Modern Academy for Engineering and Technology in Maadi
Computer Engineering and Information Technology Department.

Computer Engineering And Information Technology BSc Program Specifications (By Law 2018)

مقدمة

الهندسة هى المعرفة بالعلوم الطبيعية والرياضية، والتى تكتسب بالدراسة والخبرة والممارسة، وتطبق بوعى لتطوير أساليب تستخدم اقتصاديا لتطويع المواد وقوى الطبيعة لصالح البشريّة. وهى أيضا المقدرة على الشروع في النشاط والسلوك المرتبط بالعمليات الهندسية والنظم والمشاكل والفرص، والتاريخ ، والمستقبل ، والتأثيرات ، والأخلاق والمردودات. كما أنها تنطوى على المعرفة، وطرق التفكير والتصرفات والقدرات. كما تساعد الهندسة في إعداد الأفراد لتقديم خيارات مدروسة في إطار كونهم مستهلكين أو عمالا أو مواطنين وأعضاء فى المجتمع الدولى. وينبغي أن يحقق التعليم الهندسي التميز والتفوق في التعليم العالى والدراسات العليا والبحوث، والخدمة العامة، وتطوير المعارف الهندسية. ويهدف التعليم الهندسى الى تخريج مهندسين موهوبين، واسعى المعرفة على درجة عالية من الكفاءة, بالإضافة إلى إنتاج بحوث وتقنيات مفيدة وخلاقة من خلال التفوق والتميز الأكاديمي. علاوة على ذلك فإن التعليم الهندسى يهدف إلى تحفيز الطلاب وأعضاء هيئة التدريس على التعلم والنمو، كذلك تحقيق وتلبية احتياجات المجتمع قوميًّا وإقليميًّا ودوليًّا. كما يهدف أيضا إلى إعداد الطّلبة لمهنة منتجة ومفيدة في المجال الهندسى مبنية على أسس أخلاقية ومعنوية قوية.

ويختص المهندسون بحل المشاكل الواقعيّة، ويعملون على إيجاد أفضل الحلول لها عن طريق تطبيق مجمل معارفهم وخبراتهم ومهاراتهم . كما يساعد المهندسون على تعريف وتحسين نمط الحياة بتوفير وسائل حياتية ذات أداء عالي مبتكر، أكثر أمانًا وملائمة للاستعمال اليومى. كما يسعون إلى التطوير من خلال الاختراع والتصميم والتصنيع والبناء. كما تهدف مجمل الأنشطة الهندسية إلى الحصول على نتائج إيجابية لتحسين المعيشة بيد ان هناك عوائق تصاحب هذه الأنشطة مثل تلوث المياه والهواء والبيئة والتلوث الصوتي الناتج عن الإنجازات الهندسية المبهرة خلال العقود الماضية. كذلك يصطدم عمل المهندس أثناء مواجهة المشكلات بقيود متنامية نتيجة تشابك وتقارب المشكلات الاجتماعية والتقنية. وعلى سبيل المثال فإن مشكلة تلوّث الهواء لا يمكن أن تُحَلّ بدون اعتبار التناقضات الأخلاقيّة والسّياسيّة والقانونيّة والاجتماعيّة. علاوة على ذلك، يجب أن يأخذ فى الاعتبار تأثير الحلول الهندسية المتاحة على مصالح الأفراد و المجموعات.

وتقدم دراسة الهندسة للطلاب تعليما فعالا ومبنيا على أسس تكنولوجية، آخذا فى الاعتبار التوقعات المستقبلية للعلم والتكنولوجيا. وهى أيضا توفر المعارف التقنية والمهارات الضرورية لحل المشاكل التي تسمح بمواجهة التحديات المستقبلية . وقد حددت المعايير الأكاديمية المرجعية (NARS)، لبرنامج هندسة الحاسبات وتكنولوجيا الحاسبات والمعتمدة من الهيئة القومية للاعتماد وجودة التعليم، مفاهيما شاملة تمثل التوقعات والطموحات العامة بخصوص معايير درجة البكالوريوس في العلوم الهندسية، كما توضح هذه المفاهيم المواصفات والخصائص التى يتمتع بها خريج البرامج الدراسية الهندسية خاصة:

- **منح الدرجة يتفق مع الإطار العام للتعليم الهندسى الحديث.**
- **الدرجات الهندسية تتوافق مع التوجهات القومية.**
- **الدرجات الممنوحة تلبى الاحتياجات الفعلية لسوق العمل.**

وقد تم تصميم برنامج هندسة الحاسبات وتكنولوجيا المعلومات لإعداد المهندسين المتميزين فى مجالات تصميم البرامج والمكونات المادية للحاسبات إضافة إلى تكنولوجيا المعلومات التى تدرس من خلال مجموعة من المواد المميزة والتى تعطى لخريج البرنامج تأهيلا متميزا مقارنة بخريجى البرامج المثيلة لسد احتياجات سوق العمل.

وقد تم إعداد مواصفات البرنامج بتعاون جاد وأداء احترافى لنخبة متميزة من أعضاء هيئة التدريس المتخصصين فى مجالات مقررات البرنامج.

وقسم الهندسة الكهربية (شعبة هندسة الحاسبات وتكنولوجيا المعلومات) إذ يقدم هذه الوثيقة الهامة فإنه يتقدم بالشكر لجميع أعضاء هيئة التدريس الذين تضافرت جهودهم لإنجازها كما يقدم الشكر والتقدير لمكتب الجودة بالأكاديمية الذى وفر الخبرات اللازمة والتدريب والاستشارات لإتمام مواصفات البرنامج.

والله ولى التوفيق،،،

أ.د. وفائى بغدادى
منسق البرنامج

Contents

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Computer Engineering and Information Technology B.Sc. Program Specifications

1. General

1.1. Basic Information

Program Title: Computer Engineering and Information Technology B.Sc. Program
Program Type: Single
Department: Computer Engineering and Information Technology Department
Coordinator: Ass. Prof.Dr. Wafaa Boghdady
Assistant Co-ordinator: Dr.Seham Ebrahim
External Evaluators: Prof. Aly Aly Fahmy, Former Dean of the Faculty of Computer and Information, Cairo University
Academic Standard: The program adopts the Academic Reference Standards for the Computer Engineering and Information Technology B.Sc. Program (ARS) approved by the National Authority for Quality Assurance and Accreditation in Education (NAQAAE), first edition, July 2015.
Total Credit Hours: 180
Total Contact Hours: 268
Program Started on: 2018-2019
Dates of program specifications approval: 24/09/2018

1.2. Staff Members

The Computer Engineering and Information Technology B.Sc. Program is taught by 7 highly qualified staff members, All of the staff members are qualified to teach the courses allocated to them. The staff members are assisted by 15 full time teaching assistants in addition to 2 engineers and 6 technicians.

1.3. Program Reviewing

The program was evaluated by one external evaluator. His evaluation report showed that the program specification agrees with the Adopted Academic Reference Standards.

2. Professional Information

2.1. Preamble

Engineers solve real-life problems. They find the best solutions through the application of their knowledge, experience and skills. Engineers help to define and refine the way of life by providing innovative, higher-performance, safer, cleaner or more comfortable daily-used facilities for human beings. They seek improvements through the processes of invention, design, manufacturing and construction.

The engineer's problem-solving complexity grows as the world's social and technological problems become more closely related. For example, The problem of protection of intellectual creativity of software Programs and Information security cannot be solved without considering the social, legal, and political conflicts. Moreover, the impact of the available engineering solutions on the interests of the individuals and groups should be considered.

Engineering studies provide students with the advanced, effective, technology-based education that should meet the expected needs of future science and technology. They should also promote the technical understanding and problem-solving skills required to face the engineering challenges of tomorrow.

The engineering education should achieve excellence in undergraduate and graduate education, research, public service and advancement of the state-of-the-art within the discipline. It aims to produce able, broadly educated, highly qualified engineers through academic excellence. Moreover, it motivates students, faculty and staff to learn, grow, achieve and serve the needs of society nationally, regionally and internationally. It also prepares students for a productive and rewarding career in engineering based on strong moral and ethical foundation.

Computer engineering (CE) is a discipline that embodies the science and technology of design, construction, implementation, and maintenance of software and hardware components of modern computing systems and computer-controlled equipment. Computer engineering has traditionally been viewed as a combination of both computer science (CS) and electrical engineering (EE). Computer engineering is a field that experiences effects from rapid technological development in different real life applications. Computer engineering programs use basic sciences, mathematics, engineering and electronics, physical and human sciences to provide new computer technologies and systems that make human applications easier, productive, faster and enjoyable to use.

The Computer Engineering and Information Technology program integrate the Information technology discipline with the base of the Computer Engineering discipline. This integration emphasizes and supports the base of computer engineering program and adds to it the knowledge areas of the Information technology. This allows graduates to have strong base to work effectively in both fields.

The current program fulfills the requirements of the Academic Reference Standard (ARS) for the computer engineering and information technology BSc program, approved by the Egyptian National Authority for Quality Assurance and Accreditation in Education (NAQAAE), first edition, July 2015.

A computer engineer is a person trained to be proficient in the design and implementation of computer systems hardware, distributed systems, Data Base Management and computer network. He should essentially be able to design different types of software programs that revolve from modern trends of technologies. To perform these tasks, the computer engineer must be knowledgeable in related mathematics, physics sciences, electronics, communications, computer hardware and software, networking and other engineering concepts and systems. A proper level of expertise must be possessed through practicing the discipline concepts in solving problems of real applications. This level of expertise should be permanently upraised by engaging in life-long learning processes.

2.2. Program Mission and Aims

2.2.1. Program Mission

The mission of the computer engineering and information technology BSc program is to prepare competent graduates capable of interacting with various domains of the specialization. The graduate of this program should possess the qualities and satisfies the requirements needed by both public and private sectors.

2.2.2. Program Aims:

The program aims at providing future engineers of computer engineering and information technology with appropriate theoretical knowledge and technical skills to respond to professional market demands.

2.2.3. Aimed Graduate Attributes:

The following are the aimed graduate attributes:

1. Apply knowledge of mathematics, science and engineering concepts to the solution of engineering problems.
2. Design a system; component and process to meet the required needs within realistic constraints.
3. Design and conduct experiments as well as analyze and interpret data.
4. Identify, formulate and solve fundamental engineering problems.

5. Use the techniques, skills, and appropriate engineering tools, necessary for engineering practice and project management.
6. Work effectively within multi-disciplinary teams.
7. Communicate effectively.
8. Consider the impacts of engineering solutions on society and environment.
9. Demonstrate knowledge of contemporary engineering issues.
10. Display professional and ethical responsibilities; and contextual understanding.
11. Engage in self- and life- long learning.
12. Demonstrate inductive reasoning abilities, figuring general rules and conclusions about seemingly unrelated events.
13. Use current advanced techniques, skills, and tools necessary for computing practices to specify, design, and implement computer-based systems.
14. Recognize the information requirements of various business activities on both operational and decision making levels.
15. Tackle business problems using system analysis tools and techniques.
16. Manage projects related to computer systems in diverse fields of applications.
17. Implement phases of the computer system development life cycle, procurement and installation of hardware, software design, data manipulation and system operations.
18. Appreciate knowledge of tools and techniques of system development and implementation involving data and network security aspects.
19. Implement computer applications to support business needs including databases and network solutions.
20. Conduct effectively user experience building to the use computer applications in various business domains.

2.2.4 Graduate Career Opportunities:

A computer engineer may work in private and governmental firms and agencies, where it is required to design, manufacture, operate, develop or maintain computer systems or computer-controlled systems. He/ She may also work as a computer network engineer or a software developer.

2.3. Intended Learning Outcomes (ILO's)

2-3-1-Knowledge and Understanding:

On successful completion of the program, the graduate of the computer engineering and information technology BSc engineering program should demonstrate the knowledge and understanding of:

A1. Concepts and theories of mathematics and sciences, appropriate to the discipline.
A2. Basics of information and communication technology (ICT).
A3. Characteristics of engineering materials related to the discipline.
A4. Principles of design including elements design, process and/or a system related to specific disciplines.
A5. Methodologies of solving engineering problems, data collection and interpretation.
A6. Quality assurance systems, codes of practice and standards, health and safety requirements and environmental issues.
A7. Business and management principles relevant to engineering.
A8. Current engineering technologies as related to disciplines.
A9. Topics related to humanitarian interests and moral issues.
A10. Technical language and report writing.
A11. Professional ethics and impacts of engineering solutions on society and environment.
A12. Contemporary engineering topics.
A13. Engineering principles in the fields of logic design, circuit analysis, machine and assembly languages, computer organization and architectures, memory hierarchy, advanced computer architectures, embedded systems, signal processing, operating systems, real-time systems and reliability analysis.
A14. Quality assessment of computer systems.

A15. Related research and current advances in the field of computer software and hardware.
A16. Technologies of data, image and graphics representation and organization on computer storage media.
A17. Modern trends in the field of networking and data transmission widely used nowadays.
A18. Knowledge of fundamentals of programming and the construction of computer-based systems, data structures and algorithms, software engineering techniques and information retrieval.
A19. Knowledge of methods for the construction of web based materials and systems, design of internet-based systems.
A20. Understand the broad context within computer information technology such as quality, reliability, enterprise, employment law, accounting and health.

2.3.2. Intellectual Skills

On successful completion of the program, The graduate of the computer engineering and information technology BSc engineering program should be able to::

B1. Select appropriate mathematical and computer-based methods for modeling and analyzing problems.
B2. Select appropriate solutions for engineering problems based on analytical thinking.
B3. Think in a creative and innovative way in problem solving and design.
B4. Combine, exchange, and assess different ideas, views, and knowledge from a range of sources.
B5. Assess and evaluate the characteristics and performance of components, systems and processes.
B6. Investigate the failure of components, systems, and processes.
B7. Solve engineering problems, often on the basis of limited and possibly contradicting information.
B8. Select and appraise appropriate ICT tools to a variety of engineering problems.
B9. Judge engineering decisions considering balanced costs, benefits, safety, quality, reliability, and environmental impact.
B10. Incorporate economic, societal, environmental dimensions and risk management in design.
B11. Analyze results of numerical models and assess their limitations.
B12. Create systematic and methodic approaches when dealing with new and advancing technology.
B13. Select the appropriate mathematical tools, computing methods, design techniques for modeling and analyzing computer systems;
B14. Select, synthesize, and apply suitable IT tools to computer engineering problems.
B15. Propose various computer-based solutions to business system problems. Cost-benefit analysis should be performed especially in sensitive domains where direct and indirect costs are involved.
B16. Identify symptoms in problematic situations.
B17. Innovate solutions based on non-traditional thinking and the use of latest technologies
B18. Classify computer objects running on different system configurations.
B19. Analyze data/ information to support activities of business system users
B20. Organize information innovatively in a form appropriate to decision making process
B21. Analyze, discuss and evaluate using various networking techniques
B22. Give examples of Information technology systems problems, set goals towards solving them, observe results, reason and apply judgment.
B23. Recognize the professional, moral and ethical issues of involved in the exploitation of Information Technology and be guided by their adoption, reflect on issues of professional practice within the discipline.

2.3.3. Professional and Practical Skills

On successful completion of the program, The graduate of the computer engineering and information technology BSc engineering program should be able to::

C1. Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.
C2. Professionally merge the engineering knowledge, understanding, and feedback to improve design, products and/or services.

C3. Create and/or re-design a process, component or system, and carry out specialized engineering designs.
C4. Practice the neatness and aesthetics in design and approach.
C5. Use computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design experiments, collect, analyze and interpret results.
C6. Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs.
C7. Apply numerical modeling methods to engineering problems.
C8. Apply safe systems at work and observe the appropriate steps to manage risks.
C9. Demonstrate basic organizational and project management skills.
C10. Apply quality assurance procedures and follow codes and standards.
C11. Exchange knowledge and skills with engineering community and industry.
C12. Prepare and present technical reports.
C13. Design and operate computer-based systems specifically designed for business applications.
C14. Use appropriate specialized computer software, computational tools and design packages throughout the phases of the life cycle of system development;
C15. Write computer programs on professional levels achieving acceptable quality measures in software development.
C16. Conduct user support activities competently.
C17. Build and run databases and integrate them with business processing requirements
C18. Deploy tools for the implementation and documentation of databases, networks and computer-based systems.
C19. Evaluate systems in terms of their quality and possible trade-offs, evaluate appropriate hardware and software solutions for given scenarios.
C20. Make effective use of general IT facilities, plan and manage a project to complete within budget and schedule.

2.3.4. General and Transferable Skills:

On successful completion of the program, The graduate of the computer engineering and information technology BSc engineering program should be able to:

D1 Collaborate effectively within multidisciplinary team
D2 Work in stressful environment and within constraints
D3 Communicate effectively
D4 Demonstrate efficient IT capabilities
D5 Lead and motivate individuals
D6 Manage tasks and resources efficiently
D7 Search for information and adopt life-long self-learning
D8 Acquire entrepreneurial skills
D9 Refer to relevant literature effectively

2.4. Curriculum Structure and Content

2.4. Curriculum Structure and Content

The program includes **64** courses of total 180 credit hours. These courses are classified according to the relevant sector NARS requirements to the following subject areas:

1) Humanities and social science
2) Mathematics and basic sciences
3) Basic engineering
4) Applied engineering and design
5) Computer Applications and ICT
6) Projects & training
7) Discretionary

2.4.1. Humanities and social science courses (University Requirements)

The humanitarian courses give the following knowledge and understanding and skills

a) Acquiring knowledge of non-engineering fields that strengthen the consciousness of the engineer of the society and its culture, including business, marketing, wellness, ethics, law, arts, etc.
b) The ability to consider and evaluate the impact of the technology on the society, public health and safety.
c) The ability to appreciate and engage in social and entrepreneurial activities essential to the engineering practice and reflect on the management of the economics and social science
d) The ability to engage in life-long learning and respond effectively to the needs of the society.

The humanitarian courses are unified for all of the programs of the Modern Academy. They consist of 16 credits (8.89% of total 180 credits), which are satisfied by completing eight (8) courses:

- Six (6) compulsory courses equivalent to 12 credits (6.67%), as listed in table 1- a.
- Two (2) elective courses equivalent to 4 credits (2.22%), as listed in table 1- b.

Table 1-a Compulsory Humanitarian Courses 12 credit Hours, 6.67% of total 180 credits

Course Code	Total Credit	Contact Hours				Course Title	Prerequisites	Subject Area						
		L	T	P	Total			Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Discretionary
GENN041	2	2	-	-	2	Contemporary Social Issues	None	2						
GENN042	2	2	-	-	2	English Language.	None	2						
GENN043	2	2	-	-	2	History of Engineering and Technology.	None	2						
GENN141	2	2	-	-	2	Presentation Skills.	None	2						
GENN142	2	2	-	-	2	Technical Report Writing.	None	2						
GENN341	2	2	-	-	2	Project Management.	None	2						
Total	**12**	**12**	**-**		**12**	**6.67 %**		**12**						

Table 1-b Elective Humanitarian Courses 2 credit Hours, 2.22 % of total 180 credits

	Course Code	Total Credit	Contact Hours				Course Title	Prerequisites	Subject Area						
			L	T	P	Total			Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Discretionary
Electi	GENN351	2	2	-	-	2	Engineering Economy.	None	2						
	GENN352	2	2	-	-	2	Environmental Effects of Electromagnetic Waves.								

	GENN353	2	2	-	-	2	Engineering Laws and Professional ethics.								
	GENN354						Risk Management								
Elective 2	GENN451	2	2	1	-	3	Advanced Computer Systems Implementation.	CMPN010	2						
	GENN452	2	2	-	-	2	Civilization and heritage	None							
	GENN453	2	2	-	-	2	Industrial Psychology.								
	GENN454	2	2	-	-	2	Marketing								
Total		**4***					**2. 22 %**		**4***						

The University Requirements make 8.89% of the total credit hours.

2.4.2. Mathematics and Basic Sciences

Mathematics

Mathematical Courses give the following knowledge and understanding and skills:

a) Acquiring knowledge in mathematical and analytical methods.
b) The ability to reason about and conceptualize engineering components, systems or processes using analytical methods as related to the Computer Engineering and Information Technology.
c) The ability to analyze and model engineering components, systems and processes specific to the Computer Engineering and Information Technology.
d) The skill of using probability and statistical methods

Basic Sciences

Basic sciences Courses give the following knowledge and understanding and skills:

a) Acquiring knowledge of physics, chemistry, mechanics, earth sciences, biological sciences and other specific Courses which focus on understanding the physical world.
b) The ability to select and apply scientific principles in practical problem solving.
c) The ability to analyze, model and reason about engineering components, systems or processes using principles and knowledge of the basic sciences as applicable in each engineering disciplinary context.
d) The ability to adopt scientific evidence-based techniques in problems solving

The Institute Requirements (Mathematics & Basic Science Courses) of the Computer Engineering and Information Technology bachelor program consist of 30 credits (16.66% of total 180 credits) as shown in table 2.

Table -2 Courses of Institute Requirements (Mathematics and Basic science cources) (30credits, 16.66% of total 180 credits)

Course Code	Total Credit	Contact Hours				Course Title	Prerequisites	Subject Area						
		L	T	P	Total			Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Discretionary
CHEN001	3	2	1	2	5	Chemistry.	None		3					
MECN001	2	1	3	-	4	Mechanics -1.	None		2					
MECN002	2	1	3	-	4	Mechanics-2.	MECN001		2					
MTHN001	3	2	3	-	5	Mathematics-1(Algebra and Calculus).	None		3					

MTHN002	3	2	3	-	5	Mathematics-2(Integration and Analytic Geometry).	MTHN001		3					
PHYN001	3	2	1	2	5	Physics-1.	None		3					
PHYN002	3	2	1	2	5	Physics -2.	PHYN001		3					
MNFN001	1	1	-	-	1	Introduction to Engineering Materials.	None			1				
MNFN002	3	1	6	-	7	Engineering Graphics.	None			3				
MNFN003	3	2	-	3	5	Principles of Production Engineering.	None			3				
CMPN010	4	2	3	2	7	Program Design and Computer Languages.	None		4					
Total	**30**	**18**	**24**	**11**	**53**	**16.66%**			**23**	**7**				

2.4.3. Basic Engineering Courses

Basic Engineering sciences Courses, Table 3. give the following knowledge and understanding and skills:

a) Integrating knowledge and understanding of mathematics and physical sciences to develop basic engineering laws and concepts related to the Computer Engineering and Information Technology.
b) The ability to extend knowledge and develop models and methods and use techniques, principles and laws of engineering sciences in order to lead to engineering applications across disciplinary boundaries.
c) The ability to deal effectively with numbers and concepts to identify/solve complex and open ended engineering problems.

The requirements of the general specialization (Basic Engineering Courses) of Computer Engineering and Information Technology bachelor program consist of 67 credits (37.22% of total 180 credits), as listed in table 3.

Table -3 Requirements of the general specialization of the program (Basic Engineering Courses) (67Credit Hours, 37.22% of total 180 credits)

Course Code	Total Credit	Contact Hours				Course Title	Prerequisites	Subject Area						
		L	T	P	Total			Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Discretionary
MTHN103	3	2	3	-	5	Mathematics -3(Differential Equations and Transforms).	MTHN002		3					
MTHN104	3	2	3	-	5	Mathematics-4(Advanced Calculus).	MTHN001		3					
ELCN114	3	2	1	2	5	Modern Theory for Semiconductor Devices	PHYN002		3					
MTHN207	3	2	2	-	4	Mathematics -7(Introduction to Prob. and Statistics)	MTHN002		3					
MTHN208	2	2	1	-	3	Mathematics -8 (Complex Analysis and P. D. E).	MTHN002		2					
ARCN110	3	2	2	-	4	Civil Engineering Technology.	None			3				
CMPN110	3	2	2	-	4	Data Structures and Algorithms.	CMPN010					3		
ELCN111	3	2	1	2	5	Electrical Circuit Analysis-1.	MTHN002 ELCN060			2			1	

ELCN112	3	2	3	—	5	Electrical Circuit Analysis-2.	ELCN111			2			1	
ELCN113	3	2	1	2	5	Electrical Measurements.	ELCN111			2			1	
CMPN111	4	3	2	1	6	Logic Circuits Design-1.	MTHN001			2		2		
MNFN110	3	2	1	2	5	Mechanical Engineering Technology.	MECN002 MNFN001			3				
ELCN115	3	2	1	2	5	Semiconductors for Microelectronics.	ELCN114			3				
CMPN210	3	2	1	2	5	Engineering Computer Applications.	CMPN010 CMPN160					3		
CMPN211	3	2	2	-	4	Numerical Methods with Computer Applications.	MTHN103			2		1		
ELCN210	4	3	1	2	6	Control-1. (Principles of Automatic Control)	MTHN103			3		1		
ELCN211	3	2	2	—	4	Signal Analysis.	MTHN103			3				
ELCN212	3	2	1	2	5	Microelectronic Circuits-1	ELCN115,			2		1		
ELCN214	3	2	1	2	5	Electronic Measurements.	ELCN113			3				
ELCN215	3	2	1	2	5	Communications-1.	ELCN211			3				
ELCN218	3	2	2	1	5	Electrical Power Engineering.	ELCN112			3				
CMPN310	3	2	1	2	5	Microprocessor Based - Systems.	CMPN111					3		
Total	**67**	**46**	**35**	**24**	**105**	**37.22%**			**14**	**36**		**14**	**3**	

- **ELCN060:** Summer training for level zero.
- **CMPN160:** Summer training for level one.

2.4.4. Applied Engineering and Design Courses and Projects

Applied engineering sciences Courses give the following knowledge and understanding and skills:

a) Attaining knowledge of operational practice, engineering codes and design techniques relevant to the Course
b) The ability to apply engineering knowledge and creative, iterative and open-ended procedures when conceiving and developing components, systems and processes.
c) The ability to integrate engineering knowledge, engineering codes, basic and mathematical sciences in designing a component, a system or a process.
d) The ability to work under constraints, taking into account time, economy, health and safety, social and environmental factors and applicable laws.

Projects & Training

The projects give the following knowledge and understanding and skills:

a) Gaining the knowledge and experience of applying the different principles and techniques introduced in the program of study.
b) The ability to work within defined constraints, tackle work which lacks a well-defined outcome or which has a wide range of possible solutions and exhibit creativity in dealing with unfamiliar real-life problems.
c) The ability to investigate, plan and execute technical research specific to the Computer Engineering and Information Technology over an extended period of time; meeting deadlines and putting technical work in a social and commercial context.

The ability to work in a team, search published sources of information, interprets technical data and analyzes and presents findings in various ways.

The requirements of the specific specialization (Applied Engineering and Design) of the Computer Engineering and Information Technology bachelor program consist of 67 credits (37.2% of total 180 credits), which are satisfied by completing Twenty three (23) courses:

1. Eleven (11) Core Computer Major Courses equivalent to 37 credits (20.55%), as listed in table 4- a.

2. Five (5) Applied Engineering Elective Courses equivalent to 15 credits (8.33%), as listed in table 4- b.
3. Six (6) Projects and Industrial Training Courses equivalent to 15 credits (8.33%), as listed in table 4- c.

Table 4-a Requirements of the specific specialization of the program (Applied Engineering and design cources) (37 Credit Hours, 20.55% of total 180 credits)

Course Code	Total Credit	Contact Hours				Course Title	Prerequisites	Subject Area						
		L	T	P	Total			Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Discretionary
ELCN213	3	2	1	2	5	Microelectronic Circuits-2	ELCN212				2	1		
CMPN321	3	2	2	-	4	Computer Architecture	CMPN111				3			
CMPN322	3	2	1	2	5	Computer Graphics and Man Machine Interface.	CMPN110 CMPN321				3			
CMPN323	4	3	2	1	6	Data Base Management.	CMPN325				4			
CMPN324	4	3	2	1	6	Data Transmission and Computer Networks.	CMPN321				4			
CMPN325	3	2	2	-	4	Information Systems	CMPN110				3			
CMPN326	3	2	1	2	5	Logic Circuits Design - 2.	CMPN111				3			
CMPN421	3	2	2	1	5	Distributed Computer Systems.	CMPN324				3			
CMPN422	4	3	2	1	6	Artificial Intelligence.	CMPN325				4			
CMPN423	4	3	2	-	5	Languages and Compilers.	CMPN110				4			
CMPN424	3	2	2	-	4	Computer Modeling and Simulation	CMPN210				3			
Total	**37**	**26**	**19**	**6**	**55**						**36**	**1**		

Table 4-b Applied Engineering and design Elective Courses (12Credits+3 Credits from Communications Major ,8.33% of 180 Credit Hours)

Course Code	Total Credit	Contact Hours				Course Title	Prerequisites	Subject Area						
		L	T	P	Total			Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Discretionary

CMPN331	3	2	2	-	4	Computer Peripherals.	CMPN321							3
CMPN332	3	2	1	2	5	Digital Image Processing.	CMPN210							3
CMPN333	3	2	2	-	4	Embedded Systems	CMPN310							3
CMPN334	3	2	1	2	5	Multimedia	CMPN110							3
CMPN335	3	2	2	1	5	Operating Systems.	CMPN321							3
CMPN336	3	2	2	1	5	Software Engineering.	CMPN325							3
CMPN431	3	2	2	-	4	Advanced Computer Systems.	CMPN310							3
CMPN432	3	2	2	-	4	Advanced Database Systems.	CMPN323							3
CMPN433	3	2	2	-	4	Computer Organization.	CMPN321							3
CMPN434	3	2	2	-	4	Computer Performance.	CMPN110							3
CMPN435	3	2	2	-	4	Computer System Technology.	CMPN321							3
CMPN436	3	2	2	-	4	Fault Tolerant Computing.	CMPN010							3
CMPN437	3	2	2	-	4	Computer Interfacing.	CMPN321							3
CMPN438	3	2	2	-	4	Pattern Recognition and Neural Networks.	MTHN103 CMPN310							3
CMPN439	3	2	2	-	4	Real Time Computing.	CMPN010							3
ELCN425	3	2	2	1	5	Digital Signal Processing. (Elective Course from Communications)	MTHN103 CMPN111					3		
Total	**15***	**10**	**9**	**3**	**22**							**3**		**12**

	Course Code	**Total Credit**	**Contact Hours**				**Course Title**	**Prerequisites**	**Subject Area**						
			L	**T**	**P**	**Total**			**Social & Hum. Sc.**	**Business Adminstration**	**Math. & B. Science**	**Engineering Culture**	**Basic Engineering Sc.**	**Applied Eng. & Design**	**Project & Ind. Training**
Elective 3	CMPN333	3	2	2	-	4	Embedded Systems	CMPN310							3
	CMPN335	3	2	2	1	5	Operating Systems.	CMPN321							
	CMPN433	3	2	2	-	4	Computer Organization.	CMPN321							
Elective 4	CMPN331	3	2	2	-	4	Computer Peripherals.	CMPN321							3
	CMPN336	3	2	2	1	5	Software Engineering.	CMPN325							
	CMPN434	3	2	2	-	4	Computer Performance.	CMPN110							
Elective 5	CMPN334	3	2	1	2	5	Multimedia	CMPN110							3
	CMPN432	3	2	2	-	4	Advanced Database Systems.	CMPN323							

	CMPN439	3	2	2	-	4	Real Time Computing.	CMPN010							
	CMPN332	3	2	1	2	5	Digital Image Processing.	CMPN210							3
Elective communication	ELCN425	3	2	2	1	5	Digital Signal Processing. (Elective Course from Communications)	MTHN103 CMPN111						3	
Elective 6	CMPN431	3	2	2	-	4	Advanced Computer Systems.	CMPN310							3
	CMPN435						Computer System Technology.	CMPN321							
	CMPN436						Fault Tolerant Computing.	CMPN010							
	CMPN437						Computer Interfacing.	CMPN321							
	CMPN438						Pattern Recognition and Neural Networks.	MTHN103 CMPN310							
	Total	**12***												**3**	**12**

Table 4-c Projects and Industrial Training cources (15 Credit Hours, 8.33% of total 180 credits)

Course Code	Total Credit	Contact Hours				Course Title	Prerequisites	Subject Area						
		L	T	P	Total			Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Discretionary
CMPN261	1	-	2	-	2	Seminar	65 Credits						1	
CMPN361	2	1	1	2	4	Project-1.	101 Credits						2	
CMPN460	3	2	-	2	4	Project-2. a	CMPN361						3	
CMPN461	3	2	-	2	4	Project-2-b	CMPN461						3	
CMPN260	3	-	-	6	6	Industrial Traning-1.	65 Credits						3	
CMPN360	3	-	-	6	6	Industrial Training-2.	CMPN260 +101Credits						3	
Total	**15**	**5**	**3**	**18**	**26**								**15**	

The industrial training is carried out in the third and the fourth summers.

2.4.5. CONFORMITY TO THE (SCU) AND NARS REQUIREMENTS

The Computer Engineering and Information Technology BSc program includes 64 courses of total 180 credit hours, 268 contact hours without summer training. These courses are classified according to the requirements of the engineering sector of the supreme council of Universities (SCU) to the following subject areas:

1) General cultural courses requirements (University Requirements) (8-10%)
2) Faculty/Institute requirements (15-20%)
3) Requirements of the general specialization of the program (Basic Engineering Courses) (30-35%)
4) Requirements of the specific specialization of the program (35-40%)

The program credit hours were also classified according to the NARS to following subject areas:

1) Humanities and Social Sciences (9-12 %)
2) Mathematics and Basic Sciences (20-26 %)
3) Basic Engineering Sciences (20-23 %)
4) Applied Engineering and Design (20-22 %)
5) Computer Applications and ICT* (9-11 %)
6) Projects* and Practice (8-10 %)
7) Discretionary (Institution character-identifying) subjects (6-8 %)

The collective credit hours are shown in the following table. This table shows that the Credit hours' distribution of the Computer Engineering and Information Technology BSc program agrees with the requirements of the Engineering Sector of the Supreme Council of Universities (SCU) as well as the requirements of the National Authority for quality assurance and accreditation in Education.

	Subject Area							Total Credit Hours	Percentage	Requirements of the Engineering Sector Committee
	Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Discretionary			
University Requirements (General cultural courses requirements)	16							16	8.88	8-10%
Faculty/Institute requirements (Mathematics & Basic Science Courses)		23	7					30	16.66	15-20%
Requirements of the general specialization of the program (Basic Engineering Courses)		14	36		14	3		67	37.22	30-35%
Requirements of the specific specialization of the program (Applied Engineering and Design)				36	4	15	12	67	37.22	35-40%
Total Credit Hours	16	37	43	36	18	18	12	180		
Percentage	8. 88	20.55	23.88	20.0	10	10	6.66			
NARS Engineering Requirements	9-12%	20-26%	20-23%	20-22%	9-11%	8-10%	6-8%			

2.4.6. Sample study plan

A sample study plan for the Computer Engineering and Information Technology BSc program is presented as one recommended sequence to complete the graduation requirements over 10 main semesters, the Fall and Spring semesters per academic year. Since the program is based on the credit hours system of education, the student does not have to take the courses during the semester indicated in the study plan as long as the course prerequisites are satisfied. The academic year is divided into 2 main semesters. In addition to summer courses that enable high caliber students to finish the program in nine semesters only (each summer term shouldn't exceed 6 credit hours)

First Semester (Level zero)

Code	Subject	Total Credits	Contact Hours			
			L	T	P	Total
CHEN001	Chemistry.	3	2	1	2	5
GENN041	Contemporary Social Issues	2	2	-	-	2
MNFN002	Engineering Graphics	3	1	6	-	7
GENN043	History of Engineering and Technology	2	2	-	-	2
MECN001	Mechanics -1.	2	1	3	-	4
MTHN001	Mathematics -1 (Algebra and Calculus)	3	2	3	-	5
PHYN001	Physics -1	3	2	1	2	5
Total		**18**	**12**	**14**	**4**	**30**

Second Semester (Level zero)

Code	Subject	Total Credits	Contact Hours			
			L	T	P	Total
MNFN001	Introduction to Engineering Materials.	1	1	-	-	1
GENN042	English Language.	2	2	-	-	2
MECN002	Mechanics-2	2	1	3	-	4
MTHN002	Mathematics -2(Integration and Analytic Geometry)	3	2	3	-	5
PHYN002	Physics-2.	3	2	1	2	5
MNFN003	Principles of Production Engineering	3	2	-	3	5
CMPN010	Program Design and Computer Languages.	4	2	3	2	7
Total		**18**	**12**	**10**	**7**	**29**

Summer Training

Code	Subject	Total Credits	Contact Hours			
			L	T	P	Total
ELCN060	Summer Training-1	0	0	-	0	0
Total		**0**	**0**	**-**	**0**	**0**

Third Semester (Level one)

Code	Subject	Total	Contact Hours

		Credits	L	T	P	Total
ARCN110	Civil Engineering Technology.	3	2	2	-	4
ELCN111	Electrical Circuit Analysis-1	3	2	1	2	5
CMPN111	Logic Circuits Design-1.	4	3	2	1	6
ELCN114	Modern Theory for Semiconductor Devices	3	2	1	2	5
MTHN103	Mathematics -3 (Differential Equations and Transforms).	3	2	3	-	5
GENN141	Presentation Skills.	2	2	-	-	2
Total		**18**	**13**	**9**	**5**	**27**

Fourth Semester (Level one):

Code	Subject	Total Credits	Contact Hours			
			L	T	P	Total
CMPN110	Data Structures and Algorithms.	3	2	2	-	4
ELCN112	Electrical Circuit Analysis-2	3	2	3	-	5
ELCN113	Electrical Measurements.	3	2	1	2	5
MNFN110	Mechanical Engineering Technology.	3	2	1	2	5
MTHN104	Mathematics -4(Advanced Calculus)	3	2	3	-	5
ELCN115	Semiconductors for Microelectronics	3	2	1	2	5
Total		**18**	**12**	**11**	**6**	**29**

Summer Training

Code	Subject	Total Credits	Contact Hours			
			L	T	P	Total
CMPN160	Summer Training-2	0	0	-	0	0
Total		**0**	**0**	**-**	**0**	**0**

Fifth Semester (Level two)

Code	Subject	Total Credits	Contact Hours			
			L	T	P	Total
GENN341a	Project Management.	2	2	-	-	2
ELCN211	Signal Analysis	3	2	2	-	4
ELCN212	Microelectronic Circuits-1	3	2	1	2	5
CMPN210	Engineering Computer Applications	3	2	1	2	5
MTHN207	Mathematics -7 (Introduction to Probability. and Statistics).	3	2	2	-	4
CMPN325	Information Systems.	3	2	2	-	4
CMPN261	Seminar	1	-	2	-	2
Total		**18**	**12**	**10**	**4**	**26**

Sixth Semester (Level two)

Code	Subject	Total Credits	Contact Hours			
			L	T	P	Total

CMPN321	Computer Architecture	3	2	2	-	4
ELCN210	Control-1 (Principles of Automatic Control).	4	3	1	2	6
ELCN214	Electronic Measurements	3	2	1	2	5
ELCN213	Microelectronic Circuit-2	3	2	1	2	5
MTHN208	Mathematics -8(Complex Analysis and P.D.E)	2	2	1	-	3
GENN142	Technical Report writing	2	2	-	-	2
Total		**17**	**13**	**6**	**6**	**25**

Summer Training

Code	Subject	Total Credits	Contact Hours			
			L	T	P	Total
CMPN260	Industrial Training -1	3	1	-	4	5
Total		**3**	**1**	**-**	**4**	**5**

Seventh Semester (Level three)

Code	Subject	Total Credits	Contact Hours			
			L	T	P	Total
CMPN211	Numerical Methods with Computer Applications.	3	2	2	-	4
ELCN215	Communications -1	3	2	1	2	5
CMPN310	Microprocessor Based Systems.	3	2	1	2	5
ELCN218	Electrical Power Engineering	3	2	2	1	5
CMPN323	Data Base Management.	4	3	2	1	5
GENN35*	Elective course of University Requirements • GENN351 Engineering Economy • GENN352 Environmental Effects of Electromagnetic Waves.. • GENN353 Engineering Laws and Professional ethics • GENN354 Risk Management.	2	2	-	-	2
Total		**18**	**13**	**8**	**6**	**26**

Eighth Semester (Level three)

Code	Subject	Total Credits	Contact Hours			
			L	T	P	Total

CMPN322	Computer Graphics and Man Machine Interface	3	2	1	2	5
CMPN326	Logic Design -2.	3	2	1	2	5
CMPN324	Data Transmission and Computer Networks.	4	3	2	1	6
CMPN33*	Elective Course of Applied Engineering and design • CMPN335 Operating Systems • CMPN333 Embedded Systems	3	2	2	1	5
CMPN361	Project -1	2	1	1	2	4
CMPN33*	Elective Course of Applied Engineering and design • CMPN336 Software Engineering • CMPN331 Computer Peripherals	3	2	2	1	5
Total		**18**	**12**	**9**	**9**	**30**

Summer Training

Code	Subject	Total Credits	Contact Hours			
			L	T	P	Total
CMPN360	Industrial Training -2	3	1	-	4	5
Total		**3**	**1**	**-**	**4**	**5**

Ninth Semester (Level Four)

Code	Subject	Total Credits	Contact Hours			
			L	T	P	Total
CMPN421	Distributed Computer Systems	3	2	2	1	5
CMPN33*	Elective Course of Applied Engineering and design • CMPN332 Digital Image processing • CMPN334 Multimedia	3	2	1	2	5
CMPN460	Project -2a (First Stage)	3	1	1	4	6
CMPN423	Languages and Compliers	4	3	2	-	5
GENN45*	Elective course of University Requirements • GENN451 Advanced Computer Systems Implementation. • GENN452 Civilization and heritage • GENN453 Industrial psychology • GENN454 Marketing	2	2	-	-	2
Total		**15**	**8**	**6**	**7**	**23**

Tenth Semester (Level Four)

Code	Subject	Total	Contact Hours

		Credits	**L**	**T**	**P**	**Total**
CMPN424	Computer Modeling and Simulation	3	2	2	-	4
CMPN422	Artificial Intelligence.	4	3	2	1	6
CMPN461	Project-2-b	3	1	1	4	6
CMPN43*	Elective Course of Applied Engineering and design • CMPN434 Computer Performance • CMPN438 Pattern Recognition and Neural Networks	3	2	2	-	4
ELCN425	Digital signal processing	3	2	2	1	5
Total		**16**	**10**	**9**	**6**	**25**

2.5. Curriculum Mapping

The contribution of the individual courses to the program Intended Learning Outcomes are marked in the courses specifications and revised following the evaluation of the mapping matrix. Therefore, the courses specifications are approved by the department scientific council following the program specification approval.

Appendix 1 shows the curriculum mapping matrix, developed on the basis of the courses specifications. The mapping matrix shows that the program courses present balanced contribution to the program ILO's includes also two tables summarizing the program ILO's contributed by the individual courses and the courses contributing to the individual ILO's.

2.6. Courses Specifications

The detailed program courses specifications are given in Appendix 2. These courses specifications were revised and approved on **September 2018**. The contribution of each course to the program ILO's were considered during this revision.

3. Program Admission Requirements

- Admission is fully organized by the admission office of the Ministry of Higher Education.
- Secondary School Certificate Graduates of other countries are eligible to join this program if they met the minimum grades set by Admission Office of the Ministry of Higher Education.
- The study begins with a preparatory year for all students before specialization in computer engineering. Students' departmental allocation is in accordance with the Academy Council regulations.

4. Regulations for Progression and Program Completion

1) Attendance of program is on full-time basis.
2) The study follows the credit hour system with two major semesters, 15-week each and one, 8-week- semesters per year.
3) A minimum of 75 % student attendance to lectures, tutorials and laboratory exercises per course is conditional for taking the final exams of the course, in accordance with the Departmental Board recommendation approved by the Faculty Council; otherwise students would be deprived from taking their final exam(s).
4) If a course includes written and oral / lab tests, the course evaluation is made according to the total mark of all tests in addition to the academic standing throughout the semester.
5) No mark is recorded for the student who fails to appear in the written examination.

The details of program progression and grades evaluation are explained by Appendix 3.

5. Teaching and Learning Methods

Teaching methods

- Lecture
- Presentations and Movies
- Discussions
- Tutorials
- Problem solving
- Brain storming
- Projects
- Modeling and Simulation
- Laboratory Experiment

Learning methods

- Site visits

- Self-learning
- Cooperative
- Discovering

6. Student Assessment (Methods and rules for student assessment)

Students assessment methods

Method (tool)	Assessed ILO's
1- Written exam	A, B & C
2- Quizzes and reports	A, B & C
3- Oral exams	A, B & C
4- Practical	A &C
5- Project applied on a practical field problem	A, B, C & D
6- Other assessment methods	As stated in the courses specifications

Where:

A includes the program knowledge and understanding
B includes the intellectual skills
C includes the professional applied skills
D includes the general transferrable skills

7. Program Evaluation

Evaluator	Tool	Periodicity
1- Senior students	Questionnaires	Annual
2- Alumni	Questionnaires	Bi-annual
3- Stakeholders	Questionnaires	Annual
4- External Evaluator(s) (External Examiner (s))	Reports	Each 5 years
5- Other societal parties	Questionnaires	On request

Appendix 1

Curriculum Mapping

Appendix 1

Curriculum Mapping

The curriculum mapping was carried out according to the following procedures:

1) Extract the program ILO's covered by each course from the courses specifications and arrange them in a convenient table.
2) Develop four matrices for the courses with each of the four categories of program ILO's.
3) Study the developed matrices and find the needed tuning of courses specifications to insure balanced covering of the courses to program ILO's.
4) Carryout the required tuning process and prepare the final program specifications including the final mapping matrix.
5) Present the program specifications to the academic council for approval.
6) Carry out the necessary courses specifications tuning and present the courses specifications to the concerned academic council for approval.

A1.1 Program ILO.s covered by the individual courses.

Table A1-1 carries the program ILO's covered by the individual courses.

Table A1-1 Program ILO's covered by the program courses

Course		Program Intended Learning Outcomes			
Code	Title	Knowledge and understanding	Intellectual skills	Professional and practical skills	General and transferable skills
CHEN001	Chemistry.	A1,A3,A4,A5,A6,A8,A11,A12	B1,B2,B3,B4,B6,B8,B10,B12	C1,C2,C3,C5,C8,C12	D1,D2,D3,D4,D5,D7
GENN041	Contemporary Social Issues	A9, A10	B4, B9, B12	C1,C5	D1, D3, D7, D9
MNFN002	Engineering Graphics.	A2,A 4,A5,A8,A10	B3,B5,B7,B8,B9	C2, C3, C4, C11	D1,D3, D9
GENN043	History of Engineering and Technology.	A1, A5, A8, A9, A11, A14	B1, B2, B6, B7		D1,D7, D8
MTHN001	Mathematics-1(Algebra and Calculus).	A1, A2, A5	B1, B2, B3, B7	C1, C12	D3, D7
MECN001	Mechanics -1.	A1, A2, A3, A4	B1, B2	C1, C2	D1, D2
PHYN001	Physics-1.	A1, A2, A3, A4, A13	B1, B2, B3, B7, B13,B17, B20	C1, C6, C12, C16, C17	D1, D2, D3, D4, D5,D6,D7,D8,D9
GENN042	English Language.	A9, A10	B4	C11, C12	D1, D2, D3, D4, D6, D7, D8
MNFN001	Introduction to Engineering Materials.	A2, A3, A4, A18	B1, B2, B5, B13, B15, B17	C1,C2,C19	D1, D3, D7, D9
MTHN002	Mathematics-2(Integration and Analytic Geometry).	A1, A3, A5	B1, B2, B3, B4, B7, B11	C1, C12	D1, D3, D7
MECN002	Mechanics-2.	A1,A2,A3,A4,A5	B1,B2,B5,B13	C1,C3,C5	D1,D2
PHYN002	Physics -2.	A1,A3, A5	B2,B3, B4, B5	C1, C5, C12	D5, D7
MNFN003	Principles of Production Engineering.	A1,A2,A4	B2,B3,B10,B18.	C1, C3,C7	D1,D3,D7,D9
CMPN010	Program Design and Computer Languages.	A1,A2,A4,A5,A8,A13,A15, A16,A18	B1,B2,B3,B4,B7,B13,B14,B17,B18,B19	C1,C2,C3,C4,C5,C6,C13,C14,C15	D1,D2,D3,D4,D5,D7,D9,

ELCN060	Summer training for level zero	A3, A4	B2, B3, B9	C1, C3	D1, D3, D5, D6, D7
Course		Program Intended Learning Outcomes			
Code	Title	Knowledge and understanding	Intellectual skills	Professional and practical skills	General and transferable skills
ARCN110	Civil Engineering Technology.	A3,A4,A7,A8	B1,B2,B9	C1,C2,C3,C5,C7	D6
ELCN111	Electrical Circuit Analysis-1.	A1, A2, A3, A4, A5, A6,A8,A15	B1, B2, B4, B5, B6, B7	C1,C3,C5,C6,C9,C10,C11	D1, D2, D3,D6, D7, D9
CMPN111	Logic Circuits Design-1.	A1.A2,A3,A5,A14	B1,B2,B3,B4,B8,B12,B14	C1,C2,C3,C5,C6	D1,D2,D3,D4,D5,D6,D7,D9
MTHN103	Mathematics - 3(Differential Equations and Transforms).	A1, A2, A5	B1, B2, B3, B7	C1, C12	D3,D7
ELCN114	Modern Theory for Semiconductor Devices	A1, A2, A3, A8, A9	B1, B2, B4, B5, B6, B7, B8, B12	C1, C2,C3, C4, C7, C8, C11, C12	D1, D3, D4, D7, D9
GENN141	Presentation Skills.	A9, A10, A12	B14	C11	D1, D2, D3, D5, D7
CMPN110	Data Structures and Algorithms.	A1,A2,A3,A4,A5,A9,A12,A16,A18	B1,B2,B4,B8,B12,B14,B17,B18	C1,C2,C3,C5,C6	D1,D2,D3,D4,D6,D7
ELCN112	Electrical Circuit Analysis-2.	A1, A2, A3, A4, A5, A6	B1, B2, B3, B4, B5, B6, B7	C1,C2	D1, D2, D3, D7, D9
ELCN113	Electrical Measurements.	A1, A4, A14,A15	B1,B3,B5,B6,B7,B9,B10,B11,B13,B14	C2,C3,C5,C15,C16,C17,C18,C20	D1,D3,D6,D8,D9
MTHN104	Mathematics-4(Advanced Calculus).	A1, A5	B1, B2, B3	C1, C12	D3, D7
MNFN110	Mechanical Engineering Technology.	A1, A3, A4, A5	B1, B2, B3, B4, B5, B6, B7, B12	C1, C2, C5, C6, C12	D1, D2, D3, D7, D9
ELCN115	Semiconductors for Microelectronics.	A1, A2, A3, A8, A9	B1, B2, B4, B5, B6, B7, B8, B12	C1,C2, C3, C4, C7, C11, C12	D1, D3, D4, D7, D9
CMPN160	Summer training for level one				
CMPN210	Engineering Computer Applications.	A1,A2,A5,A8,A12,A13,A16	B1,B2,B3,B5,B7,B13,B14,B17,B18	C1,C2,C3,C4.C5,C6,C7, C14,C15	D1,D3,D4,D5,D7,D9
CMPN325	Information Systems	A1,A2,A3,A4,A7,A8,A9,A12,A18,A19,A20	B1,B2,B3,B4,B12,B14,B18,B19,B20,B22,B23	C1,C2,C3,C4,C5,C6,C13,C14,C15,C17,C18	D1,D3,D4,D5,D6,D7,D9
MTHN207	Mathematics -7 (Introduction to Prob. and Statistics)	A1, A2, A5, A10	B1, B2, B3, B4, B7,B11	C1, C2, C7, C13	D3, D7
ELCN212	Microelectronic Circuits-1	A3, A4 , A8 , A13	B2 , B5 , B7	C3 , C17	D3, D5 , D6 ,D7
GENN341a	Project Management.	A1, A3, A4, A10	B9	C12	D1, D3 , D6, D7, D9
CMPN261	Seminar	A1,A3,A5,A8,A9,A11,A15, A16	B1,B2,B5,B10,B13,B14, B17	C1,C2,C5,C6C9,C10,C11,C12,C14,C15,C16	D1,D2,D3,D7
ELCN211	Signal Analysis.	A2	B2	C1,C13	D3,D6,D7,D9
CMPN321	Computer Architecture	A1,A2,A3,A4,A5,A8,A10,A13,A15	B1,B2,B3,B4,B5,B6,B7, B12,B13,B17	C1,C2,C3,C4,C6,C13,C14,C15	D1,D3,D4,D5,D6,D7,D9
ELCN210	Control-1. (Principles of Automatic Control).	A1,A4,A5,A16	B1,B2,B5,B7,B13	C1,C2,C3,C5,C11,C12, C14,C17	D1,D3,D7,D9
ELCN214	Electronic Measurements.	A5,A10,A15	B2, B3 ,B12	C3, C12 , C15, C20	D4 ,D6 ,D7
MTHN208	Mathematics -8 (Complex Analysis and P. D. E).	A1, A3, A5	B1, B2, B3, B4, B7	C1,C12	D1, D3, D7
ELCN213	Microelectronic Circuits-2	A1,A3,A4,A15	B2,B3,B5	C1,C7,C15,C18	D2,D3,D6,D7,D9
GENN142	Technical Report Writing.	A 4, A10, A11	B4	C2,C4,C12,C14	D6,D8

CMPN260	Industrial Traning-1.	A5,A6,A7,A13,A14,A15,A16,A17	B1,B2,B3,B4,B6,B7,B8,B10,B11,B12,B13,B14,B17	C1,C2,C5,C7,C8,C9,C10,C11,C13,C14,C16	D1,D2,D3,D4,D6,D7,D8,D9
Course		Program Intended Learning Outcomes			
Code	Title	Knowledge and understanding	Intellectual skills	Professional and practical skills	General and transferable skills
CMPN323	Data Base Management.	A1,A2,A4,A5,A13,A15,A16,A17	B2,B3,B7,B8,B9,B12,B15,B17	C1,C4,C13	D1,D3,D4,D7,D9
ELCN215	Communications-1.	A2	B7	C5	D3, D5, D6, D7
GENN351a	Elective1 Engineering Economy.	A1, A2, A5, A7, A14, A18	B1,B2,B7,B8, B13	C1,C5,C7,C9, C13	D1, D2, D3, D7, D9
GENN353a	Elective1 Engineering Laws and Professional ethics.	A5, A6, A9, A10, A11	B3, B4, B9, B12	C1, C5	D1, D3, D7, D9
GENN352	Elective1 Environmental Effects of Electromagnetic Waves.	A1, A2, A5, A9, A11	B1, B2, B3, B4	None	D1, D3, D4, D6, D7
GENN354	Elective1 Risk Management	A1, A2, A4, A5, A6, A11	B1, B2, B3, B4, B7, B9	C1, C2, C6, C11	D1, D2, D3, D5, D6, D7, D9
ELCN218	Electrical Power Engineering.	A1,A3,A4,A5,A6,A8,A11,A13,A14,A15,A16	B1,B2,B3,B6,B9,B11	C1,C2,C4,C5,C8	D2,D3,D6,D7,D8
CMPN310	Microprocessor Based -Systems.	A4,A5,A9,A14,A15,A16,A18	B1,B2,B3,B4,B5,B6,B9,B11,B12,B13,B16,B17	C5,C6,C12,C14,C15	D3,D5,D7,D9
CMPN211	Numerical Methods with Computer Applications.	A1,A5	B1,B2,B3,B11	C1,C4	D3,D4,D7
CMPN322	Computer Graphics and Man Machine Interface.	A1,A2,A4,A5,A8,A12,A15,A16	B1,B2,B3,B7,B8,B10,B13	C1,C2,C3,C4,C5,C6,C7,C11,C13,C15	D1,D3,D4,D6,D7,D8,D9
CMPN324	Data Transmission and Computer Networks.	A1,A2,A3,A4,A5,A6,A8,A12,A15,A17,A18,A19,A20	B1,B4,B5,B14,B17,B21	C1,C2,C3,C5,C6,C10,C11,C19	D1,D3,D4,D5,D6,D7,D9
CMPN331	Elective3 Computer Peripherals.	A1, A2, A4, A5,A6, A8,, A11, A12, A13, A15	B1, B5, B4,B8	C1, C2,C4,C5,C14,C15,C16	D1, D2,D3, D4, D5,D7,D9
CMPN335	Elective3 Operating Systems.	A1,A2,A4,A15,A17,A18	B1,B2,B3,B4,B5,B7,B16,B17,B18	C1,C2,C3,C5,C8,C19	D1,D2,D3,D4,D7,D8,D9
CMPN333	Elective4 Embedded Systems	A1, A4, A5, A6, A12, A14, A15, A16	B2,B3, B4, B8, B12, B13, B14, B15	C1, C3, C4, C5, C6, C13, C14, C15	D1, D3, D4, D7, D9
CMPN336	Elective4 Software Engineering.	A1,A3,A4,A6,A7,A8,A12,A13,A15,A18	B1,B2,B4,B5,B7,B9,B14,B17	C1,C2,C3,C4,C6,C9,C10,C11,C12,C13,C14	D1,D3,D4,D6,D7,D9
CMPN433	Elective4 Computer Organization.	A1,A2,A3,A9,A13,A16	B1,B2,B3,B4,B12,B14	C1,C2,C3,C6,C9,C12,C14,C15,C19	D1,D3,D4,D5,D7,D9
CMPN434	Elective4 Computer Performance	A1, A2,A3,,A8, A 9, A12,A13,A14,A15,A16	B1,B2, B3,,B5,B6,B8,B11,B12, B13 ,B14,B18,B20,B21	C1, C2,C3,C4,C5, C6,C13,C14,C15,C19,C20	D1, D3, D4, D5,D7, D9
CMPN326	Logic Circuits Design - 2.	A1,A2,A3,A4,A5,A9,A14	B1,B3,B4,B6,B7,B8,B12,B14,B17	C1,C2,C3,C4,C5,C6	D1,D2,D3,D4,D5,D6,D7,D9
CMPN361	Project-1.	A4,A5,A6,A8,A10,A14,A15	B2,B3,B4,B5,B6,B9,B10,B11,B12,B13,B15	C1,C2,C3,C4,C5,C6,C7,C8,C9,C10,C11,C12,C13,C14,C15	D1,D3,D7,D9
CMPN360	Industrial Training-2.	A7,A9,A10,A11,A13,A14,A15,A20	B1,B2,B3,B4,B6,B7,B8,B10,B11,B12,B13,B14,B17	C1,C2,C4,C5,C6,C7,C8,C9,C10,C11,C12,C13,C14,C16	D1,D2,D3,D4,D5,D6,D7,D8,D9
CMPN421	Distributed Computer Systems.	A2,A3,A5,A8,A12,A13,A14,A15,A17	B2,B3,B4,B5,B6,B13,B14,B17,B21	C1,C2,C3,C5,C6,C14,C16,C17	D1,D3,D4,D5,D6,D7,D9
GENN451a	Elective2 Advanced Computer Systems Implementation.	A4, A6, A8, A10, A12	B8, B9, B11, B13, B14, B15, B18	C5,C6, C10, C13, C14, C15	D1, D3, D4, D7, D9
GENN452a	Elective2 Civilization and heritage	A9, A11, A17	B18,B19, B21	C19, C21,C22	D3, D6, D9

GENN453	Elective2 Industrial Psychology.	A4، A9 ،A11،A18, A19	B3،B5،B9	C2،C4،C8	D1،D2,D6,D9
GENN454	Elective2 Marketing	A1, A8, A9	B1, B2	None	D1 , D7, D8
CMPN332	Elective5 Digital Image Processing.	A1,A2,A3,A4,A5,A12,A15, A16	B1,B2,B7,B12,B13,B15, B16,B17	C1,C2,C3,C4,C5,C7,C13,C14,C15	D3,D4,D6,D7,D8,D9
CMPN423	Languages and Compilers.	A1,A2,A3,A5,A8,A13,A15, A17	B1,B2,B3,B5,B9,B13,B14	C5,C6,C7,C12,C14,C16	D3,D4,D7,D9
CMPN334	Elective5 Multimedia	A1,A2,A3,A5,A6,A17,A18	B1,B2,B3,B5,B19,B20	C1,C2,C6,C10,C11,C18,C19	D1,D2,D3,D4,D5,D7,D9
Course		Program Intended Learning Outcomes			
Code	Title	Knowledge and understanding	Intellectual skills	Professional and practical skills	General and transferable skills
CMPN460	Project-2.a	A4,A5,A6,A8,A10,A14,A15,A17,A18	B1,B2,B3,B4,B5,B7,B8, B10,B11,B12,B13,B14,B15,B17,B18	C1,C2,C3,C4,C5,C6,C7, C8,C9,C10,C11,C12,C13,C14,C15,C16	D6,D7,D8,D9
CMPN422	Artificial Intelligence.	A1,A3,A5,A13,A14,A15	B2,B3,B4,B14,B16	C3,C11,C12,C13,C14	D1,D3,D4,D7,D9
CMPN424	Computer Modeling and Simulation	A1,A2,A3,A4,A5,A11,A13,	B1,B2,B3,B7,B8,B12,B13,B14,B17	C1,C2,C5,C6,C7	D1,D3,D4,D5,D7,D9
ELCN425	Digital Signal Processing.	A2, A5, A8, A10	B1, B3, B7, B11, B14 ,B15	C2, C5, C6, C12, C14 , C15	D3, D4 , D7
CMPN431	Elective6 Advanced Computer Systems.	A1,A3,A5,A13,A14,A15,A16,A17,A18	B1,B2,B3,B4,B5,B14,B16,B17	C1, C2, C3, C5, C6,C7, C10,C14, C15	D1, D3, D4, D7, D9
CMPN432	Elective6 Advanced Database Systems.	A1,A2.A3,A4,A8,A12,A15, A18,A19	B2,B4,B13,B15,B18,B19	C3,C4,C11,C14,C17,C20	D1, D3, D4, D7, D9
CMPN437	Elective6 Computer Interfacing.	A1, A2, A3, A4, A5,A6, A8,A10, A12, A13, A16	B1, B2, B4,B5, B7,B13	C1, C3,C8,C9,C14,C15,C16	D1,D2,D3,D4,D5, D7, D9
CMPN435	Elective6 Computer System Technology.	A4, A13, A15, A16, A19	B4, B5, B8,B9, B14, B15,B16, B21	C2, C4, C10, C18	D1, D3, D4, D7
CMPN436	Elective6 Fault Tolerant Computing.	A1, A2,A3, A4, A6,A8,A20	B1, B2, B3,B4, B6,B9	C1, C5, C6, C8, C19	D1, D2,D3,D7,D9
CMPN438	Elective6 Pattern Recognition and Neural Networks.	A1, A2, A3, A4,A5, A11,A12, A13,A15,A17	B1, B2, B3,B4,B5,B7, B8,B11,B13, B14,B15	C1, C2,C5, C6, C7,C14,C15	D1, D3, D4, D5,D7, D9
CMPN439	Elective6 Real Time Computing	A1, A14, A15, A16, A18	B1, B4, B5, B7, B9, B13	C4, C6, C7, C10	D1, D3, D4, D7, D9
CMPN461	Project-2-b	A4,A5,A6,A8,A10,A14,A15,A17,A18	B1,B2,B3,B4,B5,B7,B8, B10,B11,B12,B13,B14,B15,B17,B18	C1,C2,C3,C4,C5,C6,C7, C8,C9,C10,C11,C12,C13,C14,C15,C16	D6,D7,D8,D9

A1.2 Curriculum Mapping Matrices

Table A1-2 Program Mapping Matrix; Courses/Knowledge and Understanding (A's)

Course		Program Intended Learning Outcomes			
Code	Title	Knowledge and understanding	Intellectual skills	Professional and practical skills	General and transferable skills
CHEN001	Chemistry.	A1,A3,A4,A5,A6,A8,A11, A12	B1,B2,B3,B4,B6,B8,B 10,B12	C1,C2,C3,C5,C8,C12	D1,D2,D3,D4,D5,D7
GENN041	Contemporary Social Issues	A9, A10	B4, B9, B12	C1,C5	D1, D3, D7, D9
MNFN002	Engineering Graphics.	A2,A 4,A5,A8,A10	B3,B5,B7,B8,B9	C2, C3, C4, C11	D1,D3, D9
GENN043	History of Engineering and Technology.	A1, A5, A8, A9, A11, A14	B1, B2, B6, B7		D1,D7, D8
MTHN001	Mathematics-1(Algebra and Calculus).	A1, A2, A5	B1, B2, B3, B7	C1, C12	D3, D7
MECN001	Mechanics -1.	A1, A2, A3, A4	B1, B2	C1, C2	D1, D2
PHYN001	Physics-1.	A1, A2, A3, A4, A13	B1, B2, B3, B7, B13,B17, B20	C1, C6, C12, C16, C17	D1, D2, D3, D4, D5,D6,D7,D8,D9
GENN042	English Language.	A9, A10	B4	C11, C12	D1, D2, D3, D4, D6, D7, D8
MNFN001	Introduction to Engineering Materials.	A2, A3, A4, A18	B1, B2, B5, B13, B15, B17	C1,C2,C19	D1, D3, D7, D9
MTHN002	Mathematics-2(Integration and Analytic Geometry).	A1, A3, A5	B1, B2, B3, B4, B7, B11	C1, C12	D1, D3, D7
MECN002	Mechanics-2.	A1,A2,A3,A4,A5	B1,B2,B5,B13	C1,C3,C5	D1,D2
PHYN002	Physics -2.	A1,A3, A5	B2,B3, B4, B5	C1, C5, C12	D5, D7
MNFN003	Principles of Production Engineering.	A1,A2,A4	B2,B3,B10,B18.	C1, C3,C7	D1,D3,D7,D9
CMPN010	Program Design and Computer Languages.	A1,A2,A4,A5,A8,A13,A1 5,A16,A18	B1,B2,B3,B4,B7,B13, B14,B17,B18,B19	C1,C2,C3,C4,C5,C6,C 13,C14,C15	D1,D2,D3,D4,D5,D7,D9 ,
ELCN060	Summer training for level zero	A3, A4	B2, B3, B9	C1, C3	D1, D3, D5, D6, D7
Course		Program Intended Learning Outcomes			
Code	Title	Knowledge and understanding	Intellectual skills	Professional and practical skills	General and transferable skills

ARCN110	Civil Engineering Technology.	A3,A4,A7,A8	B1,B2,B9	C1,C2,C3,C5,C7	D6
ELCN111	Electrical Circuit Analysis-1.	A1, A2, A3, A4, A5, A6,A8,A15	B1, B2, B4, B5, B6, B7	C1,C3,C5,C6,C9,C10, C11	D1, D2, D3,D6, D7, D9
CMPN111	Logic Circuits Design-1.	A1.A2,A3,A5,A14	B1,B2,B3,B4,B8,B12, B14	C1,C2,C3,C5,C6	D1,D2,D3,D4,D5,D6,D7 ,D9
MTHN103	Mathematics - 3(Differential Equations and Transforms).	A1, A2, A5	B1, B2, B3, B7	C1, C12	D3,D7
ELCN114	Modern Theory for Semiconductor Devices	A1, A2, A3, A8, A9	B1, B2, B4, B5, B6, B7, B8, B12	C1, C2,C3, C4, C7, C8, C11, C12	D1, D3, D4, D7, D9
GENN141	Presentation Skills.	A9, A10, A12	B14	C11	D1, D2, D3, D5, D7
CMPN110	Data Structures and Algorithms.	A1,A2,A3,A4,A5,A9,A12, A16,A18	B1,B2,B4,B8,B12,B14 ,B17,B18	C1,C2,C3,C5,C6	D1,D2,D3,D4,D6,D7
ELCN112	Electrical Circuit Analysis-2.	A1, A2, A3, A4, A5, A6	B1, B2, B3, B4, B5, B6, B7	C1,C2	D1, D2, D3, D7, D9
ELCN113	Electrical Measurements.	A1, A4, A14,A15	B1,B3,B5,B6,B7,B9,B 10,B11,B13,B14	C2,C3,C5,C15,C16,C 17,C18,C20	D1,D3,D6,D8,D9
MTHN104	Mathematics- 4(Advanced Calculus).	A1, A5	B1, B2, B3	C1, C12	D3, D7
MNFN110	Mechanical Engineering Technology.	A1, A3, A4, A5	B1, B2, B3, B4, B5, B6, B7, B12	C1, C2, C5, C6, C12	D1, D2, D3, D7, D9
ELCN115	Semiconductors for Microelectronics.	A1, A2, A3, A8, A9	B1, B2, B4, B5, B6, B7, B8, B12	C1,C2, C3, C4, C7, C11, C12	D1, D3, D4, D7, D9
CMPN160	Summer training for level one				
CMPN210	Engineering Computer Applications.	A1,A2,A5,A8,A12,A13,A 16	B1,B2,B3,B5,B7,B13, B14,B17,B18	C1,C2,C3,C4.C5,C6,C 7,C14,C15	D1,D3,D4,D5,D7,D9
CMPN325	Information Systems	A1,A2,A3,A4,A7,A8,A9, A12,A18,A19,A20	B1,B2,B3,B4,B12,B14 ,B18,B19,B20,B22,B2 3	C1,C2,C3,C4,C5,C6,C 13,C14,C15,C17,C18	D1,D3,D4,D5,D6,D7,D9
MTHN207	Mathematics -7 (Introduction to Prob. and Statistics)	A1, A2, A5, A10	B1, B2, B3, B4, B7,B11	C1, C2, C7, C13	D3, D7
ELCN212	Microelectronic Circuits-1	A3, A4 , A8 , A13	B2 , B5 , B7	C3 , C17	D3, D5 , D6 ,D7
GENN341 a	Project Management.	A1, A3, A4, A10	B9	C12	D1, D3 , D6, D7, D9
CMPN261	Seminar	A1,A3,A5,A8,A9,A11,A1 5,A16	B1,B2,B5,B10,B13,B1 4,B17	C1,C2,C5,C6C9,C10, C11,C12,C14,C15,C1 6	D1,D2,D3,D7

ELCN211	Signal Analysis.	A2	B2	C1,C13	D3,D6,D7,D9
CMPN321	Computer Architecture	A1,A2,A3,A4,A5,A8,A10, A13,A15	B1,B2,B3,B4,B5,B6,B 7,B12,B13,B17	C1,C2,C3,C4,C6,C13, C14,C15	D1,D3,D4,D5,D6,D7,D9
ELCN210	Control-1. (Principles of Automatic Control).	A1,A4,A5,A16	B1,B2,B5,B7,B13	C1,C2,C3,C5,C11,C1 2,C14,C17	D1,D3,D7,D9
ELCN214	Electronic Measurements.	A5,A10,A15	B2, B3 ,B12	C3, C12 , C15, C20	D4 ,D6 ,D7
MTHN208	Mathematics -8 (Complex Analysis and P. D. E).	A1, A3, A5	B1, B2, B3, B4, B7	C1,C12	D1, D3, D7
ELCN213	Microelectronic Circuits-2	A1,A3,A4,A15	B2,B3,B5	C1,C7,C15,C18	D2,D3,D6,D7,D9
GENN142	Technical Report Writing.	A 4, A10, A11	B4	C2,C4,C12,C14	D6,D8
CMPN260	Industrial Traning-1.	A5,A6,A7,A13,A14,A15, A16,A17	B1,B2,B3,B4,B6,B7,B 8,B10,B11,B12,B13,B 14,B17	C1,C2,C5,C7,C8,C9,C 10,C11,C13,C14,C16	D1,D2,D3,D4,D6,D7,D8 ,D9
Course		Program Intended Learning Outcomes			
Code	Title	Knowledge and understanding	Intellectual skills	Professional and practical skills	General and transferable skills
CMPN323	Data Base Management.	A1,A2,A4,A5,A13,A15,A 16,A17	B2,B3,B7,B8,B9,B12, B15,B17	C1,C4,C13	D1,D3,D4,D7,D9
ELCN215	Communications-1.	A2	B7	C5	D3, D5, D6, D7
GENN351 a	Elective1 Engineering Economy.	A1, A2, A5, A7, A14, A18	B1,B2,B7,B8, B13	C1,C5,C7,C9, C13	D1, D2, D3, D7, D9
GENN353 a	Elective1 Engineering Laws and Professional ethics.	A5, A6, A9, A10, A11	B3, B4, B9, B12	C1, C5	D1, D3, D7, D9
GENN352	Elective1 Environmental Effects of Electromagnetic Waves.	A1, A2, A5, A9, A11	B1, B2, B3, B4	None	D1, D3, D4, D6, D7
GENN354	Elective1 Risk Management	A1, A2, A4, A5, A6, A11	B1, B2, B3, B4, B7, B9	C1, C2, C6, C11	D1, D2, D3, D5, D6, D7, D9
ELCN218	Electrical Power Engineering.	A1,A3,A4,A5,A6,A8,A11, A13,A14,A15,A16	B1,B2,B3,B6,B9,B11	C1,C2,C4,C5,C8	D2,D3,D6,D7,D8
CMPN310	Microprocessor Based -Systems.	A4,A5,A9,A14,A15,A16, A18	B1,B2,B3,B4,B5,B6,B 9,B11,B12,B13,B16,B 17	C5,C6,C12,C14,C15	D3,D5,D7,D9
CMPN211	Numerical Methods with Computer Applications.	A1,A5	B1,B2,B3,B11	C1,C4	D3,D4,D7

CMPN322	Computer Graphics and Man Machine Interface.	A1,A2,A4,A5,A8,A12,A15,A16	B1,B2,B3,B7,B8,B10, B13	C1,C2,C3,C4,C5,C6,C7,C11,C13,C15	D1,D3,D4,D6,D7,D8,D9
CMPN324	Data Transmission and Computer Networks.	A1,A2,A3,A4,A5,A6,A8, A12,A15,A17,A18,A19,A20	B1,B4,B5,B14,B17,B21	C1,C2,C3,C5,C6,C10, C11,C19	D1,D3,D4,D5,D6,D7,D9
CMPN331	Elective3 Computer Peripherals.	A1, A2, A4, A5,A6, A8,, A11, A12, A13, A15	B1, B5, B4,B8	C1, C2,C4,C5,C14,C15,C16	D1, D2,D3, D4, D5,D7,D9
CMPN335	Elective3 Operating Systems.	A1,A2,A4,A15,A17,A18	B1,B2,B3,B4,B5,B7,B16,B17,B18	C1,C2,C3,C5,C8,C19	D1,D2,D3,D4,D7,D8,D9
CMPN333	Elective4 Embedded Systems	A1, A4, A5, A6, A12, A14, A15, A16	B2,B3, B4, B8, B12, B13, B14, B15	C1, C3, C4, C5, C6, C13, C14, C15	D1, D3, D4, D7, D9
CMPN336	Elective4 Software Engineering.	A1,A3,A4,A6,A7,A8,A12, A13,A15,A18	B1,B2,B4,B5,B7,B9,B14,B17	C1,C2,C3,C4,C6,C9,C10,C11,C12,C13,C14	D1,D3,D4,D6,D7,D9
CMPN433	Elective4 Computer Organization.	A1,A2,A3,A9,A13,A16	B1,B2,B3,B4,B12,B14	C1,C2,C3,C6,C9,C12, C14,C15,C19	D1,D3,D4,D5,D7,D9
CMPN434	Elective4 Computer Performance	A1, A2,A3,,A8, A 9, A12,A13,A14,A15,A16	B1,B2, B3,,B5,B6,B8,B11,B12, B13 ,B14,B18,B20,B21	C1, C2,C3,C4,C5, C6,C13,C14,C15,C19, C20	D1, D3, D4, D5,D7, D9
CMPN326	Logic Circuits Design -2.	A1,A2,A3,A4,A5,A9,A14	B1,B3,B4,B6,B7,B8,B12,B14,B17	C1,C2,C3,C4,C5,C6	D1,D2,D3,D4,D5,D6,D7,D9
CMPN361	Project-1.	A4,A5,A6,A8,A10,A14,A15	B2,B3,B4,B5,B6,B9,B10,B11,B12,B13,B15	C1,C2,C3,C4,C5,C6,C7,C8,C9,C10,C11,C12,C13,C14,C15	D1,D3,D7,D9
CMPN360	Industrial Training-2.	A7,A9,A10,A11,A13,A14,A15,A20	B1,B2,B3,B4,B6,B7,B8,B10,B11,B12,B13,B14,B17	C1,C2,C4,C5,C6,C7,C8,C9,C10,C11,C12,C13,C14,C16	D1,D2,D3,D4,D5,D6,D7,D8,D9
CMPN421	Distributed Computer Systems.	A2,A3,A5,A8,A12,A13,A14,A15,A17	B2,B3,B4,B5,B6,B13, B14,B17,B21	C1,C2,C3,C5,C6,C14, C16,C17	D1,D3,D4,D5,D6,D7,D9
GENN451a	Elective2 Advanced Computer Systems Implementation.	A4, A6, A8, A10, A12	B8, B9, B11, B13, B14, B15, B18	C5,C6, C10, C13, C14, C15	D1, D3, D4, D7, D9
GENN452a	Elective2 Civilization and heritage	A9, A11, A17	B18,B19, B21	C19, C21,C22	D3, D6, D9
GENN453	Elective2 Industrial Psychology.	A4، A9 ،A11،A18, A19	B3،B5،B9	C2،C4،C8	D1،D2,D6,D9
GENN454	Elective2 Marketing	A1, A8, A9	B1, B2	None	D1 , D7, D8
CMPN332	Elective5 Digital Image Processing.	A1,A2,A3,A4,A5,A12,A15,A16	B1,B2,B7,B12,B13,B15,B16,B17	C1,C2,C3,C4,C5,C7,C13,C14,C15	D3,D4,D6,D7,D8,D9
CMPN423	Languages and Compilers.	A1,A2,A3,A5,A8,A13,A15,A17	B1,B2,B3,B5,B9,B13, B14	C5,C6,C7,C12,C14,C16	D3,D4,D7,D9
CMPN334	Elective5 Multimedia	A1,A2,A3,A5,A6,A17,A18	B1,B2,B3,B5,B19,B20	C1,C2,C6,C10,C11,C18,C19	D1,D2,D3,D4,D5,D7,D9
Course		Program Intended Learning Outcomes			

Code	Title	Knowledge and understanding	Intellectual skills	Professional and practical skills	General and transferable skills
CMPN460	Project-2.a	A4,A5,A6,A8,A10,A14,A15,A17,A18	B1,B2,B3,B4,B5,B7,B8,B10,B11,B12,B13,B14,B15,B17,B18	C1,C2,C3,C4,C5,C6,C7,C8,C9,C10,C11,C12,C13,C14,C15,C16	D6,D7,D8,D9
CMPN422	Artificial Intelligence.	A1,A3,A5,A13,A14,A15	B2,B3,B4,B14,B16	C3,C11,C12,C13,C14	D1,D3,D4,D7,D9
CMPN424	Computer Modeling and Simulation	A1,A2,A3,A4,A5,A11,A13,	B1,B2,B3,B7,B8,B12, B13,B14,B17	C1,C2,C5,C6,C7	D1,D3,D4,D5,D7,D9
ELCN425	Digital Signal Processing.	A2, A5, A8, A10	B1, B3, B7, B11, B14 ,B15	C2, C5, C6, C12, C14 , C15	D3, D4 , D7
CMPN431	Elective6 Advanced Computer Systems.	A1,A3,A5,A13,A14,A15, A16,A17,A18	B1,B2,B3,B4,B5,B14, B16,B17	C1, C2, C3, C5, C6,C7, C10,C14, C15	D1, D3, D4, D7, D9
CMPN432	Elective6 Advanced Database Systems.	A1,A2.A3,A4,A8,A12,A15,A18,A19	B2,B4,B13,B15,B18,B19	C3,C4,C11,C14,C17, C20	D1, D3, D4, D7, D9
CMPN437	Elective6 Computer Interfacing.	A1, A2, A3, A4, A5,A6, A8,A10, A12, A13, A16	B1, B2, B4,B5, B7,B13	C1, C3,C8,C9,C14,C15,C16	D1,D2,D3,D4,D5, D7, D9
CMPN435	Elective6 Computer System Technology.	A4, A13, A15, A16, A19	B4, B5, B8,B9, B14, B15,B16, B21	C2, C4, C10, C18	D1, D3, D4, D7
CMPN436	Elective6 Fault Tolerant Computing.	A1, A2,A3, A4, A6,A8,A20	B1, B2, B3,B4, B6,B9	C1, C5, C6, C8, C19	D1, D2,D3,D7,D9
CMPN438	Elective6 Pattern Recognition and Neural Networks.	A1, A2, A3, A4,A5, A11,A12, A13,A15,A17	B1, B2, B3,B4,B5,B7, B8,B11,B13, B14,B15	C1, C2,C5, C6, C7,C14,C15	D1, D3, D4, D5,D7, D9
CMPN439	Elective6 Real Time Computing	A1, A14, A15, A16, A18	B1, B4, B5, B7, B9, B13	C4, C6, C7, C10	D1, D3, D4, D7, D9
CMPN461	Project-2-b	A4,A5,A6,A8,A10,A14,A15,A17,A18	B1,B2,B3,B4,B5,B7,B8,B10,B11,B12,B13,B14,B15,B17,B18	C1,C2,C3,C4,C5,C6,C7,C8,C9,C10,C11,C12,C13,C14,C15,C16	D6,D7,D8,D9

A1.2 Curriculum Mapping Matrices
Table A1-2 Program Mapping Matrix; Courses/Knowledge and Understanding (A's)

Code	Subject	Knowledge and understanding **(A)**																			
		01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
CHEN001	Chemistry.	1		1	1	1	1		1			1	1								
GENN041	Contemporary Social Issues									1	1										
MNFN002	Engineering Graphics.		1		1	1			1		1										
GENN043	History of Engineering and Technology.	1				1			1	1		1			1						
MTHN001	Mathematics-1(Algebra and Calculus).	1	1			1															
MECN001	Mechanics -1.	1	1	1	1																
PHYN001	Physics-1.	1	1	1	1									1							
GENN042	English Language.									1	1										
MNFN001	Introduction to Engineering Materials.		1	1	1														1		
MTHN002	Mathematics-2(Integration and Analytic Geometry).	1		1		1															
MECN002	Mechanics-2.	1	1	1	1	1															
PHYN002	Physics -2.	1		1		1															
MNFN003	Principles of Production Engineering.	1	1		1																
CMPN010	Program Design and Computer Languages.	1	1		1	1			1					1		1	1		1		
ELCN060	Summer training for level zero			1	1																
ARCN110	Civil Engineering Technology.			1	1			1	1												
ELCN111	Electrical Circuit Analysis-1.	1	1	1	1	1		1								1					
CMPN111	Logic Circuits Design-1.	1	1	1		1									1						
MTHN103	Mathematics -3(Differential Equations and Transforms).	1	1			1															
ELCN114	Modern Theory for Semiconductor Devices	1	1	1					1	1											
GENN141	Presentation Skills.	1		1	1	1	1		1			1	1								
CMPN110	Data Structures and Algorithms.									1	1										
ELCN112	Electrical Circuit Analysis-2.		1		1	1			1		1										
ELCN113	Electrical Measurements.	1				1			1	1		1			1						
MTHN104	Mathematics-4(Advanced Calculus).	1	1			1															
MNFN110	Mechanical Engineering Technology.	1	1	1	1																
ELCN115	Semiconductors for Microelectronics.	1	1	1	1									1							
CMPN160	Summer training for level one									1	1										
CMPN210	Engineering Computer Applications.		1	1	1														1		
CMPN325	Information Systems	1		1		1															
MTHN207	Mathematics -7 (Introduction to Prob. and Statistics)	1	1	1	1	1															
ELCN212	Microelectronic Circuits-1	1		1		1															
GENN341a	Project Management.	1	1		1																
CMPN261	Seminar	1	1		1	1			1					1		1	1		1		
ELCN211	Signal Analysis.			1	1																
CMPN321	Computer Architecture			1	1			1	1												
ELCN210	Control-1. (Principles of Automatic Control).	1	1	1	1	1		1								1					
ELCN214	Electronic Measurements.	1	1	1		1									1						
MTHN208	Mathematics -8 (Complex Analysis and P. D. E).	1		1		1															
ELCN213	Microelectronic Circuits-2	1		1	1											1					

Code	Subject	Knowledge and understanding **(A)**																			
		01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
GENN142	Technical Report Writing.				1						1	1									
CMPN260	Industrial Traning-1.					1	1	1						1	1	1	1	1			
CMPN323	Data Base Management.	1	1		1	1								1		1	1	1			
ELCN215	Communications-1.		1																		
GENN351a	Elective1 Engineering Economy.	1	1			1		1							1				1		
GENN353a	Elective1 Engineering Laws and Professional ethics.					1	1			1	1	1									
GENN352	Elective1 Environmental Effects of Electromagnetic Waves.	1	1			1				1		1									
GENN354	Elective1 Risk Management	1	1		1	1	1					1									
ELCN218	Electrical Power Engineering.	1		1	1	1	1		1			1		1	1	1	1				
CMPN310	Microprocessor Based -Systems.				1	1				1					1	1	1		1		
CMPN211	Numerical Methods with Computer Applications.	1				1															
CMPN322	Computer Graphics and Man Machine Interface.	1	1		1	1			1				1			1	1				
CMPN324	Data Transmission and Computer Networks.	1	1	1	1	1	1		1				1			1		1	1	1	1
CMPN331	Elective3 Computer Peripherals.	1	1		1	1	1		1			1	1	1		1					
CMPN335	Elective3 Operating Systems.	1	1		1																
CMPN333	Elective4 Embedded Systems	1			1	1	1						1		1	1	1				
CMPN336	Elective4 Software Engineering.	1		1	1		1	1	1				1	1		1			1		
CMPN433	Elective4 Computer Organization.	1	1	1						1				1			1				
CMPN434	Elective4 Computer Performance	1	1	1	1	1				1			1	1	1	1	1				
CMPN326	Logic Circuits Design -2.	1	1	1	1	1				1					1						
CMPN361	Project-1.				1	1	1		1		1				1	1					
CMPN360	Industrial Training-2.							1		1	1	1		1	1	1					1
CMPN421	Distributed Computer Systems.		1	1		1			1				1	1	1	1		1			
GENN451a	Elective2 Advanced Computer Systems Implementation.				1		1		1		1		1								
GENN452a	Elective2 Civilization and heritage									1		1						1			
GENN453	Elective2 Industrial Psychology.				1					1		1							1	1	
GENN454	Elective2 Marketing	1							1	1											
CMPN332	Elective5 Digital Image Processing.	1	1	1	1	1							1			1	1				
CMPN423	Languages and Compilers.	1	1	1		1			1					1		1		1			
CMPN334	Elective5 Multimedia	1	1	1		1	1											1	1		

Code	Subject	Knowledge and understanding **(A)**																			
		01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
CMPN460	Project-2.a				1	1	1		1		1				1	1		1	1		
CMPN422	Artificial Intelligence.	1		1		1								1	1	1					
CMPN424	Computer Modeling and Simulation	1	1	1	1	1						1		1							
ELCN425	Digital Signal Processing.		1			1			1		1										
CMPN431	Elective6 Advanced Computer Systems.	1		1		1								1	1	1	1	1	1		
CMPN432	Elective6 Advanced Database Systems.	1	1	1	1				1				1			1			1	1	
CMPN437	Elective6 Computer Interfacing.	1	1	1	1	1	1		1		1		1	1			1				
CMPN435	Elective6 Computer System Technology.				1									1		1	1			1	
CMPN436	Elective6 Fault Tolerant Computing.	1	1	1	1		1		1												1
CMPN438	Elective6 Pattern Recognition and Neural Networks.	1	1	1	1	1						1	1	1		1		1			
CMPN439	Elective6 Real Time Computing	1													1	1	1		1		
CMPN461	Project-2-b				1	1	1		1		1				1	1		1	1		

Table A1-3 Program Mapping Matrix; Courses/Intellectual Skills (B's)

Code	Subject	Intellectual skills**(B)**																						
		01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CHEN001	Chemistry.	1	1	1	1		1		1		1		1											
GENN041	Contemporary Social Issues				1					1			1											
MNFN002	Engineering Graphics.			1		1		1	1	1														
GENN043	History of Engineering and Technology.	1	1				1	1																
MTHN001	Mathematics-1(Algebra and Calculus).	1	1	1				1																
MECN001	Mechanics -1.	1	1																					
PHYN001	Physics-1.	1	1	1				1						1				1			1			
GENN042	English Language.				1																			
MNFN001	Introduction to Engineering Materials.	1	1			1								1		1		1						
MTHN002	Mathematics-2(Integration and Analytic Geometry).	1	1	1	1			1				1												
MECN002	Mechanics-2.	1	1			1								1										
PHYN002	Physics -2.		1	1	1	1																		
MNFN003	Principles of Production Engineering.		1	1							1								1					
CMPN010	Program Design and Computer Languages.	1	1	1	1			1						1	1			1	1	1				
ELCN060	Summer training for level zero																							
ARCN110	Civil Engineering Technology.	1	1							1														
ELCN111	Electrical Circuit Analysis-1.	1	1		1	1	1	1																
CMPN111	Logic Circuits Design-1.	1	1	1	1				1				1		1									
MTHN103	Mathematics -3(Differential Equations and Transforms).	1	1	1				1																
ELCN114	Modern Theory for Semiconductor Devices	1	1		1	1	1	1	1				1											
GENN141	Presentation Skills.														1									
CMPN110	Data Structures and Algorithms.	1	1		1				1				1		1			1	1					
ELCN112	Electrical Circuit Analysis-2.	1	1	1	1	1	1	1																
ELCN113	Electrical Measurements.	1		1		1	1	1		1	1	1		1	1									
MTHN104	Mathematics-4(Advanced Calculus).	1	1	1																				
MNFN110	Mechanical Engineering Technology.	1	1	1	1	1	1	1					1											
ELCN115	Semiconductors for Microelectronics.	1	1		1	1	1	1	1				1											
CMPN160	Summer training for level one																							
CMPN210	Engineering Computer Applications.	1	1	1		1		1						1	1			1	1					
CMPN325	Information Systems	1	1	1	1								1		1				1	1	1		1	1
MTHN207	Mathematics -7 (Introduction to Prob. and Statistics)	1	1	1	1			1				1												
ELCN212	Microelectronic Circuits-1		1			1		1																
GENN341a	Project Management.									1														
CMPN261	Seminar	1	1			1					1			1	1			1						
ELCN211	Signal Analysis.		1																					
CMPN321	Computer Architecture	1	1	1	1	1	1	1					1	1				1						
ELCN210	Control-1. (Principles of Automatic Control).	1	1			1		1						1										
ELCN214	Electronic Measurements.		1	1									1											
MTHN208	Mathematics -8 (Complex Analysis and P. D. E).	1	1	1	1			1																
ELCN213	Microelectronic Circuits-2		1	1		1																		

Code	Subject	Intellectual skills**(B)**																						
		01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
GENN142	Technical Report Writing. .				1																			
CMPN260	Industrial Traning-1.	1	1	1	1		1	1	1		1	1	1	1	1			1						
CMPN323	Data Base Management.		1	1				1	1	1			1			1		1						
ELCN215	Communications-1.							1																
GENN351a	Elective1 Engineering Economy.	1	1					1	1					1										
GENN353a	Elective1 Engineering Laws and Professional ethics.			1	1					1			1											
GENN352	Elective1 Environmental Effects of Electromagnetic Waves.	1	1	1	1																			
GENN354	Elective1 Risk Management	1	1	1	1			1		1														
ELCN218	Electrical Power Engineering.	1	1	1			1			1		1												
CMPN310	Microprocessor Based -Systems.	1	1	1	1	1	1			1		1	1	1			1	1						
CMPN211	Numerical Methods with Computer Applications.	1	1	1								1												
CMPN322	Computer Graphics and Man Machine Interface.	1	1	1				1	1		1			1										
CMPN324	Data Transmission and Computer Networks.	1			1	1									1			1				1		
CMPN331	Elective3 Computer Peripherals.	1			1	1			1															
CMPN335	Elective3 Operating Systems.	1	1	1	1	1		1									1	1	1					
CMPN333	Elective4 Embedded Systems		1	1	1				1				1	1	1	1								
CMPN336	Elective4 Software Engineering.	1	1		1	1		1		1					1			1						
CMPN433	Elective4 Computer Organization.	1	1	1	1								1		1									
CMPN434	Elective4 Computer Performance	1	1	1		1	1		1			1	1	1	1				1		1	1		
CMPN326	Logic Circuits Design -2.	1		1	1		1	1	1				1		1			1						
CMPN361	Project-1.		1	1	1	1	1			1	1	1	1	1		1								
CMPN360	Industrial Training-2.	1	1	1	1		1	1	1		1	1	1	1	1			1						
CMPN421	Distributed Computer Systems.		1	1	1	1	1							1	1			1				1		
GENN451a	Elective2 Advanced Computer Systems Implementation.								1	1		1		1	1	1			1					
GENN452a	Elective2 Civilization and heritage																		1	1		1		
GENN453	Elective2 Industrial Psychology.			1		1				1														
GENN454	Elective2 Marketing	1	1																					
CMPN332	Elective5 Digital Image Processing.	1	1					1					1			1	1	1						
CMPN423	Languages and Compilers.	1	1	1		1				1				1	1									
CMPN334	Elective5 Multimedia	1	1	1	1															1	1			

Code	Subject	Intellectual skills**(B)**																						
		01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CMPN460	Project-2.a	1	1	1	1	1		1	1		1	1	1	1	1	1		1	1					
CMPN422	Artificial Intelligence.		1	1	1										1		1							
CMPN424	Computer Modeling and Simulation	1	1	1				1	1				1	1	1			1						
ELCN425	Digital Signal Processing.	1		1				1				1			1	1								
CMPN431	Elective6 Advanced Computer Systems.	1	1	1	1										1		1	1						
CMPN432	Elective6 Advanced Database Systems.		1		1									1		1			1	1				
CMPN437	Elective6 Computer Interfacing.	1	1		1	1		1						1										
CMPN435	Elective6 Computer System Technology.				1	1			1	1					1	1	1					1		
CMPN436	Elective6 Fault Tolerant Computing.	1	1	1	1		1			1														
CMPN438	Elective6 Pattern Recognition and Neural Networks.	1	1	1	1	1		1	1			1		1	1	1								
CMPN439	Elective6 Real Time Computing	1			1	1		1		1				1										
CMPN461	Project-2-b	1	1	1	1	1		1	1		1	1	1	1	1	1		1	1					

Table A1-4 Program Mapping Matrix; Courses/ Professional and practical skills (C's)

Code	Subject	Professional and practical skills**(C)**																			
		01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
CHEN001	Chemistry.	1	1	1		1			1				1								
GENN041	Contemporary Social Issues	1				1															
MNFN002	Engineering Graphics.		1	1	1							1									
GENN043	History of Engineering and Technology.	1				1															
MTHN001	Mathematics-1(Algebra and Calculus).	1											1								
MECN001	Mechanics -1.	1	1																		
PHYN001	Physics-1.	1					1						1				1	1			
GENN042	English Language.											1	1								
MNFN001	Introduction to Engineering Materials.	1	1																	1	
MTHN002	Mathematics-2(Integration and Analytic Geometry).	1											1								
MECN002	Mechanics-2.	1		1		1															
PHYN002	Physics -2.	1				1							1								
MNFN003	Principles of Production Engineering.	1		1				1													
CMPN010	Program Design and Computer Languages.	1	1	1	1	1	1							1	1	1					
ELCN060	Summer training for level zero	1		1																	
ARCN110	Civil Engineering Technology.	1	1	1		1		1													
ELCN111	Electrical Circuit Analysis-1.	1		1		1	1			1	1	1									
CMPN111	Logic Circuits Design-1.	1	1	1		1	1														
MTHN103	Mathematics -3(Differential Equations and Transforms).	1											1								
ELCN114	Modern Theory for Semiconductor Devices	1	1	1	1			1	1			1	1								
GENN141	Presentation Skills.											1									
CMPN110	Data Structures and Algorithms.	1	1	1		1	1														
ELCN112	Electrical Circuit Analysis-2.	1	1																		
ELCN113	Electrical Measurements.		1	1		1										1	1	1	1		1
MTHN104	Mathematics-4(Advanced Calculus).	1											1								
MNFN110	Mechanical Engineering Technology.	1	1			1	1						1								
ELCN115	Semiconductors for Microelectronics.	1	1	1	1			1				1	1								
CMPN160	Summer training for level one																				
CMPN210	Engineering Computer Applications.	1	1	1	1	1	1	1							1	1					
CMPN325	Information Systems	1	1	1	1	1	1							1	1	1		1	1		
MTHN207	Mathematics -7 (Introduction to Prob. and Statistics)	1	1					1						1							
ELCN212	Microelectronic Circuits-1			1														1			
GENN341a	Project Management.												1								
CMPN261	Seminar	1	1			1	1			1	1	1	1		1	1	1				
ELCN211	Signal Analysis.	1												1							
CMPN321	Computer Architecture	1	1	1	1		1							1	1	1					
ELCN210	Control-1. (Principles of Automatic Control).	1	1	1		1						1	1		1			1			
ELCN214	Electronic Measurements.			1									1			1					1
MTHN208	Mathematics -8 (Complex Analysis and P. D. E).	1											1								
ELCN213	Microelectronic Circuits-2	1						1								1			1		

Code	Subject	Professional and practical skills(C)																			
		01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
GENN142	Technical Report Writing. .		1		1							1		1							
CMPN260	Industrial Traning-1.	1	1			1		1	1	1	1	1		1	1		1				
CMPN323	Data Base Management.	1			1									1							
ELCN215	Communications-1.					1															
GENN351a	Elective1 Engineering Economy.	1				1		1		1				1							
GENN353a	Elective1 Engineering Laws and Professional ethics.	1				1															
GENN352	Elective1 Environmental Effects of Electromagnetic Waves.																				
GENN354	Elective1 Risk Management	1	1				1					1									
ELCN218	Electrical Power Engineering.	1	1		1	1			1												
CMPN310	Microprocessor Based -Systems.					1	1						1		1	1					
CMPN211	Numerical Methods with Computer Applications.	1			1																
CMPN322	Computer Graphics and Man Machine Interface.	1	1	1	1	1	1	1				1		1		1					
CMPN324	Data Transmission and Computer Networks.	1	1	1		1	1				1	1								1	
CMPN331	Elective3 Computer Peripherals.	1	1		1	1									1	1	1				
CMPN335	Elective3 Operating Systems.	1	1	1		1	1				1	1								1	
CMPN333	Elective4 Embedded Systems	1		1	1	1	1							1	1	1					
CMPN336	Elective4 Software Engineering.	1	1	1	1		1			1	1	1	1	1	1						
CMPN433	Elective4 Computer Organization.	1	1	1			1			1			1		1	1				1	
CMPN434	Elective4 Computer Performance	1	1	1	1	1	1							1	1	1				1	1
CMPN326	Logic Circuits Design -2.	1	1	1	1	1	1														
CMPN361	Project-1.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					
CMPN360	Industrial Training-2.	1	1		1	1	1	1	1	1	1	1	1	1	1		1				
CMPN421	Distributed Computer Systems.	1	1	1		1	1								1		1	1			
GENN451a	Elective2 Advanced Computer Systems Implementation.					1	1				1			1	1	1					
GENN452a	Elective2 Civilization and heritage																			1	
GENN453	Elective2 Industrial Psychology.		1		1				1												
GENN454	Elective2 Marketing																				
CMPN332	Elective5 Digital Image Processing.	1	1	1	1	1		1						1	1	1					
CMPN423	Languages and Compilers.					1	1	1					1		1		1				
CMPN334	Elective5 Multimedia	1	1				1				1	1							1	1	

Code	Subject	Professional and practical skills(C)																			
		01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
CMPN460	Project-2.a	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
CMPN422	Artificial Intelligence.			1								1	1	1	1						
CMPN424	Computer Modeling and Simulation	1	1			1	1	1													
ELCN425	Digital Signal Processing.		1			1	1						1		1	1					
CMPN431	Elective6 Advanced Computer Systems.	1	1	1		1	1	1			1				1	1					
CMPN432	Elective6 Advanced Database Systems.			1	1							1			1			1			1
CMPN437	Elective6 Computer Interfacing.	1		1					1	1					1	1	1				
CMPN435	Elective6 Computer System Technology.		1		1						1								1		
CMPN436	Elective6 Fault Tolerant Computing.	1				1	1		1											1	
CMPN438	Elective6 Pattern Recognition and Neural Networks.	1	1			1	1	1							1	1					
CMPN439	Elective6 Real Time Computing				1		1	1			1										
CMPN461	Project-2-b	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				

Table A1-5 Program Mapping Matrix; Courses/ General and transferable skills (D's)

Code	Subject	General and transferable skills(**D)**								
		01	02	03	04	05	06	07	08	09
CHEN001	Chemistry.	1	1	1	1	1		1		
GENN041	Contemporary Social Issues	1		1				1		1
MNFN002	Engineering Graphics.	1		1						1
GENN043	History of Engineering and Technology.	1						1	1	
MTHN001	Mathematics-1(Algebra and Calculus).	1	1							
MECN001	Mechanics -1.			1				1		
PHYN001	Physics-1.	1	1	1	1	1	1	1	1	1
GENN042	English Language.	1		1				1		1
MNFN001	Introduction to Engineering Materials.	1		1				1		1
MTHN002	Mathematics-2(Integration and Analytic Geometry).	1	1							
MECN002	Mechanics-2.	1		1				1		
PHYN002	Physics -2.					1		1		
MNFN003	Principles of Production Engineering.	1		1				1		1
CMPN010	Program Design and Computer Languages.	1	1	1	1	1		1		1
ELCN060	Summer training for level zero	1		1		1	1	1		
ARCN110	Civil Engineering Technology.	1	1	1			1	1		1
ELCN111	Electrical Circuit Analysis-1.	1	1	1	1	1	1	1		1
CMPN111	Logic Circuits Design-1.	1		1	1			1		1
MTHN103	Mathematics -3(Differential Equations and Transforms).			1				1		
ELCN114	Modern Theory for Semiconductor Devices	1	1	1		1		1		
GENN141	Presentation Skills.	1	1	1	1		1	1		
CMPN110	Data Structures and Algorithms.	1	1	1				1		1

Code	Subject	General and transferable skills**(D**)								
		01	02	03	04	05	06	07	08	09
ELCN112	Electrical Circuit Analysis-2.	1	1	1				1		1
ELCN113	Electrical Measurements.	1		1			1		1	1
MTHN104	Mathematics-4(Advanced Calculus).			1				1		
MNFN110	Mechanical Engineering Technology.	1	1	1				1		1
ELCN115	Semiconductors for Microelectronics.	1		1	1			1		1
CMPN160	Summer training for level one									
CMPN210	Engineering Computer Applications.	1		1	1	1		1		1
CMPN325	Information Systems	1		1	1	1	1	1		1
MTHN207	Mathematics -7 (Introduction to Prob. and Statistics)			1				1		
ELCN212	Microelectronic Circuits-1			1		1	1	1		
GENN341a	Project Management.	1		1			1	1		1
CMPN261	Seminar	1	1	1				1		
ELCN211	Signal Analysis.			1			1	1		1
CMPN321	Computer Architecture	1		1	1	1	1	1		1
ELCN210	Control-1. (Principles of Automatic Control).	1		1				1		1
ELCN214	Electronic Measurements.				1		1	1		
MTHN208	Mathematics -8 (Complex Analysis and P. D. E).	1		1				1		
ELCN213	Microelectronic Circuits-2		1	1			1	1		1
GENN142	Technical Report Writing. .						1		1	

CMPN260	Industrial Traning-1.	1	1	1	1		1	1	1	1

Code	Subject	General and transferable skills**(D)**								
		01	02	03	04	05	06	07	08	09
CMPN323	Data Base Management.	1		1	1			1		1
ELCN215	Communications-1.			1		1	1	1		
GENN351a	Elective1 Engineering Economy.	1	1	1				1		1
GENN353a	Elective1 Engineering Laws and Professional ethics.	1		1				1		1
GENN352	Elective1 Environmental Effects of Electromagnetic Waves.	1		1	1		1	1		
GENN354	Elective1 Risk Management	1	1	1		1	1	1		1
ELCN218	Electrical Power Engineering.		1	1			1	1	1	
CMPN310	Microprocessor Based -Systems.			1		1		1		1
CMPN211	Numerical Methods with Computer Applications.			1	1			1		
CMPN322	Computer Graphics and Man Machine Interface.	1		1	1		1	1	1	1
CMPN324	Data Transmission and Computer Networks.	1		1	1	1	1	1		1
CMPN331	Elective3 Computer Peripherals.	1	1	1	1	1		1		1
CMPN335	Elective3 Operating Systems.	1	1	1	1			1	1	1
CMPN333	Elective4 Embedded Systems	1		1	1			1		1
CMPN336	Elective4 Software Engineering.	1		1	1		1	1		1
CMPN433	Elective4 Computer Organization.	1		1	1	1		1		1
CMPN434	Elective4 Computer Performance	1		1	1	1		1		1
CMPN326	Logic Circuits Design -2.	1	1	1	1	1	1	1		1
CMPN361	Project-1.	1		1				1		1
CMPN360	Industrial Training-2.	1	1	1	1	1	1	1	1	1
CMPN421	Distributed Computer Systems.	1		1	1	1	1	1		1
GENN451a	Elective2 Advanced Computer Systems Implementation.	1		1	1			1		1
GENN452a	Elective2 Civilization and heritage			1			1			1
GENN453	Elective2 Industrial Psychology.	1	1				1			1
GENN454	Elective2 Marketing	1						1	1	
CMPN332	Elective5 Digital Image Processing.			1	1		1	1	1	1
CMPN423	Languages and Compilers.			1	1			1		1
CMPN334	Elective5 Multimedia	1	1	1	1	1		1		1
CMPN460	Project-2.a						1	1	1	1
CMPN422	Artificial Intelligence.	1		1	1			1		1
CMPN424	Computer Modeling and Simulation	1		1	1	1		1		1
ELCN425	Digital Signal Processing.			1	1			1		
CMPN431	Elective6 Advanced Computer Systems.	1		1	1			1		1
CMPN432	Elective6 Advanced Database Systems.	1		1	1			1		1
CMPN437	Elective6 Computer Interfacing.	1	1	1	1	1		1		1
CMPN435	Elective6 Computer System Technology.	1		1	1			1		
CMPN436	Elective6 Fault Tolerant Computing.	1	1	1				1		1
CMPN438	Elective6 Pattern Recognition and Neural Networks.	1		1	1	1		1		1
CMPN439	Elective6 Real Time Computing	1		1	1			1		1
CMPN461	Project-2-b						1	1	1	1

The preceding four tables includes the mapping matrix relating the program courses with the program ILO's. The program ILO's contributed by each course were determined in the course specification. These tables showed that the program courses gave balanced coverage of the program ILO's.

Appendix 2
Courses Specifications

The courses of the Computer Engineering and Information Technology BSc Program are given in Table A2-1, Followed by the courses description.

Table A2-1 Computer Engineering and Information Technology BSc Program Courses, By-Law 2018

Level	Semester	Course Code	Course Title	Credit hours	Contact Hours				Marks				Final Exam Duration, hr	Pre Requisites
					Lectures	Tutorials	Practical	Total	Mi-Term	Semester Work	Practical/Oral Exam	Final Exam		
0	1	CHEN001	Chemistry.	3	2	1	2	5	20	20	20	40	2	None
0	1	GENN041	Contemporary Social Issues	2	2	-	-	2	20	40	0	40	2	None
0	1	MNFN002	Engineering Graphics.	3	1	6	-	7	20	40	0	40	3	None
0	1	GENN043	History of Engineering and Technology.	2	2	-	-	2	20	40	0	40	2	None
0	1	MTHN001	Mathematics-1(Algebra and Calculus).	3	2	3	-	5	20	40	0	40	2	None
0	1	MECN001	Mechanics -1.	2	1	3	-	4	20	40	0	40	2	None
0	1	PHYN001	Physics-1.	3	2	1	2	5	20	20	20	40	2	None
0	2	GENN042	English Language.	2	2	-	-	2	20	40	0	40	2	None
0	2	MNFN001	Introduction to Engineering Materials.	1	1	-	-	1	20	40	0	40	2	None
0	2	MTHN002	Mathematics-2(Integration and Analytic Geometry).	3	2	3	-	5	20	40	0	40	2	MTHN001
0	2	MECN002	Mechanics-2.	2	1	3	-	4	20	40	0	40	2	MECN001
0	2	PHYN002	Physics -2.	3	2	1	2	5	20	20	20	40	2	PHYN001
0	2	MNFN003	Principles of Production Engineering.	3	2	-	3	5	20	20	20	40	2	None
0	2	CMPN010	Program Design and Computer Languages.	4	2	3	2	7	20	20	20	40	2	None
0	3	ELCN060	Summer training for level zero	0	0	0	0	0	0	0	0	P/F	Oral	Non
1	1	ARCN110	Civil Engineering Technology.	3	2	2	-	4	20	40	0	40	2	None
1	1	ELCN111	Electrical Circuit Analysis-1.	3	2	1	2	5	20	20	20	40	2	MTHN002, ELCN060
1	1	CMPN111	Logic Circuits Design-1.	4	3	2	1	6	20	20	20	40	2	MTHN001
1	1	MTHN103	Mathematics -3(Differential Equations and Transforms).	3	2	3	-	5	20	40	0	40	2	MTHN002
1	1	ELCN114	Modern Theory for Semiconductor Devices	3	2	1	2	5	20	20	20	40	2	PHYN002
1	1	GENN141	Presentation Skills.	2	2	-	-	2	20	40	0	40	2	None
1	2	CMPN110	Data Structures and Algorithms.	3	2	2	-	4	20	40	0	40	2	CMPN010
1	2	ELCN112	Electrical Circuit Analysis-2.	3	2	3	–	5	20	40	0	40	2	ELCN111
1	2	ELCN113	Electrical Measurements.	3	2	1	2	5	20	20	20	40	2	ELCN111
1	2	MTHN104	Mathematics-4(Advanced Calculus).	3	2	3	-	5	20	40	0	40	2	MTHN001

Level	Semester	Course Code	Course Title	Credit hours	Contact Hours				Marks				Final Exam Duration, hr	Pre Requisites
					Lectures	Tutorials	Practical	Total	Mi-Term	Semester Work	Practical/Oral Exam	Final Exam		
1	2	MNFN110	Mechanical Engineering Technology.	3	2	1	2	5	20	20	20	40	2	MECN002 MNFN001
1	2	ELCN115	Semiconductors for Microelectronics.	3	2	1	2	5	20	20	20	40	2	ELCN114
1	3	CMPN160	Summer training for level one	0	0	0	0	0	0	0	0	P/F	Oral	ELCN060
2	1	CMPN210	Engineering Computer Applications.	3	2	1	2	5	20	20	20	40	2	CMPN010
2	1	CMPN325	Information Systems	3	2	2	-	4	20	40	0	40	2	CMPN110
2	1	MTHN207	Mathematics -7 (Introduction to Prob. and Statistics)	3	2	2	-	4	20	40	0	40	2	MTHN002
2	1	ELCN212	Microelectronic Circuits-1	3	2	1	2	5	20	20	20	40	2	ELCN115, CMPN160
2	1	GENN341a	Project Management.	2	2	-	-	2	20	40	0	40	2	None
2	1	CMPN261	Seminar	1	-	2	-	2	0	60	0	40	Oral	65 Credits
2	1	ELCN211	Signal Analysis.	3	2	2	–	4	20	40	0	40	2	MTHN103
2	2	CMPN321	Computer Architecture	3	2	2	-	4	20	40	0	40	2	CMPN111
2	2	ELCN210	Control-1. (Principles of Automatic Control).	4	3	1	2	6	20	20	20	40	2	MTHN103
2	2	ELCN214	Electronic Measurements.	3	2	1	2	5	20	20	20	40	2	ELCN113
2	2	MTHN208	Mathematics -8 (Complex Analysis and P. D. E).	2	2	1	-	3	20	40	0	40	2	MTHN002
2	2	ELCN213	Microelectronic Circuits-2	3	2	1	2	5	20	20	20	40	2	ELCN212
2	2	GENN142	Technical Report Writing.	2	2	-	-	2	20	40	0	40	2	None
2	3	CMPN260	Industrial Traning-1.	3	-	-	6	6	0	60	0	40	Oral	65 Credits
3	1	ELCN215	Communications-1.	3	2	1	2	5	20	20	20	40	2	ELCN211
3	1	CMPN323	Data Base Management.	4	3	2	1	6	20	20	20	40	2	CMPN325
3	1	GENN351a	Elective1 Engineering Economy.	2	2	-	-	2	20	40	0	40	2	None
3	1	GENN353a	Elective1 Engineering Laws and Professional ethics.	2	2	-	-	2	20	40	0	40	2	None
3	1	GENN352	Elective1 Environmental Effects of Electromagnetic Waves.	2	2	-	-	2	20	40	0	40	2	None
3	1	GENN354	Elective1 Risk Management	2	2	-	-	2	20	40	0	40	2	None
3	1	ELCN218	Electrical Power Engineering.	3	2	2	1	5	20	20	20	40	2	ELCN112
3	1	CMPN310	Microprocessor Based - Systems.	3	2	1	2	5	20	20	20	40	2	CMPN111
3	1	CMPN211	Numerical Methods with Computer Applications.	3	2	2	-	4	20	40	0	40	2	MTHN103
3	2	CMPN322	Computer Graphics and Man Machine Interface.	3	2	1	2	5	20	20	20	40	2	CMPN110 CMPN321

Level	Semester	Course Code	Course Title	Credit hours	Contact Hours				Marks				Final Exam Duration, hr	Pre Requisites
					Lectures	Tutorials	Practical	Total	Mi-Term	Semester Work	Practical/Oral Exam	Final Exam		
3	2	CMPN324	Data Transmission and Computer Networks.	4	3	2	1	6	20	20	20	40	2	CMPN321
3	2	CMPN331	Elective3 Computer Peripherals.	3	2	2	-	4	20	40	0	40	2	CMPN321
3	2	CMPN335	Elective3 Operating Systems.	3	2	2	1	5	20	20	20	40	2	CMPN321
3	2	CMPN333	Elective4 Embedded Systems	3	2	2	-	4	20	40	0	40	2	CMPN310
3	2	CMPN336	Elective4 Software Engineering.	3	2	2	1	5	20	20	20	40	2	CMPN325
3	2	CMPN433	Elective4 Computer Organization.	3	2	2	-	4	20	40	0	40	2	CMPN321
3	2	CMPN434	Elective4 Computer Performance	3	2	2	-	4	20	40	0	40	2	CMPN110
3	2	CMPN326	Logic Circuits Design -2.	3	2	1	2	5	20	20	20	40	2	CMPN111
3	2	CMPN361	Project-1.	2	1	1	2	4	0	60	0	40	Oral	101 Credits
3	3	CMPN360	Industrial Training-2.	3	-	-	6	6	0	60	0	40	Oral	CMPN260 +101Credits
4	1	CMPN421	Distributed Computer Systems.	3	2	2	1	5	20	20	20	40	2	CMPN324
4	1	GENN451a	Elective2 Advanced Computer Systems Implementation.	2	2	1	-	3	20	40	0	40	2	CMPN010
4	1	GENN452a	Elective2 Civilization and heritage	2	2	-	-	2	20	40	0	40	2	None
4	1	GENN453	Elective2 Industrial Psychology.	2	2	-	-	2	20	40	0	40	2	None
4	1	GENN454	Elective2 Marketing	2	2	-	-	2	20	40	0	40	2	None
4	1	CMPN332	Elective5 Digital Image Processing.	3	2	1	2	5	20	20	20	40	2	CMPN210
4	1	CMPN334	Elective5 Multimedia	3	2	1	2	5	20	20	20	40	2	CMPN110
4	1	CMPN423	Languages and Compilers.	4	3	2	-	5	20	40	0	40	2	CMPN110
4	1	CMPN460	Project-2.a	3	2	-	2	4	0	60	0	40	Oral	CMPN361
4	2	CMPN422	Artificial Intelligence.	4	3	2	1	6	20	20	20	40	2	CMPN325
4	2	CMPN424	Computer Modeling and Simulation	3	2	2	-	4	20	40	0	40	2	CMPN210
4	2	ELCN425	Digital Signal Processing.	3	2	2	1	5	20	20	20	40	2	MTHN103 CMPN111
4	2	CMPN431	Elective6 Advanced Computer Systems.	3	2	2	-	4	20	40	0	40	2	CMPN310
4	2	CMPN432	Elective6 Advanced Database Systems.	3	2	2	-	4	20	40	0	40	2	CMPN323
4	2	CMPN437	Elective6 Computer Interfacing.	3	2	2	-	4	20	40	0	40	2	CMPN321
4	2	CMPN435	Elective6 Computer System Technology.	3	2	2	-	4	20	40	0	40	2	CMPN321
4	2	CMPN436	Elective6 Fault Tolerant Computing.	3	2	2	-	4	20	40	0	40	2	CMPN010

Level	Semester	Course Code	Course Title	Credit hours	Contact Hours				Marks				Final Exam Duration, hr	Pre Requisites
					Lectures	Tutorials	Practical	Total	Mi-Term	Semester Work	Practical/Oral Exam	Final Exam		
4	2	CMPN438	Elective6 Pattern Recognition and Neural Networks.	3	2	2	-	4	20	40	0	40	2	MTHN103 CMPN310
4	2	CMPN439	Elective6 Real Time Computing	3	2	2	-	4	20	40	0	40	2	CMPN010
4	2	CMPN461	Project-2-b	3	2	-	2	4	0	60	0	40	Oral	CMPN460

Modern Academy
for Engineering and Technology in Maadi

Course Specification
CHEN001: Chemistry

A- Affiliation

Relevant program: Manufacturing Engineering and Production Technology BSc Program
Electronic Engineering and Communication Technology BSc Program
Computer Engineering and Information Technology BSc Program
Architecture Engineering and Building Technology BSc Program

Department offering the program:
Manufacturing Engineering and Production Technology Department
Electronic Engineering and Communication Technology Department
Computer Engineering and Information Technology Department
Architecture Engineering and Building Technology Department

Department offering the course: Basic Science Department
Date of specifications approval: June, 2018

B - Basic information

Title: Chemistry **Code:** CHEN001 **Level:** Freshman. **Semester**: First/Second
Hours **Credit** 3 hrs **Lectures** 2 hrs **Tutorial** 1 hrs **Practical** 2 hr
Pre-requisite: non

1 – Course Learning Objectives:

By the end of this course the students should be able to demonstrate the knowledge and understanding of the basic concepts and theory of chemical Engineering subjects such as: gas laws, gas liquidation, Electro chemistry and its applications, thermo chemistry and its applications, solutions and antifreezes to understand some of chemical industries in different fields Such as polymers, lubricants, Soaps and detergents, petrochemicals, cement Industry, water treatments and Desalination.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1- Key facts, concepts, principles and techniques of Gas and Liquid states of Matter. (A1, A3)
a2- Theories relevant to Electrochemistry, solutions and thermo chemistry. (A1,A3,A5,A4,A8,A11,A12)
a3- Some chemical industries in different fields such as eng. practices and regulatory farm works in chem. Eng. Industry. (A3, A4, A5, A6, A11, A12)
a4- Technology Supporting water treatments and Desalination Techniques. (A4,A6,A11)
a5- Scientific principles of petroleum extraction and refining (A1, A3.A4.A7).
a6- Basic principles for fuel classification and knowing its optimum characteristics, also identify advantage and disadvantage of them (A1, A5,A6,A11,A12).

b - Intellectual skills:

On successful completion of the course, the student should be able to.

b1- Apply chem. Principles and analytical thinking to problems of Gases, Liquids and electrochemistry and determine its effective solutions. (B1,B2,B8,B12)
b2- Select and develop appropriate Some petrochemical Technologies. (B6)
b3- Exercise professional judgment with respect to commercial and technical risks. (B1)

b4- Overlap different scientific subjects to reach a new scientific system with a better quality. (B1,B3.B4,B12,B10)
b5-Think in a creative new scientific idea which are not exist in present time to be used in the fee ten line the field of development of energy recourses, pollution problem, new industrial products. (B3, B12)
b6- Select appropriate solutions for corrosion problems based on analytical thinking. (B1, B2, B6, B8)
b7- Consider the applicability, economy and risk management. (B4)
b8-Maintain a systematic and methodic approach in dealing with new advanced industrial products. (B1)

c - Professional and practical skills:
On successful completion of the course, the student should be able to:
c1-Apply knowledge of scientific equipment and instrumentation competently to determine known concentration and solve its problem.(C1,C5)
c2- Employ computational facilities, measuring instruments, Laboratory tools and equipment to design an experiment to treat underground water and make it safe for Human use. (C1,C5)
c3- Improve plan and execute project work including the preparation of descriptive and interpretative technical reports.(C2,C3,C5,C8)
c4- Create and design for a certain system using the subject information given during.(C2,C3,C8)
c5- Improve the designed system to be compatible with Eng. Conditions.(C2,C3,C8)
c6- Apply experimental facilities to investigate the system performance.(pH and water hardness degree).(C2,C3,C5,C8)
c7- Prepare and present technical materials.(Soaps, detergents, and some polymeric samples).(C2)
c8- Observe, record and analyze data in lab. As well as in Field.(Lab Fresh water and undergrawnd water).(C5)
c9- Use appropriate tools to measure system performance.(C5)
c10- Present work both in written and oral form. (C12)
d - General and transferable skills:
On successful completion of the course, the student should be able to:
d1- Improving own learning and performance, personal skills, working with others. (D1,D2,D3)
d2- Search for information from references, journals and internet. (D3)
d3- Write technical reports and prepare convenient presentations. (D5)
d4- Use the E-mail for communication. (D3,D4,D7)

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A3, A4, A5, A6, A8,A11,A12
B	Intellectual skills	B1,B2,B3,B4,B6,B8,B10,B12
C	Professional and practical skills	C1,C2,C3,C5,C8,C12
D	General and transferable skills	D1,D2,D3,D4,D5,D7

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
Gas law and gas liquefaction.	4	2	-
Liquid state, Refrigeration & heat pump.	4	1	-
Electrochemistry &Metallic corrosion.	2	1	-
Solution & Antifreezes	2	1	-
Thermo chemistry & solar heat, Rocket.	2	1	-
Pollution	2	1	-
Water treatment and destitution	2	1	10
Polymer and Industry	2	1	-

Fuels and combustion	2	1	-
Chemistry and tech. of petroleum new trends in energy resource	2	1	-
Industrial detergents chemistry such cement, lubricants, soap	2	1	4
Acid - base titration	-	-	8
Revision and sheets	2	2	6
Total hours	**28**	**14**	**28**

4 – Teaching, Learning and Assessment methods:

Course IL O's		Teaching Methods						Learning Methods		Assessment Method				
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments	Researches and Reports	Modeling and Simulation	Written Exam	Practical Exam	Quizzes	Term papers	Assignments
Knowledge	a1	1	1	1	1		1	1		1		1	1	
	a2	1			1					1		1	1	1
	a3	1			1				1	1		1	1	1
	a4	1	1	1	1	1	1	1		1		1	1	1
	a5	1				1	1			1	1	1	1	1
	a6	1						1					1	1
Intellectual	b1	**1**			**1**					1		1		**1**
	b2	**1**			**1**	**1**				1		1	**1**	**1**
	b3	**1**	**1**	**1**	**1**		**1**	**1**		1	1		**1**	
	b4	**1**	**1**	**1**	**1**			**1**		1	1			
	b5	**1**											**1**	**1**
	b6	**1**				**1**				1			**1**	
	b7	**1**		**1**				**1**		1				**1**
	b8	**1**	**1**			**1**								
Applied	c1	1	1		1	1	1			1	1	1	1	1
	c2	1			1					1		1	1	1
	c3	1		1		1		1	1				1	1
	c4	1	1		1	1					1		1	1
	c5	1	1				1			1	1			
	c6	1		1			1				1	1		
	c7	1			1	1								1
	c8	1	1	1	1		1							
	c9	1				1								1
	c10	1					1				1			
General	d1			1		1		1					1	
	d2		1	1			1	1	1				1	
	d3	1	1		1	1		1					1	1
	d4	1	1	1				1						

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)

Assignments and reports	Bi-Weekly	10
Quizzes	5^{th} and 10^{th}	10
Mid-Term Exam	6-th Week	20
Practical Exam	Fifteenth week	20
Written Exam	Sixteenth week	40
Total		100

6- List of references:

6-1 Course notes

Goda, S. and Assran, A. Chemistry for engineering & applied sciences, Lecture note, 2012.

6-2 Required books:

Sunita Rattan (2013**),** A Textbook of Engineering **Chemistry, Kaston Books, New Delhi**

6-3 Recommended books:

None

6-4 Periodicals, Web sites, etc.

- www.seciensedaily.com
- www.encyclopedia.com
- www.nasa,com
- www.science.com

7- Facilities required for teaching and learning:

- Chemistry lab.
- Computer, Data show.
- Computer programs.

Course coordinator: Dr Shaaban Ragab Goda
Head of the Department: Prof. Dr. Ashraf Taha
Date: September 2019

Modern Academy
for Engineering and Technology in Maadi

Course Specification
GENN041: Contemporary Social Issues

Relevant program:	Manufacturing Engineering and Production Technology BSc Program Electronic Engineering and Communication Technology BSc Program Computer Engineering and Information Technology BSc Program Architecture Engineering and Building Technology BSc Program
Department offering the program:	Manufacturing Engineering and Production Technology Department Electronic Engineering and Communication Technology Department Computer Engineering and Information Technology Department Architecture Engineering and Building Technology Department
Department offering the course:	Basic scinec department
Date of specifications approval:	June 2018

B - Basic information

Title Contemporary Social Issues: **Code:** GENN041 **Level:** Freshman, **Semester**: First

Credit Hours: 2 **Lectures:** 2 **Tutorial/Exercise:** - **Practical:** -

Pre-requisite: non

C - Professional information

1 – Course Learning Objectives:

By the end of this course the students should be able to gain and analyze and apply the knowledge and understanding of

الانتماءوأهميته وأصول المجتمع وبناء الأسرة و تكوينها والمكونات الاجتماعية والاقتصادية للمجتمع وأساليب القيادة وكذلك أساليب ترشيد الموارد وتجديدها و أساليب تقييم المشروعات وكذلك مهارات العمل الجماعي وأهمية الفارق بين العمل الجماعي والفريقى و كيفية إعداد القادة و كذلك الضغوط والمؤثرات المعوقة والنظريات المفسرة للعمل الفريقى.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1- الانتماء و أهميته و أصول المجتمع و العادات والتقاليد المرعية (A9, A10)

a2- بناء الأسرة و تكوينها و التنشئة الاجتماعية (A9, A10)

a3- العمل الجماعي و أهمية عمل الفريق و الفارق بين العمل الجماعي والفريقى و كيفية إعداد القادة (A9, A10)

b - Intellectual skills:

On successful completion of the course, the student should be able to.

b1- ان يتعلم الطالب مفهوم الانتماء والعادات والتقاليد واصول المجتمع (B4, B9, B12)

b2- ان يدرك الطالب علي اهمية الاسره والتنشئه الاجتماعيه (B4, B9)

b3- ان يتعلم مهارات العمل الجماعي واهمية عمل الفريق والفرق بين العمل الجماعي والفردي (B4, B12)

c - Professional and practical skills:

On successful completion of the course, the student should be able to:

c1- أن يمارس الطالب مهارات العمل الجماعى والفردى خلال الدراسة.(C1,C5)

d - General and transferable skills:

On successful completion of the course, the student should be able to:

d1- Work in a team and involve in group discussion and seminars (D1, D3).

d2- Search for information's in references and in internet (D7).

d3- Practice self-learning (D7, D9).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A9, A10
B	Intellectual skills	B4, B9, B12
C	Professional and practical skills	C1,C5
D	General and transferable skills	D1, D3, D7, D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
الانتماء: أهميته - أصـــول المجتمع - العادات والتقاليد المرعية – المواطنة - العوامل المحفزة لحب الوطن (الحرية - احترام الرأي الآخر - عدم التمييز العنصـــري - الديمقراطية).	4	-	-
النمو والتكامل الاقتصادي: المكونات الاجتماعية والاقتصادية للمجتمع- أساليب القيادة - أساليب ترشيد الموارد - الابتكار وتجديد الموارد - الحوافز الخاصة بأفراد المجتمع - أساليب تقييم المشروعات).	10	-	--
بناء الأسرة: تكوين الأسرة - التنشئة الاجتماعية - النسق الأسرى والأنساق الأخرى - المؤسسات التقليدية والحديثة الخاصة بالأسرة).	6	-	-
مهارات العمل الجماعي : أهمية عمل الفريق-الفارق بين العمل الجماعي والفريقى – كيفية إعداد القادة	4	-	-
الضغوط والمؤثرات المعوقة-النظريات المفسرة للعمل الفريقى.	4	-	-
Total hours	**28**	**-**	**-**

4 - Teaching and Learning and Assessement methods:

Course ILO's		Teaching Methods										Learning Methods				Assessement Method							
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments					Researches and Reports	Modeling and Simulation			Written Exam	Practical Exam	Quizes	Term papers	Assignments			
Knowledge	a1	1	1	1								1				1		1					
	a2	1				1										1		1		1			

	a3	1														1		1		1			
Intellectual Skills	b1	**1**														1		1		**1**			
	b2	**1**				**1**										1		1		**1**			
	b3	**1**	**1**	**1**								**1**				1							
Professional	c1	**1**	**1**									**1**				1							
General Tran. Skills	d1	1		1		1						1											
	d2	1	1	1																			
	d3	1	1																	1			

5- Assessment Timing and Grading:

Asessement Method	Timing	Grade (Degrees)
Assignments	Bi-Weekly	20
Quizes	5th and 10th	20
Mid-Term Exam	6-th Week	20
Written Exam	Sixteenth week	40
Total		100

6- List of references:

6-1 Course notes :

Shimaa Esmail, Contemporary Social Issues, Lecture note, Modern Academy Press, 2014.

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6-2 Required books

S. Nasef (2007), Contemporary Social Issues, Cairo.

6-3 Recommended books:

None

6-4 Periodicals, Web sites, etc.:

7- Facilities required for teaching and learning:

- Computer,
- Data show
- Computer programs

Course coordinator: Dr. Shimaa Nabih Ebrahim Esmail
Head of the Department: Prof. Dr. Ashraf Taha
Date: September, 2019

Modern Academy for Engineering

and Technology in Maadi

Course Specification

MNFN002: Engineering Graphics

A- Affiliation

Relevant program: Mechanical Design and Production Technology BSc Program

Department offering the program: Manufacturing Engineering and Production Technology Department

Department offering the course: Manufacturing Engineering and Production Technology Department

Date of specifications approval: September 2018

B - Basic Information

Title: Engineering Graphics **Code:** MNFN002 **Year/level:** freshman, first semester

Credit Hours:3 **Lectures:** 1 **Tutorial:**6 **Practical:** -

Pre-requisite: Non

C - Professional Information

1 – Course Learning Objectives:

The objective of this course is to enable the students to read and draw components in different drawing kinds, namely orthogonal, perspective and/or section drawings. The students will be able to apply the dimensioning principles on the drawings.

2 - Intended Learning Outcomes (ILOS)

A - Knowledge and understanding

By the end of the course the student should gain the following knowledge.

a1- The basic information in engineering graphics. [A2]
a2- The principles of geometrical construction in engineering graphics. [A4]
a3- Methodology of solving problems in orthographic and in successive views. [A5]
a4- The basics of developments and intersections. [A4]
a5- Section views. Methodology of solving problems in sectional views. [A5]
a6- Conventional way of drawings. [A8]
a7- The correct rules for dimensioning. [A10]

B - Intellectual skills

By the end of the course the student should be able to:

b1- Solve and communicate problems in orthographic views. [B7]
b2- Solve and communicate problems in isometric and oblique drawings. [B7]
b3- Consider the benefits of solving problems of developments and intersections. .[B5]
b4- Draw different problems in sectional views. [B7]
b5- Select the proper section for each component. [B8],[B9]
b6- Draw dimensions for components from production point of view. [B3]

C - Professional and practical skills

By the end of the course the student should be able to:
c1- Produce orthographic views from 3D models. [C2]
c2- Read and understand orthographic drawing. [C3]
c3- Prepare and interpret engineering drawing. [C4]
c4- Read orthographic drawing with sectional views. [C4], [C11]
c5- Make necessary views using sections and dimensioning. [C4], [C13]
c6- Communicate by graphic language. [C4]

D - General and transferable skills

By the end of the course the student should be able to:
d1- Communicate effectively with other discipline using the graphical language. [D3]
d2- Expand their creative talents and to communicate their ideas in a meaningful manner. [D9]
d3- Search for information and engage in life – long sell learning discipline. [D1]
d4- Communicate graphically effectively. [D9]
d5- Refer to relevant literature. [D9]

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	2, 4, 5, 8, 10
B	Intellectual skills	3, 5, 7, 8,9
C	Professional and Practical Skills	2, 3, 4, 11, 13
D	General and transferable skills	1, 3, 9

3 – Contents

Topic	**Lecture hours**	**Tutorial hours**
Drawing instruments, Draw sheets; Scales; Folding , Lettering	1	6
Geometric Construction	1	6
Alphabet of lines	1	6
Theory of orthographic projection: Projection of point ; line and plane Projection of geometric solids	1	6
Multi view drawing (of Vertical and Horizontal Surfaces)	1	6
Multi view drawing (of inclined Surfaces)	1	6
Multi view drawing (of cylindrical Surfaces)	1	6
Pictorial drawing (isometric) , Pictorial drawing (oblique)	1	6
Isometric drawing (of Vertical, Horizontal & inclined Surfaces)	1	6
Isometric drawing (of cylindrical Surfaces)	1	6
Conventional practice in ED	1	6
Importance of drawing sections ; Basic types of sections: Full sections : longitudinal ,cross – section	1	6
Off set ; Aligned sections ; Half-section ;Partial S.; Revolved & Auxiliary sections.	1	6
Dimensioning – Arrangements of dimensions – Rules for dimensions of circles ; radii ; angles ; plain holes	1	6
Total hours	**14**	**84**

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations & Movies	Discussions & Seminars	Tutorials	Problem solving						Modeling	Self-learning				Homework	Seminars	Quizzes	Reports	Mid-Term	Practical	Written Exam
Knowledge & Understanding	a1	1	1		1												1		1		1		1
	a2	1	1		1												1		1		1		1
	a3	1	1		1												1		1		1		1
	a4	1	1		1												1		1		1		1
	a5	1	1		1												1		1		1		1
	a6	1	1		1												1		1		1		1
	a7	1			1												1		1				1
Intellectual Skills	b1	1	1		1	1											1		1		1		1
	b2	1			1	1											1		1		1		1
	b3	1	1		1	1											1		1		1		1
	b4	1			1	1											1		1				1
	b5	1			1	1											1		1				1
	b6	1			1	1											1		1				1
Applied Professional Skills	c1	1	1		1	1											1		1		1		1
	c2	1			1	1											1		1		1		1
	c3	1			1	1											1		1		1		1
	c4	1			1	1											1		1		1		1
	c5	1	1		1	1											1		1				1
	c6	1			1	1											1						1
General Tran. Skills	d1	1	1		1	1											1						
	d2	1	1		1	1											1				1		1
	d3	1			1	1											1						
	d4	1	1		1	1											1				1		1
	d5	1			1	1											1						

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: Assignments and Home works	Weekly	20
Quizzes	Bi-Weekly	20
Mid-Term Exam	6th. Week	20
Written Exam	16th. week	40
Total		100

6- List of references:

6-1 Course notes

Engineering Drawing by : Prof. Mamdouh Saber

6-2 Required books

James H.Earle, Graphics For Engineering, Addison Wesley Publishing Company 1991.

6-3 Recommended books Non

6-4 Periodicals, Web sites etc . Non

7- Facilities required for teaching and learning:

- Overhead projector and screen
- Models and prototype as teaching aids

Course coordinator: Prof.Dr. Nabil Gadallah
Head of the Department: Prof.Dr. Nabil Gadallah
Date: September 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specification
GENN043: History of Engineering & Technology

A- Affiliation

Relevant program: Electronic Engineering and Communication Technology BSc Program
Computer Engineering and Information Technology BSc Program
Manufacturing Engineering and Production Technology BSc Program
Architecture Engineering and Building Technology BSc Program

Department offering the program: Electronic Engineering and Communication Technology BSc Program
Computer Engineering and Information Technology BSc Program
Manufacturing Engineering and Production Technology BSc Program
Architecture Engineering and Building Technology BSc Program

Department offering the course: Basic Science Department

Date of specifications approval: September, 2018

B - Basic information

Title: History of Science and Technology **Code:** GENN 043 **Level:**1 Semester: First, Second, Third.

Hours Credit/Total 2 hrs Lectures 2 hrs Tutorial - Practical -

C – Professional information

مع نهاية تدريس هذا المقرر يكون الطالب قد اكتسب المهارات التى تمكنه من فهم تاريخ الهندسه و التكنولوجيا فى مختلف العصور والفرق بين كل من العلم و الهندسة والتكنولوجيا – نقل التكنولوجيا – نشاطات العمل الهندسى و مسئوليات المهندس- امثلة على تطور اوجه النشاط الهندسى و التكنولوجى و أشهر علماء الهندسة كنماذج يحتذى بها

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1- مفهوم العلم و الهندسة والتكنولوجيا و علاقتهم ببعضهم البعض و كيفية ابتكار معدات و منظومات تحقق احتياجات المجتمع طبقا لتلك المفاهيم (A1, A11, A14)

a2- المعلومات التاريخية عن مهنه الهندسة و التكنولوجيا وكذا العلاقة بين مسمى المعهد او الكلية و بين ما يتم دراسته (A9,A1).

a3- مفهوم التعليم الهندسى و مجالات العمل للمهندسين و كيفيه القيد و التسجيل بنقابة المهندسين و كذا حقوق وواجبات المهندس (A9, A1)

a4- تطور اوجه النشاط الهندسى و التكنولوجى و ايضا التعرف على الطرق المختلفة لنقل التكنولوجيا (A8,A5)

b - Intellectual skills:

On successful completion of the course, the student should be able to.

b1- أن يكتسب الطالب مهارات توظيف النظريات و المعارف و البيانات و الافكار لابتكار معدات و منظومات متطورة (B1, B2)

b2- أن يستحدم الطالب المنهج العلمى فى التفكير وصولا لتصميم و تركيب الفروض (B2)

b3- أن يستطيع الطالب التفكير فى حل مشكلة ما من خلال تفهمه لموضوعات الهندسة العكسية (B7)

B4- ان يستطيع الطالب اتخاذ القرار السليم و اختيار انسب الحلول من خلال دراسته لنماذج و امثلة من المشاكل الهندسيه و عرض الحلول الممكنه لها (B6)

d - General and transferable skills:

On successful completion of the course, the student should be able to:

d1- المام الطالب بمعايير الجودة و نظم الامان فى استخدام المنظومات الهندسية(D1).

d2- تدريب الطالب على التفكير و ايجاد التصميمات اللازمة لخلق كل ما هو جديد.(D7,D8).

d3- اكساب الطالب الخبرة فى ايجاد حلول عملية تخدم برامج خارج تخصصه (D7).

d4-اكساب الطالب كيفية وضع المعايير اللازمة لتكوين فريق بحثى متكامل(D1)

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A5, A8, A9, A11,A14
B	Professional and practical skills	B1, B2, B6, B7
D	General and transferable skills	D1, D7, D8

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
العلم و الهندسة والتكنولوجيا	2		
الهندسة و البحث العلمى – منظومة البحث العلمى	2		
عناصر و متطلبات البحث العلمى	2		
الهندسة وخريطة البحث العلمى – مراحل البحث العلمى	2		
تاريخ الهندسة و التكنولوجيا فى مختلف العصور	4		
نقل التكنولوجيا	2		
نشاطات العمل الهندسى و مسئوليات المهندس	2		
التعليم الهندسى	2		
نقابة المهندسين المصرية – جمعية المهندسين المصرية	4		
تطور اوجه النشاط الهندسى و التكنولوجى	4		
اشهر علماء الهندسة و التكنولوجيا	2		
Total hours	**28**		

4 – Teaching, Learning and Assessementmethods:

Course ILO's	Teaching Methods	Learning Methods	Assessment Method

		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments	Researches and Reports	Modeling and Simulation	Written Exam	Practical Exam	Quizzes	Term papers	Assignments
Knowledge	a1	1	1					1				1	1	1
	a2	1	1	1				1				1	1	1
	a3	1	1					1				1	1	1
	a4	1	1	1				1				1	1	1
Intellectual	b1	**1**	**1**					**1**				1	**1**	**1**
	b2	**1**	**1**					**1**				1	**1**	**1**
	b3	**1**	**1**					**1**				1	**1**	**1**
	b4	1	1					1					1	
General	d1		1	1				1					1	
	d2		1	1				1					1	
	d3		1	1				1					1	
	d4		1	1				1					1	

5- Assessment Timing and Grading:

Asesement Method	Timing	Grade (Degrees)
Semister Work: seminars, quizes assignments and reports	Bi-Weekly	40
Mid-Term Exam	6-th Week	20
Practical Exam	Fifteenth week	-
Written Exam	Sixteenth week	40
Total		100

6- List of references: تاريخ العلوم و التكنولوجيا الهندسية المؤلف احمد على العريان الناشر عالم الكتب رقم 8-090-232-997 تسلسلى عالمى

6-1 Course notes: -

6-2 Required books:

Robert J. Pond, Jeffrey L. Rankinen (2014) Introduction to Engineering Technology, Prentice Hall, USA.

6-3 Recommended books

Wright, P. H., Introduction to engineering, second edition, John Wiley and Sons Inc., New York, 1994

6-4 Periodicals, Web sites, etc.

مواقع الانترنت الخاصة بنقابه المهندسين المصرية

7- Facilities required for teaching and learning:

- Computer, Data show and projector.

Course coordinator: Dr Marwa Mohamed Fouad
Head of the Department: Prof. Dr. Ashraf Taha
Date: September, 2019

Modern Academy
for Engineering and Technology in Maadi

Course Specification
MECN001: Mechanics-1

A- Affiliation

Relevant program: Manufacturing Engineering and Production Technology BSc Program
Electronic Engineering and Communication Technology BSc Program
Computer Engineering and Information Technology BSc Program
Architecture Engineering and Building Technology BSc Program

Department offering the program: Manufacturing Engineering and Production Technology Department
Electronic Engineering and Communication Technology Department
Computer Engineering and Information Technology Department
Architecture Engineering and Building Technology Department

Department offering the course: Basic Science Department
Date of specifications approval: June, 2018

B - Basic information

Title: Mechanics-1 **Code:** MECN 001 **Level:** Senior 2. Semester: Frist.

Hours	Credit/Total	2 hrs	Lectures	2 hrs	Tutorial	3 hrs	Practical	Non

C - Professional information

1 – Course Learning Objectives:

A study of this course will introduce the basic concepts of statics in plane and space: (force resultant equilibrium analysis of structures).

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1- knowledge of the basic of statics in plane and space(A1,A2).
a2- knowledge the difference between the moment of force in plane and space(A2,A4).
a3- classification the support reaction in plane and in space(A1,A2).
a4- understanding the structural analysis in plane(A3,A4).

b - Intellectual skills:

On successful completion of the course, the student should be able to.

b1- analyze and classify between equilibrium in plane and equilibrium in space(B1, B2).
b2- classify and compare the different between equilibrium of a single rigid body and all forces involved were external to the rigid body(B1,B2) .

c - Professional and practical skills:

On successful completion of the course, the student should be able to:

c1- solve the equations of equilibrium to get three unkownes(C1,C2).
c2- solve the trusses to get the value of the forces in the structural by joints and by section methods(C1,C2).

d - General and transferable skills:
On successful completion of the course, the student should be able to:
d1-work in a team to solve problem as a search(D1).
d2- search for information in references and in internet(D2)

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A2, A3, A4
B	Professional and practical skills	B1, B2
C	Intellectual skills	C1, C2
D	General and transferable skills	D1, D2

3 – Contents

Topic	Lecture hours	Tutorial hours
➢ Basic Concepts of statics.	1	2
➢ Resultant of concurrent forces in plane	1	3
➢ Resultant of concurrent forces in space	1	4
➢ Equilibrium of a particle (in plane and in space)	1	4
➢ Different types of support in plane	1	3
➢ Distributed loads	1	3
➢ Equilibrium of rigid body in plane	1	2
➢ Different types of supports in space	1	4
➢ Equilibrium of rigid body in space	2	4
➢ Special cases of two, three and four force members	1	4
➢ Analysis of Trussess by the method of joints	1	4
➢ Analysis of Trussess by the method of section ➢	1	4
➢ Final revision	1	1
Total hours	**14**	**42**

4 – Teaching, Learning and Assessment methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments					Researches and Reports	Modeling and Simulation			Written Exam	Practical Exam	Quizzes	Term papers	Assignments			
Knowledge	a1	1			2	1						1				1		1	1	1			
	a2	1			2	3										1		1	1	1			
	a3	1			3	3						1				1		1	1	2			
	a4	2			4	1						1				1		1	1	1			
Intellectual	b1	**2**			**4**											1		1		**1**			
	b2	**2**			**4**	**1**										1		1	**1**	**1**			
Applied	c1	2			4	3										1		1	1	1			
	c2	2			4											1		1	1	1			
General	d1					1						1							1				
	d2											1							1				

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	20
Mid-Term Exam	7-th Week	20
Second Mid-Term Exam	12-th Week	20
Written Exam	Fifteen week	40
	Total	100

6- List of references:

6-1 Course notes: found

6-2 Required books : Beer and Johnston, Vector Mechanics for Engineers- Statics, 8th Edition in SI Units, ISBN 978-007-125765-7, U.S.A., 2007)

6-2 Recommended books

Beer and Johnston, Vector Mechanics for Engineers- Statics, 8th Edition in SI Units, ISBN 978-007-125765-7, U.S.A., 2007.

6-4 Periodicals, Web sites, etc.

Basic of mechanical engineering, engineering mechanics statics and dynamics, statics and dynamics hibbeler 12th edition.

Course coordinator: Dr Moamen Wafaie
Head of the Department: Prof. Dr. Ashraf Taha
Date: September, 2019

Modern Academy
for Engineering and Technology in Maadi

Course Specification
MTHN001: Mathematics-1(Algebra and Calculus)

A- Affiliation

Relevant program: Manufacturing Engineering and Production Technology BSc Program
Electronic Engineering and Communication Technology BSc Program
Computer Engineering and Information Technology BSc Program
Architecture Engineering and Building Technology BSc Program

Department offering the program: Manufacturing Engineering and Production Technology Department
Electronic Engineering and Communication Technology Department
Computer Engineering and Information Technology Department
Architecture Engineering and Building Technology Department

Department offering the course: Basic Sciences Department
Date of specifications approval: June, 2018

B - Basic information

Title: Mathematics-1 **Code:** MTHN001 **Level:** First **Semester:** First
Credit Hours: 3 **Lectures:** 2 **Tutorial/Exercise:** 3 **Practical:** -
Pre-requisite: None

C - Professional information

1 - Course Learning Objectives:

The main objective of this course is to introduce the main concepts of differential calculus, linear algebra, Taylor expansion and binomial expansion and polar coordinates and their applications.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1- Rules of limits and continuity of functions of one variable. (A1)
a2- Concepts of differentiation. (A1)
a3- Rules of applications of differential calculus used engineering. (A1)
a4- Basic concepts of Taylor expansion and Binomial expansion. (A1)
a5- Basic concepts matrices and matrices algebra. (A1, A2, A5)
a6- Solutions of systems of linear equations. (A1, A5)
a7- Basic concepts of vectors, vector spaces and vector algebra. (A1)

b - Intellectual skills:

On successful completion of the course, the student should be able to.

b1- Solve problems on limits, continuity and differentiate all continuous function. (B1, B2)
b2- Use differential calculus to solve applied Engineering Models. (B1, B2, B7)
b3- Apply infinite series, power series, Taylor and Meclaurin series to applications. (B1, B2)
b4- Apply basic concepts of different methods to discuss solutions of linear systems. (B1, B2, B3)
b5- Solve problems on vectors, vector spaces and vector algebra. (B1, B2)

c - Professional and practical skills:

On successful completion of the course, the student should be able to:
c1- Apply differential calculus in mechanics and electronics. (C1, C12)
c2- Use matrices and vectors to solve engineering problems. (C1, C12)

d - General and transferable skills:
On successful completion of the course, the student should be able to:
d1- Write technical reports. (D3)
d2- Communicate effectively in written form.(D3)
d3- Search for information's in references and in internet. (D7)

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A2, A5
B	Professional and practical skills	B1, B2, B3, B7
C	Intellectual skills	C1, C12
D	General and transferable skills	D3, D7

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
➢ Functions	3	4	
➢ Differentiation	3	6	
➢ Trigonometric and inverse trigonometric functions	4	6	
➢ Exponential and logarithmic functions	2	4	
➢ Hyperbolic and inverse hyperbolic functions	2	4	
➢ Taylor and binomial expansions	2	3	
➢ Matrices with applications	6	6	
➢ Vectors in the Euclidean space	2	3	
➢ Real vector spaces	2	3	
➢ Polar coordinates	2	3	
Total hours	28	42	

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods						Learning Methods				Assessment Method				
		Lecture	Discussions and seminars	Tutorials	Problem solving			Researches and Reports	Modeling and Simulation			Written Exam	Quizzes	Assignments		
Knowledge & Understanding	a1	1	1	1	1			1				1	1	1		
	a2	1		1	1			1				1	1	1		
	a3	1		1	1			1				1	1	1		
	a4	1		1	1			1				1	1	1		
	a5	1		1	1			1				1	1	1		
	a6	1		1				1	1			1		1		
	a7	1	1	1	1			1	1			1		1		
Intellectual Skills	b1	1		1	1							1	1	1		
	b2	1						1	1			1				
	b3	1	1		1			1				1				
	b4	1		1	1			1				1	1	1		
	b5			1	1							1	1	1		
Applied Professional Skills	c1	1	1						1							
	c2	1	1						1							
General Tran. Skills	d1		1		1			1						1		
	d2		1	1	1			1						1		
	d3	1						1						1		

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Assignments, Reports	Bi-weekly	20
Two Quizzes	5th and 9th	20
Mid-Term Exam	7th Week	20
Written Exam	Sixteenth week	40
Total		100

6- List of references:

6-1 Course notes:

Sameh Shenawy and Sabry Abd El-Aziz Algebra and Calculus, Lecture Notes, Modern Academy Press.

6-2 Required books

Briggs (2013) Calculus for Scientists and Engineers, U.S.A: Pearson.

Stewart, J. (2012) Calculus, U.S.A: Cengage Learning.

6-3 Recommended books:

E. Kreyszig, Advanced Engineering Mathematics, 8ed, John Willey & Sons, Inc., 1999

6-4 Periodicals, Web sites, etc.

www.mathwords.com , www.17calculus.com , www.sosmath.com .

7- Facilities required for teaching and learning:

- Library
- Internet

Course coordinator: Dr. Sabry Abd El-Aziz
Head of the Department: Prof. Dr. Ashraf Taha
Date: September, 2019

Modern Academy
for Engineering and Technology in Maadi

Course Specification

PHYN001 : Physics I

A- Affiliation

Relevant program/s: Manufacturing Engineering and Production Technology BSc Program
Electronic Engineering and Communication Technology BSc Program
Computer Engineering and Information Technology BSc Program
Architecture Engineering and Building Technology BSc Program

Department offering the program: Manufacturing Engineering and Production Technology BSc Department
Electronic Engineering and Communication Technology BSc Department
Computer Engineering and Information Technology BSc Department
Architecture Engineering and Building Technology BSc Department

Department offering the course: Basic Sciences Department.

Date of specifications approval: June, 2018

B - Basic Information

Title: Physics I **Code:** PHYN001 **Level:** Freshman, First Semester
Credit Hours: 3 **Pre-requisite:** None
Contact Hours: **Lectures:** 2 **Tutorial:**1 **Laboratory: 2** **Total:** 5

1 – Course Learning Objectives:

This course will enable the student to have a clear presentation of the basic concepts and principles of fundamental topics in classical physics. Concerning properties of matter, heat and waves.

2 - Intended Learning Outcomes (ILOS)

A - Knowledge and understanding

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1- the basic principles of rotational motion, application of rotational motion. (A1,A2,A3)
a2- laws of planetary motion derived from the law of gravity and driving a general expression for gravitational potential energy. (A1,A2,A3)
a3- how objects deform under load condition and defining of several elastic constants for different types of deformation. (A1,A2,A3)
a4- fluid in motion and its description by using a model with certain simplifying assumptions. (A1,A2,A4)
a5- Bernoulli's equation and its Application. (A1,A2)
a6- description of thermal phenomena through important terms; temperature, heat & internal energy. (A1 ,A2)
a7- the concept of internal energy and the process by which energy is transferred. (A1 ,A2,A13)
a8- the first law of thermodynamic and some important applications of this law. (A1,A2,A3)
a9- the kinetic theory of gas, entropy and engine efficiency. (A1,A2,A3)
a10- fundamental of wave motion and sound wave. (A1,A2)

B - Intellectual skills

On successful completion of the course, the student should be able to.

b1- analyze and solve a wide variety of problems of the related subjects listed above, justify the suitability and limitations of the studied equations, and select the most appropriate equations for problem solutions. (B1,B2,B3)

b2- predict the different laws that governing the motion of the body (Newton's laws, gravity law, and kepler's law). (B1,B2 ,B7)

b3- analyze the characteristics of elastic materials. (B17)

b4- deduce models for fluid flow and analyze some practical situation. (B7,B13)

b5- differentiate and compare the different types of heat transfer in different walls. (B7,B13)

b6- identify the heat system's internal energy changes by an energy transfer or by work done. (B1,B2,B7)

b7- differentiate and compare the different types of waves. (B1,B2,B20).

C - Professional and practical skills

On successful completion of the course, the student should be able to:

c1- analyze physical phenomena and solve problems depending on the gained background and concepts. (C1)

c2- validate the concepts of some of the studied physical phenomena.(C1,C12,C16)

c3- determine different dimensions using vernier calipers, micrometer and spherometer.(C16,C17)

c4- use experimental facilities to measure the acceleration due to gravity and the force constant. (C6,C12,C16,C17)

c5- perform experiments on heat to get practically the specific heat of different materials, the expansion coefficient of a solid, and the viscosity of a viscous liquid.(C1,C16,C17)

c6- determine the velocity of sound in air using resonance tube. (C1,C16,C17)

c7- use experimental facilities to verify the inverse square law of radiation. (C1,C16,C17)

D - General and transferable skills

On successful completion of the course, the student should be able to:

d1. communicate and interact effectively with other people and in a small group.(D1,D3,D5)

d2. use computing and information technology, and synthesize information.(D4,D7,D8)

d3. develop reasoned and scientific arguments.(D2,D6)

d4. manage resources and time, and work within a deadline.(D2,D6)

d5- search for information's in references and in internet. .(D7,D8,D9)

d6- practice self-learning.(D5,D6,D8)

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A2, A3, A4, A13
B	Professional and practical skills	B1, B2, B3, B7, B17, B20
C	Intellectual skills	C1, C6, C12, C16, C17
D	General and transferable skills	D1, D2, D3, D4, D5,D6,D7,D8,D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
➢ Rotational motion, angular displacement, velocity, acceleration.	2		
➢ Relation between linear and angular quantities.	1	1	4
➢ Applications on rotational motion.	2	1	
➢ Universal gravitational law.	1	1	2
➢ Kepler's laws.	2	1	
➢ Gravitational energy.	1		
➢ Escape speed and orbital energy.	1	1	
➢ Elasticity: Linear, and shear deformation.	1		2
➢ Bulk deformation, and energy stored in a wire.	2	2	4
➢ Characteristics of fluids and stream lines.	1	1	2
➢ Fundamental laws of fluid	2	1	
➢ Applications on Bernoulli's equation.	2	1	2
➢ Viscosity and Poiseulli's law.	1	1	2
➢ Heat transfer by convection.	1		
➢ Heat transfer by conduction.	2	1	2
➢ Work and heat in thermodynamic system.	1		
➢ First law of thermodynamic.	1		
➢ Isothermal expansion of gases and Molar specific heat.	2	1	2
➢ Mathematical representation of waves and speed of transverse waves.	1		2
➢ The principle of superposition.	1		
➢ Standing waves and Sound waves.	1	1	4
Total hours	**28**	**14**	**28**

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations and	Discussions and	Tutorials	Problem solving	Laboratory & Experiments					Researches and Reports	Modeling and Simulation			Written Exam	Practical Exam	Quizzes	Term papers	Assignments			
Knowledge	a1	1		1	1	1	1					1				1	1	1	1	1			
	a2	1		1	1	1	1					1				1	1	1	1	1			
	a3	1		1	1	1	1					1				1	1	1	1	1			
	a4	1		1	1	1	1					1				1	1	1	1	1			
	a5	1		1	1	1	1					1				1	1	1	1	1			
		1		1	1	1	1					1				1	1	1	1	1			

	a7	1		1	1	1	1					1				1	1	1	1	1			
	a8	1		1	1	1	1					1				1	1	1	1	1			
	a9	1		1	1	1	1					1				1	1	1	1	1			
	a10	1		1	1	1	1					1				1	1	1	1	1			
Intellectual	b1	1		1	1	1	1					1				1	1	1	1	1			
	b2	1		1	1	1	1					1				1	1	1	1	1			
	b3	1		1	1	1	1					1				1	1	1	1	1			
	b4	1		1	1	1	1					1				1	1	1	1	1			
	b5	1		1	1	1	1					1				1	1	1	1	1			
	b6	1		1	1	1	1					1				1	1	1	1	1			
	b7	1		1	1	1	1					1				1	1	1	1	1			
Applied	c1			1	1	1	1					1				1	1	1	1	1			
	c2						1										1			1			
	c3						1										1						
	c4						1										1						
	c5						1										1						
	c6						1										1						
	c7						1										1						
General	d1	1	1	1			1					1											
	d2		1	1		1						1								1			
	d3	1		1		1	1					1							1	1			
	d4					1										1	1	1		1			
	d5			1		1						1							1				
	d6					1						1				1	1	1	1	1			

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Quizzes assignments and reports	3rd and 10th weeks	20
Mid-Term Exam	7th week	20
Practical Exam	15th week	20
Written Exam	Sixteenth week	40
Total		100

6- List of references:

6-1 Course notes:

- PHYN001, Physics I.
- Physics Lab (1) Note.

6-2 Required books

Serway (2003) Physics for Scientists & Engineering, USA: Sundress College Pub.
Griffith Thomas (2008) The Physics of Everyday Phenomena, USA: Mc-Graw hill.

6-3 Recommended books:

Halliday, David, Robert Resnick, Jearl Walker(2005). Fundamentals of Physics, 7th ed. Hoboken, N.J.: John Wiley and Sons.

6-4 Periodicals, Web sites, etc.

http.www.saunderscollege.cpm/physics
http://www.physicsclassroom.com/calcpad/circgrav/
http://physicsworld.com/
http://www.britannica.com/science/wave-motion
http://physics.info/

7- Facilities required for teaching and learning:

1. Library
2. Computer and Data Show
3. Laboratories.

Course coordinator: Dr. Mohamed Eltawab
Head of the Department: Prof. Dr. Ashraf Taha
Date: September, 2019

Modern Academy for Engineering

and Technology in Maadi

Course Specification

MNFN001: Introduction to Engineering Materials

A- Affiliation

Relevant program:
Manufacturing Engineering and Production Technology BSc Program
Electronic Engineering and Communication Technology BSc Program
Computer Engineering and Information Technology BSc Program
Architecture Engineering and Building Technology BSc Program

Department offering the program:
Manufacturing Engineering and Production Technology Department
Electronic Engineering and Communication Technology Department
Computer Engineering and Information Technology Department
Architecture Engineering and Building Technology Department

Department offering the course:
Manufacturing Engineering and Production Technology Department

Date of specifications approval: September 2018

B - Basic Information

Title: Introduction to Engineering Materials **Code:**MNFN001 **Level:** Freshman, First Semester
Credit Hours: 1 **Lectures:** 1 **Tutorial/Exercise:**- **Practical:** -
Pre-requisite: -

C - Professional Information

1 – Course Learning Objectives:

By the end of this course the students should demonstrate the knowledge and understanding of the engineering materials, materials classification and material properties. They should be able to differentiate between materials according to their physical, thermal, magnetic, mechanical properties and how to select the suitable material.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1- Basic information of atomic structure (A2)
a2- Characteristics of engineering materials related to the discipline (A3).
a3- Principles of ferrous and non-ferrous alloys (A4)
a4- Basic properties of copper and aluminum alloys (A3).
a5- Engineering design principles for selection of material (A18).

b - Intellectual skills:

On successful completion of the course, the student should be able to:
b1- Investigate the required properties to choose the material (B1, B13)
b2- Select appropriate solutions for engineering problems based on analytical thinking (B2)
b3- Assess and evaluate the characteristics and performance of component material (B5)
b4- Use the principle of engineering science in selection of the required properties (B15,B17).

c - Professional and practical skills:
On successful completion of the course, the student should be able to:
c1- Solve some simple production problems related to material and process selection (C19)
c2- Apply knowledge of materials to determine the suitable used materials (C1).
c3- professionally merge the engineering knowledge to improve material properties (C2).

d - General and transferable skills:
On successful completion of the course, the student should be able to:
d1- Work in a team and involve in group discussion and seminars (D1, D3).
d2- Communicate effectively and present data and results orally and in written form (D3).
d3- Search for information's in references and in internet (D7).
d4- Practice self-learning through preparing reports (D7, D9).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A2, A3, A4, A18
B	Intellectual skills	B1, B2, B5, B13, B15, B17
C	Professional and Practical Skills	C1, C2, C19
D	General and transferable skills	D1, D3, D7, D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
1- Introduction	1		
• Types of engineering materials			
• Properties of materials, material testing principles			
2- Ferrous alloys and their properties	3		
2-1 Steel; types and uses			
2-2 Cast iron; types and uses			
3- Non-ferrous alloys and their properties	7		
3-1 Copper and its alloys			
3-2 Aluminum and its alloys			
4- Other engineering alloys	3		
5- Selection of Materials			
Total hours	**14**		

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations	Discussions	Tutorials	Problem	Laboratory &					Researches and Reports	Modeling and			Written Exam	Practical	Quizzes	Term papers	Assignments			
Knowledge & Understanding	a1	1	1	1	1								1			1	1						
	a2	1	1	1	1							1				1				1			
	a3	1	1		1								1			1		1		1			
	4	1	1	1	1							1				1		1		1			
	a5	1	1	1	1							1				1	1		1				
Intellectual Skills	b1	1	1	1	1											1	1	1		1			
	b2	1	1	1	1							1				1			1	1			
	b3	1	1	1								1				1	1		1				
	b4	1	1	1	1							1				1	1						
Applied Prof. Skills	c1	1	1	1		1																	
	c2	1	1	1												1	1	1	1	1			
	c3	1	1	1	1							1				1	1		1				
General Tran.	d1			1								1											
	d2		1	1								1											
	d3			1								1											

	d4		1	1							1											

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: seminars, and reports	Bi-Weekly	20
Mid-Term Exam	8-th Week	20
quizzes assignments	Bi-weekly	20
Written Exam	Sixteenth week	40
Total		100

6- List of references:

6-1 Course notes: Introduction to Engineering Material (Lecture Notes)

6-2 Required books : David G. Rethwisch, "Fundamentals of Materials Science and Engineering", Wiley, Asia,2013

6-3 Recommended books: William D. Callister**, "**Fundamentals of Materials Science and Engineering", Wiley, USA, 2005

6-4 Periodicals, Web sites, etc.

http://simple.wikipedia.org/wiki/Materials_science
http://www.matsci.com/
http://www.homework-help-secrets.com/atomic-structure.html

7- Facilities required for teaching and learning:

- Lecture Room
- Computer, Data show.

Course coordinator: Dr. Nasr Aref
Head of the Department: Prof.Dr. Nabil Gadallah
Date: September 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specification
GENN042: English Language

Relevant program: Manufacturing Engineering and Production Technology BSc Program
Electronic Engineering and Communication Technology BSc Program
Computer Engineering and Information Technology BSc Program
Architecture Engineering and Building Technology BSc Program

Department offering the program: Manufacturing Engineering and Production Technology Department
Electronic Engineering and Communication Technology Department
Computer Engineering and Information Technology Department
Architecture Engineering and Building Technology Department

Department offering the course: Basic Sciences Department
Date of specifications approval: June, 2018

B - Basic information

Title: English Language **Code:** GENN042 **Level:** 1ST. Year, 1ST Semester
Credit Hours: 2 **Lectures:**2 **Tutorial:** **Practical:**
Pre-requisite: -

C - Professional information

1 – Course Learning Objectives:

This course is designed for students of the pre-intermediate to upper-intermediate level of English. The course aims at developing students' reading, writing, speaking and listening skills with regard to the related topics. It is also designed to consolidate and extend Students' knowledge of situations of every day life. The course offers realistic and informative original situations introducing students to key concepts of different topics.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1) Identifying the most frequent words, phrases and grammar rules in everyday conversation. (A9), (A10)
a2) how to communicate effectively, even at the very beginning levels. (A9), (A10)
a3)how to differentiate between tenses. (A9)

b - Intellectual skills:

On successful completion of the course, the student should be able to.

b1)Enhance class interaction in terms of speaking, reading, listening and writing. (B4)
b2)Personalize the learning experience by offering students interesting topics relevant to their interests and experiences. (B4)
b3)Employ tasks which encourage students to take an active role in learning and using new vocabulary. (B4)
b4)Use different tenses in conversation. (B4)

c - Professional and practical skills:

On successful completion of the course, the student should be able to:
c 1)Write paragraphs and peer edit them using error detection. (C12)
c 2)communicate with each other and with the professor. (C11)
c 3)Use different tenses in conversation. (C11)
c 4)Brainstorm ideas for homework writing. (C12)

d - General and transferable skills:

On successful completion of the course, the student should be able to:
d1- Work in a team and involve in group discussion. (D1), (D2), (D3)
d2- Communicate effectively and present data and results orally and in written form. (D1), (D2), (D3), (D6)
d3- communicate effectively in written and oral forms.(D3), (D7)
d4- Search for information's in references and in internet. (D4), (D7)
d5- Practice self-learning. (D4), (D7), (D8)

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A9, A10
B	Professional and practical skills	B4
C	Intellectual skills	C11, C12
D	General and transferable skills	D1, D2, D3, D4, D6, D7, D8

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
Computer Hackers	2		
At the Doctor's Reviewing tenses Reading	2		
At the Doctor's(to be continued) Grammar: perfect tenses& prefixes	2		
Global Warming Reading Speaking : English communication skills Suffixes & adj.&adv.	2		
Computer Addiction Reading: 53-55 Seaking: discussing the topic Grammar: adjectives	2		
Earthquake Reading: 59-61 Grammar: Suffixes	2		
Words and their Stories Reading Grammar: wh-questions and negatives	2		
Revision **7th week Exam**	2		
Describing People &Things **Reading :** **Grammar:**adj.& adv	2		

Describing People &Things (to be contiued) **Reading :** **Grammar : relative clauses**	2		
Qualities and Flaws Speak**:** dicussing qualities and flaws of each one (pair work **Grammar:** Possession Pronouns+ Adjectives	2		
Qualities and Flaws (to be continued) **List. & Speak:**dicussing the topic	2		
People Idioms **Grammar:**gerund "& to infinitive & adjectives with prepositions	2		
English proverbs **Grammar: problem verbs**	2		
Total hours	**28**		

4 - Teaching and Learning and Assessementmethods:

Course ILO's		Teaching Methods										Learning Methods				Assessement Method							
		Lecture	Warming up	Discussions	Tutorials	Problem solving						Researches and Reports	Modeling and Simulation			Written Exam	Class work	Quizes	Class participation	Assignments			
Knowledge & Understanding	a1	1	1	1								1				1	1	1	1	1			
	a2	1	1	1								1				1	1	1	1	1			
	a3	1	1	1								1				1	1	1	1	1			
Intellectual Skills	b1	**1**	**1**	**1**								**1**				1	1	1	**1**	**1**			
	b2	**1**	**1**	**1**								**1**				1	1	1	**1**	**1**			
	b3	**1**	**1**	**1**								**1**				1	1		**1**	**1**			
	b4	1	**1**	**1**								**1**				1	1	1	**1**	**1**			
Applied Professional Skills	c1	1	1	1								1				1	1	1	1	1			
	c2	1	1	1								1				1	1	1	1	1			
	c3	1	1	1								1				1	1	1	1	1			
	c4	1	1	1								1				1	1	1	1	1			
General Tran. Skills	d1	1	1	1								1				1			1				
	d2		1	1								1							1				
	d3	1	1	1								1							1	1			
	d4	1	1	1								1											

	d5											1							1				

5- Assessment Timing and Grading:

Asesessement Method	Timing	Grade (Degrees)
Assignments and Reports	Bi-Weekly	20
Two Quizzes	5th and 10th	20
Mid-Term Exam	7-th Week	20
Written Exam	Sixteenth week	40
Total		100

6- List of references:

6-1 Course notes:

The English Language Book by Dr Neveen Samir , 2015

6-2 Required books

Shelton, James, Handbook for technical writing, NTC publishing Group, Illinois, USA, 1998.

6-3 Recommended books: Non

6-4 Periodicals, Web sites, etc.:

- http://www.bbc.co.uk/learningenglish
- http://www.rong-chang.com/
- http://legacy.australianetwork.com/studyenglish/

7- Facilities required for teaching and learning:

Library and Internet

Course coordinator: Dr. Neveen Samir
Head of the Department: Prof. Dr. Ashraf Taha
Date: September, 2019

Modern Academy
for Engineering and Technology in Maadi

Course Specification
MECN 002: Mechanics-2

A- Affiliation

Relevant program: Manufacturing Engineering and Production Technology BSc Program
Electronic Engineering and Communication Technology BSc Program
Computer Engineering and Information Technology BSc Program
Architecture Engineering and Building Technology BSc Program

Department offering the program: Manufacturing Engineering and Production Technology Department
Electronic Engineering and Communication Technology Department
Computer Engineering and Information Technology Department
Architecture Engineering and Building Technology Department

Department offering the course: Basic SciencDepartment

Date of specifications approval: June, 2018

B - Basic information

Title: Mechanics-2 **Code:** MECN 002 **Level:** First/Second. Semester: First / Second
Hours Credit/Total 3 hrs Lectures 2 hrs Tutorial 2 hrs

C - Professional information

1 – Course Learning Objectives:

By the end of this course the students should demonstrate the knowledge and understanding the geometry of motion to relate displacement, velocity, acceleration and time without reference to the cause of the motion. The study of the relation existing between the forces acting on a body to determine the forces required to produce a given motion.The end of this course the students should demonstrate the knowledge that the equation of motion together with the principle of kinetics to obtain the two additional methods of analysis the method of the work and energy and the method of impulse and momentum.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1- basic of dynamics like velocity, acceleration, total distance, average velocity and average speed(A1, A2).
a2- defention of differentiation and integration (A1)
a3- classification the particle's motion in straight line and in curved path and it's applications (A3,A5)
a4- understanding the dynamics system and the effect of forces on the system in different coordinates (A5).
a5- classification of two methods of kinetics, namely,the method of work and energy and method of impulse and momentum. (A4, A5)

b - Intellectual skills:

On successful completion of the course, the student should be able to.

b1- analyze and classify between the force acting on the system to get it's value and the principle of work and energy to get the velocity of the particle (B1, B2)
b2- classify and compare the different between the average velocity and average speed (B5, B13).

c - Professional and practical skills:
On successful completion of the course, the student should be able to:
c1- solve the equation of motion to get velocity,acceleration and total distance traveled at any time. (C1,C3)
c2- calculate the time of flight of projectile to get a target. (C1, C5).
c3- solve the equation of motion graphically.(C3)

d - General and transferable skills:
On successful completion of the course, the student should be able to:
d1- work in a team to solve problem as a search.(D1,D2)
d2- search for information in references and in internet (D2).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A2, A3, A4, A5
B	Professional and practical skills	B1, B2, B5, B13, B15
C	Intellectual skills	C1, C2, C3
D	General and transferable skills	D1, D2

3 – Contents

Topic	Lecture hours	Tutorial hours
➢ Rectilinear Motion of particles.	1	4
➢ Determination of the motion of a particle.	1	4
➢ Graphical Solution of Rectilinear Motion.	1	4
➢ Curvilinear Motion of particle, Free Flight Motion.	2	4
➢ Normal and Tangention.	1	4
➢ Plane Curvilinear Motion.	1	4
➢ Polar Coordinates.	1	4
➢ Kinetics of Particles, Force and acceleration.	2	4
➢ Kinetics of Particles Energy and Momentum Methods	2	4
➢ Motion under a conservative centeral force.	1	4
➢ Principle of Impulse and Momentum for particle.	1	2
Total hours	**14**	**42**

4 – Teaching, Learning and Assessementmethods:

Course ILO's		Teaching Methods										Learning Methods				Assessement Method							
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments					Researches and Reports	Modeling and Simulation			Written Exam	Practical Exam	Quizes	Term papers	Assignments			
Knowledge	a1	1			1	1						1				1		1	1	1			
	a2	1			1	3										1		1	1	1			
	a3	2			2	3						1				1		1	1	2			
	a4	1			1	1						1				1		1	1	1			
	a5	2			2											1		1	1	1			
Intellectual	b1	**2**			**2**											1		1		**1**			
	b2	**1**			**1**	**1**										1		1	**1**	**1**			
Applied	c1	1			1	3										1		1	1	1			
	c2	1			1											1		1	1	1			
	c3	1			1	1													1	1			
General	d1					1						1							1				
	d2											1							1				

5- Assessment Timing and Grading:

Asessement Method	Timing	Grade (Degrees)
Semister Work: seminars, assignments and reports	Bi-Weekly	20
Quizes	5th and 10th	20
Mid-Term Exam	7-th Week	20
Written Exam	Sixteenth week	40
Total		100

6- List of references:

6-1 Course notes: found

6-2 Required books:

F. Beer and Johnston Vector mechanics for Engineers, Dynamics, McGraw-Hill.

R.C. Hibbeler Engineering mechanics, Dynamics.

6-3 Recommended books: Non

6-4 Periodicals, Web sites, etc.

Basic of mechanical engineering, enginerring mechanics statics and dynamics, statics and dynamics hibbeler 12th edition.

Course coordinator: Dr Shimaa Lotfy
Head of the Department: Prof. Dr. Ashraf Taha
Date: September, 2019

Modern Academy
for Engineering and Technology in Maadi

Course Specification

MTHN103: Mathematics -3 (Differential Equations and Transforms)

A- Affiliation

Relevant program: Manufacturing Engineering and Production Technology BSc Program
Electronic Engineering and Communication Technology BSc Program
Computer Engineering and Information Technology BSc Program

Department offering the program: Manufacturing Engineering and Production Technology Department
Electronic Engineering and Communication Technology Department
Computer Engineering and Information Technology Department

Department offering the course: Basic Scienc Department
Date of specifications approval: June, 2018

B - Basic information

Title: Differential Equations and Transforms **Code:** MTHN103 **Level:** 1st (Sophomore) **Semester:** Third
Hours **Credit/Total** 3hrs **Lectures** 2hrs **Tutorial** 3hrs **Practical** —
Pre-requisite: MTHN002

C - Professional information

1 – Course Learning Objectives:

By the end of this course the students should demonstrate the basic concepts of the ordinary differential equations (O.D.E) and understanding a lot of methods to solve the different types of O.D.E. Furthermore, they should be able to study in this course the basic concepts of Laplace transform, Fourier series and Legendre and Bessel functions.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1- classification of O.D.E. (A1)
a2- solution of the O.D.E using suitable methods.(A1,A5)
a3- rules of Laplace transform.(A1,A2,A5)
a4- rules of inverse Laplace transform. (A1,A2,A5)
a5- fourier series and its applications in applied engineering problems. (A1,A2,A5)
a6- basic concepts of Legendre function.(A1,A5)
a7- basic concepts of Bessel function.(A1,A5)

b - Intellectual skills:

On successful completion of the course, the student should be able to.
b1- choose the suitable methods for solving O.D.E. (B1,B2,B7)
b2- apply rules of Laplace transform and its inverse to Solve O.D.E and integral equations. (B1, B2, B3, B7)
b3- make analysis for electrical problem using Fourier series. (B1, B2)
b4- solving problems on Legendre and Bessel functions. (B1,B2)

c - Professional and practical skills:

On successful completion of the course, the student should be able to:
c1- apply O.D.E in electrical and mechanical problems. (C1, C12)
c2- apply Laplace transform in electrical and mechanical problem. (C1, C12)
c3- apply Fourier series in electrical and mechanical problem. (C1, C12)

d - General and transferable skills:
On successful completion of the course, the student should be able to:
d1- communicate effectively. (D3)
d2- search for information. (D7)

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A2, A5
B	Professional and practical skills	B1, B2, B3, B7
C	Intellectual skills	C1, C12
D	General and transferable skills	D3, D4

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
➢ Definitions, order, degree.	1	1	—
➢ 1st order differential equations, 2nd order and n th order differential equations with constant coefficients.	6	10	—
➢ Non homogeneous D.E., undetermined coefficient method.	6	10	—
➢ Variation of parameters, Euler equations, piratical D.E.	3	4	—
➢ Laplace transform, 1st and 2nd shifting theorem.	4	6	—
➢ Laplace transforms of derivative and integrals, inverse Laplace transforms, convolution, applications.	4	6	—
➢ Fourier series, half rang expansion, Legendre and Bessel functions.	4	5	—
Total hours	**28**	**42**	—

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods				Learning Methods	Assessment Method		
		Lecture	Discussions and seminars	Tutorials	Problem solving	Researches and Reports	Written Exam	Quizzes	Assignments
Knowledge	a1	1	1	1	1				1
	a2	1		1	1	1	1	1	1
	a3	1	1	1	1	1	1	1	1
	a4	1	1	1	1	1	1	1	1

	a5	1		1	1		1	1	1
	a6	1	1	1	1		1	1	1
	a7	1	1	1	1		1	1	1
Intellectual	b1	1	1		1		1	1	1
	b2	1		1	1		1	1	1
	b3	1	1	1	1	1	1	1	1
	b4	1			1	1	1	1	1
Applied	c1	1	1			1			
	c2	1	1			1			
	c3	1	1		1	1			
General	d1		1	1		1			1
	d2	1			1	1			1

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	40
Mid-Term Exam	6-th Week	20
Written Exam	Sixteenth week	40
Total		100

6- List of references:

6-1 Course notes:

Essawi, A. M. and El-Sayed, A. T. (2013) Differential Equations and Transforms. Cairo: MAM Press

6-2 Required books

Kreyszig, E. (1980) Advanced Engineering Mathematics. John Wiley, New York.

6-3 Recommended books:

Wylie, C. R. and Barrett, L. C. (1996) Advanced Engineering Mathematics. McGraw-Hill.

6-4 Periodicals, Web sites, etc.

www.mathwords.com.
www.khanacademy.org/math/differential-equations
www.sosmath.com/diffeq/diffeq.html

7- Facilities required for teaching and learning:

- Library
- Internet

Course coordinator: Prof.Dr. Ashraf Taha EL-Sayed
Head of the Department: Prof. Dr. Ashraf Taha
Date: September, 2019

Modern Academy
for Engineering and Technology in Maadi

Course Specification

PHYN002: Physics II

A- Affiliation

Relevant program: Manufacturing Engineering and Production Technology BSc Program
Electronic Engineering and Communication Technology BSc Program
Computer Engineering and Information Technology BSc Program
Architecture Engineering and Building Technology BSc Program

Department offering the program: Manufacturing Engineering and Production Technology Department
Electronic Engineering and Communication Technology Department
Computer Engineering and Information Technology Department
Architecture Engineering and Building Technology Department

Department offering the Course: Basic Sciences Department
Date of specifications approval: June, 2018

B - Basic information

Title: Physics-2 **Code:** PHYN002 **Level:**Senior2, Second Semester
Credit Hours: 3 **Lectures:** 2 **Tutorial/Exercise:**1 **Practical:** 2
Pre-requisite: PHYN001

C - Professional information

1 – Course Learning Objectives:

By the end of this course the students should be able to apply, demonstrate the knowledge and understanding of the concepts of the electricity and magnetism and learn the main laws of electromagnetism, understanding how to connect the actual phenomena with the theory, and learn the fundamentals of physical optics.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1- Fundamental and basic law of applications in electricity, magnetism and electromagnetism (A1 and A3) .
a2- Gausses law in electricity for different type of charged bodies (A1 and A3).
a3- Laws of electric capacitors and effect of dielectric (A4 and A5).
a4- Direct current, resistance and solution of simple electric circuits and kerchief's laws (A4 , A5, A13, A14, and A15)
a5- Analogy between magnetic field and electric field., and application of Ampere's law, Gausse's law in magnetism (A3, A4, A14 and A15) .
a6- Magnetic properties of matter (A3, A5, A13, and A15).
a7- Fundamental theories of Electro-magnetic waves and main physical phenomena of physical optics (interference, diffraction and polarization) (A25) .

b - Intellectual skills:

On successful completion of the course, the student should be able to.

b1- Investigate electric force and electric field (using Gauss's law) and select the proper manner to solve problem (B2, B3, B4, and B13).
b2-Study of capacitors' and dielectric effect, uses of capacitors, and use Kirchhoff's laws to solve simple electric circuits (B3, B5, B6, and B15).
b3- Investigate and compare electric field, magnetic field, and magnetic force using Gauss law in magnetism and Ampere's law; studying the nature of each, and identify magnetic properties and studying electromagnetic wave (B3, B5, and B15).

c - Professional and practical skills:

On successful completion of the course, the student should be able to:
c1- Identify ohms law practically, and comparison between two nearly equal resistance by carry-foster bridge (C1, C5, C8, and C11).
c2- Determine time constant for (Rc) circuits (C1, C5, and C11).
c3- Determine power, focal length for lenses and mirrors (convex and concave) (C1, C5, and C11).
c4- Perform a physical experiment (Absorption co-efficient, polarization and Newton's rings) (C1,C5, C11, andC14).

d - General and transferable skills:

On successful completion of the course, the student should be able to:
d1- Write technical reports(D5)
d2- Use libraries information's in subjects (D1)
d3- Use the E-mail and internet (D3, D4, and D7).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A3, A4, A5, A13, A14, A15, A25
B	Intellectual skills	B2, B3, B4, B5, B6, B13, B15
C	Professional and practical skills	C1, C5, C8, C11, C14
D	General and transferable skills	D1, D3, D4,D5, D7

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
➢ Charge and Matter, The Electric Field, Gauss' law	2	1	2
➢ Gauss's law, Electric Potential	2	1	2
➢ Gauss's law applications	2		2
➢ Capacitors and Dielectric	2	1	2
➢ Current and Resistance, Electromotive force and Circuits	2	1	2
➢ The Magnetic Field, Ampere's Law	2	1	2
➢ Ampere's law, Inductance	2	1	2
➢ Magnetic Properties of matter	2	1	2
➢ Magnetic Properties of matter, Electromagnetic Waves	2	1	2
➢ Electromagnetic Waves	2	1	2
➢ Electromagnetic Waves, Physical Optics, Polarization of light	2	1	2
➢ Polarization of light	2	1	2
➢ Interference of light	2	1	2
➢ Interference of light, Diffraction of light	1	1	2
➢ Diffraction of light, Some applications	1	1	2
Total hours	**28**	**14**	**28**

4- Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory& Experiments					Researches and Reports	Modeling and Simulation			Written Exam	Practical Exam	Quizzes	Term papers	Assignments			
Knowledge & Understanding	a1	1		1	1	1	1					1				1	1	1	1	1			
	a2	1			1	1										1		1	1	1			
	a3	1			1	1	1									1	1	1	1	1			
	a4	1			1	1	1									1	1	1	1	1			
	a5	1		1	1	1						1				1			1	1			
	a6	1		1	1	1						1				1			1	1			
	a7	1		1	1	1	1					1				1	1		1	1			
Intellectual Skills	b1	1			1	1										1		1	1	1			
	b2	1			1	1										1		1	1	1			
	b3	1		1	1							1							1				
Applied Professional Skills	c1	1			1		1					1					1		1	1			
	c2	1			1	1	1					1					1		1	1			
	c3	1			1		1					1					1		1	1			
	c4	1			1		1					1					1		1	1			
General Tran. Skills	d1	1		1		1						1							1	1			
	d2			1								1							1	1			
	d3			1								1							1	1			

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: seminars, quizzes assignments and reports	Bi- Weekly	20
Mid-Term Exam	8-th Week	20
Practical Exam	Fifteenth week	20
Written Exam	Sixteenth week	40
Total		100

6- List of references:

6-1 Course notes: Non

6-2 Required books

M. El- Tawab Kamal and Abo- Elyzeed B. Abo- Elyzeed, ***Electricity, Magnetism and Optics Physics***

6-3 Recommended books:

- David Halliday, Robert Resnick, JearlWallker, ***Fundamentals of Physics***, John Wiley, New York, 1993.
- Raymond A. Serway, ***Physics for Scientists and Engineers with Modern Physics***, 3rd ed. Wiely, New Yourk, 1990.

6-4 Periodicals, Web sites, etc.

Non

7- Facilities required for teaching and learning:

- Physics Lab.
- Computer, and Data show

Course coordinator:	Dr. M El- Tawab Kamal
Head of the Department:	Prof. Dr. Ashraf Taha
Date:	September, 2019

Modern Academy for Engineering

and Technology in Maadi

Course Specification

MNFN003: Principle of Production Engineering

A- Affiliation

Relevant program:	Manufacturing Engineering and Production Technology BSc Program
Department offering the program:	Mechanical Engineering Department Electrical Engineering Department Architectural Engineering Department
Department offering the course:	Mechanical Engineering Department
Date of specifications approval:	November, 2018

B - Basic Information

Title: Principle of Production Engineering **Code:** MNFN003 **Year/level:** Level zero

Credit Hours: 3 **Lectures:** 2 **Tutorial/Exercise:**-

Practical: 3 **Total:** 5

Pre-requisite: MNFN 001

C - Professional Information

1 – Course Learning Objectives:

By the end of this course the students should demonstrate the knowledge and understanding of the production system and different methods of production by cutting and non-cutting processes theoretically and practically.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1- Basic production methods related to casting, metal forming processes, welding and metal cutting (A1)

a2- Design pattern, allowances in casting & solidification (A4).

a3- Fundamental of centrifugal casting process (A2)

a4- Classification of welding process (A1).

a5- Basic methods of hot and cold forming (A1)

a6- Applications of metal cutting processes (A1)

b - Intellectual skills:

On successful completion of the course, the student should be able to.

b1- Select the proper manufacturing process for a specific product (B2)

b2- Design the pattern for sand casting (B3)

b3- Choose the suitable welding method or different joining (B18)

b4- Use the principle of production engineering in producing good quality cheap product (B10, B2)

c - Professional and practical skills:

On successful completion of the course, the student should be able to:

c1- Solve some simple production problems related to method of production selection (C3)

c2- Use the studied manufacturing methods in producing prototypes during practical hours (C7).

c3- Collect, record and submitting data about production engineering (C1).

d - General and transferable skills:

On successful completion of the course, the student should be able to:

d1- Work in a team and involve in group discussion (D1, D3).

d2- Communicate effectively and present data and results orally (D3, D9).

d3- Search for information's in references and in internet (D7).

d4- Practice self-learning.(D7,D9).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1,A2,A4.
B	Professional and practical skills	B2,B3,B10,B18.
C	Intellectual skills	C1, C3,C7.
D	General and transferable skills	D1,D3,D7,D9.

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
➢ Role of production engineering, production system objective, types of industries, classification of manufacturing processes .	2		
➢ Sand casting, melting of metal & furnaces. Solidification, pattern allowances, sand molding & gating system. Die casting, centrifugal & investment casting.	6		12
➢ Types of welding, oxy- acetylene welding, electric- arc welding, submerged arc welding, MIG, TIG, resistance welding, soldering & brazing	5		10
➢ Hot & cold forming, rolling, extrusion, wire drawing & sheet metal forming	5		5
➢ Metal cutting processes (Turning, milling, shaping, grinding and drilling)	10		15
Total hours	**28**		**42**

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations &	Discussions &	Tutorials	Problem solving						Modeling	Self-learning					Seminars	Quizzes	Reports	Mid-Term Exam	Practical Exam	Written Exam
Knowledge & Understanding	a1	x	x	x															x	x	x	x	x
	a2	x	x	x								x							x	x	x	x	x
	a3	x	x	x								x							x	x	x	x	x
	4	x	x	x								x											
	a5	x	x	x								x							x	x		x	x
	a6	x	x	x								x							x	x		x	x
Intellectual Skills	b1	x	x	x															x	x	x	x	x
	b2	x	x	x								x							x	x	x	x	x
	b3	x	x	x															x	x	x	x	x
	b4	x	x	x															x	x			x
Ap	c1	x		x																	x	x	x

	c2	x	x																	x	x	x
	c3	x	x									x							x	x		x
General Trans. Skills	d1		x	x																		
	d2			x														x				
	d3																		x			
	d4											x									x	

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	20
Mid-Term Exam	6-th Week	20
Practical Exam	Fifteenth week	20
Written Exam	Sixteenth week	40
Total		100

6- List of references:

6-1 Course notes: Lecture notes & workshop training notes

6-2 Required books: Serope Kalpakjiam," Manufacturing Engineering and technology", prentice hall, 2010

6-3 Recommended books: Non

6-4 Periodicals, Web sites, etc.:

7- Facilities required for teaching and learning:

- Lecture room , and workshops

Course coordinator: Prof. Dr. Ahmed Kohail
Dr. Maher Khalifa

Head of the Department: Prof. Dr.. Nabil Gad Alla

Date: November, 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specification
CMPN010: Program Design and Computer Languages

A- Affiliation

Relevant program: Computer Engineering and Information Technology BSc Program
Electronic Engineering and Communication Technology BSc Program
Manufacturing Engineering and Production Technology BSc Program
Architectural Engineering and Building Technology BSc Program

Department offering the program: Architecture Engineering and Building Technology Department.
Electronic Engineering and Communications Technology Department
Computer Engineering and Information Technology Department
Manufacturing Engineering and Production Technology Department

Department offering the course: Computer Engineering and Information Technology Department

Date of specifications approval: December 2018

B - Basic information

Title: Program Design and Computer Languages **Code:** CMPN010 **Year/level:** Freshman - Fall, Spring and Summer Semesters

Credit Hours: 4 **Lectures**: 2 **Tutorial**: 3 **Practical**: 2 **Total**: 7

Prerequisite: None

C - Professional information

1 – Course Learning Objectives:

By the end of this course the students should demonstrate the knowledge and understanding of the concepts of programming, the steps of solving problems using flowcharts or using the C++ programming language. They should be able to develop and enhance programming using the Microsoft Visual C++ software (embedded in the Microsoft Visual Studio software package).

2 - Intended Learning Outcomes (ILOS)

a – Knowledge and understanding:

By the end of this course the student should have the following Knowledge:

a1- Steps for solving programs by computer programs and flowcharts (A1, A2, A4, A15).
a2- Program structure in C++ (A4, A15, A18).
a3- Data types, Data declaration (Variables and Constants) in C++ (A16, A18).
a4- Different Categories of Operators and their precedence in C++ (A1, A13).
a5- Control Structures in C++ (Decision and Loop Constructs) (A4, A5).
a6- Arrays, Pointers, References, and dynamic allocation (A16, A18).
a7- Functions and types of calling (by value, by reference) in C++ (A4, A16, A18).
a8- Structures, Unions, Enumeration, User-defined data types and ADT (Abstract Data Types) (A4, A15, A16).
a9- Object-Oriented Programming (OOP) concepts and terminologies (A5, A8, A16, A18).
a10- Input and Output Files (File I/O s), I/O stream, strings and recursion (A5, A16, A18).

b – Intellectual Skills:

On successful completion of the course, the student should be able to.

b1-Investigate on a Visual C++ program in a similar way to other computer programming tools (B1, B13, B14).
b2-Manipulate different data types (B4, B18, B19).
b3- Analyse the problem required to be solved and design the appropriate C++ program to solve this problem (B1, B2, B3, B13)
b4-Manipulate the different control structures; investigate decisions and loops suitable for solving the problem (B2, B7).

b5- Manipulate different C++ structures (Arrays, Structures, Unions and Classes) for different problems (B3, B7, B18).
b6-Investigate the new programming interface and develop to the Object- Oriented Programming concepts (B17, B18).
b7-Manipulate input and output files (for reading from and writing into these files respectively) (B4, B19).

c - Professional and practical skills:

On successful completion of the course, the student should be able to.
c1- Install and use the Visual C++ 2010 (or 2012) software (C6, C14).
c2- Develop and Produce a solution to the problem through flowcharts and C++ programs (C1, C4).
c3-Solve different engineering problems related to the artificial intelligent systems, microcontroller systems, operating systems and their basic elements (C1, C5, C6, C15).
c4- Design and implement C++different structures (C2, C3, C4, C13).
c5- Apply the concepts of Object –Oriented Programming for solving different engineering problems (C2, C3, C4, C5

d - General and transferable skills:

On successful completion of the course, the student should be able to:
d1- Work in a team and involve in group discussion and seminars (D1, D2, D3).
d2- Communicate effectively and present data and results orally and in written form (D3, D4).
d3- Use ICT facilities in presentations, and manage resources efficiently (D4, D5).
d4- Search for information's in references, journals and in internet (D7).
d5- Practice self-learning (D7, D9).

Co Course Contribution in the Program ILO's

ILO's		**Program ILO's**
A	Knowledge and understanding	A1, A2, A4, A5, A8, A13, A15, A16, A18
B	Intellectual skills	B1, B2, B3, B4, B7, B13, B14,B17,B18, B19
C	Professional and practical skills	C1, C2,C3,C4,C5, C6, C13, C14,C15
D	General and transferable skills	D1, D2, D3, D4, D5,D7, D9

3 – Contents

Topic	**Lecture hours**	**Tutorial hours**	**Practical hours**
➢ Steps for solving programs by computer programs	2	2	2
➢ Program documentation and flow charts	2	2	2
➢ Program structure in C++	1	2	1
➢ Data types and declaration in C++	2	2	2
➢ Input/output in C++ and I/O stream class	1	2	1
➢ I/O manipulation	1	2	1
➢ Operators and precedence in C++	2	2	2
➢ Decision (Selection) Constructs in C++	2	3	2
➢ Loops (Iterations) in C++	2	3	2
➢ Arrays, Pointers, References, and dynamic allocation	2	3	2
➢ Functions in C++, calling functions (by value, by reference)	2	3	2
➢ Structures, Unions, Enumeration, and user-defined data types	2	3	2
➢ Abstract data types (ADT)	1	2	1

➢ Concepts and Terminologies of Object-Oriented Programming (OOP)	1	2	1
➢ Classes and objects	1	2	1
➢ Constructors, destructors, friend functions	1	2	1
➢ Polymorphism, encapsulation, inheritance	1	2	1
➢ File I/O, I/O stream, strings, recursion	2	3	2
Total hours	**28**	**42**	**28**

4 - Teaching and Learning and Assessment methods:

Course ILO's		**Teaching Methods**										**Learning Methods**				**Assessment Method**							
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments					Researches and Reports	Modeling and Simulation			Written Exam	Practical Exam	Quizzes	Term papers	Assignments			
Knowledge &Understanding	a1	1	1	1		1						1				1		1	1	1			
	a2	1	1		1											1		1	1	1			
	a3	1	1		1		1					1				1		1	1	1			
	a4	1	1		1		1					1				1	1	1	1	1			
	a5	1	1		1		1					1	1			1	1	1	1	1			
	a6	1	1	1	1		1					1				1	1	1	1	1			
	a7	1	1	1	1		1					1	1			1	1	1	1	1			
	a8	1	1		1		1					1				1	1	1	1	1			
	a9	1	1	1	1		1					1	1			1	1	1	1	1			
	a10	1	1		1		1					1				1	1	1	1	1			
Intellectual Skills	b1		1	1			1						1				1	1	1	1			
	b2	1	1		1		1									1		1	1	1			
	b3	1	1	1	1	1						1				1		1	1	1			
	b4	1	1		1	1	1					1				1	1	1	1	1			
	b5	1	1	1	1		1					1	1			1	1	1	1	1			
	b6	1	1	1	1		1					1	1			1	1	1	1	1			
	b7	1	1		1		1					1				1		1	1	1			
Applied Professional Skills	c1						1										1						
	c2						1										1						
	c3						1										1						
	c4						1										1						
	c5						1										1						
	d1																	1		1			

	d2																1		1			
	d3																1		1			
	d4																1		1			
	d5																1		1			

5- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7-th Week	20
Semester Work	Quizzes	4 Quizzes (every 3 weeks)	8
	Reports	Two reports per semester	4
	Assignments	Bi-Weekly	8
Practical Exam		Fifteenth week	20
Written Exam		Sixteenth week	40
Total			100

6- List of references
6-1 Course notes:
Lecture notes and handouts

6-2 Required books:
Walter Savitch, (2006) Problem Solving with C++, Pearson Education Inc.
Deitel & Deitel, (2001) C++ How to program, Prentice Hall.
Al Stevens, (2000) C++ Programming Bible, IDG.

6-3 Recommended books:

C++ Essentials, Sharam Hekmat, (2005) Programming Soft Corporation,www.pragsoft.com,
6-4 Periodicals, Web sites, etc.:

http://www.cplusplus.com/.

7- Facilities required for teaching and learning:
Computer Lab.
Course coordinator: Dr. Ehab ElShimy
Head of the Department: A. Prof. Dr. Wafaa Boghdady
Date: December 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specification

ARCN110: Civil Engineering Technology

A- Affiliation

Relevant program/s:	Electronic Engineering and Communication Technology BSc Program Computer Engineering and Information Technology BSc Program
Department offering the program:	Architecture Engineering and Building Technology Department Electronic Engineering and Communication Technology Department Computer Engineering and Information Technology Department
Department offering the course:	Architecture Engineering and Building Technology Department
Date of specifications approval:	December 2018

B - Basic Information

Title: Civil Engineering **Code:** ARCN110 **level:** sophomore, Third Semester
Credit **Credit Hours:3** **Lectures: 2** **Tutorial/Exercise: 2** **Total:** 4
Pre-requisite: None

C - Professional Information

1 – Course Learning Objectives:

The course aims at introducing students to the basic principles of structure, Introduce the principles of Civil engineering technology and Studying civil engineering applications on different constructions.

2 - Intended Learning Outcomes (ILOS)

A - Knowledge and understanding:

By the end of the course the student should acquire knowledge of:

a1-The technology of building construction methods (A3, A4, A8)
a2- Soil mechanics science (A3, A4, A8)
a3- Process of surveying (A4)
a4-Theory of structures (A4)
a5- Quantities of civil construction works (A7)

B - Intellectual skills:

By the end of the course the student should be able to:

b1-Analyze simple construction projects (B1)
b2-Choose suitable solution from different alternatives (B2, B9)
b3- Applying different equations to solve civil projects (B2, B9)

C- Professional and practical skills:

By the end of the course the student should be able to undertake:
c1- Perform longitudinal and transverse leveling. (C1)
c2- Compute quantities of civil works. (C1, C7)
c3- Design using civil standard systems. (C2, C3)
c4- Calculate quantities of earth excavation and fill. (C5)

D - General and transferable skills:
By the end of the course the student should be able to:
d1- Application of civil technology in every day life. (D6)

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A3,A4,A7,A8
B	Intellectual skills	B1,B2,B9
C	Professional and practical skills	C1,C2,C3,C5,C7
D	General and transferable skills	D6

3 – Contents

Topic	Lecture hours	Practical hours	Tutorial hours
• Introduction	1		1
• Fundamentals of surveying	1		1
• Measurement of areas from maps and measurement of angles	2		2
• Leveling	2		2
• Computation of volumes	2		2
• Soil mechanics	2		2
• Highway and airports engineering	2		2
• Railway engineering	2		2
• Environmental engineering	2		2
• Building construction	2		2
• Foundations	2		2
• Building materials	2		2
• Quantities and specifications	2		2
• Isolating layers	2		2
• General revision	2		2
Total hours	**28**		**28**

4 - Teaching and Learning and Assessement methods:

Code	Teaching Methods	Learning Methods	Assessment Method

		Lecture	Presentations & Movies	Discussions &seminars	Tutorials	Problem solving	Laboratory & Experiments	Projects	Researches and Reports	Modeling and Simulation	Site Visits	Discovering	Written Exam	Practical Exam	Quizzes	Term papers	Assignments
Knowledgea4	a1	1			1	1			1				1		1	1	1
	a2	1			1	1		1	1							1	1
	a3	1	1		1	1		1	1				1		1	1	1
	a4	1			1	1		1					1		1	1	1
	a5	1			1	1		1	1	1			1			1	1
Intellectua l	b1		1	1				1	1	1						1	
	b2			1	1	1		1								1	1
	b3				1	1		1	1				1		1	1	1
Applied	c1							1		1							
	c2				1	1		1					1		1	1	1
	c3				1	1		1	1	1			1		1	1	1
	c4				1	1		1	1				1		1	1	1
General ran	d1		1			1		1			1					1	1

5- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7-th Week	20
Semester Work	Quizzes	4 Quizzes (every 3 weeks)	16
	Reports	Two reports per semester	14
	Assignments	Bi-Weekly	10
Practical Exam		Fifteenth week	20
Written Exam		Sixteenth week	40
Total			100

6- List of references:

6-1 course notes

none

6-2 Required books

Wrigh Wldkhak,Theory of Structures, Dar Elmaaref, 1995

6-3 Periodicals, Web sites

www.ACI.com

7- Facilities required for teaching and learning:

Projectors and data show

Course coordinator: Dr. Tamer Seliem

Head of the Department: Associate Professor: Ebrahim Goda

Date: September , 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specification
ELCN 060: Summer Training-1

A- Affiliation

Relevant programs:	Electronic Engineering and Communication Te chnology BSc Program.
Department offering the program:	Electronic Engineering and Communication Technology Department
Department offering the course:	Electronic Engineering and Communication Technology Department
Date of specifications approval:	December, 2018

B - Basic Information

Title: Summer Training Level 0	**Code:** ELCN 060	**Level:** (0), First Summer		
Credit Hours: 3	**Pre-requisite:** Nothing			
Contact Hours:	**Lectures:** 2	**Tutorial:** none	**Laboratory:** 5	**Total:** 7

C - Professional Information

1 – Course Learning Objectives:

In summer training we introduce the basics elements, units of the electrical circuits and the student will be able to connect ant test different electrical circuits on the bread board. Fundamental equation such as Ohm's law is understood. It is a relationship of fundamental quantities that can have application in the most advanced setting. Introduce the Basic of electrical and electronics elements (Diode, Capacitor, resistance, Bipolar Junction Transistor…). Implement modern electronic application circuit in a Bread board and Printed circuit board.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understandin of:

a1- Understanding the basic electronic and electrical elements (resistor, capacitor, inductor, BJT, MosFET). (A3, A4)

a2- Introduce basic electrical concept (Ohm's Law, Kirchhoff's circuit law, Series and parallel resistor circuit, voltage and current divider). (A3, A4).

a3- Understanding the operation of digital logic gates (AND, OR, NOR, NAND, XOR). (A3, A4)

a4- Understand the different electronic circuit using the basic electronic and electrical element. (A3, A4).

b - Intellectual skills:

On successful completion of the course, the student should be able to:

b1 – Understand the characteristic of basic electrical & electronic elements. (B2, B3< B9)

b2- understand the ohm's Law. (B2, B3, B9)

b3- Understand the concept of circuit analysis (Kirchhoff's circuit law, Series and parallel resistor circuit, voltage and current divider). (B2, B3, B9)

b4- Understanding the operation of digital logic gates (AND, OR, NOR, NAND, XOR). (B2, B3, B9).

c - Professional and practical skills:

On successful completion of the course, the student should be able to:

c1- introduce the basic electronic and electrical elements (resistor, capacitor, inductor, BJT, MosFET). (C1, C3)
c2- Implement circuit which introduce basic electrical concept (Ohm's Law, Kirchhoff's circuit law, Series and parallel resistor circuit, voltage and current divider). (C1, C3)
c3- Verify the truth tables of digital logic gates (AND, OR, NOR, NAND,XOR). (C1, C3)
c4- Implement the different electronic circuit using the basic electronic and electrical element. (555 Timer circuit, 10 minute alarm, power alarm). (C1, C3)

d - General and transferable skills:

On successful completion of the course, the student should be able to:
d1- Communicate effectively through assignments and e- mails. (D1, D3, D5)
d2- Effectively manage tasks, time, and resources. (D6)
d3- Search for information and engage in life-long self-learning discipline. (D7)

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A3, A4
B	Intellectual skills	B2, B3, B9
C	Professional and Practical Skills	C1,C3
D	General and transferable skills	D1, D3, D5, D6, D7

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
• Basic electronic and electrical elements		-	1
• Introduce basic electrical concept		-	1
• Operation of digital logic gates		-	1
• Implement the different electronic circuit		-	2
Total hours	**1**	**-**	**5**

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments					Brain storming	Self Learning	Researches and Reports		Midterm	Quizzes	Assignments	Written Exam	Practical Exam			
Knowledge & Understandin	a1	1	1																				
	a2	1	1	1								1											
	a3	1	1	1								1											
	a4	1		1		1								1									
Intelle ctual	b1					1						1											
	b2					1						1											

	b3					1						1										
	b4					1						1		1								
Applied Prof. Skills	c1		1	1			1					1								1		
	c2		1	1			1					1								1		
	c3			1			1					1								1		
	c4			1		1	1						1							1		
General Skills	d1																					
	d2																					
	d3			1									1	1								

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Practical Exam	Fifth day	Pass or Fail
Total		Pass Or Fail

6- List of references:

6-1 Course notes: Summer Training Level 0 "Theoretical part"

6-2 Required books

Boylestad, "Introductory circuit analysis", prentice Hall, 2003.

6-3 Recommended books: William. Hayat "Engineering Circuit analysis", Wiley, 2009.

7- Facilities required for teaching and learning:

- Lectures room equipped with OHP and data show facility.

Course coordinator: Dr. Sara Fouad Mohamed
Head of the Department: Prof. Dr. Shouman S.E.I.
Date: December, 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specification
ELCN 111: Electrical Circuit Analysis-1

A- Affiliation

Relevant program/s:	Electronic Engineering and Communication Technology BSc Program, Computer Engineering and Information Technology B.Sc. Program
Department offering the program:	Electronic Engineering and Communication Technology BSc Program. Computer Engineering and Information Technology B.Sc. Program
Department offering the course:	Electronic Engineering and Communication Technology Department
Date of specifications approval:	December, 2018.

B - Basic Information

Title: Electrical Circuit Analysis-1 **Code:** ELCN 111 **Level:** (1), Third Semester
Credit Hours: 3 **Pre-requisite:** MTHN 002, ELCN 060
Contact Hours: **Lectures:** 2 **Tutorial:**1 **Laboratory:** 2 **Total:** 5

C - Professional Information

1 – Course Learning Objectives:

The main objective of this Course is to introduce the basic concepts and theories of circuit analysis, operational amplifiers, natural response of RL and RC circuits, step response of first order RL and RC circuits, natural and step responses of RLC circuits, and sinusoidal steady - state power calculations.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of

a1- Basic concepts, ideas and laws of electrical circuit analysis. (A1, A4)
a2- Voltage, current, and power calculation for a simple resistive circuits. (A1, A5)
a3- Applications of Ohm's and Kirchhoff's Laws. (A1, A5)
a4- Series, parallel, and delta-star connections principles. (A1, A5)
a5- Different techniques of circuit analysis. (A1, A15)
a6- Operational-amplifier characteristics and applications. (A1, A15)
a7- Characteristics of a sinusoidal current and voltage. (A1, A8)
a8- Basic concepts of RL and RC circuits. (A1, A5)
a9- Basic concepts of RLC circuits. (A1, A5)

b - Intellectual skills:

On successful completion of the course, the student should be able to:

b1- Apply the Ohm's and K's laws. (B1, B2)
b2- Apply the powerful techniques of circuit analysis. (B1, B2, B3, B4)
b3- Use the operational-amplifier in different applications. (B5, B6, B7)
b4- Apply Thevenin's theorem. (B1, B2, B4)
b5- Apply the maximum power transfer theory. (B1, B2, B4)

c - Professional and practical skills:

On successful completion of the course, the student should be able to:

c1- Use different types of basic hand tools and different types of switches to construct a circuit. (C3, C5)
c2- Identify all types of electrical lamps and primary cells (Batteries) that are used in numerous circuits applications. (C1, C3, C5)
c3- Read and determine the value of the resistance and capacitance using color code. (C1, C5, C10)
c4- Use different symbols of circuits. (C1, C3, C5)
c5- Use and read the measured values shown by oscilloscopes, and laws principles. (C1, C6, C10)
c6- Construct simple circuits applying the learned laws and principles given in lectures. (C9, C10, C11)

d - General and transferable skills:

On successful completion of the course, the student should be able to:

d1- Communicate effectively through reports and e-mails. (D1, D2, D3)
d2- Effectively manage tasks, time, and resources. (D2, D6)
d3- Search for information and engage in life-long self-learning discipline. (D3, D7, D9)

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A4, A5, A8, A15
B	Intellectual skills	B1, B2, B3, B4, B5, B6, B7
C	Professional and Practical Skills	C1, C3, C5, C6, C9, C10, C11
D	General and transferable skills	D1, D2, D3, D6, D7, D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
• Units Dimensions and Standards.	2	1	2
• Circuit Variables and elements.	2	1	2
• Simple Resistive Circuit.	3	2	3
• Node Voltage Method.	2	1	2
• Mesh Current method	2	1	2
• Source Transformation and Supper Position Principle.	4	2	4
• Thevenin's Theorem.	3	2	3
• Operational Amplifiers.	4	2	4
• Inductance, Capacitance and Mutual Impedances.	2	1	2
• Response of RL and RLC Circuits.	4	1	4
Total hours	**28**	**14**	**28**

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments					Brain storming	Self-Learning	Researches and Reports		Midterm	Quizzes	Assignments	Written Exam	Practical Exam			
Knowledge & Understanding	a1	1				1						1				1		1	1				
	a2	1				1						1				1		1	1				
	a3	1				1						1				1		1	1				
	a4	1				1						1				1	1	1	1				
	a5	1				1						1				1		1	1				
	a6	1	1	1		1						1						1	1				
	a7	1	1	1		1						1					1	1	1				
	a8	1		1		1						1		1				1	1				
	a9	1	1	1		1						1		1				1	1				
Intellectual Skills	b1				1	1						1				1		1	1				
	b2				1	1						1				1		1	1				
	b3				1	1						1					1	1	1				
	b4				1	1						1						1	1				
	b5				1	1						1						1	1				
Applied Prof. Skills	c1						1													1			
	c2						1													1			
	c3						1													1			
	c4						1													1			
	c5						1													1			
	c6						1													1			
General Skills	d1						1																
	d2						1																
	d3						1																

5- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7-th Week	20
Semester Work	Quizzes	3rd and 9th Weeks	10
	Reports	Two reports per semester	Bonus 2 deg. per report
	Assignments	5th and 10th weeks	10
Practical Exam		Fifteenth week	20
Written Exam		Sixteenth week	40
Total			100

6- List of references:

6-1 Course notes:

- Electrical Circuit Analysis-1 “Theoretical part”.
- Electrical Circuit Analysis-1 “Practical part”.

6-2 Required books

- Boylestad, Introductory Circuit Analysis, Tenth Edition, 2003.
- David E. Jonson, Electrical Circuit Analysis, Prentice Hall, USA, 1999.

6-3 Recommended books:

- James W. Nilsson, and Susan A. Riedel, Electric Circuits, Pearson Education Inc., 8thEdition, 2008.

6-4 Periodicals, Web sites, etc.

- https://en.wikiversity.org/wiki/Electric_Circuit_Analysis.
- https://en.wikibooks.org/wiki/Electronics/DC_Circuit_Analysis.

7- Facilities required for teaching and learning:

- Lectures room equipped with OHP and data show facility.
- Computer lab installed by MATLAB and ORCAD software.

Course coordinator:	Prof. Dr. Said Refai.
	Dr. Haytham Gamal.
Head of the Department:	Prof. Dr. Shouman S.E.I.
Date:	December, 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specification
CMPN111:Logic Design-1

A- Affiliation

Relevant program: Electronic Engineering and Communication Technology BSc Program
Computer Engineering and Information Technology BSc Program

Department offering the program: Electronic Engineering and Communications Technology Department
Computer Engineering and Information Technology Department

Department offering the course: Computer Engineering and Information Technology Department

Date of specifications approval: December 2018.

B - Basic information

Title: Logic Design-1 **Code:** CMPN111 **Level:** Sophomore, First Semester

Credit Hours: 4 **Lectures:**3 **Tutorial/Exercise:**2 **Practical:**1 **Total**:6

Pre-requisite: MTHN 001

C - Professional information

1 – Course Learning Objectives:

The basic objective of this course is to give the students the main concepts of digital circuit construction and the different approaches to achieve the highest speed and the lowest cost of these circuits.

2 – Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1- The laws of Boolean algebra to simplify a complicated logic expression (A1, A2).
a2- Construction of the truth table for a special given problem (A2, A5).
a3- Expressing a logic function in the S.O.P and P.O.S algebraic forms and karnaugh map representation (A2, A5).
a4- Minimization of logic functions using K.M and Quine – Mc – Clusky's tabular method and realization using NAND and NOR gates only (A2, A3).
a5- Combinational modules used in digital systems like adders, de-multiplexers, multiplexers, decoder, encoder, parity checker and comparator circuits (A2, A3).
a6- Representation of simple sequential circuits using state diagram and state table (A2, A5).
a7- Sequential circuit elementary Flip-Flop circuits (A2, A5).
a8- Overcoming racing in synchronous sequential circuits using M.S or edge-triggered Flip-Flops (A2, A3).
a9- Sequential logic modules like registers, shift registers, and counters (A2, A3, and A14).
a10- Memory modules like combinational ROM and RAM sequential modules (A2, A3, and A14).

b - Intellectual skills:

On successful completion of the course, the student should be able to:

b1- Deduce a logic function for solving a given simple problem (B1, B2).
b2- Achieve a logic model which introduces a solution of a high-scale problem using combinational modules (B2, B3, and B4).
b3- Analyze the realization approaches using gate and modular designs and determine the measures for selection of any of them (B2, B3, and B4).
b4- Investigate the benefits of using a special Flip-Flop type for realizing a sequential circuit or using the asynchronous or the synchronous approach (B4, B8, and B12).
b5- Suggest a solution for an allocated sequential problem and report the merits of this solution (either higher speed of lower cost) (B4, B8, and B14).

c - Professional and practical skills:

On successful completion of the course, the student should be able to:

c1- Construct of a logic circuit using available logic gates satisfying minimum cost (C1, C2, and C3).
c2- Use the practical lab. Knowledge to construct the layout for a solution using modular design (C2, C3, and C6).
c3- Investigate the output performance for input sequence (C1, C2).
c4- Design a binary counter counting in an arbitrary input random sequence using any type of Flip-Flops (C3, C5).
c5- Design the associated circuits for fault detection in counter operation and presetting to a given initial state (C1, C3, and C5).

d - General and transferable skills:

On successful completion of the course, the student should be able to:
d1- Use internet, references and journals for searching information (D3, D7, and D9).
d2- Write a technical report for a given task and prepare its presentation (D3, D4, D6, and D7).
d3- Join teams (D1, D2, and D5).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A2, A3, A5, A14
B	Intellectual skills	B1, B2, B3, B4, B8, B12, B14
C	Professional and practical skills	C1, C2, C3, C5, C6
D	General and transferable skills	D1,D2,D3, D4, D5, D6, D7, D9

3 – Contents

	Topic	Lecture hours	Tutorial hours	Practical hours
1	Introduction	3	-	1
	• Basic Definitions.			
	• Laws of Boolean algebra.			
2	Logic Functions Representation & Realization	2	1	2
	Methods of representation of logic functions truth table, S.O.P and P.O.S).			
	• Realization of logic functions using AND-OR_NOT, NAND only and NOR only gate systems.	1	2	
	• Matching logic functions with gate systems.			
3	Logic function minimization	2	-	1
	• Using basic laws of Boolean.	1		
	• Using karnaugh map minimization.	1	-	1
	• Using Quine-Mc Clusky's Methods.	1		
	• Minimization of multiple-output Logic Functions.	1	-	1
4	Combinational logic modules	2	2	1
	• Half and full adders, Parallel adder connection, look ahead carry.			
5	Decoders and de-multiplexers	1	2	-
6	Encoders	1		
7	Data selectors (multiplexers)	1		
	• Parity checkers.	1	4	1
	• Read only memories.	2		
	• Binary comparators.	2		
8	Sequential logic circuit elements	2	2	1

	• State diagram and state table representation of sequential circuits.			
9	Asynchronous and synchronous sequential elements	2	3	1
	• S-R Flip-Flop, and J-K Flip Flop.			
	• D Flip-Flop, and T Flip Flop.	2	3	1
	• Racing in sequential circuits.	1		-
	• Master-slave and Edge-triggered Flip-Flops.	2	2	-
10	Sequential logic circuit modules	1		-
	• Introduction.			
	• Registers and shift registers	2	1	1
	• Asynchronous and synchronous counters	3	2	1
	• Counter using shift-registers (Johnson and ring counters)	2	1	
	• Random access memories (basic cell, addressing and read-write operations)	3	3	1
	Total hours	**42**	**28**	**14**

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods						Learning Methods		Assessment Method				
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments	Researches and Reports	Modeling and Simulation	Written Exam	Practical Exam	Quizzes	Term papers	Assignments
Knowledge & Understanding	a1	1			1					1				1
	a2	1			1	1				1		1		1
	a3	1			1	1	1			1		1		1
	a4	1			1	1		1		1				1
	a5	1	1				1			1	1	1		
	a6	1		1	1			1		1				1
	a7	1			1		1			1	1	1		
	a8	1		1				1		1				1
	a9	1	1		1		1			1	1	1		1
	a10	1		1			1			1	1	1		1
Intellectual Skills	b1	1			1	1				1		1		1
	b2	1		1		1		1		1				1
	b3	1		1				1		1				1
	b4	1		1				1		1		1		1
	b5			1		1		1		1				1
Applied Professional	c1	1			1	1		1		1		1		
	c2	1		1	1		1			1	1			1
	c3	1		1	1					1				

	c4	1			1	1	1	1		1	1	1		1
	c5	1		1		1	1			1	1			
General Tran. Skills	d1	1	1									1		1
	d2		1	1		1		1				1		1
	d3			1		1		1						

5- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7-th Week	20
Semester Work	Quizzes	4 Quizzes (every 3 weeks)	16
	Reports	Two reports per semester	14
	Assignments	Bi-Weekly	10
Practical Exam		Fifteenth week	20
Written Exam		Sixteenth week	40
Total			100

6- List of references:

6-1 Course notes: Digital logic circuit (Theoretical + Practical).

6-2 Required books:

Sanjay (2012) Analog and Digital Electronics

Mano, M.M, and Kime, C.R, (2014) Logic and Computer Design Fundamental", 4TH ed., Pearson.

6-3 Recommended books: Non

6-4 Periodicals, Web sites, etc.

- http://www.prenhall.com/mano.
- http://opencourses.emu.edu.tr/

7- Facilities required for teaching and learning: None.

Course coordinator: Ass. Prof. Dr. Wafaa Boghdady

Head of the Department: Ass. Prof. Dr. Wafaa Boghdady

Date: December 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specification
ELCN114: Modern Theory for Semiconductor Devices

A- Affiliation

Relevant program/s:	Electronic Engineering and Communication Technology BSc Program, Manufacturing Engineering and Production Technology BSc Program Computer Engineering and Information Technology B.Sc. Program
Department offering the program:	Electronic Engineering and Communication Technology Department Manufacturing Engineering and Production Technology Department Computer Engineering and Information Technology B.Sc. Program
Department offering the course:	Electronic Engineering and Communication Technology Department
Date of specifications approval:	December, 2018

B - Basic Information

Title: Modern Theory for Semiconductor Devices **Code:** ELCN 114 **Level:** (1), Third Semester

Credit Hours: 3 **Pre-requisite:** PHYN 002

Contact Hours: **Lectures:** 2 **Tutorial:**1 **Laboratory:**2 **Total:** 5

C - Professional Information

1 – Course Learning Objectives:

By the end of this course the students should demonstrate the knowledge and understanding of the theory of relativity, particle-wave duality, photoelectric effect and Compton scattering. They should understand basic concepts of quantum mechanics, application of infinity potential well, simple harmonic oscillator and the tunnel effect. They can be having a good learning about atomic structure and electronic configuration of elements, energy stats and spectra of molecules and solids.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understandin of:

a1- the particle-wave duality and photoelectric effect (A3, A8, A9).
a2- Compton scattering (A8, A9).
a3- the infinite potential well, simple harmonic oscillator and the tunnel effect (A1, A2).
a4- the atomic structure and electronic configuration of elements (A1, A3).
a5- the energy stats and spectra of molecules and solids (A1, A3).
a6- the energy bands of solids (A1, A3).
a7- the theory and structure electrical conduction of metals, insulator and semiconductors. (A1, A3, A8).

b - Intellectual skills:

On successful completion of the course, the student should be able to:
b1- apply on the photoelectric effect and Compton scattering (B4, B6, B7).
b2-deduce mathematical relations describing the energy of photon and electron (B1, B2, B12).
b3- deduce relations describing the collision between photon and electron (B4, B5. B7).

b4- classify and compare the different ways of the conductivity of elements (, B5, B7, B8).

c - Professional and practical skills:

On successful completion of the course, the student should be able to:

c1- Design, operate, test and maintain photocell (C1, C2, C8)
c2- Calculate the energy of electron and photon (C1, C2, C3).
c3- Use the light to introduce electric current (C7).
c4- design amplifiers and transformers (C1, C2, C4).
c5- make current and voltage rectification (C1, C11, C12).
c6- use experimental facilities to assemble and operate electronic circuits (C1:C4, C12).

d - General and transferable skills:

On successful completion of the course, the student should be able to:

d1- work in a team and involve in group discussion and seminars (D1, D3).
d2- communicate effectively and present data and results orally and in written form (D3).
d3- use ICT facilities in presentations (D4).
d4- search for information's in references and in internet (D7).
d5- practice self-learning (D7, D9).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A2, A3, A8, A9
B	Intellectual skills	B1, B2, B4, B5, B6, B7, B8, B12
C	Professional and Practical Skills	C1, C2,C3, C4, C7, C8, C11, C12
D	General and transferable skills	D1, D3, D4, D7, D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
• Introduction to quantum physics	2		2
• Classical and modern theory of light	1		2
• Plank's explanation for black body radiation	2	1	2
• Photo electric effect	1	1	2
• Compton experiment	2	1	2
• Compton scattering	2	1	2
• Particles behaving as a wave and particle wave complementarity	1	1	2
• Introduction to wave mechanics	2	1	2
• The uncertainty principle	1	1	2
• Wave function for free particle	1		
• Wave function of the particle	2	1	2
• The simple harmonic oscillator	2	1	2
• Scanning tunneling microscopy	2	1	
• Introduction to atomic physics	1		
• Models of atoms	2	1	2
• Bonding mechanisms	2	1	2
• Bonding in solids	1	1	
• Classical free electron model of metals	1	1	2

Total hours	**28**	**14**	**28**

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method								
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments					Researches and Reports	Modeling and Simulation			Written Exam	Practical Exam	Quizzes	Term papers	Assignments				
Knowledge & Understanding	a1	1	1	1	1		1					1				1		1	1	1				
	a2	1			1											1		1	1	1				
	a3	1			1											1		1	1	1				
	a4	1	1	1	1	1	1					1				1		1	1	1				
	a5	1					1									1	1	1	1	1				
	a6	1										1							1	1				
	a7	1		1	1	1						1	1						1					
Intellectual Skills	b1	1			1											1		1		1				
	b2	1			1	1										1		1	1	1				
	b3	1	1		1		1					1				1	1		1					
	b4	1	1		1		1					1				1	1	1	1	1				
Applied Prof. Skills	c1	1	1		1	1	1									1	1	1	1	1				
	c2	1			1											1		1	1	1				
	c3	1		1		1						1	1						1	1				
	c4	1			1	1											1		1	1				
	c5						1										1							
	c6						1										1							
General Skills	d1			1		1						1							1					
	d2		1	1								1	1						1					
	d3	1	1									1							1	1				
	d4	1	1	1								1												
	d5											1	1						1					

5- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7-th Week	20
Semester Work	Quizzes	3rd and 9th Weeks	10
	Reports	Two reports per semester	Bonus 2 deg. per report
	Assignments	5th and 10th weeks	10
Practical Exam		Fifteenth week	20
Written Exam		Sixteenth week	40
Total			100

6- List of references:

6-1 Course notes:

L. Soliman, Modern Theory for Semiconductor Devices, Lectures notes, Modern Academy, 2012.

6-2 Required books

Peter Y. Yu, Manuel Cordona, Fundamental of semiconductors: physics and Materials Properties, springer, London, 2010.

6-3 Recommended books:

- Jasprit Singh, Modern physics for engineers, WILEY-VCH Verlag GmbH & Co. KGaA, Weinheim, Germany, 2004.
- Charles E. Burkhardt · Jacob J. Leventhal, Foundations of quantum physics, Springer Science, Business Media, LLC, New York, 2008.

6-4 Periodicals, Web sites, etc.

Physics.exchange.com

www.iop.org

7- Facilities required for teaching and learning:

- Semiconductor Physics Lab.
- Library
- Internet

Course coordinator: Prof. Dr. Laila Soliman
Head of the Department: Prof. Dr. Shouman S.E.I.
Date: December, 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specification

MTHN103: Mathematics -3 (Differential Equations and Transforms)

A- Affiliation

Relevant program: Manufacturing Engineering and Production Technology BSc Program
Electronic Engineering and Communication Technology BSc Program
Computer Engineering and Information Technology BSc Program

Department offering the program: Manufacturing Engineering and Production Technology Department
Electronic Engineering and Communication Technology Department
Computer Engineering and Information Technology Department

Department offering the course: Basic Scienc Department
Date of specifications approval: June, 2018

B - Basic information

Title: Differential Equations and Transforms **Code:** MTHN103 **Level:** 1st (Sophomore) **Semester:** Third
Hours **Credit/Total** 3hrs **Lectures** 2hrs **Tutorial** 3hrs **Practical** —
Pre-requisite: MTHN002

C - Professional information

1 – Course Learning Objectives:

By the end of this course the students should demonstrate the basic concepts of the ordinary differential equations (O.D.E) and understanding a lot of methods to solve the different types of O.D.E. Furthermore, they should be able to study in this course the basic concepts of Laplace transform, Fourier series and Legendre and Bessel functions.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1- classification of O.D.E. (A1)
a2- solution of the O.D.E using suitable methods.(A1,A5)
a3- rules of Laplace transform.(A1,A2,A5)
a4- rules of inverse Laplace transform. (A1,A2,A5)
a5- fourier series and its applications in applied engineering problems. (A1,A2,A5)
a6- basic concepts of Legendre function.(A1,A5)
a7- basic concepts of Bessel function.(A1,A5)

b - Intellectual skills:

On successful completion of the course, the student should be able to.
b1- choose the suitable methods for solving O.D.E. (B1,B2,B7)
b2- apply rules of Laplace transform and its inverse to Solve O.D.E and integral equations. (B1, B2, B3, B7)
b3- make analysis for electrical problem using Fourier series. (B1, B2)
b4- solving problems on Legendre and Bessel functions. (B1,B2)

c - Professional and practical skills:

On successful completion of the course, the student should be able to:
c1- apply O.D.E in electrical and mechanical problems. (C1, C12)
c2- apply Laplace transform in electrical and mechanical problem. (C1, C12)
c3- apply Fourier series in electrical and mechanical problem. (C1, C12)

d - General and transferable skills:
On successful completion of the course, the student should be able to:
d1- communicate effectively. (D3)
d2- search for information. (D7)

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A2, A5
B	Professional and practical skills	B1, B2, B3, B7
C	Intellectual skills	C1, C12
D	General and transferable skills	D3, D4

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
➢ Definitions, order, degree.	1	1	—
➢ 1st order differential equations, 2nd order and n th order differential equations with constant coefficients.	6	10	—
➢ Non homogeneous D.E., undetermined coefficient method.	6	10	—
➢ Variation of parameters, Euler equations, piratical D.E.	3	4	—
➢ Laplace transform, 1st and 2nd shifting theorem.	4	6	—
➢ Laplace transforms of derivative and integrals, inverse Laplace transforms, convolution, applications.	4	6	—
➢ Fourier series, half rang expansion, Legendre and Bessel functions.	4	5	—
Total hours	**28**	**42**	—

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods				Learning Methods	Assessment Method		
		Lecture	Discussions and seminars	Tutorials	Problem solving	Researches and Reports	Written Exam	Quizzes	Assignments
Knowledge	a1	1	1	1	1				1
	a2	1		1	1	1	1	1	1
	a3	1	1	1	1	1	1	1	1
	a4	1	1	1	1	1	1	1	1

	a5	1		1	1		1	1	1
	a6	1	1	1	1		1	1	1
	a7	1	1	1	1		1	1	1
Intellectual	b1	1	1		1		1	1	1
	b2	1		1	1		1	1	1
	b3	1	1	1	1	1	1	1	1
	b4	1			1	1	1	1	1
Applied	c1	1	1			1			
	c2	1	1			1			
	c3	1	1		1	1			
General	d1		1	1		1			1
	d2	1			1	1			1

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	40
Mid-Term Exam	6-th Week	20
Written Exam	Sixteenth week	40
Total		100

6- List of references:

6-1 Course notes:

Essawi, A. M. and El-Sayed, A. T. (2013) Differential Equations and Transforms. Cairo: MAM Press

6-4 Required books

Kreyszig, E. (1980) Advanced Engineering Mathematics. John Wiley, New York.

6-5 Recommended books:

Wylie, C. R. and Barrett, L. C. (1996) Advanced Engineering Mathematics. McGraw-Hill.

6-4 Periodicals, Web sites, etc.

www.mathwords.com.
www.khanacademy.org/math/differential-equations
www.sosmath.com/diffeq/diffeq.html

7- Facilities required for teaching and learning:

- Library
- Internet

Course coordinator: Prof.Dr. Ashraf Taha EL-Sayed
Head of the Department: Prof. Dr. Ashraf Taha
Date: September, 2019

Modern Academy
for Engineering and Technology in Maadi

Course Specification
GENN 141: Presentation Skills

A- Affiliation

Relevant program/s: Manufacturing Engineering and Production Technology BSc Program
Electronic Engineering and Communication Technology BSc Program
Computer Engineering and Information Technology B.Sc. Program
Architecture Engineering and Building Technology BSc Program

Department offering the program: Electronic Engineering and Communication Technology Department

Department offering the course: Basic Sciences Department.

Date of specifications approval: October 2018

B - Basic Information

Title: Presentation Skills **Code:** GENN141 **Level:** Sophomore ,Third

Credit Hours: 2 **Pre-requisite:** None

Contact Hours: **Lectures:** 2 **Tutorial: :** - **Laboratory: :-** **Total:** 2

C - Professional Information

1 – Course Learning Objectives:

This is a public speaking course that requires the student to combine both written knowledge with oral performance criteria. The course gives practical advice on the different modes of communication, including formal writing, CV writing, body language, art of listening, leadership, speeches, negotiation and face-to-face interactions, and examines how to design and deliver an effective presentation. Students will become more confident and less fearful, more skillful and less clumsy, more understanding of others and less threatened by them. Students will practice different modes of communication, and examine how to design and deliver an effective attractive presentation.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1- Topics related to humanitarian interests and moral issues (A9)
a2- Technical language and report writing (A10)
a3- Contemporary engineering topics (A12)

b - Intellectual skills:

On successful completion of the course, the student should be able to:
b1- Plan, conduct and write a report on a project or assignment B14)

c - Professional and practical skills:

On successful completion of the course, the student should be able to:
c1-Prepare and present technical reports (C11)

d - General and transferable skills:

On successful completion of the course, the student should be able to:
d1- Collaborate effectively within multidisciplinary team (D1)
d2-Work in stressful environment and within constraints (D2)
d3-Communicate effectively (D3)
d4- Lead and motivate individuals (D5)

d5- Search for information and adopt life-long self-learning (D7)

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A9, A10, A12
B	Intellectual skills	B14
C	Professional and Practical Skills	C11
D	General and transferable skills	D1, D2, D3, D5, D7

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
• Preparation of short talks.	2		
• How to write a technical report.	2		
• C.V Writing: Preparation of an attractive C.V. containing personal data qualifications, posts, and publications. - Interview Preparations	2		
• Fundamentals of preparing an attractive style for a short talk, techniques for using slides and projector for better interpretation. Using the power point technique for achieving and ideal short talk through a lab top and a data show / Seminar training.	4		
• To improve the student communications skills / Seminar training / Joharry's window	6		
• To develop the student acquiring power of leadership	2		
• Training on active listening and negotiation.	4		
• To understand and practice what's body language.	2		
• Free Suggested topic by the students.	2		
• Speeches vs. presentation	2		
Total hours	**28**		

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments					Brain storming	Self-Learning	Researches &		Midterm	Quizzes	Assignments	Written Exam	Practical Exam			
Knowledge & Understanding	a1	1	1																1				
	a2	1												1				1					
	a3		1	1																			
Intellectual Skills	b1	1	1	1								1	1	1				1	1				

Applied Prof. Skills	c1	1										1	1			1	1						
General Skills	d1		1	1								1		1									
	d2		1	1															1				
	d3		1	1								1							1				
	d4		1	1								1							1				
	d5	1	1											1				1	1				

5- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7-th Week	20
Semester Work	Presentation	Weekly (every week different no. of students to present)	20
	CV	Weekly (every week different no. of students to present)	13
	Company's biography	Weekly (every week different no. of students to present)	7
Practical Exam		Fifteenth week	-
Written Exam		Sixteenth week	40
Total			100

6- List of references:

6-1 Course notes: Presentation and Communication Skills "Theoretical part"

6-2 Required books

- Anderson, Paul, Technical Communication: A Reader-Centered Approach, 5th. Edition MacMillan Publishing., 2003.

6-3 Recommended books:

- Strunck, William, Jr.; and white, E. B., The Elements of style, 3rd edition", MacMillan Co., 2000
- Gerson Sharon J. and Gerson Steven M., Technical Communication Process and Product, 7th edition, Prentice Hall, 2012.
- Riordan Daniel G. Technical Report Writing Today, 9th edition", Houghton Mifflin, 2005.
- Stephen Lucas, The Art of Public Speaking, 9th edition, McGraw Hill. 2007.
- Julius Fast, Body Language, MJF books, 1970.

7- Facilities required for teaching and learning:

- Lectures room equipped with and data show facility.

Course coordinator: Dr. Lubna Fekry
Head of the Department: Prof. Dr. Shouman S.E.I.
Date: December 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specification Course Specification
CMPN110: Data Structures and Algorithms

A- Affiliation

Relevant program: Electronic Engineering and Communication Technology BSc Program.
Computer Engineering and Information Technology BSc Program.

Department offering the program: Computer Engineering and Information Technology Department
Electronic Engineering and Communications Technology Department

Department offering the course: Computer Engineering and Information Technology Department

Date of specifications approval: December 2018

B - Basic information

Title: Data Structures and Algorithms **Code:** CMPN110 **Level:** Sophomore, Second Semester

Credit Hours: 3 **Lectures**: 2 **Tutorial/Exercise**: 2 **Practical:** **Total:**4

Pre-requisite: CMPN010

C - Professional information

1 – Course Learning Objectives:

By the end of this course the students should demonstrate the knowledge and understanding of the different data structures, their storage in computer memory and their implementation. They should be able to excute different algorithms like delectation of data searching and sorting.

2 – Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1- Storage of data in counter memory like numbers in the fixed and floating point, one and two-dimemsional arrays, matrices, records, and spare matrices (A1, A3,A18).
a2- Push and pop operations associated with a stack and memory addressing (A1, A3, A5, A9,A18).
a3- Insertion and deletion from a circular queue (A3, A9,A18).
a4- Representation of header, header-free, and two-way linked lists in memory (A2, A4, A9,A18).
a5- Traversing, searching, insertion, and deletion algorithms for linked lists (A3, A5, A12,A18).
a6- Linked, T.B.S and string array representation of binary tree in computer memory (A2, A4, A9,A18).
a7- Traversal algorithms, using preorder, in order and post order traversals (A3, A5, A12,A18).
a8- Path length and Huffman's algorithm (A2, A3, A16,A18).
a9- Direct and binary searching algorithms, and associated binary search tree (B.S.T) with searching, deletion, and insertion into B.S.T (A2, A3, A5, A12).
a10- Sorting algorithms using selection, exchange, insertion, and deducing the algorithms complexity (A2, A4, A5,A18).
a11- Bubble, quick, and heap sort algorithms (A2, A4, A9,A18).

b - Intellectual skills:

On successful completion of the course, the student should be able to:

b1- Judge the types of data if it is adjacent continuous blocks like arrays, matrices, and other data which can have separator addresses such that the probability of memory overflow approaches zero (B1, B4, B8).

b2- Deduce the proper data structures algorithms for problems arising in the engineering fields (B2, B4, B12, B14).
b3- Optimize data manipulation to minimize the program running time implementing the Huffman's algorithm (B1, B2, B4, B14).
b4- Construct a special data base for storage of data on the basis of the B.S.T insertion, and deletion algorithms (B8, B12, B17, B18).

c - Professional and practical skills:

On successful completion of the course, the student should be able to:

c1- Use the data structure as program tools (C1, C2, C5).
c2- Join the allocated topics with topics of the compiler subject to achieve an optimum compiler design (C1, C2, C3, C6).
c3- Use the given topics to measure program efficiency (C1, C5, C6).

d - General and transferable skills:

On successful completion of the course, the student should be able to:

d1- Communicate effectively through reports and e-mails (D3, D6, D7).
d2- Demonstrate efficient IT capabilities (D4, D6).
d3- Search for information and engage in life-long self-learning discipline (D1, D2, D7).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A2, A3, A4, A5, A9, A12, A16,A18
B	Intellectual skills	B1, B2, B4, B8, B12, B14, B17, B18
C	Professional and practical skills	C1, C2, C3, C5, C6
D	General and transferable skills	D1, D2, D3, D4, D6, D7

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
➢ Introduction	2	3	-
• Basic Definitions and basic operation.			
• Data representation and storage, fixed point and floating point formats.			
• Applications of data structure.			
➢ Arrays	3	2	-
• Storage of one dimensional arrays in memory.			
• Storage of two-dimensional arrays using row major and column major ordering.			
• Pointer arrays.			
• Parallel array storage of records.			
• Operations on matrices and associated algorithms.			
• Storage of sparse matrices.			
➢ Linear lists	3	2	-
• Definitions and properties.			
• Stacks, definition, push, pop operation.			
• Queues, definition, insertion, and deletion from circular queues.			
• De-queues, definition, and basic operations.			

➢ Linked lists	4	4	-
• Basic structures of header-free and header linked lists.			
• Representation in memory.			
• Traversing and searching linked lists for sorted and unsorted linked lists.			
• Insertion and definition algorithms.			
• Two-way lists.			
➢ Trees	7	8	-
• Basic definitions and structure.			
• Representation of binary trees in memory.			
• Linked representation.			
• String array representation.			
• Terminating binary sequence (TBS) representation.			
• Transformation of a general tree into binary tree.			
• Transferring tree and transversal algorithms using stacks (Preorder, in			
• Threads and in order threading.			
• Path length and Huffman's tree achieving using Huffman's algorithms.			
➢ Searching	4	5	-
• Introduction and searching types.			
• Scanning.			
• Direct scanning and controlled scanning.			
• Binary search algorithms.			
• Binary search trees.			
• Definition.			
• Searching and insertion into B.S.T.			
• Deletion from a B.S.T.			
• Building a B.S.T			
➢ Sorting	5	4	-
• Introduction.			
• Sorting algorithms using selection, exchange, insertion techniques.			
• Complexity of algorithms.			
• Bubble sort algorithms as an example for exchange technique.			
• Binary sort (quick sort) algorithm.			
• Heap sort algorithms.			
Total hours	28	28	-

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods						Learning Methods		Assessment Method				
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments	Researches and Reports	Modeling and Simulation	Written Exam	Practical Exam	Quizzes	Term papers	Assignments
Knowledge & Understanding	a1	1			1					1		1		1
	a2	1			1					1		1		1
	a3	1			1					1		1		1
	a4	1		1				1		1				
	a5	1	1		1					1		1		1
	a6	1			1			1		1				
	a7	1	1	1						1		1		1
	a8	1		1	1					1				1
	a9	1			1			1		1		1		1
	a10	1	1		1					1				
	a11	1		1				1		1				1
Intellectual Skills	b1	1			1	1		1		1				
	b2		1			1		1		1				1
	b3		1	1		1		1				1		1
	b4		1	1				1				1		
Applied Professional Skills	c1			1						1				1
	c2		1	1		1		1						
	c3		1	1		1		1						1
General Tran. Skills	d1			1		1		1				1		
	d2			1		1		1						1
	d3			1		1						1		1

5- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7-th Week	20
Semester Work	Quizzes	4 Quizzes (every 3 weeks)	16
	Reports	Two reports per semester	14
	Assignments	Bi-Weekly	10
Written Exam		Sixteenth week	40
Total			100

6- List of references:

6-1 Course notes:

- Data structures theory & Algorithms.

6-2 Required books

Micheal Main and Water Savitch, (1995),Data Structure and other Objects, Benjamine/Cummings, CA

Adam Drozdek,(2012.), Data Structure and Algorithms in C++, Cengage Learning , 4th edition

6-3 Recommended books:

- Glenn W. Rowe, Introduction to Data Structures and Algorithms with C++, Prentice Hall, 1991.

6-4 Periodicals, Web sites, etc.

http://www.prenhall.com/mano.

7. Facilities required for teaching and learning:

None.

Course coordinator:	Dr. Khaled Morsy
Head of the Department:	Ass. Prof. Dr. Wafaa Boghdady
Date:	December 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specification
ELCN112: Electrical Circuit Analysis-2

A- Affiliation

Relevant program/s:	Electronic Engineering and Communication Technology BSc Program.
Department offering the program:	Electronic Engineering and Communication Technology Department
Department offering the course:	Electronic Engineering and Communication Technology Department
Date of specifications approval:	December, 2018

B - Basic Information

Title: Electrical Circuit Analysis-2 **Code:** ELCN 112 **Level:** (1), Fourth Semester
Credit Hours: 3 **Pre-requisite:** ELCN 111
Contact Hours: **Lectures:** 2 **Tutorial:** 3 **Laboratory:** — **Total:** 5

C - Professional Information

1 – Course Learning Objectives:

The main Objective of this course is to introduce the basic concepts and theories of power calculations in sinusoidal steady state, balanced three-phase circuits, mutual inductance, Laplace transform and its applications in circuit analysis, transfer function and two-port circuits.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding

a1- Basic concepts of power calculations in sinusoidal steady state. (A1, A5)
a2- Basic concepts of the balanced three-phase circuits. (A1, A2, A3)
a3- Principles of mutual inductance. (A1, A3)
a4- Principles of series and parallel resonance. (A1, A2)
a5- Laplace transforms theory. (A4, A5)
a6- Transfer function. (A3, A5)
a7- Principles of the two-port circuits. (A4, A5)

b - Intellectual skills:

On successful completion of the course, the student should be able to:
b1- Use the principles of the balanced three-phase circuits. (B1,B2)
b2- Apply the principles of series and parallel resonance. (B3, B4)
b3- Apply the Laplace transformation technique to circuit analysis. (B5, B6, B7)
b4- Use the transfer function. (B1, B4)
b5- Apply the principles of two-port circuits in circuit's analysis. (B1, B4)

c - Professional and practical skills:

On successful completion of the course, the student should be able to:
c1- Estimate the cost of the electricity bill. (C1, C2)
c2- Improve the power factor for companies and industrial factors. (C1, C2)

c3- Implement the achieved knowledge to recognize 3-phase balanced circuits and its analysis. (C1, C2)
c4- Analyze the given realized circuits excited by other than sinusoidal sources. (C1, C2)
c5- Design the frequency- selective circuit. (C1, C2)
c6- Implement the techniques of two- port terminated network and analyze it to obtain its characteristics. (C1, C2).

d - General and transferable skills:

On successful completion of the course, the student should be able to:
d1- Communicate effectively through reports and e- mails. (D1, D2, D3)
d2- Effectively manage tasks, time, and resources. (D2, D7)
d3- Search for information and engage in life-long self-learning discipline. (D7, D9)

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A2, A3, A4, A5
B	Intellectual skills	B1, B2, B3, B4, B5, B6, B7
C	Professional and Practical Skills	C1, C2
D	General and transferable skills	D1, D2, D3, D7, D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
• Sinusoidal steady- state analysis.	2	3	-
• Techniques of circuit analysis in AC.	4	6	-
• Sinusoidal steady- state power calculation	4	6	-
• Balanced three- phase circuit.	4	6	-
• Introduction to Laplace- Transform.	2	3	-
• Laplace- Transform circuit analysis.	3	6	-
• Techniques of circuit analysis using Laplace- Transform.	3	6	-
• Frequency selective circuits.	4	3	-
• Two- ports networks.	2	3	-
Total hours	**28**	**42**	—

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments					Brain storming	Self Learning	Researches and Reports		Midterm	Quizzes	Assignments	Written Exam	Practical Exam			
Knowledge & Understanding	a1	1				1						1				1		1	1				
	a2	1				1						1				1		1	1				
	a3	1	1			1						1				1		1	1				
	a4	1				1						1					1	1	1				
	a5	1				1						1						1	1				
	a6	1	1	1		1						1		1			1	1	1				
	a7	1		1		1						1		1				1	1				
	a8	1		1		1						1		1				1	1				
Intellectual Skills	b1				1	1						1				1		1	1				
	b2				1	1						1				1	1	1	1				
	b3				1	1						1						1	1				
	b4				1	1						1						1	1				
	b5				1	1						1						1	1				
	b6				1	1						1						1	1				
Applied Prof. Skills	c1	1		1		1						1		1				1	1				
	c2	1		1		1						1		1				1	1				
	c3	1		1		1						1		1				1	1				
	c4	1		1		1						1		1				1	1				
	c5	1		1		1						1		1				1	1				
	c6	1		1		1						1		1				1	1				
General Skills	d1																						
	d2			1	1																		
	d3																						

5- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7-th Week	20
Semester Work	Quizzes	3rd and 9th Weeks	10
	Reports	Two reports per semester	Bonus 2 deg. per report
	Assignments	5th and 10th weeks	10
Practical Exam		Fifteenth week	20
Written Exam		Sixteenth week	40
Total			100

6- List of references:

6-1 Course notes:

- Electrical Circuit Analysis-2 “Theoretical part”.

6-2 Required books

- Boylestad, Introductory Circuit Analysis, Tenth Edition, 2003.
- David E. Jonson, Electrical Circuit Analysis, Prentice Hall, USA, 1999.

6-3 Recommended books:

James W. Nilsson, and Susan A. Riedel, *Electric Circuits*, Pearson Education Inc., 8th Edition, 2008.

6-4 Periodicals, Web sites, etc.

http://www.freebookcentre.net/Electronics/Basic-Electronics-Books.html.

7- Facilities required for teaching and learning:

- Lectures room equipped with OHP and data show facility.
- Computer lab installed by MATLAB and ORCAD software.

Course coordinator:	Prof. Dr. Said Refai.
	Dr. Haytham Gamal.
Head of the Department:	Prof. Dr. Shouman S.E.I.
Date:	December, 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specification
ELCN214: Electronic Measurements

A- Affiliation

Relevant program/s:	Electronic Engineering and Communication Technology BSc Program Computer Engineering and Information Technology BSc Program
Department offering the program:	Electronic Engineering and Communication Technology Department
Department offering the course:	Electronic Engineering and Communication Technology Department
Date of specifications approval:	December 2018

B - Basic Information

Title: Electronic Measurements **Code:** ELCN214 **Level:** (2), sixth Semester
Contact Hours: **Lectures:** 2 **Tutorial:**1 **Laboratory: 2** **Total:** 5
Credit Hours: 3 **Pre-requisite:** ELCN113

C - Professional Information

1 – Course Learning Objectives:

The objective of this course is to enable the students to understand and analyze different techniques for improving performance of electromechanical conventional measuring instruments, utilizing relevant electronic circuits. They should also understand the construction, concepts, and operation of different analog & digital measuring instruments such as: voltmeters, ammeters, ohmmeters, frequency meters, oscilloscopes, and waveforms analyzers and generators. Also it enables the students to understand the principles of design, operation, and application of transducers and data acquisition systems.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1- Analog Measurements. (A5, A15)
a2- Digital Measurements. (A5 ,A15)
a3- CRT and Special Types Oscilloscope. (A15)
a4- Waveform Analysis and Generation. (A8, A15)
a5- Data Acquisition Systems (A5 ,A15)

b - Intellectual skills:

On successful completion of the course, the student should be able to:

b1- Analyze the technical problems and find a suitable solutions. (B3)
b2- Think in a scientific way to reach a certain imagination and new innovation (B3)
b3- Give the correct decision and test his solutions. (B2)
b4- Create new ideas. (B12)

c - Professional and practical skills:

On successful completion of the course, the student should be able to:

c1- Design the special measuring circuits. (C20)
c2- Test electronic circuits using laboratory information. (C12 ,C15)

c3- Develop a system to get a better efficiency. (C3 ,C12)
c4- Establish and construct digital measuring circuits (C3, C20)

d - General and transferable skills:

On successful completion of the course, the student should be able to:

d1- Search for information's from references, journals and internet. (D7)
d2- Write technical reports and prepare convenient presentations. (D4)
d3- Communicate with others, and involve effectively in a team wok (D1)
d4- Effectively manage tasks, time, and resources. (D6)

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A5, A8, A15
B	Intellectual skills	B2, B3, B12
C	Professional and Practical Skills	C3, C12, C15, C20
D	General and transferable skills	D1, D4, D6 , D7

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
Analog Measurements: • Emitter Follower Voltmeter	2	1	2
• Difference Amplifier Voltmeter • Operational Amplifier Voltmeter Circuits	4	2	4
• AC Electronic Voltmeter • Ohm and Current Measurements	2	1	2
Digital Measurements: • Digital Voltmeters DVMs • Digital Frequency Meters	2	1	2
CRT Oscilloscope: • Cathode Ray Tube • Deflection Amplifiers	2	1	2
• Sweep Generator • Automatic Time Base	4	2	4
• Dual Trace Oscilloscope • Wave Forms measurements	2	1	2
Special Types Oscilloscopes: • Sampling Oscilloscope • Digital Storage Oscilloscope (DSO)	4	2	4
Waveform Analysis and Generation: • Analog Spectrum Analyzer • Digital Spectrum Analyzer	2	1	2
Data Acquisition Systems • Transducers • Signal Conditioning Circuits	2	1	2
• Digital to Analog Converters (D/A) • Analog to Digital Converters (A/D)	2	1	2

Total hours	**28**	**14**	**28**

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations and	Discussions and	Tutorials	Problem solving	Laboratory &					Researches and	Modeling and			Written Exam	Practical Exam	Quizzes	Term papers	Assignments			
Knowledge & Understanding	a1	1	1		1			1		1		1	1	1	1	1		1			1		1
	a2	1	1	1	1					1	1		1	1	1	1	1	1					1
	a3	1	1	1	1							1	1	1	1	1	1	1					
	a4	1	1		1		1				1		1	1	1	1		1		1			
	a5	1	1		1		1				1		1	1	1	1		1		1			
	a6	1	1	1	1		1	1		1		1	1	1	1	1	1	1		1	1		1
	a7	1	1	1	1					1	1		1	1	1	1	1	1					1
	a8	1	1		1		1					1	1	1	1	1		1		1			
	a9	1	1		1		1				1		1	1	1	1		1		1			
	a10	1	1	1	1			1		1		1	1	1	1	1	1	1			1		1
Intellectual Skills	b1	1	1	1	1					1	1		1	1	1	1	1	1					1
	b2	1	1		1		1					1	1	1	1	1		1		1			
	b3	1	1		1		1					1	1	1	1	1		1		1			
	b4				1		1											1		1			
	b5				1			1				1						1			1		
Applied Prof. Skills	c1				1													1					
	c2			1	1		1					1					1	1		1			
	c3	1	1		1			1		1		1	1	1	1	1		1			1		1
	c4	1	1	1	1					1	1		1	1	1	1	1	1					1
General Skills	d1	1	1	1	1							1	1	1	1	1	1	1					
	d2	1	1		1		1				1		1	1	1	1		1		1			
	d3	1	1		1		1				1		1	1	1	1		1		1			

5- Assessment Timing and Grading:

Assessment Method		**Timing**	**Grade (Degrees)**
Mid-Term Exam		7th Week	20
Semester Work	3th and 9th weeks	10th Week	8
	5rd and 11th Weeks	10th Week	4
	1 reports per semester	5 (Bonus)	8
Practical Exam		Fifteenth week	20
Written Exam		Sixteenth week	40
Total			100

6- List of references:

6-1 Course notes:

1- Electronic Measurements "Theoretical Part"

2- Electronic Measurements "Practical Part"

6-2 Required books

David A. Bell, Electronic Instrumentation & Measurements, 2nd edition, Prentice-Hall, Inc., 1997.

6-3 Recommended books:

Larry D. Jones, and A. Foster Chin, Electronic Instrumentation & Measurements, 2nd edition, Prentice- Hall, Inc., 1991.

6-4 Periodicals, Web sites, etc.

(Last Accessed - Dec. 2018)

- MIT Open courseware

https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-071j-introduction-to-electronics-signals-and-measurement-spring-2006/

7- Facilities required for teaching and learning:

- Lectures room equipped with OHP and data show facility.
- Computer Lab. Installed with MATLAB program.
- Complete Lab for Electronic Measurements.

Course coordinator: Prof. Dr. Hany Tawfik
Head of the Department: Prof. Dr. Shouman S.E.I.
Date: December, 2018

MNFN110

Modern Academy
for Engineering and Technology in Maadi

Course Specification
MTHN104: Mathematics -4 (Advanced Calculus)

A- Affiliation

Relevant program: Electronic Engineering and Communication Technology BSc Program
Computer Engineering and Information Technology BSc Program

Department offering the program:
Electronic Engineering and Communication Technology Department
Computer Engineering and Information Technology Department

Department offering the course: Basic Science Department
Date of specifications approval: June, 2018

B - Basic information

Title: Advanced Calculus
Code: MTHN104 **Level:** 1st (Sophomore) **Semister:** Fourth
Hours **Credit/Total** 3hrs **Lectures** 2hrs **Tutorial** 3hrs **Practical** —
Pre-requisite: MTHN001

C - Professional information

1 – Course Learning Objectives:

A study of this course aims to realize the basic concepts in functions of two or more independent variables and its partial derivative with applications and to realize the basic concepts of double and trible integrals to integrate function of severed variables in different coordinates.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1- applications of partial derivatives to physical and Engineering problems.(A1,A5)
a2- rule of doule integral.(A1,A5)
a3- rule of trible integral.(A1,A5)
a4- basic concepts of cylindrical coordinates.(A1,A5)
a5- basic concepts of spherical coordinates.(A1,A5)
a6- uses of vector calculus analysis in applications. (A1)

b - Intellectual skills:

On successful completion of the course, the student should be able to.
b1- apply applications of partial derivatives to Engineering problems. (B1, B2)
b2- choose the right decision by choosing the best kind of multiple Integration in applications. (B1, B2, B3)
b3- use vector analysis to evaluate line integrals and surface integrals for a vector function. (B2)

c - Professional and practical skills:

On successful completion of the course, the student should be able to:
c1- apply multiple Integration in electronics. (C1, C12)
c2- apply vector analysis to find the work done by the force field in electrical problem. (C1, C12)

d - General and transferable skills:

On successful completion of the course, the student should be able to:
d1- communicate effectively. (D3)
d2- search for information. (D7)

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A5
B	Professional and practical skills	B1, B2, B3, B7
C	Intellectual skills	C1, C12
D	General and transferable skills	D3, D4

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
➢ Functions of several variables ; partial derivatives,. Directional derivatives, Taylor polynomials, Lagrange multiplier max, and min. of functions			
• Functions of several variables	2	3	—
• partial derivatives	3	4	—
• Directional derivatives	2	3	—
• Taylor polynomials	2	3	—
• Lagrange multiplier max, and min. of functions	3	4	—
➢ Multiple integrals (double, triple integrals)			
• Double integrals	4	6	—
• Triple integrals	4	6	—
➢ Polar coordinates, cylindrical coordinates and spherical coordinates			
• Polar coordinates, cylindrical coordinates	2	3	—
• spherical coordinates	2	3	—
➢ Green's theorem, Gauss's and Stocks theorems.			
• Vector Calculus	3	6	—
• Green's theorem, Gauss's and Stocks theorems.	1	1	—
Total hours	**28**	**42**	—

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods				Learning Methods	Assessment Method		
		Lecture	Discussions and seminars	Tutorials	Problem solving	Researches and Reports	Written Exam	Quizes	Assignments
Knowledge	a1	1	1	1	1				1
	a2	1	1	1	1	1	1	1	1
	a3	1	1	1	1	1	1	1	1
	a4	1		1	1	1	1	1	1
	a5	1		1	1		1	1	1
	a6	1	1	1	1		1	1	1
Intellectual	b1	**1**	**1**		**1**		1	1	1
	b2	**1**	**1**	**1**	**1**		1	1	1
	b3	**1**	**1**	**1**	**1**	**1**	1	1	1
Applied	c1	1	1			1			
	c2	1	1			1			
General	d1		1	1		1			1
	d2	1			1	1			1

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	40
Mid-Term Exam	6-th Week	20
Written Exam	Sixteenth week	40
Total		100

6- List of references:

6-1 Course notes:

Essawi, A. M., Wafaee, M. and El-Sayed, A. T. (2013) Advanced Calculus. Cairo: MAM Press

6-2 Required books

Wylie, C. R. and Barrett, L. C. (1996) Advanced Engineering Mathematics. McGraw-Hill.

6-3 Recommended books:

Kreyszig, E. (1980) Advanced Engineering Mathematics. John Wiley, New York.

6-4 Periodicals, Web sites, etc.

www.mathwords.com.
www.khanacademy.org/math
www.sosmath.com

7- Facilities required for teaching and learning:

- Library
- Internet

Course coordinator: Prof.Dr. Ashraf Taha EL-Sayed
Head of the Department: Prof. Dr. Ashraf Taha
Date: September, 2019

Modern Academy
for Engineering and Technology in Maadi

Course Specification
ELCN115: Semiconductors for Microelectronics

A- Affiliation

Relevant program/s:	Electronic Engineering and Communication Technology BSc Program, Computer Engineering and Information Technology B.Sc. Program
Department offering the program:	Electronic Engineering and Communication Technology BSc Department, Computer Engineering and Information Technology B.Sc. Department
Department offering the course:	Electronic Engineering and Communication Technology Department
Date of specifications approval:	December 2018

B - Basic Information

Title: Semiconductor for Microelectronics **Code:** ELCN 115 **Level:** (1), Fourth Semester

Credit Hours: 3 **Pre-requisite:** ELCN 114

Contact Hours: **Lectures:** 2 **Tutorial:**1 **Laboratory:** 2 **Total:** 5

C - Professional Information

1 – Course Learning Objectives:

By the end of this course the students should demonstrate the knowledge and understanding. They have to understand the structures, characteristics, principals of operation and applications of PN junction (diode). They have to study the characteristics (forward and revers bias) of zener and tunnel diodes, Ohmic contact, heterojunction, bipolar junction transistor (BJT), junction field effect transistor (JFET), metal oxide semiconductor transistor (MOSFT). They have to study physical structure, basic configuration and I-V characteristics.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understandin of:

a1- the properties of semiconductor materials (A3, A8, A9).
a2- The crystal structure and band structure of semiconductors (A8, A9).
a3- the difference between intrinsic and doped semiconductor carriers transport (A1, A2).
a4- the structures, characteristics, principals of operation and applications of PN junction (diode (A1, A3).
a5- the characteristics (forward and revers bias) of zener and tunnel diodes (A1, A3).
a6- the schottky, Ohmic contact, heterojunction, bipolar junction transistor (BJT), junction field effect transistor (JFET), metal oxide semiconductor transistor (MOSFT) (A1, A3).
a7- the physical structure, basic configuration and I-V characteristics. (A1, A2, A3).

b - Intellectual skills:

On successful completion of the course, the student should be able to:
b1- do an applications on intrinsic and doped semiconductor (B4, B6, B7).
b2-deduce mathematical relations describing the conductivity of different types of semiconductors (B1, B2, B12).

b3- deduce relations describing the connection between P-type and N-type semiconductors (B4, B5. B7).
b4- classify and compare between different types of diodes and transistors (, B5, B7, B8).

c - Professional and practical skills:

On successful completion of the course, the student should be able to:
c1- design, operate, test and maintain solar cell (C1, C2, C3)
c2- Calculate the conductivity of different types of semiconductors (C1, C2, C3).
c3- use the light to introduce electric current (C7).
c4- design amplifiers and transformers (C1, C2, C4).
c5- make current and voltage rectification (C1, C11, C12).
c6- use experimental facilities to assemble and operate electronic circuits (C1:C4, C7).

d - General and transferable skills:

On successful completion of the course, the student should be able to:
d1- work in a team and involve in group discussion and seminars (D1, D3).
d2- communicate effectively and present data and results orally and in written form (D3).
d3- use ICT facilities in presentations (D4).
d4- search for information's in references and in internet (D7).
d5- practice self-learning (D7, D9).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A2, A3, A8, A9
B	Intellectual skills	B1, B2, B4, B5, B6, B7, B8, B12
C	Professional and Practical Skills	C1, C3,C3, C4, C7, C11, C12
D	General and transferable skills	D1, D3, D4, D7, D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
• Introduction to semiconductors	1		1
• Classify different types of semiconductors	1		2
• Crystal structure and band structure of semiconductor	1	1	1
• Conduction in different types of semiconductor	2	1	2
• P-N junction	1	1	1
• Forward and revers bias and breakdown	2	1	2
• Diode	1	1	2
• Zener diode	2	1	2
• Tunnel diode	2	1	2
• Solar cell	1		2
• Application of diodes	1	1	1
• Schottky diode	2	1	
• Tunnel diode	2	1	2
• Bipolar junction transistor (BJT)	2	1	2
• Junction field effect transistor (JFET)	2	1	2
• Metal oxide semiconductor transistor(MOSFT)	3	1	2
• Physical structure, basic configuration and I-V characteristics	2	1	2

Total hours	**28**	**14**	**28**

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method								
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments					Researches and Reports	Modeling and Simulation			Written Exam	Practical Exam	Quizzes	Term papers	Assignments				
Knowledge & Understanding	a1	1	1	1	1	1	1					1				1		1	1	1				
	a2	1	1	1	1	1	1									1		1	1	1				
	a3	1	1	1	1	1	1									1		1	1	1				
	a4	1	1	1	1	1	1					1				1		1	1	1				
	a5	1	1	1	1	1	1									1	1	1	1	1				
	a6	1	1	1		1	1					1				1			1	1				
	a7	1	1	1	1	1	1					1				1			1	1				
Intellectual Skills	b1	1		1	1	1	1									1		1		1				
	b2	1		1	1	1	1									1		1	1	1				
	b3	1	1	1	1	1	1					1				1	1		1	1				
	b4	1	1	1	1	1	1					1				1	1	1	1	1				
Applied Prof. Skills	c1	1	1	1	1	1	1									1	1	1	1	1				
	c2	1		1	1											1		1	1	1				
	c3	1		1		1						1				1			1	1				
	c4	1		1	1	1										1	1		1	1				
	c5			1		1	1									1	1		1	1				
	c6			1		1	1									1	1		1	1				
General Skills	d1	1		1		1	1					1							1					
	d2	1	1	1			1					1							1					
	d3	1	1				1					1							1	1				
	d4	1	1	1		1	1					1												
	d5	1				1	1					1							1					

5- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7-th Week	20
Semester Work	Quizzes	3rd and 9th Weeks	10
	Reports	Two reports per semester	Bonus 2 deg. per report
	Assignments	5th and 10th weeks	10
Practical Exam		Fifteenth week	20
Written Exam		Sixteenth week	40

Total	100

6- List of references:

6-1 Course notes:

L. Soliman, semiconductor for Microelectronics, Lecture notes, 2012.

6-2 Required books

Peter Y. Yu, Manuel Cordona, Fandamental of semiconductors: physics and Materials Properties, springer, 2010.

6-3 Recommended books:

- Jasprit Singh, Modern physics for engineers, WILEY-VCH Verlag GmbH & Co. KGaA, Weinheim, Germany, 2004.
- Charles E. Burkhardt · Jacob J. Leventhal, Foundations of quantum physics, Springer Science, Business Media, LLC, New York, 2008.

6-4 Periodicals, Web sites, etc.

www.iop.org
physics.exchange.com

7- Facilities required for teaching and learning:

- Semiconductor Physics Lab.
- Library
- Internet

Course coordinator: Prof. Dr. Laila Soliman
Head of the Department: Prof. Dr. Shouman S.E.I.
Date: December, 2018

Modern Academy for Engineering and Technology in Maadi

Course Specification

GENN341a: Project Management

A- Affiliation

Relevant program/s:	Electronic Engineering and Communication Technology BSc Program Computer Engineering and Information Technology BSc Program
Department offering the program:	Electronic Engineering and Communication Technology Department
Department offering the course:	Electronic Engineering and Communication Technology Department
Date of specifications approval:	December 2018

B - Basic Information

Title: Project Management **Code:** GENN 341a **Level:** 2 (5th Semester)

Credit Hours: 2 **Pre-requisite:** None

Contact Hours: **Lectures:** 2 **Tutorial:** - **Laboratory:** - **Total:** 2

C - Professional Information

1- Course Learning Objectives:

The objective of this course is to enable the students to understand the basic principles required for the project control, while considering its different goals and constraints. It also enable them to utilize various computer algorithms and analysis techniques for time, cost, quality, risk, and resources management, in addition to evaluating the efficiency of the management system.

2- Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1- Project Constraints, project management processes (A7).
a2- Body of the knowledge required for the project manager (A7)
a3- Roll and skills of the project manager (A7).
a4- Planning the project progress (A2).
a5- Evaluating and controlling the project progress (A5).
a6- Quality, risk, and resources management (A6)

b - Intellectual skills:

On successful completion of the course, the student should be able to:

b1- Design proper schedule that satisfies both time and resources constraints (B1)
b2- Investigate the project progress status (B11)

c - Professional and practical skills:

On successful completion of the course, the student should be able to:

None

d - General and transferable skills:

On successful completion of the course, the student should be able to:

d1- Search for information in the references and in the internet (D9).

d2- Present data and results orally and in written form (D3).

d3- Effectively manage time, and resources (D6)

d4- Practice self-learning (D7).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A2, A5, A6, A7
B	Intellectual skills	B1, B11
C	Professional and Practical Skills	None
D	General and transferable skills	D3 , D6, D7, D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
Overview of the Project Management			
- Project constraints - Project Management processes	2		
- Body of Knowledge required for the project manager - Roll and Skills of the project manager	2		
Planning the Project			
- Planning Levels, Rules and Steps - Developing the Project's Vision, Mission, and Objectives	2		
- Work Breakdown Structure (WBS) - Critical-Path Method	2		
- Time-Constrained Schedule	4		
- Time and Recourse-Constrained Schedule	2		
Controlling the Project			
- Project Process Review	2		
- Earned-Value Analysis	4		
Managing the Project Team	2		
Quality Management	2		
Risk Management	4		
Total hours	**28**		

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods							Learning Methods				Assessment Method					
		Lecture	Presentations and	Discussions and	Tutorials	Problem solving	Laboratory & Experiments		Researches and	Modeling and			Written Exam	Practical Exam	Quizzes	Term papers	Assignments	
Knowledge & Understanding	a1	1											1		1			
	a2	1											1		1			
	a3	1							1				1				1	
	a4	1	1						1				1				1	
	a5	1	1						1				1				1	
	a6	1							1				1				1	
Intellectual Skills	b1	1				1							1		1			
	b2	1				1							1		1			
Applied Prof. Skills																		
General Skills	d1	1							1								1	
	d2	1							1								1	
	d3	1							1								1	
	d4	1							1								1	

5- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Semester Work	Assignments	3rd , 5th , 9th , and 11th Weeks	20
	Quizzes	4th , 6th , 10th , and 12th Weeks	20
Mid-Term Exam		7th Week	20
Practical Exam		-	-
Written Exam		16th week	40
Total			100

6- List of references:

6-1 Course notes: Printed notes

6-2 Required books

- Joseph Heagney, (2016), "Fundamentals of project Management", 5th Edition, AMACOM, NY.

6-3 Recommended books:

- Project Management Institute, (2018), "A Guide to the Project Management Body of Knowledge (PMBOK® Guide)", 6th Edition. PMI Inc, PA, USA

6-4 Periodicals, Web sites, etc. (Last Viewed - Dec. 2018)

- https://www.pmi.org
- https://www.pmi.org/pmbok-guide-standards/foundational/pmbok
- https://www.pmi.org/learning/publications

7- Facilities required for teaching and learning:

- Computer, and Data show

Course coordinator: Dr. Fawzy Hashim
Head of the Department: Prof. Dr. Shouman E. I. Shouman
Date: December 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specification
ELCN 211: Signal Analysis

A- Affiliation

Relevant program/s:	Electronic Engineering & Communication Technology BSc Program Computer Engineering and Information Technology BSc Program
Department offering the program:	Electronic Engineering & Communication Technology BSc Program Computer Engineering and Information Technology BSc Program
Department offering the course:	Electronic Engineering &Communication Technology Department.
Date of specifications approval:	October, 2018

Title: Signal Analysis **Code:** ELCN 211 **Level:** (2), Fifth Semester
Credit Hours: 3 **Lectures**: 2 **Tutorial**: 2 **Laboratory**: **Total**: 4
Contact Hours: **Pre- requisite**: MTHN 103

C - Professional Information

1 – Course Learning Objectives:

The objective of this course is to introduce main principles of electrical signals based and its properties. By the aid of this course some important operations on signals will be discussed such as convolution, power and energy calculations. Fourier operations (series and transform) are vital for time and frequency domains representation of signal therefore, our course should contain both. Finally, random process will be displayed including random variable and random process transmission.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1- Definition of signal, signal classification and basic operation in signal. (A5, A24)
a2-. Difference between signal mathematical representation in time and frequency domains (A5, A24)
a3- Represent Fourier series analysis for periodic signal**.** (A5, A24).
a4- Represent Fourier transform analysis for aperiodic signal. (A5,A24)
a5- Properties of Fourier transformation. (A5, A24)
a6- Characteristics of system and features of Linear time invariant system (LTI). (A5, A24)
a7- Basics of random process and random variables. (A5, A24)
a8- Some important definitions related to random variables such as; mean and variance. (A5, A24)

b - Intellectual skills:

On successful completion of the course, the student should be able to:

b1- Classify signal using many ways. (B2, B11)
b2- Apply signal transformation from time to frequency domains and vice versa. (B2, B11)
b3- Calculate signal energy and power. (B2**,** B11)
b4- Classify system and calculate output signal from system.(B2, B11)
b5-Obtain mean and variance functions for any random variable. (B2**,** B11)

c - Professional and practical skills:

On successful completion of the course, the student should be able to:

c1- Sketch signal waveform and spectrum for periodic function signals. (C1, C13)

c2- Design signal analysis in frequency domain for different periodic and aperiodic signal. (C1, C13)

d - General and transferable skills:

On successful completion of the course, the student should be able to:

d1- Communicate with others; work in a team and involvement in group discussion and seminars (D3).
d2- Present data and results orally and in written form (D6, D9).
d3- Search for information's in references and in internet (D7).
d4- Practice self-learning (D7).

Course Contribution in the Program ILO's

ILO's		**Program ILO's**
A	Knowledge and understanding	A5, A24
B	Intellectual skills	B2, B11
C	Professional and Practical Skills	C1, C13
D	General and transferable skills	D3, D6, D7, D9.

3 – Contents

Topic	**Lecture hours**	**Tutorial hours**	**Practical hours**
• Introduction to Signals, Classification of signals and Signal Operators.	3	3	-
• Calculate Energy and power signal	3	3	-
• Signal Representation by orthogonal signal set – Fourier series	3	3	-
• A periodic Signal representation by Fourier Integral.	3	3	-
• Transforms of same useful function and properties of Fourier Transform.	3	3	-
• Introduction and properties of system	3	3	-
• Analysis Linear Invariant system (LTI).	3	3	-
• Probability – Random variables – Statistical averages	3	3	-
• Cumulative Distribution function with different distribution.	4	4	-
Total hours	**28**	**28**	**-**

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations and	Discussions and	Tutorials	Problem solving	Laboratory &					Researches and	Modeling and			Written Exam	Practical Exam	Quizzes	Term papers	Assignments			
Knowledge & Understanding	a1	1	1	1	1	1					1	1	1	1									
	a2	1	1	1	1	1					1			1									
	a3	1	1	1	1	1					1	1	1	1									
	a4	1	1	1	1	1								1									
	a5	1	1		1	1						1	1	1									
	a6	1		1	1	1				1				1									
	a7	1			1	1			1	1		1	1	1									
	a8	1	1		1	1			1	1			1	1									

	a9	1			1	1		1			1	1	1	1								
	a10	1			1	1		1			1		1	1								
Intellectual Skills	b1	1			1	1		1				1	1	1								
	b2	1			1	1		1					1	1								
	b3	1			1	1		1						1								
	b4	1				1		1			1	1	1	1								
	b5	1				1		1			1	1	1	1								
Applied Prof. Skills	c1	1							1													
	c2	1							1													
	c3	1							1													
	c4	1							1													
Genera l Skills	d1																					
	d2																					
	d3																					

5- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Semester Work	Quizzes	Week 5,10	15
	Assignments	Week 3,9	15
	Reports	Week13	10
Mid-Term Exam		7-th Week	20
Written Exam		Sixteenth week	40
Total			100

6- List of references:

6-1 Course notes:

Signal Analysis (I) "*Theoretical part*"

6-2 Required books

1- Alan V. Oppenheim, Alan S. Willsky "Signal & systems" Prentice Hall, 1997.

2- William A. Gardner " Introduction to random process with application to signal & systems" Mc Graw Hill, 1990

6-3 Recommended books:

S. Haykin, ***Communication systems***, 4th edition J. W. 2001.

7- Facilities required for teaching and learning:

- Lectures room equipped with OHP and data show facility.

Course coordinator: Dr. Mohamed El-Hawary

Head of the Department: Prof. Dr. Shouman S.E.I

Modern Academy
for Engineering and Technology in Maadi

Course Specification
ELCN212: Microelectronics Circuits-1

A- Affiliation
Relevant program/s: Electronic Engineering & Communication Technology BSc Program
Department offering the program: Electronic Engineering & Communication Technology Department
Department offering the course: Electronic Engineering &Communication Technology Department.
Date of specifications approval: December, 2018

B - Basic Information
Title: Microelectronics Circuits-1 **Code:** E LCN212 **Level:** Junior, Fifth Semester
Credit Hours: 3 **Lectures:** 2 **Tutorial:**1 L**aboratory: 2 Total :5**
Contact Hours: **Pre-requisite:** PHYN002

C - Professional Information

1 – Course Learning Objectives:

The main objective of this course is to introduce the basic concepts and theory of Micro Electronics circuit and devices and implementation of these circuits.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1- Identify Linear and non Linear circuits. (A13)
a2- Design different configuration of op-amp circuits. (A4)
a3- Understands the different diode applications. (A3)
a4- Understands the Basic functions of transistors. (A8)

b - Intellectual skills:

By the end of the course the student should be able to:
b1- Design the op-amp circuits. (B7)
b2- Give the correct decision and test his solutions. (B2)
b3- Analyze the technical problems and find a suitable solution. (B2)
b4- Understand the JFET & CMOSFET circuits. (B5)

c - Professional and practical skills:

By the end of the course the student should be able to:
c1- Develop a system to get a better efficiency (C3)
c2- Establish the power supply circuits using diode rectifiers. (C3)
c3- Use data sheets & read characteristics of different electronic components (C17).

d - General and transferable skills:

By the end of the course the student should be able to:
d1- Communicate effectively through assignments and e- mails. (D3)
d2- Lead and motivate individuals. (D5)
d3- Effectively manage tasks, time, and resources. (D6)
d4- Search for information and engage in life-long self-learning discipline. (D7

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A3, A4 , A8 , A13
B	Intellectual skills	B2 , B5 , B7
C	Professional and Practical Skills	C3 , C17
D	General and transferable skills	D3, D5 , D6 ,D7

3- Contents

Topic	Lecture hours	Tutorial hours	Practical hours
• Operational Amplifiers Configurations	1	-	1
• Applications of Op-Amps	2	1	2
• Op-Amp Differentiator	2	1	2
• Op-Amp Integrator	2	1	2
• Design of Op-Amp circuits	2	1	2
• Design of Digital to Analog Converter	2	1	2
• Basic Principles of Semi-conductors.	2	1	2
• Diode Terminal Characteristic	2	1	2
• Diode Applications	2	1	2
• Design of Half wave & Full wave rectifier	2	1	2
• Diode circuits	2	1	2
• JFET Transistors	2	1	2
• JFET Trans- conductance & ac parameters	2	1	2
• CMOSFET Functions	2	1	2
• CMOSFET Applications	1	1	1
Total hours	**28**	**14**	**28**

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations and	Discussions and	Tutorials	Problem solving	Laboratory &					Researches and	Modeling and			Written Exam	Practical Exam	Quizzes	Term papers	Assignments			
Knowledge & Understanding	a1	1	1	1	1			1			1		1	1		1	1	1	1			1	
	a2	1			1						1	1	1	1		1			1				
	a3	1			1									1		1			1				
	a4	1	1		1			1	1			1		1		1	1		1			1	1
	a5	1						1			1	1	1	1		1						1	
	a6	1			1			1			1	1	1	1	1	1			1			1	
	a7	1			1				1					1		1			1				1
	a8	1												1		1							
	a9	1						1			1	1	1	1	1	1						1	
	a10	1			1	1		1			1		1	1	1	1			1	1		1	
Intelle ctual	b1	1			1	1			1			1		1		1			1	1			1
	b2			1					1				1					1					1

	b3	1				1										1				1			
	b4	1				1			1				1			1				1			1
	b5			1														1					
Applied Prof. Skills	c1	1	1	1	1			1			1		1	1		1	1	1	1			1	
	c2	1			1						1	1	1	1		1			1				
	c3	1			1									1		1			1				
	c4	1	1		1			1	1			1		1		1	1		1			1	1
General Skills	d1	1						1			1	1	1	1		1						1	
	d2	1			1			1			1	1	1	1	1	1			1			1	
	d3	1			1				1					1		1			1				1

5- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Semester Work	Quizzes	Week 5,10	15
	Assignments	Week 3,9	15
	Reports	Week13	10
Mid-Term Exam		7-th Week	20
Written Exam		Sixteenth week	40
Total			100

6- List of references:

6-1 Course notes

- Microelectronics Circuits-1 "Theoretical part"
- Microelectronics Circuits-1 "Practical part"

6-2 Required books

- Sedra-Smith, Microelectronics Circuits -6th ed., Oxford University Press, 2009.

6-3 Recommended books

- Jacob Millman, Microelectronics-9th ed, McGraw Hill series Jacob Milman, 2012.

7- Facilities required for teaching and learning:

- Lectures room equipped with OHP and data show facility.
- Electronics Lab.
- Computer Lab. Installed with MATLAB and Orcad programs.

Course coordinator: Dr. Eman Mohammed Mahmoud

Head of the Department: Prof. Dr. Shouman S.E.I

Date: December, 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specification
CMPN 210: Engineering Computer Applications

A- Affiliation

Relevant program: Electronic engineering and communication technology BSc program
Computer Engineering and Information Technology BSc Program

Department offering the program: Electronic Engineering and Communications Technology Department
Computer Engineering and Information Technology Department

Department offering the course: Computer Engineering and Information Technology Department

Date of specifications approval: December 2018

B - Basic information

Title: Engineering Computer Applications **Code**: CMPN 210 **Year/level:** Junior , First Semester
Credit Hours: 3 **Lectures**: 2 **Tutorial**:1 **Practical**: 2 **Total:**5
Pre-requisite: CMPN 010

C - Professional information

1 – Course Learning Objectives:

By the end of this course the students should demonstrate the knowledge and understanding of the features, basic concepts and different operations of MATLAB. They should be able to develop and enhance modules and programs using MATLAB software package.

2 - Intended Learning Outcomes (ILOS)

a – Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:
a1- MATLAB fundamentals (A1, A2).
a2- Mathematical, logical, Array Operations, Vectors and Matrix Operations in MATLAB (A1, A8).
a3- MATLAB plotting and Graphing capabilities (A5, A16).
a4- MATLAB programming features (using script M-files and function files) (A2, A5, A12).
a5- MATLAB applications in the field of circuit theory (DC analysis, transient analysis, and AC Analysis and network functions of an electrical circuit) (A12,A13)
a6- MATLAB applications in the field of semiconductor physics and Operational Amplifier (A12,A13)
a7- Basics of MATLAB SIMULINK (A8).

b – Intellectual Skills:

On successful completion of the course, the student should be able to:
b1-Investigate on a MATLAB program in similar way to other computer programming (B1, B2, B3).
b2- Utilize different graphics in two and three dimensions (B5, B7, B14).
b3- Analyse DC and AC circuits, and design the appropriate MATLAB program to solve (B13).
b4- Investigate a physical problem, deduce its mathematical model, then perform the MATLAB program to solve (B13, B14).
b5-Manipulate SIMULINK model for different problems (B17, B18).

c - Professional and practical skills:

On successful completion of the course, the student should be able to:
c1- Use of different matrix and array operations for both real and complex numbers(C1,C2)
c2- Produce graphics in two and three dimension (C5,C14)
c3- Develop MATLAB programs to simulate different systems (C6, C7, C14).
c4-Solve different operational problems related to the electrical, electronic, and control systems and their basic elements (C1, C5, C6, C7, C15).

c5- Design and implement SIMULINK model for different problems (C3, C4, C5).

d - General and transferable skills:
On successful completion of the course, the student should be able to:
d1- Work in a team and involve in group discussion and seminars (D1, D3).
d2- Communicate effectively and present data and results orally and in written form (D3, D4).
d3- Use ICT facilities in presentations, and manage resources efficiently (D4, D5).
d4- Search for information's in references, journals and in internet(D7).
d5- Practice self-learning (D7, D9).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A2, A5, A8,A12, A13, A16
B	Intellectual skills	B1, B2, B3, B5, B7, B13, B14, B17,B18
C	Professional and practical skills	C1, C2,C3,C4,C5, C6, C7,C14,C15
D	General and transferable skills	D1, D3, D4, D5,D7, D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
➢ . Introduction to MATLAB	2		
➢ Mat lab Fundamentals	2	1	2
➢ Matrix Operations, Array Operations Vectors and Matrix Operations, Graphing	2	2	2
➢ Data Analysis	2	2	2
➢ Plotting Commands	2	2	2
➢ Control Flow. -M – Files	2	2	2
➢ Control Statements	2		2
➢ DC Analysis	2	1	2
➢ Transient Analysis	2	1	2
➢ AC Analysis and network functions	2	1	2
➢ Advanced Programming in MATLAB in Semiconductor physics . - Operational Amplifier	2		4
➢ Computer Application using MATLAB-Mathematical Models of systems	2	1	2
➢ Introduction to Simulink	3	1	3
➢ Seminar	1		1
Total hours	28	14	28

4 - Teaching and Learning and Assessment methods:

Course =	Teaching Methods	Learning Methods	Assessment Method

		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments					Researches and Reports	Modeling and Simulation	Site visits	discovering	Written Exam	Practical Exam	Quizzes	Term papers	Assignments			
Knowledge & Understanding	a1	1	1	1			1					1				1		1		1			
	a2	1					1							1		1		1	1	1			
	a3	1					1							1		1		1		1			
	a4	1	1	1	1	1	1					1				1		1	1	1			
	a5	1			1		1									1	1	1		1			
	a6	1			1		1					1		1		1			1	1			
	a7	1	1	1	1	1	1					1	1	1		1	1		1	1			
Intellectual Skills	b1	1			1											1		1		1			
	b2	1	1													1		1		1			
	b3	1		1	1		1					1		1		1	1			1			
	b4	1			1		1					1		1		1	1	1		1			
	b5	1	1		1	1	1							1		1	1	1		1			
Applied Professional Skills	c1	1			1	1	1							1		1		1					
	c2	1	1													1		1					
	c3	1		1		1						1	1										
	c4	1	1		1	1								1									
	c5	1	1		1		1							1									
General Tran. Skills	d1			1		1						1											
	d2		1	1								1	1										
	d3	1	1									1											
	d4	1	1	1								1											
	d5			1								1	1										

5- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7-th Week	20
Semester Work	Quizzes	4 Quizzes (every 3 weeks)	8
	Reports	Two reports per semester	4
	Assignments	Bi-Weekly	8
Practical Exam		Fifteenth week	20
Written Exam		Sixteenth week	40
Total			100

6- List of references:

6-1 Course notes:

Lecture notes and handouts

Laboratory work printed notes

6-2 Required books

Digitalfilters &signal rocessing with matlab

Munther (2013), Matlab by example programming basic.

luis f.chapore (2011), signals and systems using matlab, academic press

sanjay, (2011), digital signal processing with matlab program, korson

luis f.chapore (2004), MATLAB AN INTRODUCTION WITH APPLICATIONS, WILEY

dean g.duffy (2003), advanced engineering mathematics with matlab, chapman&hall

6-3 Recommended books:

D. Hanselman and B. Littlefield (2005), Mastering MATLAB7, Prentice Hall,
David C. Kuncicky (2004).,Matlab Programming, Pearson Prentice Hall ,
Amos Giltat, (2004),Matlab An Introduction with Applications", John Wiley.
Thomas K., Jewelly, (1990)Computer Applications for Engineers, Prentice Hall,.
Jaan Kiusalaas (2010)Numerical Methods in Engineering with MATLAB, Cambridge University Press,.

6-4 Periodicals, Web sites, etc.:

http://www.mathwork.com/ .
http://www.talkthecold.com/bizgoogle/ .
http://www.scrius.com/ .
http://www.Vlab.co.in/ .
http://www.GenLib.org/ .
http://www.SCI-hub.org/ .
http://www.Merlot.org/ .
http://www.W3schools.com/

7- Facilities required for teaching and learning:

- Computer Lab.
- Data show
- Computer software package.

Course coordinator: Dr. Abd Elmoneim Fouda
Head of the Department: Ass. Prof. Dr. Wafaa Boghdady
Date: December 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specification
ELCN422: Communications3

A- Affiliation

Relevant program/s:	Electronic Engineering and Communication Technology BSc Program
Department offering the program:	Electronic Engineering and Communication Technology Department
Department offering the course:	Electronic Engineering and Communication Technology Department
Date of specifications approval:	December, 2018

B - Basic Information

Title: Communications3 **Code:** ELCN422 **Level:** (4), Ninth Semester
Credit Hours: 4 **Pre-requisite:** MTHN207
Contact Hours: **Lectures:** 3 **Tutorial:**1 **Laboratory:** 2 **Total:** 6

C - Professional Information

1 – Course Learning Objectives:

The objective of this course is to enable the students to introduce the main stages of digital communication system, focusing on coding processes and discrete channel analysis. He should be able to introduce the main principles of information theory and to explain the source coding technique with examples. He should also be able to introduce the importance of channel coding stages, showing various types of that technique and to analyze the discrete channel memory-less model and probability of error calculation.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

By the end of the course the student should gain the following knowledge:

a1- Coding stages applied in digital communication system and the goal of each stage. (A18, A19)
a2- Common types of information sources and make some operations on them. (A2)
a3- Understand the concept of source coding and the efficient characteristics that should exist in source codes. (A2, A19)
a4- The objective of channel coding technique and difference among its various types. (A4, A19, A27)
a5- The discrete channel memory-less model. (A27)
a6- How to estimate the probability of error. (A2)

b - Intellectual skills:

On successful completion of the course, the student should be able to:

b1- Perform some operation on zero- memory source and Markov source such as symbol information and source entropy. (B11)
b2- Design suitable source codes for a group of symbols with optimum characteristics. (B1, B2, B3, B11)
b3- Design optimum channel encoder circuit taking in consideration advantages and disadvantages of encoder parameters. (B3, B15, B18)

b4- Take decision about the suitable channel coding technique applied in the digital communication system (Hamming – cyclic – convolutional). (B2, B3, B15)
b5- Simulate a complete digital communication system (base band transmitted data) using software program and study the bit error rate performance of the system. (B1, B2, B15)
b6- Calculate the probability of error for a given discrete channel model. (B11, B15)

c - Professional and practical skills:

On successful completion of the course, the student should be able to:
c1- Simulate simple digital communication system in the presence of noisy channel, transmitting random bits and find the BER at the receiver. (C13, C14)
c2- Simulate simple digital communication system in the presence of noisy channel, transmitting text and measure the effect at the receiver with/without channel coding techniques. (C12, C14)
c3- Design software program that creates source codes using Huffman method and make some operation on the output codes such as: average code length and source entropy. (C13, C14)
c4- Simulate complete digital communication system with Hamming encoder / decoder stages in the presence of noisy channel and find the BER at the receiver. (C13, C14)
c5- Simulate complete digital communication system with cyclic encoder / decoder stages in the presence of noisy channel and find the BER at the receiver. (C13, C14)
c6- Simulate complete digital communication system with convolutional encoder / decoder stages in the presence of noisy channel and find the BER at the receiver for different circuit configurations. (C13, C14)
c7- Compare between different channel coding techniques: Hamming – cyclic – convolutional based on BER performance versus SNR variation. (C12, C14)
c8 - Design software program to analyze the discrete memory-less channel and measures its performance. (C12, C13)

d - General and transferable skills:

On successful completion of the course, the student should be able to:
d1- Communicate effectively through assignments. (D3)
d2- Effectively manage tasks, time, and resources. (D6)
d3- Search for information and engage in life-long self-learning discipline. (D7)

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A2, A4, A18, A19, A27
B	Intellectual skills	B1, B2, B3, B11, B15, B18
C	Professional and Practical Skills	C12, C13, C14
D	General and transferable skills	D3, D6, D7

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
• Measurement of Information – Zero memory information sources – Source extension - Markov source – source entropy.	12	4	6
• Properties of source codes	3	1	4

• Source compact coding using Tree and Huffman methods.	8	2	4
• Channel coding using: Hamming codes, cyclic codes, convolutional codes.	12	5	10
• Discrete information channels – channel capacity and entropy.	7	2	4
Total hours	**42**	**14**	**28**

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods						Learning Methods			Assessment Method				
		Lecture	Presentations & Movies	Discussions & Seminars	Tutorials	Problem solving	Laboratory & Experiments	Brain storming	Self Learning	Researches and Reports	Midterm	Quizzes	Assignments	Written Exam	Practical Exam
Knowledge & Understanding	a1	1		1	1		1				1	1		1	
	a2	1	1	1	1	1	1	1		1	1	1	1	1	1
	a3	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	a4	1		1	1	1	1	1	1			1	1	1	1
	a5	1	1	1	1	1		1	1	1		1	1	1	
	a6	1		1	1	1	1	1						1	1
Intellectual Skills	b1	1			1	1		1			1	1	1	1	
	b2	1		1	1	1		1		1	1	1	1	1	
	b3	1		1	1	1	1	1					1	1	1
	b4	1		1	1	1	1	1		1		1	1	1	1
	b5						1	1							1
	b6	1			1	1		1						1	
Applied Professional Skills	c1						1	1							1
	c2						1	1							1
	c3						1	1							1
	c4						1	1							1
	c5						1	1							1
	c6						1	1							1
	c7						1	1							1
	c8						1	1							1
General Tran. Skills	d1						1	1					1		
	d2						1	1	1	1				1	
	d3								1	1				1	

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Mid-Term Exam	7th Week	20

Semester Work	Quizzes	5th Week and 10th Week	10
	Reports and Tasks	5th Week, 8th Week and 12th Week	5
	Assignments	Weekly	5
	Remarkably achievements	13th Week	Bonus (5)
Practical Exam		15th week	20
Written Exam		16th week	40
Total			100

6- List of references:

6-1 Course notes

1-Communications (III) "Theoretical part"

2- Communications (III) "Practical part"

6-2 Required books

B.P. Lathi (2010), Modern Digital and Signal Communication Systems, Oxford, USA, ISBN: 978-0-19-538493-2

Bernard Sklar, (2001) Digital Communications Fundamentals and applications, 2nd Edition, Prentice Hall PTR

6-3 Recommended books

Simon Haykin (2001) "Communication Systems, 4th Edition, John Wiley & Sons, USA, ISSBN: 0-471-17869-1

6-4 Periodicals, Web sites, etc.

- En.m.wikibooks.org/wiki/A_Basic_Convolutional_Coding_Example
- http://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-441-information-theory-spring-2010/lecture-notes/, Last accessed December 15, 2018
- https://mitpress.mit.edu/books/error-correcting-codes, Last accessed December 15, 2018
- http://jim*stone.staff.ac.uk/BookInfoTheoryBookMain.html, Last accessed December 15, 2018
- http://nptel.ac.in/noc/individual_course.php?id=noc17-ee17, Last accessed December 15, 2018

7- Facilities required for teaching and learning:

- Lectures room equipped with OHP and data show facility.
- Computer Lab. Installed with MATLAB program.

Course coordinator: Dr. Shaimaa ElSayed Ibrahim
Head of the Department: Prof.Dr. Shouman S.E.I
Date: December 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specification
CMPN325: Information Systems

A- Affiliation

Relevant program: Computer Engineering and Information Technology BSc Program
Department offering the program: Computer Engineering and Information Technology Department
Department offering the course: Computer Engineering and Information Technology Department
Date of specifications approval: December 2018

B - Basic information

Title: Information Systems **Code**:CMPN325 **Level:** Senior1, First Semester
Credit Hours: 3 **Lectures**: 2 **Tutorial/Exercise**:2 **Practical**: -
Pre-requisite: CMPN110

C - Professional information

1 – Course Learning Objectives:

By the end of this course the students should demonstrate the knowledge and understanding of the main concepts of systems, data, information, information systems, the importance of information systems and information requirements in modern organizations and businesses, and the different types of information systems including internet-based Information Systems. They should be able to explore the systems development life cycle (analysis, design, and implementation) of any organization's information system.

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2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of: a1- Basic concept of information systems (A1,A2,A3,).
a2- Importance of IS for business (A7, A8,A18,A20)
a3- Components of information systems (A2,A4,,A9).
a4- Different types of Information Systems such as MIS, DSS, Expert Systems (A8,A9).
a5- Information system development life cycle. (A8,A12).
a6- Transaction processing system TPS (A8,A19,A20).
a7- Basic concepts of internet-based applications in IS (A9,A2,A19).

b - Intellectual skills:

On successful completion of the course, the student should be able to:
b1-Investigate on the different approaches in Information Systems (B1,B2,B3,B19).
b2- Create a systematic approaches of IS analysis and design (B12,B19,B23)
b3- Analyze different Aspects of system's feasibility study (B12, B14,B18,B20)
b4- Manipulate different procedures of system development life cycle SDLC (B2,B3,B4,B19).
b5- Investigate on the different techniques for Internet-based Information systems (B1, B12,B22)

c - Professional and practical skills:

On successful completion of the course, the student should be able to:
c1- Apply knowledge of science, and IT to deal with Information Systems (C1,C2)
c2- Apply the life cycle and system approach techniques to analyse and design IS (C2,C3,C6)
c3- Use of analytical tools, techniques, and software packages for analysis and design of a real- world information system (C6,C14,C15,C17,C18)
c4- Use computational facilities and techniques for implementing real-world information system for some enterprise or organization (C4,C5, C6, C13,C18).

d - General and transferable skills:

On successful completion of the course, the student should be able to:

d1- Work in a team and involve in group project (D1, D3,D7).

d2- Communicate effectively and present data and results orally and in written form(D3,D4,D6).

d3- Use ICT facilities in presentations, and manage resources efficiently (D4,D5).

d4- Search for information's in references, journals and in internet(D7).

d5- Practice self-learning(D5, D7, D9).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A2,A3,A4,A7,A8, A 9, A12, A18,A19,A20
B	Intellectual skills	B1,B2, B3,B4,B12,B14 ,B18.B19,B20,B22,B23
C	Professional and practical skills	C1, C2,C3,C4,C5, C6,C13,C14,C15, C17,C18
D	General and transferable skills	D1, D3, D4, D5,D6,D7, D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
➢ Information systems concepts	2	2	
➢ System Approach of solving Business problems	2	2	
➢ System development Life Cycle:			
• System Analysis and design	2	2	
• Data Flow Diagrams	2	2	
➢ Databases systems	2	2	
➢ Information System for Business Operations			
• Marketing Information Systems	1	1	
• Manufacturing Information Systems	1	1	
• Human Resources Management Systems	1	1	
• Accounting Information Systems	1	1	
➢ Management Information Systems	2	2	
➢ Decision support systems	2	2	
➢ Artificial Intelligence and Expert Systems	2	2	
➢ Internet-Based Information Systems	4	4	
➢ Case Study	4	4	
Total hours	28	28	

4 - Teaching and Learning and Assessment methods:

Course ILO's	Teaching Methods										Learning Methods				Assessment Method							
	Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments					Researches and Reports	Modeling and Simulation			Written Exam	Practical Exam	Quizzes	Term papers	Assignments			
Kn ow a1	1	1	1								1				1	1	1		1			

	a2	1														1	1	1	1	1			
	a3	1														1	1	1		1			
	a4	1	1	1	1	1						1				1	1	1	1	1			
	a5	1		1	1							1	1			1	1	1	1	1			
	a6	1		1	1							1				1	1	1		1			
	a7	1	1	1	1	1						1	1			1	1	1	1	1			
Intellectual Skills	b1	1			1											1				1			
	b2	1	1													1				1			
	b3	1		1	1							1				1				1			
	b4	1			1							1				1				1			
	b5	1	1		1	1										1				1			
Applied Professional	c1	1			1	1										1	1	1	1	1			
	c2	1	1													1		1	1	1			
	c3	1		1		1						1	1						1	1			
	c4	1	1		1	1											1		1	1			
General Tran. Skills	d1	1	1	1		1						1							1				
	d2	1	1	1		1						1	1						1				
	d3		1	1								1							1				
	d4		1	1								1							1				
	d5		1	1								1	1						1				

5- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7-th Week	20
Semester Work	Quizzes	4 Quizzes (every 3 weeks)	16
	Reports	Two reports per semester	14
	Assignments	Bi-Weekly	10
Written Exam		Sixteenth week	40
Total			100

6- List of references:

6-1 Course notes:, "Information Systems- Lecture Notes"

6-2 Required books

- James A.O' Brine ,(1994) ,Introduction to Information Systems, 7th ed. Irwin,
- Malaga, (2004) Information System Technology, Prentice Hall.,

6-3 Recommended books:

- Steven R. Gordon,(2004).Information Systems Management Approach, wiley

6-4 Periodicals, Web sites, etc.

- http://www.britannica.com/topic/information-system
- http://www.britannica.com/topic/information-system http://www.journals.elsevier.com/information-systems/

7- Facilities required for teaching and learning:

- Computer, Data show and Computer programs

Course coordinator: Dr. Khaled Morsy
Head of the Department: Prof. Dr. Wafaee Boghdady
Date: December 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specification
CMPN 261: Seminar

A- Affiliation

Relevant program: Computer Engineering and Information Technology BSc Program
Department offering the program: Computer Engineering and Information Technology Department

Department offering the course: Computer Engineering and Information Technology Department

Date of specifications approval: December 2018

B - Basic information

Title: Seminar-1 **Code:** CMPN261 **Level:** Junior 5th Semester
Credit Hours: 1 **Lectures:** - **Tutorial/Exercise**:2 **Total:2**:
Pre-requisite: 72 Credits

C - Professional information

1 – Course Learning Objectives:

The proposed seminar topic must differ than the normal covered topics in the lectures. The seminar topic must complement the other computer engineering and information technology courses. Students practice speaking in front of an audience and to explore topics of their own choosing in detail. Students will research topics and organize presentations for faculty and other students. The topics may be any aspect of the Computer Engineering sciences and must be approved by the instructor in advance.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:
a1- The seminar topics and issues (A1, A3, A15,).
a2- Making seminar plan along the available duration time (A3, A8).
a3- Definition the basic concepts for the topics of seminar (A1, A3, A5).
a4- The relationship between the topics of seminar and the normal lecture courses (A1, A3).
a5- The update techniques for the topics of seminar (A15).
a6- Definition and evaluation of up-to-date technology (A15, A16).
a7- Human and social consideration in engineering design and social problems (A9, A11)

b - Intellectual skills:

On successful completion of the course, the students should be able to:
b1- Solve engineering problems (B5, B10).
b2- Enrich researching experience (B13, B14, B17).
b3- Enhance their think with advanced ideas (B1, B2).

c - Professional and practical skills:

On successful completion of the course, the students should be able to:
c1- Improve their oral and language skills (C11, C12, C16).
c2- Identify more of scientific search engines (C12, C14, C15).
c3- Manage their time effectively (C9, C10).
c4- Specify approaches methods which are used in their searches (C1, C5, C6).
c5- Improve their ability to carry out discussion in group (C2, C5).

d - General and transferable skills:

On successful completion of the course, the student should be able to:

d1- Search for information of up to date techniques and technology (D3, D7).

d2- Work in team and to explore problems on their own initiative (D1, D2).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A3, A5, A8, A9, A11,A15, A16
B	Intellectual skills	B1, B2, B5, B10,B13, B14,B17
C	Professional and practical skills	C1, C2, C5, C6, C9, C10, C11, C12, C14, C15, C16
D	General and transferable skills	D1, D2, D3, D7

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
The course consists of a number of subjects that concerned with the up-to-date of technology and its impact to society. It covers the following fields: • The definition and evaluation of technology. • Solving problems using up-to-date technology. • Designing new system applications using modern technology. • Modification for conventional systems.			
Total hours	-	28	

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations and	Discussions and	Tutorials	Problem solving	Laboratory & Experiments					Researches and Reports	Modeling and Simulation			Seminars	Practical Exam	Quizzes	Term papers	Assignments			
Knowledge & Understanding	a1		1	1	1	1						1				1			1				
	a2		1	1	1	1						1				1			1				
	a3		1	1	1	1						1				1			1				
	a4		1	1	1	1						1				1			1				
	a5		1	1	1	1						1				1			1				
	a6		1	1	1	1						1				1			1				
	a7		1	1	1	1						1				1			1				
Intellectual Skills	b1		1	1	1	1						1				1			1				
	b2		1	1	1	1						1				1			1				
	b3		1	1	1	1						1				1			1				
Applied Professional	c1		1	1	1	1						1				1			1				
	c2		1	1	1	1						1				1			1				

	c3		1	1	1	1						1				1			1				
	c4		1	1	1	1						1				1			1				
	c5		1	1	1	1						1				1			1				
General Tran. Skills	d1		1	1	1	1						1				1			1				
	d2		1	1	1	1						1				1			1				

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Assignment and year work	By the semester	60
Assignment and year work Evaluation of oral and final report of seminars	By the end of the seminar periods	40
Total		100

6- List of references:
6-1 Course notes: Non
6-2 Required books: Non
6-3 Recommended books: Non
6-4 Periodicals, Web sites, etc.

7- Facilities required for teaching and learning:

- Data show

Course coordinator: Ass. Prof. Dr. Wafaa Boghdady
Head of the Department: Ass. Prof. Dr. Wafaa Boghdady
Date: December 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specification
CMPN321: Computer Architecture

A- Affiliation

Relevant program/s:	Computer Engineering and Information Technology BSc Program
Department offering the program:	Computer Engineering and Information Technology Department
Department offering the course:	Computer Engineering and Information Technology Department
Date of specifications approval:	December 2018

B - Basic information

Title: Computer Architecture	**Code**: CMPN321 **Year/Level:** Senior 1, Second Semester
Credit Hours: 3	**Pre-requisite**: CMPN 111
Contact Hours:	**Lectures:** 2 **Tutorial/Exercise**:2 **Practical**: -0 **Total**:4

C - Professional information

1 – Course Learning Objectives:

By the end of this course the students should demonstrate the knowledge and understanding of the basic features, basic concepts of the microcomputer structure and architecture. Moreover, the students will be familiar with the basic concepts of machine-level architecture, programming instruction formats and addressing modes. They should be able to recognize and identify the micro operations, memory organization, I/O units, arithmetic and logic unit operations (Addition, multipliers and division).

2 - Intended Learning Outcomes (ILOS)

a – Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1- Basic Structure of computers (A1, A2).
a2- Foundations of Computer Architecture (A3)
a3- Fundamentals of Arithmetic and logic units (A3, A4, A13).
a4- Different types of Addressing Modes (A5, A8).
a5- Different classifications of parallel and pipeline processors (A13).
a6- Architecture and organization of Memory unit (A8, A13, A15).
a7- Concepts of Operating system support (A1, A2, A13).
a8- Basic of assemply Programming (A15, A10)

b – Intellectual Skills:

On successful completion of the course, the student should be able to:

b1- Investigate on the Computer Architecture (B6, B5).
b2- Create a systematic approaches of different addressing modes (B3,B4,B12)
b3- Analyze different components constituting the micro computer system (B13)
b4- Manipulate different organizations of memory units (B4,B5,B7,B17).
b5- Assess and evaluate the characteristics and performance of A.L.U. (B1,B2, B5)
b6- Investigate on the different techniques for assemply Programming (B3)

c - Professional and practical skills:

On successful completion of the course, the student should be able to:

c1- recognize and identify the structure of computer architecture (C1, C2)
c2- Evaluate the performance of A.L.U and parallel processor (C2, C3)

c3- Use a wide range of analytical tools, techniques, and software packages pertaining for programming the computer (C6, C14, C15)
c4- Utilize computational facilities and techniques, to design different architectures of parallel processors and pipeline systm (C4, C13).

d - General and transferable skills:
On successful completion of the course, the student should be able to:
d1- Work in a team and involve in group discussion and seminars (D1, D3, D6).
d2- Communicate effectively and present data and results orally and in written form (D3, D4).
d3- Use ICT facilities in presentations, and manage resources efficiently (D4, D5).
d4- Search for information's in references, journals and in internet(D7).
d5- Practice self-learning (D7, D9).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1,A2,A3,A4,A5,A8,A10,A13,A15
B	Intellectual skills	B1,B2,B3,B4,B5,B6,B7,B12,B13,B17
C	Professional and practical skills	C1,C2,C3,C4,C6,C13,C14,C15
D	General and transferable skills	D1,D3,D4,D5,D6,D7,D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
➢ Basic Structure of computers	2	2	
➢ Instruction cycle and performance evaluation	2	2	
➢ Types of computer organizations an addressing modes	4	4	
➢ Programming using different addressing modes	2	4	
➢ Arithmetic and logic units design	2	4	
➢ Memory types	2	-	
➢ Design of cache memory	4	4	
➢ Performance measuring of cache	2	2	
➢ Operating system support	1	-	
➢ Pipeline and parallel processors	3	4	
➢ Seminars	2	-	
Total hours	**26**	**26**	**-**

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments					Researches and Reports	Modeling and Simulation			Written Exam	Practical Exam	Quizzes	Term papers	Assignments			
Knowledge & Understanding	a1	1	1	1								1				1		1		1			
	a2	1														1		1	1	1			
	a3	1														1		1		1			
	a4	1	1	1	1	1						1				1		1	1	1			
	a5	1			1											1		1		1			
	a6	1			1							1				1			1	1			
	a7	1	1	1	1	1						1				1			1	1			
	a8	1																					
Intellectual Skills	b1	1			1											1		1		1			
	b2	1	1													1		1		1			
	b3	1		1	1							1				1				1			
	b4	1			1							1				1		1	1	1			
	b5	1	1		1	1						1				1		1	1	1			
	b6	1	1	1		1						1											
Applied Professional Skills	c1	1			1	1										1		1	1				
	c2	1	1													1		1	1	1			
	c3	1		1		1						1							1	1			
	c4	1	1		1	1													1				
General Tran. Skills	d1			1		1						1							1				
	d2		1	1		1						1							1	1			
	d3	1	1									1								1			
	d4	1	1	1								1								1			
	d5			1								1								1			

5- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7-th Week	20
Semester Work	Quizzes	4 Quizzes (every 3 weeks)	16
	Reports	Two reports per semester	14
	Assignments	Bi-Weekly	10

Written Exam	Sixteenth week	40
Total		100

6- List of references:
6-1 Course notes: Lecture notes and handouts
Seham Ebrahim,Computer Architecture.Cairo :MAM Press
6-2 Required books
William Stallings, (2010) Computer Organization And Architecture Designing For PERFORMANCE, 8th edition, Prentice Hall.
Rachard(1996),advanced computer architecture system approach, Prentice Hall.
M.Mano, (1996), Computer System Architecture, Prentice Hall.
Thomas C.Bartee, (1991), Computer Architecture and Logic Design, Mc Graw Hill,
6-3 Recommended books: Non

6-4 Periodicals, Web sites, etc.:
https://www.eecs.berkeley.edu/Courses/Data/188.html
http://www.GenLib.org/ .

7- Facilities required for teaching and learning:
- Computer Lab.
- Computer, Data show and Computer package.

Course coordinator: Dr. Seham Ebrahim
Head of the Department: Ass. Prof.Dr. Wafaa Boghdady
Date: December 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specification

ELCN 210: Control- I (Principles of Automatic Control)

A- Affiliation

Relevant program/s:	Electronic Engineering & Communication Technology BSc Program Computer Engineering and Information Technology BSc Program
Department offering the program:	Electronic Engineering & Communication Technology BSc Program Computer Engineering and Information Technology BSc Program
Department offering the course:	Electronic Engineering & Communication Technology BSc Department
Date of specifications approval:	December, 2018

B - Basic Information

Title: Control – I **Code: ELC 210** **Level (2)**, Fifth Semester

Contact Hours: **Lectures:** 3 **Tutorial:**1 **Practical:**2 **Total:** 6

Credit Hours: 4 **Pre-requisite:** MTH203

C - Professional Information

1 – Course Learning Objectives:

By the end of this course the students should demonstrate the knowledge and understanding of how to model, analyze the performance of linear F.B. control systems and design appropriate controllers to achieve the required performance either in time or in frequency domains using the classical control theory tools.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding o

a1- Theoretical background needed to develop and solve the mathematical model of physical systems (A1)

a2- Concept of transfer function of linear system and block diagram algebra (A1,A5)

a3-Time domain analysis and performance evaluation of F.B. control system: transient response, steady state error" accuracy", and stability (A16).

a4- Procedures of design of controllers "P,PI,PID" to improve the system performance (A4,A16).

a5- Procedure of constructing and using the Root-Loci in analysis and design of control system (A1, A16).

a6- Frequency domain analysis& design of control systems (A4,A16).

b - **Intellectual skills:**

On successful completion of the course, the student should be able to:

b1- Deduce the mathematical models, transfer functions, and state-space model for typical electrical and mechanical systems (B1,B13).

b2- Investigate transient response, steady state error, and stability of linear F.B. system (B1,B2,B13).

b3- Investigate how to improve the feedback system performance (transient response, steady state error, stability) by designing of an appropriate controller (B5,B7).

b4- Construct and Investigate the control system performance using root locus method (B1,B13).

b5- Deduce the frequency response plots of control systems and investigation of different types of system compensators (B1,B2,B7).

c - Professional and practical skills:

On successful completion of the course, the student should be able to:

c1- Construct, test, and investigate the performance characteristics of open and closed loop control system (C1, C12).

c2- Calculate the transient parameters and steady state values of control system response (C1, C12).

c3- Design of proper controller to achieve certain performance of a given control system (C1, C2, C3, C12).

c4- Carry out practical testing of the performance of servo system with P, PI and PID controllers (C5, C11, C14, C17).

c5- Use experimental facilities to investigate the control system (open loop & closed loop) performance (C5, C11, C14, C17).

d - General and transferable skills:

On successful completion of the course, the student should be able to:

d1- Search for information in reference and internet (D7).

d2- Present data and results orally and in written form (D3, D9).

d3- Communicate with others, work in a team and involvement in group discussion and seminars (D1,D3).

d4- Practice self-learning (D7,D9).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1,A4,A5,A16
B	Intellectual skills	B1,B2,B5,B7,B13
C	Professional and Practical Skills	C1,C2,C3,C5,C11,C12,C14,C17
D	General and transferable skills	D1,D3,D7,D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
• Introduction to control system (closed loop versus open loop control).	3	1	2
• Mathematical background for solving of linear time-invariant systems (differential equations & Laplace transform).	3	1	2
• Transfer function of system, block algebra & Mason's gain formula.	3	1	2
• Closed loop system subjected to disturbances & errors of system.	4	1	3
• State-space representation of dynamic system & state transition matrix& solution of state equation.	3	2	2
• First order & second order open and closed loop responses.	3	1	2
• Effect of roots of the system characteristic equation (poles of system) on the system transient response parameters.	3	1	2
• Basic control actions (P, PI, PD and PID), and system performance.	4	1	3
• Stability of linear control system (Routh-Hurwitz criterion).	3	1	2
• Root locus plots concept and system analysis.	3	1	2
• Frequency response analysis and Bode diagrams.	3	1	2

• The concept of stability in the frequency domain (polar diagram & Nyquist criterion).	3	1	2
• Design of control system via root locus and frequency domain.	4	1	2
Total hours	**42**	**14**	**28**

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method								
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments					Researches and Reports	Modeling and Simulation			Written Exam	Practical Exam	Quizzes	Term papers	Assignments				
Knowledge & Understanding	a1	1			1											1		1		1				
	a2	1			1											1		1		1				
	a3	1	1		1	1						1	1			1		1	1	1				
	a4	1	1										1					1						
	a5	1	1		1	1						1	1			1		1	1	1				
	a6	1	1		1											1		1	1	1				
	a7	1			1											1		1	1	1				
	a8	1																		1				
	a9	1			1											1		1		1				
	a10	1			1											1		1		1				
Intellectual Skills	b1	1	1		1	1						1	1			1		1	1	1				
	b2	1	1										1					1						
	b3	1	1		1	1						1	1			1		1	1	1				
	b4	1	1		1	1							1			1		1	1	1				
	b5						1										1		1					
Applied Prof. Skills	c1	1			1								1			1		1	1	1				
	c2	1	1		1								1			1	1	1	1	1				
	c3	1			1		1						1			1	1	1	1	1				
	c4	1	1		1		1						1			1	1	1	1	1				
General Skills	d1	1		1	1	1						1	1			1		1	1	1				
	d2						1										1							
	d3	1			1	1							1			1		1	1	1				

5- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7-th Week	10
Semester Work	Quizzes	5th , 10th Week	10
	Assignments	3rd , 9th Week	20
Practical Exam		Fifteenth week	20
Written Exam		Sixteenth week	40

Total	100

6- List of references:

6-1 Course notes:

Tantawy, M. (2014) Control - 1 "Principles of Automatic Control" – (Lecture) Cairo: MAM Press

Tantawy, M. (2014) Control - 1 "Principles of Automatic Control" – (Lab.) Cairo: MAM Press

6-2 Required books

Ogata, K. (2010) Modern Control Engineering Prentice-Hall, NC.

6-3 Recommended books:

Kuo, B.C.(2010) Automatic Control System. John Wiley& Sons.

Dorf, R. & Bishop, R. (1995) Modern Control Systems. A. Wesley.

6-4 Periodicals, Web sites, etc.

http://www.control.1th.se/Education/DoctorateProgram/linear-systems.htm l

http://engineersevanigm.blogspot.com/2013/09/automatic-control-by-benjamin-c-kuo-ebook-free-pdf-download-read-online.html

http://ocw.mit.edu/courses/aeronautics-and-astronautics/16-06-principles-of-automatic-control-fall-2012/lecture-notes/

7- Facilities required for teaching and learning:

- Lectures
- Automatic control Lab.

Course coordinator: Ass. Prof. Dr. Magdy O. Tantawy
Head of the Department: Prof. Dr. Shouman S.E.I
Date: December, 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specification
ELCN214: Electronic Measurements

A- Affiliation

Relevant program/s:	Electronic Engineering and Communication Technology BSc Program Computer Engineering and Information Technology BSc Program
Department offering the program:	Electronic Engineering and Communication Technology Department
Department offering the course:	Electronic Engineering and Communication Technology Department
Date of specifications approval:	December 2018

B - Basic Information

Title: Electronic Measurements **Code:** ELCN214 **Level:** (2), sixth Semester
Contact Hours: **Lectures:** 2 **Tutorial:**1 **Laboratory: 2** **Total:** 5
Credit Hours: 3 **Pre-requisite:** ELCN113

C - Professional Information

1 – Course Learning Objectives:

The objective of this course is to enable the students to understand and analyze different techniques for improving performance of electromechanical conventional measuring instruments, utilizing relevant electronic circuits. They should also understand the construction, concepts, and operation of different analog & digital measuring instruments such as: voltmeters, ammeters, ohmmeters, frequency meters, oscilloscopes, and waveforms analyzers and generators. Also it enables the students to understand the principles of design, operation, and application of transducers and data acquisition systems.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1- Analog Measurements. (A5, A15)
a2- Digital Measurements. (A5 ,A15)
a3- CRT and Special Types Oscilloscope. (A15)
a4- Waveform Analysis and Generation. (A8, A15)
a5- Data Acquisition Systems (A5 ,A15)

b - Intellectual skills:

On successful completion of the course, the student should be able to:

b1- Analyze the technical problems and find a suitable solutions. (B3)
b2- Think in a scientific way to reach a certain imagination and new innovation (B3)
b3- Give the correct decision and test his solutions. (B2)
b4- Create new ideas. (B12)

c - Professional and practical skills:

On successful completion of the course, the student should be able to:

c1- Design the special measuring circuits. (C20)

c2- Test electronic circuits using laboratory information. (C12 ,C15)
c3- Develop a system to get a better efficiency. (C3 ,C12)
c4- Establish and construct digital measuring circuits (C3, C20)

d - General and transferable skills:

On successful completion of the course, the student should be able to:
d1- Search for information's from references, journals and internet. (D7)
d2- Write technical reports and prepare convenient presentations. (D4)
d3- Communicate with others, and involve effectively in a team wok (D1)
d4- Effectively manage tasks, time, and resources. (D6)

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A5, A8, A15
B	Intellectual skills	B2, B3, B12
C	Professional and Practical Skills	C3, C12, C15, C20
D	General and transferable skills	D1, D4, D6 , D7

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
Analog Measurements: • Emitter Follower Voltmeter	2	1	2
• Difference Amplifier Voltmeter • Operational Amplifier Voltmeter Circuits	4	2	4
• AC Electronic Voltmeter • Ohm and Current Measurements	2	1	2
Digital Measurements: • Digital Voltmeters DVMs • Digital Frequency Meters	2	1	2
CRT Oscilloscope: • Cathode Ray Tube • Deflection Amplifiers	2	1	2
• Sweep Generator • Automatic Time Base	4	2	4
• Dual Trace Oscilloscope • Wave Forms measurements	2	1	2
Special Types Oscilloscopes: • Sampling Oscilloscope • Digital Storage Oscilloscope (DSO)	4	2	4
Waveform Analysis and Generation: • Analog Spectrum Analyzer • Digital Spectrum Analyzer	2	1	2
Data Acquisition Systems • Transducers • Signal Conditioning Circuits	2	1	2

• Digital to Analog Converters (D/A) • Analog to Digital Converters (A/D)	2	1	2
Total hours	**28**	**14**	**28**

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations and	Discussions and	Tutorials	Problem solving	Laboratory &					Researches and	Modeling and			Written Exam	Practical Exam	Quizzes	Term papers	Assignments			
Knowledge & Understanding	a1	1	1		1			1		1		1	1	1	1	1		1			1		1
	a2	1	1	1	1					1	1		1	1	1	1	1	1					1
	a3	1	1	1	1							1	1	1	1	1	1	1					
	a4	1	1		1		1				1		1	1	1	1		1		1			
	a5	1	1		1		1				1		1	1	1	1		1		1			
	a6	1	1	1	1		1	1		1		1	1	1	1	1	1	1		1	1		1
	a7	1	1	1	1					1	1		1	1	1	1	1	1					1
	a8	1	1		1		1					1	1	1	1	1		1		1			
	a9	1	1		1		1				1		1	1	1	1		1		1			
	a10	1	1	1	1			1		1		1	1	1	1	1	1	1			1		1
Intellectual Skills	b1	1	1	1	1					1	1		1	1	1	1	1	1					1
	b2	1	1		1		1					1	1	1	1	1		1		1			
	b3	1	1		1		1					1	1	1	1	1		1		1			
	b4				1		1											1		1			
	b5				1			1				1						1			1		
Applied Prof. Skills	c1				1													1					
	c2			1	1		1					1					1	1		1			
	c3	1	1		1			1		1		1	1	1	1	1		1			1		1
	c4	1	1	1	1					1	1		1	1	1	1	1	1					1
General Skills	d1	1	1	1	1							1	1	1	1	1	1	1					
	d2	1	1		1		1				1		1	1	1	1		1		1			
	d3	1	1		1		1				1		1	1	1	1		1		1			

5- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7th Week	20
Semester Work	3th and 9th weeks	10th Week	8
	5rd and 11th Weeks	10th Week	4
	1 reports per semester	5 (Bonus)	8
Practical Exam		Fifteenth week	20

Written Exam	Sixteenth week	40
Total		100

6- List of references:

6-1 Course notes:

1- Electronic Measurements "Theoretical Part"

2- Electronic Measurements "Practical Part"

6-2 Required books

David A. Bell, Electronic Instrumentation & Measurements, 2nd edition, Prentice-Hall, Inc., 1997.

6-3 Recommended books:

Larry D. Jones, and A. Foster Chin, Electronic Instrumentation & Measurements, 2nd edition, Prentice- Hall, Inc., 1991.

6-4 Periodicals, Web sites, etc.

(Last Accessed - Dec. 2018)

- MIT Open courseware

https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-071j-introduction-to-electronics-signals-and-measurement-spring-2006/

7- Facilities required for teaching and learning:

- Lectures room equipped with OHP and data show facility.
- Computer Lab. Installed with MATLAB program.
- Complete Lab for Electronic Measurements.

Course coordinator: Prof. Dr. Hany Tawfik
Head of the Department: Prof. Dr. Shouman S.E.I.
Date: December, 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specification
ELCN 213: Microelectronics Circuits-2

A- Affiliation

Relevant program/s:	Electronic Engineering & Communication Technology BSc Program Computer Engineering and Information Technology BSc Program
Department offering the program:	Electronic Engineering & Communication Technology BSc Program Computer Engineering and Information Technology BSc Program
Department offering the course:	Electronic Engineering & Communication Technology Department.
Date of specifications approval:	December, 2018

B - Basic Information

Title: Automatic Control **Code:** ELCN 213 **Level:** (2), Sixth Semester

Contact Hours: **Lectures:** 2 **Tutorial:**1 **Laboratory: 2** **Total:** 5

Credit Hours: 3 **Pre-requisite:** ELCN 212

C - Professional Information

1 – Course Learning Objectives:

A study of this course will enable the student to:

- Understand the BJT transistor structure and operations
- Understand the transistor biasing
- Analyze the transistor amplifier types.
- Analyze the frequency response at low and high frequencies.
- Analysis the power amplifier
- Understand the basic theory of oscillation.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1-Analysis the biasing methods of any BJT transistor circuit. (A1, A3, A15)
a2-Analysis the configurations of BJT. (A1, A3, A15)
a3-Analysis the frequency response of Common emitter amplifiers. (A1, A3, A4, A15)
a4-Analysis the power amplifier. (A1, A3, A4, A15)
a5- Basic theory of oscillators and function generators. (A1).

b - Intellectual skills:

On successful completion of the course, the student should be able to:

b1- Design the bias of simple circuits. (B2, B3.)
b2- Deduce the frequency response at low and high frequencies transistor amplifier. (B2)
b3-Evaluate the performance of power amplifier. (B2, B3, B5)
b4- Identify/describe the oscillation theory. (B2)

c - Professional and practical skills:

On successful completion of the course, the student should be able to:

c1- Measure the transistor characteristics. (C1, C15)
c2-Measure characteristics of transistor amplifier. (C1, C7, C15)
c3- Measure the frequency response of amplifiers. (C1, C15)
c4- Measure the power amplifier parameters. (C1, C18)

d - General and transferable skills:

On successful completion of the course, the student should be able to:

d1-Work in stressful environment and within constraints (D2)
d2-Communicate effectively through assignments. (D3)
d3- Effectively manage tasks, time, and resources. (D6)
d4-Search for information and engage in life-long self-learning discipline. (D7)
d5- Refer to relevant literatures(D9)

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A3, A4, A15
B	Intellectual skills	B2, B3, B5
C	Professional and Practical Skills	C1, C7, C15, C18
D	General and transferable skills	D2, D3, D6, D7, D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
• Bipolar Junction Transistors.	2	2	2
• The I-V curve of BJT.	2	1	2
• BJT Operating Regions.	2	1	2
• BJT Circuit Configurations.	4	1	4
• Transistor Amplifier.	4	1	4
• Graphical Analysis.	2	1	2
• Frequency Response.	2	1	2
• Amplifier Frequency Response.	2	1	2
• Effect of Internal Transistor Capacitance.	2	1	2
• Types of power amplifiers	2	1	2

• Class A power amplifier.	2	1	2
• Signal Generators& Wave shaping circuits.	2	2	2
Total hours	**28**	**14**	**28**

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments					Researches and Reports	Modeling and Simulation			Written Exam	Practical Exam	Quizzes	Term papers	Assignments			
Knowledge & Understanding	a1	1	1	1		1	1	1	1	1	1		1	1	1	1	1	1		1	1	1	1
	a2	1	1			1	1	1			1	1	1	1	1	1	1			1	1	1	
	a3	1	1			1	1						1	1	1	1	1			1	1		
	a4	1	1			1			1			1	1	1		1	1			1			1
	a5	1	1			1			1			1	1	1		1	1			1			1
	a6				1	1	1	1			1		1	1					1	1	1	1	
	a7				1	1		1					1	1					1	1		1	
	a8				1	1	1	1	1			1	1	1					1	1	1	1	1
	a9				1	1		1					1	1					1	1		1	
	a10						1								1						1		
Intellectual Skills	b1						1								1						1		
	b2						1								1						1		
	b3						1								1						1		
	b4						1														1		
	b5						1														1		
Applied Prof. Skills	c1						1														1		
	c2						1														1		
	c3						1														1		
	c4	1	1	1		1	1	1	1	1	1		1	1	1	1	1	1		1	1	1	1
General Skills	d1	1	1			1	1	1			1	1	1	1	1	1	1			1	1	1	
	d2	1	1			1	1						1	1	1	1	1			1	1		
	d3	1	1			1			1			1	1	1		1	1			1			1

5- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Semester Work	Quizzes	Week 5,10	15
	Assignments	Week 3,9	15

	Reports	Week13	10
Mid-Term Exam		7-th Week	20
Written Exam		Sixteenth week	40
Total			100

6- List of references:

6-1 Course notes

- Microelectronics Circuits-2 "Theoretical part"
- Microelectronics Circuits-2 "Practical part"

6-2 Required books

- Sedra-Smith, Microelectronics Circuits -6th ed., Oxford University Press, 2009.

6-3 Recommended books

- Jacob Millman, Microelectronics-9th ed, McGraw Hill series Jacob Milman, 2012.

7- Facilities required for teaching and learning:

- Lectures room equipped with OHP and data show facility.
- Electronics Lab.
- Computer Lab. Installed with MATLAB and Orcad programs.

Course coordinator: Dr. Eman Mohammed Mahmoud

Head of the Department: Prof. Dr. Shouman S.E.I

Date: December, 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specification
GENN142: Technical Report Writing

Relevant program:	Manufacturing Engineering and Production Technology BSc Program Electronic Engineering and Communication Technology BSc Program Computer Engineering and Information Technology BSc Program Architecture Engineering and Building Technology BSc Program
Department offering the program:	Manufacturing Engineering and Production Technology Department Electronic Engineering and Communication Technology Department Computer Engineering and Information Technology Department Architecture Engineering and Building Technology Department
Department offering the course:	Basic Sciences Department
Date of specifications approval:	June, 2018

B - Basic information

Title: Technical Report Writing **Code:** GENN142 **Level:** junior, First Semester
Credit Hours: 2 **Lectures:** 2 **Tutorial/Exercise:** **Practical: -**
Pre-requisite: None

C - Professional information

1 – Course Learning Objectives:

The main objective of this course is to enable the students to introduce the basic concepts of writing technical reports, resume's, CVs and research papers.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

By the end of the course the student should gain the following knowledge:
a1- Different rhetorical models of writing. [A10]
a2- The art of communicating information. [A11]
a3- Implementation of information and communication technology in his future job. [A11]
b4- Methods of analyzing the engineering data. [A4]
b5- The art of writing report of projects and experiments. [A4]

b - Intellectual skills:

By the end of the course the student should be able to:
b1- Develop clear understanding of the effects of word choice, sentence structure, organization and document design on the meaning and effectiveness of documents. [B4]
b2- Recognize the elements of technical reports. [B4]
b3- Appreciate the methods of engineering writing. [B4]
b4- Use the correct expressions and analytical reading. [B4]

c - Professional and practical skills:

By the end of the course the student should be able to:
c1- Use the technical writing tools. [C2]

c2- Interact professionally with other writers and their writing. [C4]
c3- communicate effectively his knowledge and scientific findings with other people. [C12], [C14]

d - General and transferable skills:
By the end of the course the student should be able to:
d1- Perform report and manual writing. [D6]
d2- Present findings of scientific research in seminars and workshops. [D8]
d3- Collaborative effectively with the group work and publishing strategies. [D6], [D8]

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A 4, A10, A11
B	Intellectual skills	B4
C	Professional and practical skills	C2, C4, C12, C13
D	General and transferable skills	D6, D8

3 – Contents

	Lecture hours	Tutorial hours	Practical hours
• Introduction: Paper Presentation	2		-
• Steps to a Successful Writing Assignment	2		-
• The Writing Process	2		-
• Mechanics	4		-
• Research Papers and Reports	2		-
• Technical Report Writing	4		-
• Resumes and Cover Letters	2		-
• Using Words Correctly	2		-
• Report and Thesis Layout	2		-
• Technical Writing Ethics	2		-
• A Structured Approach to Presenting Postgraduate Research Theses	2		-
• Publishing from the thesis	2		-
• Writing a research paper (Isn't it a bit early)	2		-
Total Hours	**28**		-

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving						Researches and Reports	Modeling and Simulation			Written Exam		Quizzes	Term papers	Assignments			
Knowledge &	a1	1	1	1	1							1				1		1	1				
	a2	1			1											1		1	1	1			
	a3	1			1											1		1	1	1			

	a4	1	1	1	1	1						1				1		1	1	1			
	a5	1														1		1	1	1			
	a6	1										1							1	1			
	a7	1		1	1	1						1							1				
Intellectual Skills	b1	1			1											1		1		1			
	b2	1			1	1										1		1	1	1			
	b3	1	1	1	1							1				1			1				
	b4	1	1		1							1				1		1	1	1			
Applied Prof. Skills	c1	1	1		1	1										1		1	1	1			
	c2	1			1											1		1	1	1			
	c3	1		1		1						1							1	1			
	c4	1			1	1													1	1			
	c5																						
	c6																						
General Tran. Skills	d1			1		1						1							1				
	d2		1	1								1							1				
	d3	1	1									1							1	1			
	d4	1	1	1								1											
	d5											1							1				

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: seminars assignments and reports	Bi-weekly	20 points
Quizzes	5th and 10th	20 points
Mid-Term Exam	Eighth week	20 points
Written Exam	Sixteenth week	40 points
Total		100 points

6- List of references:

6-1 Course notes:

The Report Writing Book by Dr Neveen Samir , 2015

6-2 Required books

- Deborah, C.A. & Margaret D. Blickle (2001) ***Technical Writing, Principles and Forms***, 2nd Ed., MacMillan Publishing.

6-3 Recommended books:

Douglas Godfrey, ***ASLE Author's Guide***, Jan. ,1977

6-4 Periodicals, Web sites, etc.

www.technical-writing.com

7- Facilities required for teaching and learning:

Internet educational lab, Computer and Data show

Course coordinator: Dr. Neveen Samir

Head of the Department: Prof. Dr. Ashraf Taha

Date: September, 2019

Modern Academy
for Engineering and Technology in Maadi

Course Specification
CMPN260: Industrial Training -1

A- Affiliation

Relevant program:	Computer Engineering and Information Technology BSc Program
Department offering the program:	Computer Engineering and Information Technology Department
Department offering the course:	Computer Engineering and Information Technology Department
Date of specifications approval:	December 2018

B - Basic information

Title: Industrial Training -1 **Code**:CMPN260 **Level**: Senior-2 9th Semester
Credit Hours: 3 **Lectures**: - 1 **Tutorial/Exercise:** - **Practical**: 4 **Total**:5
Pre-requisite: 65 credits

C - Professional information

1 – Course Learning Objectives:

Give the student a chance to practice his knowledge in a practical field, know the practical problems, and choose the field to continue in. also help him to choose his project of graduation. The students are carrying out their training in one of the national companies or industrial factories working in the computer engineering and information technology field. The training plan should be approved by a special committee headed by the chairman of the training department. The progress training of student is evaluated by the accreditation committee.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1- Attaining knowledge of operational practice, engineering codes and design techniques relevant to the computer subjects (A5, A6, A7, A13, A15, A16, A17).

a2- Gaining the knowledge and experience of applying the different principles and techniques introduced in the program of study (A5, A6, A14, A16).

b - Intellectual skills:

On successful completion of the course, the students should be able to:

b1- Enrich their practical learning experience (B3, B4, B6, B8, B10, B12, B17).

b2- Enrich their ability to work within defined constraints (B3, B7, B10, B13, B14, B17).

b3- Enhance their practical think (B1, B2, B4, B7, B11, B17).

c - Professional and practical skills:

On successful completion of the course, the students should be able to:

c1- Confirm their ordinary courses by practical cases (C1, C2, C7, C11).

c2- Investigate the working rules in the companies and corporations (C5, C8, C9, C10, C11, C13, C16).

c3- Identify the hardware/software production cycles (C9, C10, C11, C13, C14).

d - General and transferable skills:

On successful completion of the course, the student should be able to:

d1- Communicate with others; work in a team and involvement in group discussion (D1, D2, D3, D4)

d2- Present data and results orally and in written form. (D4, D8, D9)

d3- Use ICT facilities in presentations (D3, D6)

d4- Identify the practical up to date techniques and technologies (D2, D3, D4, D6, D7, D9).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A5, A6, A7, A13, A14, A15, A16, A17
B	Intellectual skills	B1, B2, B3, B4, B6, B7,B8, B10, B11, B12, B13, B14,B17
C	Professional and practical skills	C1, C2, C5, C7, C8,C9, C10, C11, C13, C14, C16
D	General and transferable skills	D1,D2, D3, D4, D6, D7, D8, D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
According to the training course of the national companies or industrial factories. At end of training, student should submit a report with the following formations: • Profile of the industry • Organization structure • Machine, equipment, devices • Personal welfare scheme • Details of the training undergo • Project undertaken during the training			
Total hours	-	-	90

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments					Researches and Reports	Modeling and Simulation			Written Exam	Practical Exam	Quizzes	Report	Assignments			
Knowledge & Understan	a1		1				1												1				
	a2		1				1												1				
Intellectual Skills	b1		1				1												1				
	b2		1				1												1				
	b3		1				1												1				
Applied Professional Skills	c1		1				1												1				
	c2		1				1												1				
	c3		1				1												1				
General Tran. Skills	d1		1				1												1				
	d2		1				1												1				
	d3		1				1												1				
	d4		1				1												1				

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Training and course Project	At the end of the training period	60
Examine at Department	At the end of semester	40
Total		100

6-1 Course notes: Non

6-2 Required books: Non

6-3 Recommended books: Non

6-4 Periodicals, Web sites, etc.

www.mcit.gov.eg/Ar/Training/Affiliate/12
www.**cisco**.com/web/ME/ar/learn_events/
http://www-304.ibm.com/services/learning/ites.wss/eg/en?pageType=page&c=V087174W21666K25

7- Facilities required for teaching and learning:

The tools applied by the training company (software courses or hardware practicing)

Course Coordinator: Members committee of accreditation company
Head of the Department: A. Prof. Dr. Wafaaa Boghdady
Date: December 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specification
CMPN 211: Numerical Methods with Computer Applications

A- Affiliation

Relevant program:	Electronic engineering and communication technology BSc program Computer Engineering and Information Technology BSc Program
Department offering the program:	Electronic Engineering and Communications Technology Department Computer Engineering and Information Technology Department
Department offering the course:	Computer Engineering and Information Technology Department
Date of specifications approval:	December, 2018

B - Basic information

Title: Numerical Methods with Computer Applications	**Code:** CMPN 211	**Level:** Junior	**Semester:** 6 th	
Credit Hours: 3	**Lectures:** 2	**Tutorial:** 2	**Practical: -**	**Total:**4
	Pre-requisite: MTHN103			

C - Professional information

1 – Course Learning Objectives:

The main objective of this course is to introduce some numerical methods for solving many mathematical Problems. Moreover the student can solve those problems using computer programming

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1- Methods of Least square curve fitting (A1,A5)
a2- Methods of numerical interpolation using Newton and Lagrange methods (A1,A5)
a3- Methods of numerical Integration (A1)
a4- Methods of numerical solution of initial value problems (A1)
a5- Methods of numerical solution of linear and non-linear equation (A1)

b - Intellectual skills:

By the end of the course the student should be able to:

b1- Make a logical Analysis to reach to the proper solution (B1,B2,B3)
b2- Choose the right decision by choosing the right method (B2,B3,B11)
b3- Recognize the right method which has minimum error and using minimum numerical steps(B2,B3)

c - Professional and practical skills:

By the end of the course the student should be able to:

c1- Identify appropriate economic models (C1).
c2- Use appropriate IT packages effectively to solve numerical problems (C4).

d - General and transferable skills:

By the end of the course the student should be able to:

d1- Write technical reports (D3,D7)
d2- Communicate effectively and present data in written form (D3)

d3- Communicate using internet (D4)
d4- Search for information from internet (D7)

Course Contribution in the Program ILO's

	ILO's	Program ILO's
A	Knowledge and understanding	A1,A5
B	Intellectual skills	B1, B2, B3, B11
C	Professional and practical skills	C1, C4
D	General and transferable skills	D3, D4, D7

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
Curve fitting and linear Approximation of a function.	4	4	
Interpolation			
polynomial interpolation and error estimation in the interpolation formula Lagrange interpolation	2	2	
Newton –interpolation	2	2	
Hermite interpolation.	2	2	
Numerical Integration			
Newton-Cotes formula, composite Newton-cotes formula	2	2	
Romberg – steifel integration method.	2	2	
Numerical solution of initial value problems	2	2	
numerical solution of first order methods Runge- Kutta methods	4	4	
multistep methods .	2	2	
Numerical solution of linear and non-linear equation, Gauss-Seidel method.	4	4	
Numerical solution of nonlinear equations the fixed point iteration method, Newton-Raphson method.	2	2	
Total hours	**28**	**28**	

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods						Learning Methods				Assessment Method			
		Lecture	Discussions and seminars	Tutorials	Problem solving			Researches and Reports	Modeling and Simulation			Written Exam	Quizzes	Assignments	
Knowledge & Understanding	a1	1	1	1	1			1				1	1	1	
	a2	1	1	1	1			1				1	1	1	
	a3	1		1	1			1				1	1	1	

	a4	1		1	1			1				1	1	1	
	a5	1		1	1			1				1	1	1	
Intellectual Skills	b1	1	1	1	1							1	1	1	
	b2	1		1	1			1				1	1	1	
	b3	1	1	1				1				1	1	1	
Applied Professional Skills	c1	1										1			
	c2	1										1			
General Tran. Skills	d1			1	1			1						1	
	d2		1	1	1			1						1	
	d3	1												1	
	d4		1											1	

5- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7-th Week	20
Semester Work	Quizzes	4 Quizzes (every 3 weeks)	16
	Reports	Two reports per semester	14
	Assignments	Bi-Weekly	10
Written Exam		Sixteenth week	40
Total			100

6- List of references:

6-1 Course notes:

Osama El-Gayar,(2005), Numerical Methods for Engineers, Lecture Note, Modern Academy.

6-2 Required books

luis f.chapore (2004), MATLAB AN INTRODUCTION WITH APPLICATIONS, WILEY

dean g.duffy (2003), advanced engineering mathematics with matlab, chapman&hall Richavd

6-3 Recommended books:

Jaan Kiusalaas(2010), Numerical Methods in Engineering with MATLAB, Cambridge University Press,.

L.Brude (1995) Numerical Analysis,4th ed., Mc Graw Hill,.

Amir Wadi Al-khafaji, John R. Tooley(1990)Numerical methods in Engineering Practice US.A.

D. Hanselman and B. Littlefield (2005), Mastering MATLAB7, Prentice Hall,

David C. Kuncicky (2004).,Matlab Programming, Pearson Prentice Hall ,

Amos Giltat, (2004),Matlab An Introduction with Applications", John Wiley.

Thomas K., Jewelly, (1990)Computer Applications for Engineers, Prentice Hall,.

Jaan Kiusalaas (2010)Numerical Methods in Engineering with MATLAB, Cambridge University Press,.

6-4 Periodicals, Web sites, etc.

http://www.math.fullerton.edu/mathews/numerical.html

http://www.mathwork.com/ .

http://www.GenLib.org/ .

7- Facilities required for teaching and learning:

- Library
- Internet

Course coordinator: Dr. Abd Elmoneim FoudA

Head of the Department: Ass. Prof. Dr. Wafaa BoghdadY

Date: December 2018

Modern Academy for Engineering & Technology

Electronic Engineering & Communication Technology Department

Course Specification

ELCN215: Communications-1

A- Affiliation

Relevant program:	Electronic Engineering & Communication Technology BSc Program
Department offering the program:	Electronic Engineering & Communication Technology Department
Department offering the course:	Electronic Engineering & Communication Technology Department.
Date of specifications approval:	October, 2017

B - Basic information

Title: Communications-1 **Code:** ELCN215 **Level:** Junior, Sixth Semester

Credit Hours: 4 **Lectures:** 3 **Tutorial:**1

Pre-requisite: ELCN211

C - Professional information

1 – Course Learning Objectives:

The objective of this course is to make overview on basic communication system stages and focus especially on analog communications systems. Also channel problems and classifications are displayed at the beginning of this course before discussion of different techniques for analog continuous wave modulation process.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1- Principles of communications system and its stages. (A2, A15, A18).
a2- Classifications of signals, communication channels and media (A18, A24).
a3- Systems and signals representations in communications systems. (A18, A24)
a4- Main concept of information theory. (A2, A19)
a5- Amplitude modulation process AM. (A18, A24)
a6- Frequency modulation process FM. (A18, A24)
a7- Phase modulation process PM. (A18, A24)

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b - Intellectual skills:

On successful completion of the course, the student should be able to.

b1- Decide suitable solution for communication channel problem. (B2, B17)
b2- Discriminate between different techniques of analog continuous wave modulation techniques. (B15, B19)
b3- Estimate waveform, spectrum and bandwidth at the output of each stage in analog communication system. (B15)

c - Professional and practical skills:

On successful completion of the course, the student should be able to:

c1- Connect electronic module simulating various stages in communication circuits filters, oscillators and modulators. (C14, C18)
c2- Observe and record input and output signals obtained by each communication system module using oscilloscopes then comment on results. (C12, C18)
c3- Take measurements for signal voltages and frequency obtained at the output of various types of filters and oscillators. (C12, C18)

c4- Examine simple communication system using various forms of analog modulation/ demodulation modules: DSB-SS, SSB, FM, and PM. (C15, C20)

d - General and transferable skills:

On successful completion of the course, the student should be able to:

d1- Communicate with others; work in a team and involvement in group discussion and seminars (D3).
d2- Present data and results orally and in written form (D6).
d3- Search for information's in references and in internet (D7).
d4- Practice self-learning (D7).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A2, A15, A18, A19, A24
B	Intellectual skills	B2, B15, B17, C19
C	Professional and practical skills	C12, C14, C15, C18, C20
D	General and transferable skills	D3, D6, D7

3- Contents:

Topics	Lecture hours	Tutorial hours	Practical hours
1- Introduction to basic principles of communication systems.	2	2	0
2-Basics of signaling and various sources of information signals.	2	1	4
3- Different forms of communication channels and media.	2	1	4
4- Communication channels; types, problems and proposed solution.	2	2	2
5- Main concept of information theory.	2	0	2
6- Modulation process – comparison between analog and digital modulation – C.W. modulation techniques.	2	2	2
7- Baseband and band pass modulation.	2	0	4
8- Amplitude modulation and its different forms: AM, DSB-SC, SSB – Amplitude demodulation.	6	2	6
9- Television communication system (transmission and reception) using VSB technique.	2	0	0
10- Frequency modulation and demodulation.	4	3	4
11- Phase modulation and demodulation.	4	2	2
Total hours	**30**	**15**	**30**

4 – Teaching, Learning and Assessment methods:

Course ILO's		Teaching methods						Learning methods			Assessment method				
		Lecture	Presentations & Movies	Discussions & Seminars	Tutorials	Problem solving	Laboratory & Experiments	Brain storming	Self Learning	Researches and Reports	Midterm	Quizzes	Assignments	Written Exam	Practical Exam
Knowledge & Understanding	a1	1		1	1					1	1			1	
	a2	1	1	1	1	1		1	1		1	1	1	1	
	a3	1	1	1	1	1		1			1		1	1	
	a4	1		1		1			1	1	1	1		1	
	a5	1	1		1	1		1	1				1	1	
	a6	1	1		1			1				1	1	1	
	a7	1	1	1	1	1		1	1				1	1	
Intellect. Skills	b1	1			1	1		1			1	1	1	1	
	b2	1	1	1	1	1		1				1	1	1	
	b3				1	1		1				1	1	1	
Applied Professional Skills	c1						1								1
	c2						1								1
	c3						1								1
	c4						1								1
General Tran. Skills	d1			1	1				1						
	d2			1	1				1	1					
	d3			1						1					

Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: Seminars, Quizzes& Reports	Bi-Weekly	20
Mid-Term Exam	6-th Week	20
Practical Exam	Fifteenth week	20
Written Exam	Sixteenth week	40
Total		100

6- List of references:

6-1 Course notes

1- Communications (I) "*Theoretical part*"

2- Communications (I) "*Practical part*"

6-2 Required books

1- B. Lathi, *Modern Digital and Analog communication systems,* Oxford press 1998.

2- kendey,Davis *Electronic Communication systems,* Mc Graw-Hill Book

6-3 Recommended books

1- S. Haykin, *Communication systems*, 4th edition J. W. 2001.

2- A. Yadav, *Analog Communication system,* 1st edition University Science Press, 2008.

6-4 Recommended Web site

1- https://en.wikipedia.org/wiki/Communications_system

2- https://www.docsity.com/en/introduction-to-analog-communication/539207/

7- Facilities required for teaching and learning:

- Lectures room equipped with OHP and data show facility.

Course coordinator:	*Prof. Dr. Adel El- Sherif*
Head of the Department:	*Prof. Dr. Shouman EL- Shahhat*
Date:	December 2018

Modern Academy

for Engineering and Technology in Maadi

Course Specification
CMPN310: Microprocessor Based-Systems

A- Affiliation

Relevant program:	Computer Engineering and Information Technology BSc Program
Department offering the program:	Computer Engineering and Information Technology Department
Department offering the course:	Computer Engineering and Information Technology Department
Date of specifications approval:	December 2018

B - Basic information

Title: Microprocessor Based-Systems **Code**: CMPN310 **Level**: 3rd (Senior-1), 1st Semester
Credit Hours: 3 **Pre-requisite**: CMPN111
Contact Hours: **Lectures**: 2 **Tutorial/Exercise**:1 **Practical**: 2 Total:5

C - Professional information

1 – Course Learning Objectives:

By the end of this course, the students should demonstrate the knowledge and understanding the architecture of microprocessor and microcontroller. In addition to recognize their addressing modes, binary decoding, assembly language programming. Besides understanding the basic concepts of interfacing between the processors and their memories, input/output units. They should be able to design digital systems based on the microprocessor and microcontroller.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:
a1- The architecture of microprocessors and microcontrollers (A9, A15, A18).
a2- The assembly instructions for the Intel microprocessor and microcontroller (A5, A14).
a3- The memory architecture for the microprocessor and microcontroller (A4, A14).
a4- Physical, logical and effective addresses for Intel microprocessor (A5, A9, A16).
a5- Instruction pipeline technique for the microprocessor (A4, A14, A16).
a6- The addressing modes for the microprocessor and microcontroller (A4, A14).
a7- The Instruction formats for microprocessor and microcontroller (A4, A14).
a8- The Memory interfacing with microprocessor and microcontroller (A4, A9, A14).
a9- The interfacing of different digital components with the microcontroller (A4, A14).
a10- The new generations of microprocessors and microcontrollers (A9, A15).

b - Intellectual skills:

On successful completion of the course, the student should be able to:
b1- Recognize between the architecture of microprocessors and microcontrollers (B2, B4, B9).
b2- Write assembly programs for the Intel microprocessor and microcontroller (B3, B13, B17).
b3- Analyze the characteristics of the Intel microprocessors and microcontrollers (B1, B2, B11).
b4- Investigate the effect of different addressing modes for microprocessor and microcontroller (B5, B6).
b5- Solve engineering design based on the microcontrollers MCS-51 in mini-project (B12, B17).
b6- Recognize the connections for the microprocessor and microcontroller (B11, B16).

c - Professional and practical skills:

On successful completion of the course, the student should be able to:
c1- Write assembly code for Intel microprocessor and microcontroller (C5, C14, C15).
c2- Check and Debug syntax errors in the assembly code (C6, C12, C14).
c3- Use software assembler to convert the assembly code to machine code (C5, C14, C15).
c4- Design systems (mini-project) for MCS-51 depend on software simulator program (C6, C14, C15).

c5- Use the hardware kit to check the validation for their designs (C5, C6, C15).

d - General and transferable skills:

On successful completion of the course, the student should be able to:

d1- Work in a team and involve in group in mini-projects (D5, D7).
d2- Communicate effectively and present data and results in hard and soft copies (D3).
d3- Search for information in libraries and internet (D5, D7).
d4- Practice self-learning and preparing written reports (D7, D9).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A4, A5, A9, A14, A15, A16, A18
B	Intellectual skills	B1, B2, B3, B4, B5, B6, B9, B11, B12, B13, B16, B17
C	Professional and practical skills	C5, C6, C12, C14, C15
D	General and transferable skills	D3, D5, D7, D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
➢ The architecture of microprocessor and microcontroller.	3	1	--
➢ Assembly instructions for MCS51.	3	1	4
➢ The Addressing modes for MCS51 besides 8086.	1	1	--
➢ The instruction formats for MCS51 besides 8086.	2	1	4
➢ The timers and counters.	3	2	2
➢ The interrupts and its priority.	3	2	4
➢ The serial and parallel communications with processors.	3	2	4
➢ The interface with external memories and PPI.	2	2	2
➢ The interface with input units (such as sensors, keypad …etc.).	2	1	2
➢ The interface with output units (such as motors, monitors …etc.)	2	1	2
➢ The old microprocessors versus up-to-date microprocessors	2	--	--
➢ Task for mini-project.	2	--	4
Total hours	**28**	**14**	**28**

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments					Researches and Reports	Modeling and Simulation			Written Exam	Practical Exam	Quizzes	Term papers	Assignments			
Knowledge &	a1	1	1	1	1							1	1			1	1			1			
	a2	1	1		1		1						1			1	1	1		1			
	a3	1	1		1											1	1		1	1			
	a4	1	1	1	1		1									1			1	1			

	a5	1	1		1											1		1		1			
	a6	1	1		1	1										1			1	1			
	a7	1	1		1	1	1						1			1		1	1	1			
	a8	1	1		1							1				1	1		1	1			
	a9	1	1	1	1	1	1					1	1			1	1			1			
	a10	1	1									1				1			1				
Intellectual Skills	b1	1	1	1	1							1	1			1	1			1			
	b2	1	1		1		1						1			1	1	1		1			
	b3	1	1		1											1	1		1	1			
	b4	1	1		1		1									1			1	1			
	b5	1	1		1											1		1		1			
	b6	1	1		1	1										1			1	1			
Applied	c1	1	1			1	1					1	1				1						
	c2						1					1	1				1						
	c3	1				1	1					1	1				1						
	c4	1				1	1					1	1				1						
	c5						1						1				1						
General	d1	1		1	1	1						1	1						1				
	d2	1				1						1							1				
	d3											1											
	d4					1						1							1				

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: quizzes assignments and reports	Bi-Weekly	20
Mid-Term Exam	7-th Week	20
Practical Exam	Fifteenth week	20
Written Exam	Sixteenth week	40
Total		100

6- List of references:

6-1 Course notes:

Assem B, (2018) The Microprocessor Based Systems: lecture note Modern academy

6-2 Required books:

Rolin D. McKinlay, Janice G. Mazidi, Danny Causey and Muhammad Ali Mazidi, (2012) The 8051 Microcontroller: Prentice Hall.

6-3 Recommended books:

- Valvano, (2012) Embedded microcomputer system real time interfacing: Cengage Learning.
- Yogendra Gandole, (2012) A Text Book of Advanced Microprocessors and Microcontroller: Lambert Academic Publishing.

6-4 Periodicals, Web sites, etc.

http://www.intel.com http://www.cpu-world.com
http://www.emu8086.com/ http://www.8052.com
http://www.keil.com/ http://www.mikroe.com/

7- Facilities required for teaching and learning:

- Hardware emulators and 8051 kits.
- Simulator software programs like "Proteus".
- Data show

Course coordinator: Dr. Assem Badr
Head of the Department: Ass. Prof. Dr. Wafaa Boghdady
Date: December 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specification
CMPN 211: Numerical Methods with Computer Applications

A- Affiliation

Relevant program: Electronic engineering and communication technology BSc program
Computer Engineering and Information Technology BSc Program
Department offering the program: Electronic Engineering and Communications Technology Department
Computer Engineering and Information Technology Department
Department offering the course: Computer Engineering and Information Technology Department
Date of specifications approval: December, 2018

B - Basic information

Title: Numerical Methods with Computer Applications **Code:** CMPN 211 **Level:** Junior **Semester:** 6 th
Credit Hours: 3 **Lectures:** 2 **Tutorial:** 2 **Practical: -** **Total:**4
Pre-requisite: MTHN103

C - Professional information

1 – Course Learning Objectives:

The main objective of this course is to introduce some numerical methods for solving many mathematical Problems. Moreover the student can solve those problems using computer programming

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1- Methods of Least square curve fitting (A1,A5)
a2- Methods of numerical interpolation using Newton and Lagrange methods (A1,A5)
a3- Methods of numerical Integration (A1)
a4- Methods of numerical solution of initial value problems (A1)
a5- Methods of numerical solution of linear and non-linear equation (A1)

b - Intellectual skills:

By the end of the course the student should be able to:

b1- Make a logical Analysis to reach to the proper solution (B1,B2,B3)
b2- Choose the right decision by choosing the right method (B2,B3,B11)
b3- Recognize the right method which has minimum error and using minimum numerical steps(B2,B3)

c - Professional and practical skills:

By the end of the course the student should be able to:

c1- Identify appropriate economic models (C1).

c2- Use appropriate IT packages effectively to solve numerical problems (C4).

d - General and transferable skills:
By the end of the course the student should be able to:
d1- Write technical reports (D3,D7)
d2- Communicate effectively and present data in written form (D3)
d3- Communicate using internet (D4)
d4- Search for information from internet (D7)

Course Contribution in the Program ILO's

	ILO's	Program ILO's
A	Knowledge and understanding	A1,A5
B	Intellectual skills	B1, B2, B3, B11
C	Professional and practical skills	C1, C4
D	General and transferable skills	D3, D4, D7

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
Curve fitting and linear Approximation of a function.	4	4	
Interpolation			
polynomial interpolation and error estimation in the interpolation formula Lagrange interpolation	2	2	
Newton –interpolation	2	2	
Hermite interpolation.	2	2	
Numerical Integration			
Newton-Cotes formula, composite Newton-cotes formula	2	2	
Romberg – steifel integration method.	2	2	
Numerical solution of initial value problems	2	2	
numerical solution of first order methods Runge- Kutta methods	4	4	
multistep methods .	2	2	
Numerical solution of linear and non-linear equation, Gauss-Seidel method.	4	4	
Numerical solution of nonlinear equations the fixed point iteration method, Newton-Raphson method.	2	2	
Total hours	**28**	**28**	

4 - Teaching and Learning and Assessment methods:

Course	Teaching Methods	Learning Methods	Assessment Method

		Lecture	Discussions and seminars	Tutorials	Problem solving			Researches and Reports	Modeling and Simulation			Written Exam	Quizzes	Assignments	
Knowledge & Understanding	a1	1	1	1	1			1				1	1	1	
	a2	1	1	1	1			1				1	1	1	
	a3	1		1	1			1				1	1	1	
	a4	1		1	1			1				1	1	1	
	a5	1		1	1			1				1	1	1	
Intellectual Skills	b1	1	1	1	1							1	1	1	
	b2	1		1	1			1				1	1	1	
	b3	1	1	1				1				1	1	1	
Applied Professional Skills	c1	1										1			
	c2	1										1			
General Tran. Skills	d1			1	1			1						1	
	d2		1	1	1			1						1	
	d3	1												1	
	d4		1											1	

5- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7-th Week	20
Semester Work	Quizzes	4 Quizzes (every 3 weeks)	16
	Reports	Two reports per semester	14
	Assignments	Bi-Weekly	10
Written Exam		Sixteenth week	40
Total			100

6- List of references:

6-1 Course notes:

Osama El-Gayar,(2005), Numerical Methods for Engineers, Lecture Note, Modern Academy.

6-2 Required books

luis f.chapore (2004), MATLAB AN INTRODUCTION WITH APPLICATIONS, WILEY

dean g.duffy (2003), advanced engineering mathematics with matlab, chapman&hall Richavd

6-3 Recommended books:

Jaan Kiusalaas(2010), Numerical Methods in Engineering with MATLAB, Cambridge University Press,.

L.Brude (1995) Numerical Analysis,4th ed., Mc Graw Hill,.

Amir Wadi Al-khafaji, John R. Tooley(1990)Numerical methods in Engineering Practice US.A.
D. Hanselman and B. Littlefield (2005), Mastering MATLAB7, Prentice Hall,
David C. Kuncicky (2004).,Matlab Programming, Pearson Prentice Hall ,
Amos Giltat, (2004),Matlab An Introduction with Applications", John Wiley.
Thomas K., Jewelly, (1990)Computer Applications for Engineers, Prentice Hall,.
Jaan Kiusalaas (2010)Numerical Methods in Engineering with MATLAB, Cambridge University Press,.

6-4 Periodicals, Web sites, etc.

http://www.math.fullerton.edu/mathews/numerical.html
http://www.mathwork.com/ .
http://www.GenLib.org/ .

7- Facilities required for teaching and learning:

- Library
- Internet

Course coordinator:	Dr. Abd Elmoneim Fouda
Head of the Department:	Ass. Prof. Dr. Wafaa Boghdady
Date:	December 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specification
ELCN218: Electrical Power Engineering

A- Affiliation

Relevant program: Electronic Engineering and Communication Technology BSc Program
Computer Engineering and Information Technology BSc Program

Department offering the program: Electronic Engineering and Communications Technology Department
Computer Engineering and Information Technology Department

Department offering the course: Computer Engineering and Information Technology Department

Date of specifications approval: December 2018

B - Basic information

Title: Electrical Power Engineering **Code**: **ELCN218** **Level:** Junior, Second Semester

Credit Hours: 3 **Lectures**: 2 **Tutorial/Exercise**: **Practical**: 1 **Total**:5

Pre-requisite: ELCN112

C - Professional information

1 – Course Learning Objectives:

A study of this course will enable the student to be familiar with all kinds of machines and transformers, and the application theory of their operations.

2 – Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1- Electrical power sources (A1, A4, and A23).
a2- Construction of electrical transformer (A14, A15).
a3- Theory of operation and applications of electrical transformer (A5, A8).
a4- Construction of direct current machines; motors and generators (A14, A15).
a5- Evaluation of power losses and efficiency of direct current machines (A5, A8, and A14).
a6- Three phase induction machine construction, theory of operation, torque speed characteristics, speed control, equivalent circuit, and efficiency (A5, A15).
a7- Synchronous machine operation, equivalent circuit, and voltage regulation (A5, A14).
a8- Transmission line system (A8, A15).
a9- Comparison between direct current transmission system and alternating current transmission system (A6, A11).
a10- Transmission line modeling (A3, A13, A15, and A16).
a11- Electrical power distribution for direct current system and alternating current system (A6, A13, A14, and A16).
a12- High voltage transmission lines and underground cables (A11, A15, and A16).
a13- Understand the principles of power converter operations (A5, A11, and A15).

b - Intellectual skills:

On successful completion of the course, the student should be able to:

b1- Find the equivalent circuits of transformer and machines (B11).
b2- Allocate any fault and know its reason (B6, B9).
b3- Calculate the suitable machine parameters necessary for specific load (B2).
b4- Choose the suitable operating torque-speed point for best machine performance (B3).
b5- Calculate transformer and machines efficiency (B2).
b6- Control the speed and torque of DC and AC motors (B1, B2).
b7- Design a simple transformer (B3).

c - Professional and practical skills:

On successful completion of the course, the student should be able to:

c1- Measure equivalent circuit parameters of transformer and machines (C1, C5).
c2- Measure efficiency of transformer and machines (C1, C5).
c3- Measure voltage-current characteristics of generators (C1, C4, and C5).
c4- Measure torque-speed characteristics of motors (C1, C4).
c5- Control torque-speed characteristic of three phase induction machines (C8).
c6- Test synchronous generator synchronization with grid (C8).
c7- Use power electronics for motor speed control (C2, C5).

d - General and transferable skills:

On successful completion of the course, the student should be able to:

d1- Communicate affectivity through assignment (D3).
d2- Work in stressful environment and within constraints (D2).
d3- Effectively manage tasks, time, and resources (D6).
d4- Search for information and engage in life-long self-learning discipline (D7).
d5- Use the software packages to show the applications of all kinds of power converters (D8).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A3, A4, A5, A6, A8, A11, A13, A14, A15, A16,
B	Intellectual skills	B1, B2, B3, B6, B9, B11
C	Professional and practical skills	C1, C2, C4, C5, C8
D	General and transferable skills	D2, D3, D6, D7, D8

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
➢ Circuit analysis of transformers.	2	1	-
➢ Transformer construction.	2	-	2
➢ Equivalent circuit of a transformer.	2	1	4
➢ Transformer test.	2	2	4
➢ Construction of DC machine.	2	-	1
➢ Classification of DC machine.	2	1	2
➢ Circuit equations of DC machine.	2	2	2
➢ DC machine efficiency.	1	1	2
➢ Construction of induction motors.	2	-	1
➢ Torque-speed characteristics.	2	2	3
➢ Efficiency of induction motor.	1	1	2
➢ Construction of synchronous machine.	2	-	1
➢ Circuit equations of synchronous machine.	2	1	-
➢ Operation synchronous machine.	2	1	2
➢ Types of power converters.	1	-	-
➢ Application and operation of power converters.	1	1	2

Total hours	28	14	28

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods						Learning Methods		Assessment Method				
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments	Researches and Reports	Modeling and Simulation	Written Exam	Practical Exam	Quizzes	Term papers	Assignments
Knowledge & Understanding	a1	1					1			1	1	1	1	1
	a2	1	1				1	1		1		1	1	1
	a3	1			1	1				1			1	1
	a4	1	1			1				1		1	1	1
	a5	1			1	1				1	1	1	1	1
	a6	1	1		1	1	1	1					1	1
	a7	1	1		1	1								
	a8	1	1					1						
	a9	1			1	1								
	a10	1			1	1								
	a11	1				1								
	a12	1				1								
	a13	1			1	1								
Intellectual Skills	b1	1			1					1	1	1	1	1
	b2	1					1			1	1	1	1	1
	b3	1			1					1			1	1
	b4				1		1			1			1	1
	b5	1			1		1			1		1	1	1
	b6	1			1		1			1		1	1	1
	b7				1		1			1			1	1
Applied Professional Skills	c1						1				1			
	c2						1					1	1	1
	c3						1							
	c4						1				1			
	c5	1					1							

	c6						1							
	c7	1					1							

General Tran. Skills	d1				1									
	d2						1				1			
	d3				1									
	d4	1					1				1			
	d5						1							

5- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7-th Week	20
Semester Work	Quizzes	4 Quizzes (every 3 weeks)	8
	Reports	Two reports per semester	4
	Assignments	Bi-Weekly	8
Practical Exam		Fifteenth week	20
Written Exam		Sixteenth week	40
Total			100

6- List of references:

6-1 Course notes:

Dry Essam Zaki (2016) Electrical Power Engineering.

6-2 Required books

Stephan J. Chapman, (2005) Electrical Machinery fundamentals", 4th edition, Mc Graw-Hill.

6-3 Recommended books:

Ducman, J. (2010) Power system analysis and design. USA: Gengag learning

6-4 Periodicals, Web sites, etc. , http://www2.le.ac.uk/departments/engineering/research/electrical-power/electrical-machines-and-power-electronics , http://www.wempec.wisc.edu/, http://www.ece.tamu.edu/~empelab/

7- Facilities required for teaching and learning:

- Electrical Machines Lab.
- Data Show.

Course Coordinator: Dr. Esam Zaki

Head of the Department: A. Prof. Dr. Wafaaa Boghdady.

Date: December 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specification
CMPN323: Database Management

A- Affiliation

Relevant program: Computer Engineering and Information Technology BSc Program
Department offering the program: Computer Engineering and Information Technology Department
Department offering the course: Computer Engineering and Information Technology Department

Date of specifications approval: December 2018

B - Basic information

Title: Database Management **Code**: CMPN323 **Level:** Senior 1, 8th Semester
Credit Hours: 4 **Lectures**: 3 **Tutorial/Exercise**: 2 **Practical**: 1 - **Total**:6

Pre-requisite: CMPN325

C - Professional information

1 – Course Learning Objectives:

By the end of this course, students should be able to set data requirements of database users, perform data analysis, and build normalized data model. Also design and create database, Use respective language to manipulate data contained inside the database and build queries to respond to user requests and generate operational reports as needed

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, students should demonstrate knowledge and understanding of:

a1- Concepts and terminologies of database field (A1, A2)
a2- Data types (A4, A5)
a3- Elements of data (entities, attributes, and relationships) (A13, A15)
a4- Normalization (first, second, and third normal forms) (A16)
a5- SQL statements (A17)

b - Intellectual skills:

On successful completion of the course, the student should be able to.

b1- analyze user's data requirements (B2, B3)
b2- Investigate functional dependency among data attributes (B7, B8, B9)
b3- Eliminate unneeded redundancy (B15)
b4- Determine attribute data types (B12, B17)

c - Professional and practical skills:

On successful completion of the course, the student should be able to:

c1- Apply normalization form on the data model (C1)
c2- Design database schema (C4)
c3- Build proper SQL statements (C13).

d - General and transferable skills:

On successful completion of the course, the student should be able to:
d1- Exchanging views among team members (D1, D3)
d2- Present query results to team members (D4)
d3- Search for knowledge and using ICT in search and presentation (D7, D9).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A2, A4, A5, A13, A15, A16,A17
B	Intellectual skills	B2, B3, B7, B8, B9, B12, B15, B17
C	Professional and practical skills	C1, C4, C13
D	General and transferable skills	D1, D3, D4, D7, D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
➢ Database concepts, terminology, and fundamentals	6	4	2
➢ Data analysis	4	4	2
➢ Building data models	4	4	2
➢ Data model normalization forms	3	4	2
➢ Analyzing functional dependency in the data model	6	2	1
➢ Converting data model into schema design.	6	2	1
➢ Structured Query Language	7	6	3
➢ Security in databases	6	2	1
Total hours	42	28	14

4 - Teaching and Learning and Assessment methods:

	Course ILO's	Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments					Researches and Reports	Modeling and Simulation			Written Exam	Practical Exam	Quizzes	Term papers	Assignments			
Knowledge & Understanding	a1	1			1											1		1		1			
	a2	1			1	1						1				1		1					
	a3	1		1	1	1	1					1				1		1		1			
	a4	1		1	1	1	1					1				1		1		1			
	a5	1	1	1	1	1	1					1				1		1		1			
Intellectual Skills	b1		1	1	1		1					1				1		1	1	1			
	b2	1	1	1			1					1				1		1	1	1			
	b3	1		1	1	1	1					1				1		1	1	1			

	b4			1	1	1	1					1				1		1	1	1			
Applied	c1	1		1	1	1	1					1				1		1	1	1			
	c2	1	1	1	1	1	1					1	1			1		1	1	1			
	c3	1		1	1	1	1					1				1		1	1	1			
	c4						1																
	c5						1																
Tran.	d1		1	1								1						1	1				
General	d2		1	1								1						1	1				
	d3																	1	1	1			

5- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7-th Week	20
Semester Work	Quizzes	4 Quizzes (every 3 weeks)	8
	Reports	Two reports per semester	4
	Assignments	Bi-Weekly	8
Practical Exam		Fifteenth week	20
Written Exam		Sixteenth week	40
Total			100

6- List of references:

Remez Elmasri, Shamkant Navath, (2000) Fundamentals of database systems, 3RD, Addison Wesley.
C.J. Date, (2000) An introduction to database systems, seventh edition, Addison Wesley Longman Inc.
Yadav, P.K. (2013) Introduction database management system. India: Katson.

6-1 Course notes: available

6-2 Required books:

Carlos Coronel, Steven Morris and Peter Rob, (2012) Database Systems: Design, Implementation, and Management, Cengage Learning.

6-3 Recommended books: None

6-4 Periodicals, Web sites, etc.

http://www.esp.org/db-fund.pdf
http://public.dhe.ibm.com/software/dw/db2/express-c/wiki/Database_fundamentals.pdf
http://www.ebook3000.com/Database/

7- Facilities required for teaching and learning:

- Data show
- White board

Course coordinator: Dr. Sabry Abdel Meety
Head of the Department: A. Prof. Dr. Wafaa Boghdady
Date: December 2018

Course Specification
GENN351: Engineering Economy

A- Affiliation

Relevant program: Manufacturing Engineering and Prod. Tech. BSc Program
Electronic Engineering and Comm. Tech. BSc Program.
Computer Engineering and Info. Tech. BSc.Program

Department offering the program: Manufacturing Engineering and Prod. Tech. Department
Electronic Engineering and Comm. Tech. BSc Department.
Computer Engineering and Info. Tech. BSc. Department

Department offering the course: Manufacturing Engineering and Prod. Techn. Department

Date of specifications approval: September 2018

B - Basic information

Title: Engineering Economy **Code:** GENN351 **Year/level:** Senior 1-2nd.Semester

Credit Hours:2 **Lectures:** 2 **Tutorial:** - **Practical:** -

Pre-requisite: --

C - Professional information

1 – Course Learning Objectives

A study of this course will enable the student to:

- Evaluate the present and future money investment that devoted to the mechanics of time-value.
- Calculate and compare between alternatives based on their equivalent annual worthy, present worth, and rate of return.
- Account the effects of depreciation and taxes on economic evaluations in extensively treatment

2 2- intended Learning Outcomes (ILOS)

A - Knowledge and understanding

By the end of the course the student should be able to demonstrate the knowledge and understand:

a1- The major capabilities and limitations of cash flow analysis for evaluating proposed capital investments (A1, A2).

a2- Mathematics, economics, and engineering principles necessary for analyzing benefit - cost problems (A1, A5).

a3- The basics to the mechanics of time-value calculations and comparisons of alternatives based on their equivalent annual worthy, present worth, and rate of return. (A2, A14)

a4- The role of the effects of both depreciation and taxes as well on economic evaluations (A7, A18)

B - Intellectual skills

By the end of the course the student should be able to:

b1- Apply knowledge of mathematics, economics, and engineering principles to identify, formulate, analyze, and solve engineering economic problems (B1)

b2- Use basics to the mechanics of time-value calculations and comparisons of alternatives based on the equivalent annual & present worth and rate of return (B2).

b3- Develop an understanding of managerial accounting and economic principles (B7, B8).

b4- Carry out role of accounting and the effects of depreciation and taxes on economic evaluations in extensively treatment (B13).

C - Professional and practical skills

By the end of the course the student should be able to:

c1- Use appropriate techniques, skills, and tools to identify, formulate, analyze, and solve engineering economic problems (C1).

c2- Communicate results of the modeling process to management and other non-specialist users of engineering analyses (C7).

c3- Use of benefit-cost analysis for public projects (C9).

c4- Use modern computer tools, such as spreadsheets, in financial realities from the business world including both opportunities and restrictions- that influence economic decisions (C5).

c5- Use graphics effectively for justifying solutions to engineering economics problems (C13).

D - General and transferable skills

By the end of the course the student should be able to:

d1- Work in stressful environment and within constraints. (D2)

d2- Search for information in references and internet (D7).

d3- Work in a team and involve in group discussion and seminars (D1, D3).

d4- Practice self-learning (D7, D9).

Course Contribution in the Program ILO's

ILO's	Program ILO's
A Knowledge and understanding	A1, A2, A5, A7, A14, A18
Intellectual skills	B1,B2,B7,B8, B13
Professional and practical skills	C1,C5,C7,C9, C13
General and transferable skills	D1, D2, D3, D7, D9

3 – Contents

Topic	**Lecture Hours**	**Tutorial hours**	**Practical hours**
Cash Flow: Cash flow table, Cash flow diagram, Equivalence and time Value of Money	2 2		
Compound Interest: Single payment interest, Uniform annual payment series, Arithmetic gradient payment series, Geometric gradient payment series	6		
Nominal and Effective Interest	2		
Engineering Problem Analysis: Present worth method,Equivalent uniform annual method, Rate of return method	8		
Depreciation: Straight line technique, Sum of years-digits technique, Declining balance technique, Sinking fund technique	4		
Income Taxes	4		
Total hours	**28**		

4 - Teaching and Learning and Assessment methods:

Course ILO'	Teaching Methods	Learning Methods	Assessment Method

		Lecture	Presentations & Movies	Discussions & Seminars	Tutorials	Problem solving	Laboratory			Modeling	Self-learning	Experimental				Class Works	Quizzes	Reports	Mid-Term Exam	Practical Exam	Written Exam
Knowledge & Understand	a1	1	1	1													1		1		1
	a2	1			1	1				1							1		1		1
	a3	1	1	1	1	1				1							1	1	1		1
	a4	1	1	1						1							1	1			1
Intellectual Skills	b1	1	1		1	1											1		1		1
	b2	1			1	1											1		1		1
	b3	1	1		1	1															
	b4	1	1		1	1											1		1		1
Applied Prof. kills	c1	1	1		1	1				1							1	1	1		1
	c2	1			1	1				1							1	1	1		1
	c3	1		1	1	1				1							1	1	1		1
	c4	1		1	1	1				1							1	1	1		1
	c5		1		1	1				1								1			
General Tran. Skills	d1	1	1	1							1						1	1	1		1
	d2	1	1	1							1						1	1	1		1
	d3	1	1	1							1						1	1	1		1
	d4	1	1	1							1						1	1	1		1

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Assignments & Reports	4 by term	10
Quizzes & Reports	6 quizzes	30
Mid-Term Exam	6th. Week	20
Written Exam	16th. Week	40
Total		100

6- List of references:

6.1 Course notes

Lecture notes and handouts.

6.2 Required books

- Matcolm H., "Engineering Economy Principle", USA, McGraw-Hill, 1982

6.3 Recommended books

- Sullivan W. G., Wicks E. M., and Luxhoj J. t., "Engineering Economy", 12th ed., Prentice Hall, 2003
- Barish N. B., "Economic Analysis for Engineering and Managerial Decision Making", McGraw-Hill, 1982

6.4 Periodical, Web sites, etc.:

- http://www.isr.umd.edu/~austin/ence202.d/economics.html
- http://mysite.du.edu/~jcalvert/econ/enecon.htm
- http://www.slideshare.net/ngduyquang1001/basics-of-engineering-economy

7- Facilities required for teaching and learning

- Students are required to use own PCs Computer,
- Data show and Computer programs

Course Coordinator:	Dr. Abdelmagid A. Abdalla
	Dr. Metwally Hussein Metwally
Head of the Department:	Prof. Nabil Gadallah
Date:	September 2018

- GENN352 Environmental Effects of Electromagnetic Waves..

Modern Academy
for Engineering and Technology in Maadi

Course Specification
القوانين الهندسية والأخلاق المهنية :GENN353

A- Affiliation

Relevant program:

Manufacturing Engineering and Production Technology BSc Program
Electronic Engineering and Communication Technology BSc Program
Computer Engineering and Information Technology BSc Program

Department offering the program:

Manufacturing Engineering and Production Technology Department
Electronic Engineering and Communication Technology Department
Computer Engineering and Information Technology Department

Department offering the course: Basic Science Department
Date of specifications approval: June, 2018

B - Basic information

Title: القوانين الهندسية والأخلاق المهنية	**Code:GENN 352**	**Level:**Sixth.	Semester: (Junior)
Credit Hours 2hrs	**Lectures** 2 hrs	**Tutorial** -	**Practical** -

C - Professional information

1 – Course Learning Objectives:

مع نهاية هذا المقرر يكون الطالب قد تمكن من فهم وتحليل وتطبيق المصطلحات والمفاهيم القانونية و التشريعات الصناعية المصرية - قوانين وتشريعات اعمال البناء والتخطيط العمرانى و قوانين وتشريعات بيئية لحماية البيئة المصرية و المناقصات والعطاءات- قانون تنظيم المناقصات والعطاءات و العقود الهندسية الدولية و العقود الهندسية المحلية و المطالبات والتحكيم. بالإضافة إلى ذلك ، فإنه يوضح دور ومسؤوليات المهندس مع الأخذ في الاعتبار القواعد واللوائح التي تتحكم في عمله ، وحقوقه وواجباته ، وإلى علاقته مع الاستشاريين من العمل المتخصص وأخيراً مسؤوليات المالك والمقاول. وتهدف الدورة أيضًا إلى دراسة التدريب وقوانين النقابات ، مع التأكيد على أهمية تحقيق أخلاقيات المهنة ومبادئها من خلال تقديم مقدمة لها.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1- منهجيات حل المشاكل الهندسية ، وجمع البيانات وتفسيرها (A5)
a2- نظم ضمان الجودة ، ومدونات الممارسات والمعايير ومتطلبات الأمن الصناعي والقضايا البيئية (A6)
a3- أخلاقيات المهنة والآثار المترتبة على الحلول الهندسية على المجتمع والبيئة (A9, A10, A11)
a4- اللغة التقنية وكتابة التقارير الهندسية (A10)

b - Intellectual skills:

On successful completion of the course, the student should be able to.

b1- ان يفكر بطريقة خلاقة ومبتكرة في حل المشكلات القانونية (B3, B9, B12)
b2- ان يدمج ويستبدل ويقيم مختلف الأفكار والآراء من وجه النظر القانونية (B4, B9)
b3- تخطيط وإجراء وكتابة تقريرعن مشروعاً و تكليف (B12)

C: **Professional and practical skills:**

On successful completion of the course, the student should be able to:

c1- أن يعرض ويحل أحد المشاكل القانونية فى احد الشركات (C1, C5)

d - General and transferable skills:

On successful completion of the course, the student should be able to:

d1- Work in a team and involve in group discussion(D1, D3).

d2- Search for information's in references and in internet (D7).

d3- Practice self-learning (D7, D9).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A5, A6, A9, A10, A11
B	Intellectual skills	B3, B4, B9, B12
C	Professional and practical skills	C1,C5
D	General and transferable skills	D1, D3, D7, D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
مصطلحات ومفاهيم قانونية	4		
التشريعات الصناعية المصرية - قوانين وتشريعات اعمال البناء والتخطيط العمرانى	4		
قوانين وتشريعات بيئية لحماية البيئة المصرية	2		
المناقصات والعطاءات. - قانون تنظيم المناقصات والعطاءات	4		
العقود الهندسية المحلية - العقود الهندسية الدولية- المطالبات والتحكيم	4		
القواعد واللوائح التي تتحكم في عمل المهندس ، وحقوقه وواجباته	6		
دراسة التدريب وقوانين النقابات ، مع التأكيد على أهمية تحقيق أخلاقيات المهنة ومبادئها من خلال تقديم مقدمة لها.	8		
Total hours	**28**		

4 - Teaching and Learning and Assessement methods:

Course ILO's		Teaching Methods										Learning Methods				Assessement Method							
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments					Researches and Reports	Modeling and Simulation			Written Exam	Practical Exam	Quizes	Term papers	Assignments			
Knowledge &	a1	1	1	1								1				1		1					
	a2	1				1										1		1		1			

	a3	1		1								1				1				1			
	a4	1		1								1				1							
Intellectual Skills	b1	1														1		1		1			
	b2	1				1										1		1		1			
	b3	1	1	1								1				1							
Professional		1	1									1				1							
General Tran. Skills	d1	1		1		1						1											
	d2	1	1	1																			
	d3	1	1																	1			

5- Assessment Timing and Grading:

Asesement Method	Timing	Grade (Degrees)
Assignments, reports	Bi-2Weeks	20
Quizes	5th and 10th	20
Mid-Term Exam	7-th Week	20
Written Exam	Sixteenth week	40
Total		100

6- List of References

6-1 Course notes

د شعبان رجب جودة، قوانين وتشريعات هندسيه، الأكاديمية الحديثه للهندسة و التكنولوجيا، المعادى، 2014.

6-2 Required books

6-3 Recommended books

جمال الدين احمد نصار، محمد ماجد خلوصى، قانون وتشريعات وعقود الاتحاد الدولى للمهندسين الاستشاريين، القاهرة، 2008.

6-4 Periodicals, Web sites, etc.

www.alamiria.com

7- Facilities required for teaching and learning:

- Library
- Internet

Course coordinator: Dr. Abeer Hassan
Head of the Department: Prof. Dr. Ashraf Taha
Date: September, 2019

Modern Academy
for Engineering and Technology in Maadi

Course Specification
GENN354: Risk Management

Relevant program: Manufacturing Engineering and Production Technology BSc Program
Electronic Engineering and Communication Technology BSc Program
Computer Engineering and Information Technology BSc Program
Architecture Engineering and Building Technology BSc Program

Department offering the program: Manufacturing Engineering and Production Technology Department
Electronic Engineering and Communication Technology Department
Computer Engineering and Information Technology Department
Architecture Engineering and Building Technology Department

Department offering the course: Basic science department
Date of specifications approval: September 2018

B - Basic information

Title: Risk Management **Code: GENN354** **Level:** three, First Semester

Credit Hours: 2 **Lectures:** 2 **Tutorial/Exercise:** - **Practical:** -
Pre-requisite: non

C - Professional information

1 – Course Learning Objectives:

On successful completion of the course, the student will be able to synthesize and respond to the complexity of legal issues within their risk management practice and demonstrate the ability to operate effectively in complex and unpredictable situations within professional contexts.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

The graduate should acquire knowledge and understanding of:

a1- Basic concepts of risk assessment. (A1, A2, A4)
a2- Basic concepts of hazards and risk factors. (A1, A2)
a3- Principles of rating the extent of potential harm and evaluating the likelihood that harm will occur. (A1, A2)
a4- Principles of controlling the risks. (A1, A2)
a5- Deciding priorities for action. (A1,A5)
a6- Strategies for managing the risks. (A1, A5, A6)
a7- Principles of strategic approaches for dealing with risks. (A6, A11)

b - Intellectual skills:

The graduate should have the ability to:

b1- Relate general theory to specific contexts. (B1,B2)
b2- Compare and analyze different risk situations and risk environments. (B3, B4)
b3- Develop problem solving approaches and controlling the risk. (B3, B4, B7,B9)
b4- Select and use appropriate Strategies, methods and techniques for identifying, diagnosing and dealing with risks. (B1, B4,B9)

c - Professional and practical skills:

The graduate should have the ability to:

c1- Apply risk identification and risk assessment techniques. (C1, C2)

c2- Create risk strategies and plans in different and changing contexts. (C1, C2, C6)

c3- Manage hazards more efficiently. (C1, C2)

c4- Undertake crisis management planning and implementation. (C1, C2, C11)

d - General and transferable skills:

The graduate should have the ability to:

d1- Enhance the ability to critically reflect on own and others' practice in order to improve own/others 'actions. (D1, D3)

d2- Effectively manage tasks, time, and resources. (D2, D6)

d3- Search for information and engage in life-long self-learning discipline. (D2, D7,D9)

d4- Enhance the capability of working autonomously and within groups. (D1,D3,D5)

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A2, A4, A5, A6, A11
B	Intellectual Skills	B1, B2, B3, B4, B7, B9
C	Professional and practical skills	C1, C2, C6, C11
D	General and transferable skills	D1, D2, D3, D5, D6, D7, D9

3 – Contents

Topics	Lecture hours	Tutorial hours	Practical hours
1- Identify risk assessment, hazards, and risk factors	2	-	-
2- Evaluating the hazards and risks.	4	-	-
3- Rating the extent of potential harm, and the likelihood that harm will occur.	4	-	-
4- Controlling the risks, Control measures.	4	-	-
5- Systems of control, Deciding priorities for action.	2	-	-
6- Case study 1: health services, Case study 2: call centers.	4	-	-
7- Case study 3: food production and processing, Case study 4: engineering and manufacture.	3	-	-
8- Strategies for managing the risks, Planning, Range of strategic approaches for dealing with risks.	3	-	-
9- Stakeholders and spreading the risks, and Policies.	2	-	-
Total hours	**28**		

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods						Learning Methods			Assessment Method				
		Lecture	Presentations & Movies	Discussions & Seminars	Tutorials	Problem solving	Laboratory & Experiments	Brain storming	Self-Learning	Researches and Reports	Midterm	Quizzes	Assignments	Written Exam	Practical Exam
Knowledge & Understanding	a1	1	1	1		1		1			1	1	1	1	
	a2	1	1	1		1		1			1	1	1	1	
	a3	1	1	1		1		1			1		1	1	
	a4	1	1	1		1		1			1		1	1	
	a5	1	1	1		1		1		1	1		1	1	
	a6	1	1	1		1		1		1	1	1	1	1	
	a7	1	1	1		1		1		1	1		1	1	
Intellectual Skills	b1	1	1	1		1		1		1	1		1	1	
	b2	1	1	1		1		1		1	1	1	1	1	
	b3	1	1	1		1		1		1	1		1	1	
	b4	1	1	1		1		1		1	1	1	1	1	
Applied Professional Skills	c1	1	1	1		1		1		1			1	1	
	c2	1	1	1		1		1		1			1	1	
	c3	1	1	1		1		1		1			1	1	
	c4	1	1	1		1		1		1			1	1	
General Tran. Skills	d1	1	1	1						1					
	d2			1		1		1	1	1		1	1		
	d3		1	1				1	1	1					
	d4			1				1							

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Assignments and Reports	Bi-Weekly	20
Quizzes	5th and 10th	20
Mid-Term Exam	6-th Week	20
Written Exam	Sixteenth week	40
Total		100

6- List of references:

6-1 Course notes: Risk Management

6-2 Required books

J. Jeyras (2002), "Risk management principles", planta Tree, UK

6-3 Recommended books:

- E. J. Vaughan, T. Vaugan (2007), 9th Edition, "Fundamentals of risk and insurance", John Wiley,
- M. Keegan (2004): The orange book of risk management- Principles and concepts", HM treasury concepts, London, UK
- E. Baranoff (2012)" Enterprise and individual risk management", Harvard Business Review US

6-4 Periodicals, Web sites, etc.:

https://www.investopedia.com/terms/r/riskmanagement.asp
http://www.freebookcentre.net/

7- Facilities required for teaching and learning:

- Lectures room equipped with OHP and data show facility.

Course coordinator: Dr. Nagat A. Elmahdy
Head of the Department: Prof. Dr. Ashraf Taha
Date: September, 2019

Modern Academy
for Engineering and Technology in Maadi

Course Specification
GENN451a: Advanced Computer Systems Implementation.

A- Affiliation

Relevant program: Computer Engineering and Information Technology BSc Program
Electronic Engineering and Communication Tech. BSc Program
Manufacturing Engineering and Production Tech. BSc Program

Department offering the program: Computer Engineering and Information Technology Department
Electronic Engineering and Communication Technology Department
Manufacturing Engineering and Production Technology Department

Department offering the course: Computer Engineering and Information Technology Department
Date of specifications approval: December 2018

B - Basic information

Title: Advanced Computer Systems Implementation | **Code**: GENN451a | **Level**: Junior, Semester-6
Credit Hours: 2 | **Lectures**: 2 | **Tutorial/Exercise**: -1 | **Practical:** - | **Total**:3
Pre-requisite: CMPN010

C - Professional information

1 – Course Learning Objectives:

By the end of this course the students will be able to introduce effective, reliable and flexible IT services to the success of business initiatives today. Also provide an overview of configuration management, planning for configuration management, implementing configuration management, and running an effective configuration management system using the IT Infrastructure Library (ITIL).

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1- Effective, reliable and flexible IT services. (A8,A10)
a2- The specification, identification of all IT components. (A4,A8)
a3- ITIL for identifying, tracking, and controlling IT environment. (A6,A8)
a4- ITIL configuration management for every IT leader, manager, and practitioner. (A8,A12)
a5- The management, recording of the status and review of information of each of the configuration Ite (A8)
a6- Establishment of a clear roadmap for success, customize standard processes to business unique needs (A8, A10)

b - Intellectual skills:

On successful completion of the course, the student should be able to:

b1- Assess current configuration management maturity and setting goals for improvement. (B8, B9)
b2- Gather and manage requirements to align ITIL with organizational needs. (B13, B15, B18)
b3- Describe the schema of your configuration management database (CMDB). (B9, B15)
b4- Identify, capture, and organize configuration data. (B11)
b5- Choose and run a pilot system. (B13, B14)

c - Professional and practical skills:

On successful completion of the course, the student should be able to:
c1- Choose the best tools for your requirements. (C14)
c2- Integrate data and processes to create a unified logical CMDB and configuration management service. (C6)
c3- Implement pilot projects to demonstrate the value of configuration management and to test your planning. (C13, C14, C15)
c4- Measure and improving CMDB data accuracy. (C5, C10)
c5- Leverage configuration management information. (C10)

d - General and transferable skills:

On successful completion of the course, the student should be able to:
d1- Work in a team and involve in group discussion (D1, D3).
d2- Communicate effectively and present data and results orally and in written form (D3).
d3- Use ICT facilities in presentations (D4).
d4- Search for information's in references and in internet (D7).
d5- Practice self-learning (D7, D9).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A4, A6, A8, A10, A12
B	Intellectual skills	B8, B9, B11, B13, B14, B15, B18
C	Professional and practical skills	C5,C6, C10, C13, C14, C15
D	General and transferable skills	D1, D3, D4, D7, D9

3-Contents

Topic	Lecture hours	Tutorial hours
➢ Gathering and Analyzing Requirements.	2	1
➢ Determining Scope, Span, and Granularity.	2	1
➢ Comparison of alternatives and deciding the proper solution.	2	1
➢ Planning for Data Population.	2	1
➢ Putting together a useful project plan.	3	2
➢ Populating the configuration management database.	2	1
➢ Choosing the right tools.	2	1
➢ Implementing the process.	3	2
➢ Choosing and running a pilot system.	4	1
➢ The many uses for configuration information.	2	1
➢ Measuring and improving computer systems and computer network performance.	2	1
➢ Writing tenders and tender laws	2	1

Total hours	28	14

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations and	Discussions and	Tutorials	Problem solving	Laboratory &					Researches and Reports	Modeling and Simulation			Written Exam	Practical Exam	Quizzes	Term papers	Assignments			
Knowledge & Understanding	a1	1	1	1								1				1		1	1				
	a2	1														1		1	1	1			
	a3	1														1		1	1	1			
	a4	1	1	1								1				1		1	1	1			
	a5	1														1		1	1	1			
	a6	1	1	1								1				1		1	1	1			
Intellectual Skills	b1	1														1		1		1			
	b2	1														1		1	1	1			
	b3	1	1	1								1				1			1				
	b4	1	1									1				1		1	1	1			
	b5	1														1		1		1			
Applied Professional	c1	1	1	1								1				1		1	1				
	c2	1			1											1		1	1	1			
	c3	1			1											1		1	1	1			
	c4	1	1	1	1							1				1		1	1	1			
	c5	1			1											1		1	1	1			
General Tran. Skills	d1			1								1							1				
	d2		1	1								1	1						1				
	d3	1	1									1							1	1			
	d4	1	1	1								1											
	d5											1	1						1				

5- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7-th Week	20
Semester Work	Quizzes	4 Quizzes (every 3 weeks)	16
	Reports	Two reports per semester	8
	Assignments	Bi-Weekly	16
Written Exam		Sixteenth week	40
Total			100

6- List of references:

6-1 Course notes: Non

6-2 Required books

TIEM - CHIEN,(2006), COMPUTER - AIDED MANAFACTURING, PRINTICE HALL,.
SADHU SINGH,(2010),COMPUTER AIDED DESIGN& MANUFACTURING, K P

6-3 Recommended books: Non

6-4 Periodicals, Web sites, etc. http://www.talkthecold.com/bizgoogle/ .http://www.SCI-hub.org/ . http://www.scrius.com/

7- Facilities required for teaching and learning:

- Computer, Data show and Computer programs. Microprocessor Lab

Course Coordinator:	Dr. Assem Badr
Head of the Department:	Ass. Prof.Dr. Wafaa Boghdady
Date:	December 2018

Modern Academy

for Engineering and Technology in Maadi

Course Specification

GENN452: Civilization and Heritage

A- Affiliation

RELEVANT PROGRAM:	Architecture Engineering and Building Technology BSc Program
ment offering the program:	Architecture Engineering and Building Technology Department
Department offering the course:	Architecture Engineering and Building Technology Department
Date of specifications approval:	December, 2018

B - Basic information

Title: : Civilization and Heritage **Code:**Genn452 **Level** :4th., **Tenth Semester (Level Four)**

Credit Hours: 2 **Lectures:** 2 **Tutorial/Exercise**:- **Practical:** -

Elective 2: Humaniterian

Pre-requisite: None.

C - Professional information

1 – Course Learning Objectives:

The course aims to enhance the student's background in the field of social, cultural and humanitarian studies throughout identifying the cultural environment; this includes the meaning, features, characteristics, and social interaction, in addition to its impact on the human's needs in the field of specialization. In addition, it studies the cultural and environmental forms of expressions and the social pattern in cultural heritage throughout analyzing its elements and the alternative of dealing with it. Additionally study some case from old and modern traditional societies in the field of study.

2 - Intended Learning Outcomes (ILOS)

A - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1- Theories, issues, concepts demonstrating the interrelation between Civilization and Culture (A9)

a2- The role of the architect and planner in realizing the cultural and heritage dimensions when designing a new project. (A17)

a3- The role of the architect and planner in the conservation of Architectural heritage (A11)

B - Intellectual skills:

On successful completion of the course, the student should be able to:

b1- Dealing appropriately with Heritage buildings and Architecture (B18, B21).

b2- Adapt innovative approaches in urban and architectural design considering the cultural backgrounds and realities of the local community (B19, B21)

C- Professional and practical skills:

On successful completion of the course, the student should be able to:

c1- Identify, analyse, understand the interrelation between Culture and Architecture (C19).

c2- Generate and develop selective interventions that cope with the significance of Architectural Heritage (C21, C22).

c3- Evaluate and criticize the outcomes of urban and Architectural projects in relation to cultural and heritage considerations (C21, C22).

D - General and transferable skills:

On successful completion of the course, the student should be able to:

d1- Collaborate effectively with the multidisciplinary dimensions of Architectural projects (D3).

d2- Search for information required to develop successful approaches in design (D6).

d3- Refer to relevant literature effectively in research projects (D9).

COURSE CONTRIBUTION IN THE PROGRAM ILO'S

ILO's		Program ILO's
A	Knowledge and understanding	A9, A11, A17
B	Intellectual skills	B18,B19, B21
C	Professional and practical skills	C19, C21,C22
D	General and transferable skills	D3, D6, D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
1. General definitions, terms, and characteristics of culture and Architecture)	2		
2. Definitions, Classification of Heritage, World Heritage sites.	2		
3. The Interrelation between culture and traditional and heritage	2		

4. The Interrelation between culture and Civilization (General theories, concepts and examples)	2		
5. Architecture as cultural and Civilization expression - Features and characteristics (A detailed discussion of the multi-components of culture and its impacts in urban sites.	2		
6. Social interaction and urban environment – perception, environment image and behavior patterns.	2		
7. Midterm Exam	2		
8. The role of participation and community involvement in Architectural and Urban Design (Local Case studies)	2		
9. A brief discussion of the Anthropology as a tool of understanding local and indigenous cultures and its application to Architecture	2		
10. Regionalism of architecture and architectural expression	2		
11. Urban Heritage (A review of Values)	2		
12. Urban and Architectural Conservation (A review of interventions)	2		
13. Local and international case studies of urban and Architectural projects corresponding to the cultural dimension of the societies.	2		
14. Research project presentation and discussion	2		
Total hours	**28**		

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations and	Discussions and	Tutorials	Problem solving	Laboratory &	projects	sketches			Self-learning	Discovering	Researches and	Modeling and	Written Exam	Practical Exam	Quizes	Mid-Term Exam	Assignments	Project	Researche	
Knowledge &	a1	1	1	1										1		1			1			1	
	a2	1	1	1										1		1			1			1	
	a3	1	1	1										1		1			1			1	
Intel lect	b1	1	1	1										1		1						1	

	b2	1	1	1									1		1					1	
Applied Profession	c1	1	1	1									1		1					1	
	c2	1	1	1									1		1					1	
	c3	1	1	1									1		1					1	
General Tran.	d1			1								1	1							1	
	d2			1								1	1		1					1	
	d3			1								1	1							1	

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (%)	Grade (Degrees)
Mid-Term Exam	7-th Week	20%	20
Semester Work:	Quizzes	10%	10
	Reports	5%	5
	Assignments	5%	5
Practical research	Fourteen week	20%	20
Final Exam		40%	40
Total		100%	100

6- List of references:

6-1 Course notes: None.

6-2 Required books:

6-3 Recommended books:

- Fraser, D. (1968) "Village Planning in the Primitive World", Studio Vista, London
- Oliver, P. (1969) "Shelter and Society", Barrie & Rockliff, The Cresset Press, London
- Oliver, P. (1997) "Encyclopaedia of vernacular architecture of the world", Cambridge University Press, New York
- Rapoport, A. (1969) "House, Form and Culture", Englewood Cliffs, N.J

6-4 Thesis, Periodicals, Web sites, etc.

- أشرف كامل بطرس (1998) "الثقافة والنتاج البنائي - منهج لرصد وتحليل واستقراء الأبعاد الثقافية وتوظيفها في عملية البناء"رسالة دكتوراه غير منشورة، كلية الهندسة، جامعة القاهرة.
- حسن المويلحى (2005) "العمارة بين الثقافة والتنمية نحو فهم ثقافة مجتمع المستخدمين لخدمةعملية التنمية من خلال البرمجة المعمارية"رسالة ماجستير غير منشورة، كلية الهندسة، جامعة القاهرة.

2. Silverman, H., & Waterton, E., & Watson, S., (2017), “Heritage in Action: Making the Past in the Present”, Springer International Publishing, Switzerland.
3. Born, G., (2006), “Architecture, Preserving Paradise: The Architectural Heritage and History of the Florida Keys”, The History Press, USA.
   - Oliver, P., (1997), “Encyclopedia of vernacular architecture of the world”, Cambridge University Press, New York, USA.

7- Facilities required for teaching and learning:

- Appropriate teaching class including presentation board and data show,
- Resources available in the library

Course coordinator: Dr. Nahed Omran

Head of the Department:	Associate Professor: Ibrahem Gouda.
Date:	December,2018

Modern Academy for Engineering

and Technology in Maadi

Course Specifications

GENN453: Industrial Psychology

A- Affiliation

Relevant program:	Manufacturing Engineering and Production Technology BSc. Program.
Depart offering the program:	Manufacturing Engineering and Production Technology Department
Depart offering the course	Manufacturing Engineering and Production Technology Department
Date specification approval	December 2018

B- BASIC INFORMATION

Title: Industrial Psychology **Code:** GENN453 **Year /level :4/** Semester 10

Credit Hours: 2 **Lectures:** 2 **Tutorial:** - **Practical: -**

Pre-requisite: Non

C – Professional Information

1- Course Learning objectives:

A study of this course will enable the student to improve the performance of the whole work system as well to reduce the stress imposed on the working human being in industry .

2 – Intended Learning Outcomes (ILOs)

A-Knowledge and Understanding:

By the end of the course the student should be able to:

a1- the role of industrial engineer (A4 , A9,A18).

a2- the structural system of human work (A11) .

a3-the physical environmental impacts on human beings which can be assessed quantitatively (A11 , A19) .

B-Intellectual Skills

By the end of the course the student should be able to:

b1- Apply basics of ergonomics to instrument display, machine, control and lay out of work place (B3, B5).

b2- Consider effect of all environmental changes on equipment (B9).

b3- Diminishing the effects of physical environmental impacts on human beings (B9).

C- Professional and Practical Skills

By end of the course the student should be able to :

c1- Create new product design adapted to the customer (C2, C4).

c2- Make the best use of human abilities (C8) .

c3- Use the ergonomic factors in domestic and industrial products (C8) .

D-General and Transferable Skills

By end of the course the student should be able to :

d1-Collaborate effectively with multidisciplinary team (D1, D2).

d2- Effectively manage tasks , time , and ,resources (D6 , D9).

Course Contribution in the program ILO'S

ILO's		Program ILO's
A	Knowledge and understanding	A4، A9،A11،A18, A19
B	Intellectual skills	B3،B5،B9
C	Professional and practical skills	C2،C4،C8
D	General and transferable skills	D1،D2,D6,D9

3-Contents

Topic	Lecture hours	Tutorial hours
Industrial Design – Design concepts	2	
Ergonomics	2	
Application of ergonomics – Instruments – Controls – Work place.	2	
Aesthetic and ergonomics coordination	2	
Working condition and Environment	2	
Heating and Ventilation	2	
Local Ventilation - Industrial Ventilation	2	
Air condition systems – CFC'S - Ozone	2	
Depletion and Global Warning	2	
Noise – Exposure to noise – Noise control	2	
Technique – Vibration	2	
Lighting – Level of luminance – Factors	2	
Affecting the quality of lighting	2	
Human effectiveness	2	
Revision	2	
Total hours	30	

4 - Teaching and Learning and Assessments methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations &	Discussions &	Tutorials	Problem solving	Laboratory					Modeling	Self-learning	Experimental				Class Works	Quizzes	Reports	Mid-Term Exam	Practical Exam	Written Exam
Knowledge & Understanding	a1	1		1															1		1		1
	a2	1		1															1		1		1
	a3	1		1															1		1		1
Intellectual Skills	b1	1		1															1		1		1
	b2	1		1															1		1		1
	b3	1		1															1		1		1
Applied Prof	c1	1		1															1		1		1
	c2	1		1															1		1		1

	c3	1		1														1		1		1
General Tran	d1 d2	1 1		1 1								1 1							1 1			

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: Quizzes & Reports	Bi-Weekly	5
Mid-Term Exam	8th. Week	10
Written Exam	16th. week	35
Total		50

6- List of references:

6-1 Course notes: Lecture notes and handouts prepared by the course coordinator .

6-2 Required books : Non

6-3 Recommended books: Non

6-4 Periodicals, Web sites, etc.: Non

7- Facilities required for teaching and learning:

- Non

Course coordinator: Prof. Mamdouh Saber
Head of the Department: Prof. Dr. Nabil Gadalla
Date: December 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specification
GENN 454: Marketing

A- Affiliation

Relevant program: Manufacturing Engineering and Production Technology BSc Program
Electronic Engineering and Communication Technology BSc Program
Computer Engineering and Information Technology BSc Program
Architecture Engineering and Building Technology BSc Program

Department offering the program: Manufacturing Engineering and Production Technology Department
Electronic Engineering and Communication Technology Department
Computer Engineering and Information Technology Department
Architecture Engineering and Building Technology Department

Department offering the course: Basic science department

Date of specifications approval: June 2018

B - Basic information

Titl : Marketing **Code:** GENN 454 **Level:** Four **Semester:** 9th
Credit Hours: 2 hrs **Lectures:** 2 **Tutorial/Exercise:** - **Practical:** -
Pre-requisite: non

C - Professional information

1 – Course Learning Objectives:

مع نهاية تدريس هذا المقرر يكون الطالب قد اكتسب المهارات التى تمكنه من فهم مجال المبيعات, إدارة قوة المبيعات الاستراتيجية .عملية البيع الشخصية وتنظيم قوى المبيعات, تنميط وتوظيف البائعين, اختيار وتوظيف المتقدمين, تطوير برنامج المبيعات, تحفيز قوى المبيعات, تعويض قوة المبيعات والمصروفات والنقل, قيادة قوة المبيعات، التنبؤ بالمبيعات وتطوير الميزانيات و مناطق المبيعات الأقاليم, تحليل حجم المبيعات, تحليل تكلفة التسويق والربح، تقييم الأداء, كتابة عطاءات المسؤوليات الأخلاقية والقانونية.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1- ادارة المبيعات وتطوير برنامج المبيعات (A9, A1)
a2- تحليل حجم المبيعات, تحليل تكلفة التسويق والربح، تقييم الأداء (A8)
a3- تنميط وتوظيف البائعين, اختيار وتوظيف المتقدمين (A9)

b - Intellectual skills:

On successful completion of the course, the student should be able to.

b1– ان يكتسب الطالب مهارات فى مجال اساسيات ادارة المبيعلت (B1, B2)
b2- ان يدرك الطالب كيفية اختيار وتوظيف المتقدمين وافضل الطرق لتحفيز فريق المبيعات(B1, B2)
b3- ان يستطيع الطالب تحليل تكلفة التسويق حسب مناطق التوزيع و الربح (B1, B2)

d - General and transferable skills:

On successful completion of the course, the student should be able to:

d1- تدريب الطالب على كيفية البحث عن المعلومات فى المراجع وفى الانترنت (D7)
d2- اكساب الطالب كيفية العمل فى فريق واشراكهم فى مناقشات جماعية (D1)
d3- تعليم الطالب على كيفية ايجاد الطرق الازمة لابتكار كل ما هو جديد (D7, D8)

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A8, A9
B	Professional and practical skills	B1, B2
D	General and transferable skills	D1 , D7, D8

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
مجال المبيعات, إدارة قوة المبيعات الاستراتيجية عملية البيع الشخصية وتنظيم قوة المبيعات	6		
تنميط وتوظيف البائعين, اختيار وتوظيف المتقدمين	4		
تطوير برنامج المبيعات, تحفيز قوى المبيعات تعويض قوة المبيعات والمصروفات والنقل	4		
قيادة قوة المبيعات و التنبؤ بالمبيعات	2		
تطوير الميزانيات و مناطق المبيعات الأقاليم	4		
تحليل حجم المبيعات, تحليل تكلفة التسويق والربح	3		
تقييم الأداء, كتابة عطاءات المسؤوليات الأخلاقية والقانونية	3		
مراجعة عامة	2		
Total hours	**28**		

4 - Teaching and Learning and Assessement methods:

Course ILO's		Teaching Methods										Learning Methods				Assessement Method							
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments					Researches and Reports	Modeling and Simulation			Written Exam	Practical Exam	Quizes	Term papers	Assignments			
Knowledge & Understanding	a1	1	1	1								1				1		1					
	a2	1														1		1		1			
	a3	1		1												1		1		1			
Intellectual	b1	**1**														1		1		**1**			
	b2	**1**														1		1		**1**			

	b3	**1**	**1**	**1**								**1**				1							
General Tran. Skills	d1	1		1								1											
	d2	1	1	1																			
	d3	1	1																	1			

5- Assessment Timing and Grading:

Asessement Method	Timing	Grade (Degrees)
Mid-Term Exam	7- th Week	20
Research	8- th Week	15
Quizes	Bi –Weekly	20
Assignments	11- th Week	5
Written Exam	Sixteen -th week	40
Total		100

6- List of references:

6-1 Course notes: Non

6-2 Required books

Michael J. Baker, Susan Hart (2016), "The Marketing Book", 7th Edition.

6-3 Recommended books: Non

6-4 Periodicals, Web sites, etc.: Non

7- Facilities required for teaching and learning:

- Computer, Data show and Computer programs

Course coordinator: Dr. Shaymaa Sherif
Head of the Department: Prof. Dr. Ashraf Taha
Date: September, 2019

Modern Academy
for Engineering and Technology in Maadi

Course Specification
CMPN322: Computer Graphics and Man-Machine Interface

A- Affiliation

Relevant program: Computer Engineering and Information Technology BSc Program
Department offering the program: Computer Engineering and Information Technology Department
Department offering the course: Computer Engineering and Information Technology Department
Date of specifications approval: December 2018

B - Basic information

Title: Computer Graphics and Man-Machine Interface | **Code**: CMPN322 | **Year/level**: Senior 1, first Semester
Credit Hours: 3 | **Prerequisites**: CMPN110 and CMPN321
Contact Hours: | **Lectures**: 2 **Tutorial**:1 **Practical**: 2 **Total:5**

C - Professional information

1 – Course Learning Objectives:

By the end of this course the students should demonstrate the knowledge and understanding of the basic elements of computer generated pictures, the mapping a real seen to 2D raster devices, the transformations applied to a 2D drawn seen on raster devices, the lightening-shading of a seen giving the locations of the light sources and the person looking at the scene. They should be able to apply the transformation to 3D seen and reflected to the projected on a computer generated pictures. Using the contentment and clipping techniques.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:
a1- Comparing between the computer generated pictures and raster images (A1, A2)
a2- Realization of Application programs contains computer generated pictures(A4, A5).
a3- Projection of 3-D views on 2-D plane using parallel projection and perspective projection. (A4, A5,A12)
a4- Filling algorithms , Containment and Clipping. (A4, A5, A12, A16).
a5- The lighting to a seen based on local reflection model. (A8, A16).
a6- The OPENGL to perform graphics based applications(A15, A16).
a7- The 2-D and 3-D transformations to objects (A8, A4).

b - Intellectual skills:

On successful completion of the course, the student should be able to:
b1– Apply Transformations to shapes (B3, B2)
b2 – Analyze and problem decompositions (B1,B3, B7,B8)
b3 – Solve complex computation problems with less computational approaches (B10, B13).

c - Professional and practical skills:

On successful completion of the course, the student should be able to:
c1- Draw graphics based applications in 2D. (C1,C2,C3)
c2- Using of OPENGL for graphics based applications. (C5, C6,C15)
c3- Draw graphics based applications that has 3D views. (C4,C5, C13)
c4- Applying the transformations and its inverse to the 2D, and 3D pictures (C5,C7, C11).
c5- Analyze the Computer Graphic systems (C6, C7).

d - General and transferable skills:

On successful completion of the course, the student should be able to:
d1- Communicate with others work in a team and involvement in group discussion (D1,D3, D8).
d2- Present data and results in soft and hard copy (D4, D6).
d3- Search for information in Computer Graphics and Man-Machine Interfacing. (D7, D9)
d4- Practice self-learning. (D7, D4)

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A2, A4,A5,A8, A12, A15, A16
B	Intellectual skills	B1,B2, B3, B7, B8, B10,B13
C	Professional and practical skills	C1, C2, C3,C4, C5,C6,C7, C11,C13, C15
D	General and transferable skills	D1, D3, D4,D6, D7, D8, D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
➢ Computer generated Pictures and Raster Images.	2	1	
➢ Elements of computer Generated Pictures	2	1	2
➢ Drawing a Polylines and polygons.	2	1	2
➢ Drawing a General functions	2	1	2
➢ Filling a region:			
• Rows based filling, Column based filling	2	1	2
• Seed filling	2	1	2
➢ Transformations			2
• 2D transformations	2	1	
• 3D transformations	2	1	2
• Composite transformations	1		1
• Inverse transforms	1	1	1
➢ Projection			
• Parallel Projection	2	1	2
• Perspective Projection	2	1	2
➢ Lightening based on local reflection model.	4	2	6
➢ Containment and Clipping.	2	1	2
Total hours	28	14	28

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments					Researches and Reports	Modeling and Simulation			Written Exam	Practical Exam	Quizzes	Term papers	Assignments			
Knowledge & Understandin	a1	1	1	1			1					1				1		1	1				
	a2	1			1	1										1		1	1	1			
	a3	1	1	1	1	1						1	1			1		1	1	1			
	a4	1	1	1			1					1	1			1		1	1	1			

	a5	1		1	1	1	1					1	1			1	1	1	1	1		
	a6						1												1	1		
	a7	1	1	1	1	1	1					1	1						1			
Intellectual Skills	b1	1	1		1	1	1					1				1		1		1		
	b2	1			1	1										1		1	1	1		
	b3	1	1		1	1	1									1	1		1			
Applied Professional Skills	c1	1	1		1	1	1					1				1	1	1	1	1		
	c2	1			1	1										1		1	1	1		
	c3	1		1	1	1						1	1						1	1		
	c4	1		1	1	1						1	1				1		1	1		
	c5		1		1	1	1					1	1				1					
General Tran. Skills	d1	1	1	1								1							1			
	d2	1	1	1	1	1						1							1			
	d3		1	1	1	1	1					1							1	1		
	d4		1				1					1								1		

5- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7-th Week	20
Semester Work	Quizzes	4 Quizzes (every 3 weeks)	8
	Reports	Two reports per semester	4
	Assignments	Bi-Weekly	8
Practical Exam		Fifteenth week	20
Written Exam		Sixteenth week	40
Total			100

6- List of references:

6-1 Course notes

Lectures Notes of Computer Graphics and Man-Machine Interface

6-2 Required books

- David biythe,(2013),advanced graphics programming using open gh,Elsevier.

6-3 Recommended books

- Tony white,(2006),animation for pencils to pixels, focal press

6-4 Periodicals, Web sites, etc.

IEEE transactions on computer Graphics.

7- Facilities required for teaching and learning:

- Computer Labs Equipped with OPENGL software.
- Data show

Course coordinator: Dr. Seham Ebrahim
Head of the Department: Ass. Prof.Dr. Wafaa Boghdady
Date: December 2018

Modern Academy

for Engineering and Technology in Maadi

Course Specification
CMPN326: Logic Circuits Design-2

A- Affiliation

Relevant program: Computer Engineering and Information Technology BSc Program
Department offering the program: Computer Engineering and Information Technology Department
Department offering the course: Computer Engineering and Information Technology Department
Date of specifications approval: December 2018

B - Basic information

Title: Logic Circuits Design-2 **Code**: CMPN326 **Level:** 3rd(Senior-1), 2nd Semester
Credit Hours: 3 **Pre-requisite:** CMPN111
Contact Hours: **Lectures**: 2 **Tutorial/Exercise**: 1 **Practical**: 2 **Total:** 5

C - Professional information

1 – Course Learning Objectives:

By the end of this course, the students should demonstrate the knowledge and understanding of the different logic modules, which are the main organs of a modern digital system. They should be able to design logic digital circuits and modules using VHDL besides joining those modules in a complete operating system introducing the adequate performance analysis.

2 – Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1- The concepts of digital nature for compinational and sequential logic circuits in the computer systems (A1, A5).
a2- Evaluation of the minimum cost circuit realization (A4, A5, A14).
a3- Evaluation of the parallel processing circuit realization (A4, A5, A14).
a4- The utility of sequential circuits to realize the memories, counters, clock dividers by VHDL (A2, A5).
a5- The utility the VHDL to design ALUs, CPUs for the microprocessors and/or microcontrollers (A2, A4, A5).
a6- The concept of designing advanced computer systems (like artificial neural network) by VHDL codes (A3, A4, A9, A14).
a7- The verification of the overall design using proper and reliable simulators (A1, A4, and A14).
a8- The memory circuit required to transfer data under control of control unit, the associated address, and data registers (A2, A4, A9, and A14).

b - Intellectual skills:

On successful completion of the course, the student should be able to:

b1- Create solutions for surrounding problems using the knowledge absorbed in this course (B3, B4, B12, and B14).
b2- Analyze any given system and extract the bugs in this system (B1, B4, B6, and B12).
b3- Create of revolutionary attempts to solve difficult sophisticated problems by logic approaches gained in course, giving rise up to simple and cheap solutions (B3, B4, B8, and B17).
b4- Measure procedure and self-correction means to proposed systems (B3, B6, B7, and B12).

c - Professional and practical skills:

On successful completion of the course, the student should be able to:

c1- Design a special-purpose computing system satisfying special requirements with cheaper price than normal computers (C1, C3, C4, and C5).
c2- Realize a digital system operating in real-time, which have computational time much less than that of normal PC (C1, C2, C3, and C5).
c3- Modify existing digital system to achieve either better performance or special application (C1, C2, C3, C6).

d - General and transferable skills:

On successful completion of the course, the student should be able to:
d1- Use internet, references and journals for searching information (D3, D7, D9).
d2- Write a technical report for a given task and prepare its presentation (D3, D4, D6, D7).
d3- Join with team work (D1, D2, D5).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A2, A3,A4, A5, A9, A14
B	Intellectual skills	B1, B3, B4, B6, B7,B8, B12, B14, B17
C	Professional and practical skills	C1, C2, C3, C4, C5, C6
D	General and transferable skills	D1, D2, D3, D4, D5, D6, D7, D9

3 – Contents

Topics	Lecture hours	Tutorial hours	Practical hours
➢ Introduction ➢ Aims realized through the topics of this subjects. ➢ Designing and synthesizing of combinational logic circuits by VHDL ➢ Designing and realizing different Logic gate types and tristate buffer by VHDL. ➢ Designing and realizing different vector MUXs and DEMUXs by VHDL. ➢ Designing and realizing different decoders and encoders by VHDL.	5	4	6
➢ Designing and synthesizing of sequential logic circuits by VHDL ➢ Designing and realizing different types of Flip-Flops by VHDL. ➢ Designing and realizing different types of registers by VHDL. ➢ Designing and realizing different types of Counters and clock dividers by ′HDL. ➢ Designing and realizing different types of SRAM by VHDL. ➢ Designing and realizing ROM with and store data inside it by VHDL.	6	4	8
➢ Building logical circuits using the state diagram techniques ➢ Building logical circuits using the ASM chart techniques ➢ Building logical circuits using the FSM techniques ➢ Analysis of sequential circuits	4	1	8
➢ Design and realizing of arithmetic logic unit (ALU) by VHDL. ➢ Designing and implementing the control units by VHDL. ➢ Trieste bus based transfers.	3	2	2
➢ The micro-operations (Register transfer, Arithmetic op., logic op, shifting. ..etc.)	3	1	--
➢ Designing and realizing concurrent digital circuits using arrays and matrices onfiguration.	3	1	2
➢ Designing and realizing simple microcontroller or microprocessor by VHDL.	4	1	2
Total hours	**28**	**14**	**28**

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods						Learning Methods		Assessment Method				
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments	Researches and Reports	Modeling and Simulation	Written Exam	Practical Exam	Quizzes	Term papers	Assignments
Knowledge & Understanding	a1	1			1			1		1				1
	a2	1			1			1		1		1		
	a3	1			1					1		1		1
	a4	1	1	1			1	1			1			1
	a5	1		1	1		1			1	1	1		
	a6	1			1		1			1	1			1
	a7	1	1			1		1						1
	a8	1			1		1			1	1	1		
Intellectual Skills	b1	1				1				1				1
	b2	1				1				1		1		
	b3			1		1		1				1		1
	b4			1		1		1						1
Applied Professional Skills	c1	1	1	1				1				1		1
	c2	1	1	1				1		1				1
	c3		1	1			1				1	1		1
General Tran. Skills	d1		1					1						
	d2		1			1		1				1		1
	d3		1					1						1

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	20
Mid-Term Exam	6-th Week	20
Practical Exam	Fifteenth week	20
Written Exam	Sixteenth week	40

Total	100

6- List of references:

6-1 Course notes: Digital logic circuit design (Theoretical + Practical).

6-2 Required books

- Mano, M.M, and Kime, C.R, (2000) Logic and Computer Design Fundamental, 2nd ed., Englewood cliffs, NJ: Prentice Hall.
- Stephen D., Stephen B., Zvonko G., and Zvonko V., (2004) Fundamentals of Digital Logic with VHDL Design: McGraw-Hill Higher Education.
- Volnei A. Pedroni, (2010) Circuit Design and Simulation with VHDL, 2nd ed : MIT Press Cambridge.
- Nelson, V.P, Nagel, H.T., Carroll, B.D., and Irwin, J.D., (1995) Digital Logic Circuit Analysis and Design, NJ: Prentice Hall.

6-3 Recommended books:

- Roth john, (2013) Digital system design using VHDL: Amazon
- Warkely, J.F, (2000) Digital Design: Principles and Practices, 2nd ed. Englewood cliffs: NJ: Prentice Hall.
- Mano, M.M, (1991)Digital Design 2nd ed. Englewood cliffs, NJ: Prentice Hall.

6-4 Periodicals, Web sites, etc.

http://www.prenhall.com/mano

7- Facilities required for teaching and learning

- Xilinx FPGA Logic kits. and Computers.
- Xilinx ISE software program
- Modalism software program
- Data show

Course coordinator: Dr. Assem Badr

Head of the Department: Ass. Prof. Dr. Wafaa Boghdady

Date December 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specification
CMPN 324: Data Transmission and Computer Networks

A- Affiliation

Relevant program: Computer Engineering and Information Technology BSc Program
Department offering the program: Computer Engineering and Information Technology Department
Department offering the course: Computer Engineering and Information Technology Department

Date of specifications approval: December 2018

B - Basic information

Title: Data Transmission and Computer Networks **Code**:CMPN324 **level**: Senoir2/ 1st semester
Credit Hours: 3 **Pre-requisite:** CMPN321
Contact Hours: 6 **Lectures:** 3 **Tutorial**:2 **Practical:**1 **Total**: 6

C - Professional information

By the end of this course the students should demonstrate the knowledge and understanding of the basic principles and topics of fundamental importance concerning the technique, technology and architecture of the Data Transmission and Computer Networks. They should be able to operate, maintain, calculate and analyze the performance of Computer Networks.

2 - Intended Learning Outcomes (ILOS)

a – Knowledge and understanding:

By the end of this course the student should have the following Knowledge of:
a1 - Basic networking concepts in wide use today (A1, A2, A17).
a2 - The Analog, digital, and binary transmission (A1, A2, A6).
a3- The multiplexing technique (A1, A2, A4).
a4 - Circuit switching versus packet switching (A1, A2, A15).
a5- Comparison between LANs versus WANs (A1, A2, A17, A8).
a6- Congestion and latency quality of service guarantees for speed (A1, A2, A6).
a7 - Quality of service guarantees for reliability (A1, A2, A6, A17).
a8- Terminal-host system, file server program access, and client/server processing. (A1, A2, A12).
a9- Elements of the Internet and the standards activated when access the Internet World Wide Web server, Email, and FTP servers (A1, A2, A18, A20).
al0- The needs for quality of service guarantees and improved Security (A1, A6, A20).
A1l1 -The operation of modems and other translation devices (A1, A2, A5).
a12- Description of the major functions of link layer and explain the principles of LANs. (A1, A2, A17).
a13 - Description of internetworking works and explain the principles of packet forwarding by routers. (A3, A17, A19).

b – Intellectual Skills:

On successful completion of the course, the student should be able to:
b1 - Connect the computer network (B1, B4, B5, B21).
b2- Explain Data and network distribution for data processing (B1, B4, B5, B17).
b3- Evaluate telephone modems compared to ISDN, DSL, and cable modems (B1, B4, B5, B14).
b4 - Setup of common protocols (B1, B4, B5, B21).
b5- Share the folder & files. (B1, B4, B5).
b6-Connect peer to peer and server based. (B1, B4, B5).

c - Professional and practical skills:

On successful completion of the course, the student should be able to:

cl – Install networks components (C1, C5, C6, C19).

c2- Follow all software and hardware steps to connect computers to networks (C2, C3, C10, C11).

c3- Set up the common protocols (C1, C2, C10, C11).

d - General and transferable skills:

On successful completion of the course, the student should be able to:

d1- Work in a team and involve in group discussion (D1, D3, D6).

d2- Communicate effectively and present data and results orally and in written form (D3, D4).

d3- Use ICT facilities in presentations, and manage resources efficiently (D4, D5).

d4- Search for information's in references in internet (D7).

d5- Practice self-learning (D7, D9).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A2,A3,A4, A5, A6,A8,A12, A15,A17,A18,A19,A20
B	Intellectual skills	B1, B4,B5, B14, B17, B21
C	Professional and practical skills	C1,C2,C3, C5,C6,C10,C11, C19,
D	General and transferable skills	D1, D3, D4, D5,D6,D7, D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
1. Introduction. Computer networks subsystems.	4	2	1
2. Fundamental of data transmission and digital communications	6	4	2
3. Fundamentals of computer networks.	6	2	1
4. Media of network	4	2	1
5. Topology of networks. -protocols of networks.	4	4	2
6. OSI Model: communication and network layers overview.	4	4	2
7. Types of networking devices.	2	2	1
8. TCP/IP Protocols of network and Ethernet technology	2	2	1
9. TCP/IP IP, Transport, and application layer	6	4	2
10. Networks Security techniques	4	2	1
Total hours	42	28	14

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments					Researches and Reports	Modeling and Simulation			Written Exam	Practical Exam	Quizzes	Term papers	Assignments			
Knowledge & Understanding	a1	1	1	1			1					1				1		1		1			
	a2	1				1										1		1	1	1			
	a3	1				1										1		1		1			
	a4	1	1	1	1	1						1				1		1	1	1			
	a5	1			1		1									1		1		1			
	a6	1			1	1						1				1			1	1			
	a7	1	1	1	1	1						1				1			1	1			
	a8	1		1			1					1				1				1			
	a9		1	1	1		1					1				1				1			
	a10	1	1			1						1				1							
	a11	1	1				1									1							
	a12	1	1		1											1			1				
	a13	1	1	1			1					1				1							
Intellectual Skills	b1	1		1	1							1					1	1		1			
	b2	1	1				1										1	1		1			
	b3	1		1	1		1					1				1			1	1			
	b4	1		1	1		1					1				1		1	1	1			
	b5	1	1		1	1										1		1		1			
	b6		1				1										1						
Applied Professio	c1	1			1	1										1		1	1				
	c2	1	1				1									1		1	1	1			
	c3	1		1		1						1					1		1				
General Tran. Skills	d1			1		1						1							1				
	d2		1	1	1		1					1							1				
	d3	1	1				1					1							1				
	d4	1	1	1	1		1					1							1				
	d5			1								1				1	1	1	1	1			

5- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7-th Week	20
Semester Work	Quizzes	4 Quizzes (every 3 weeks)	8
	Reports	Two reports per semester	4

	Assignments	Bi-Weekly	8
Practical Exam		Fifteenth week	20
Written Exam		Sixteenth week	40
Total			100

6- List of references:

6-1 Course notes:

Wafae Boghdady: Data Transmission and Computer Network, Cairo: Modern Academy Press, 2017

6-2 Required books

Vikas Chaudhary (2017) Cryptography and network security, S.K. Kataria & Sons
Sanjay Shama (2013) A course in computer network, S.K. Kataria & Sons
Marial (2012) Computer Communications, S.K. Kataria & Sons
Mattord (2009) Firewalls and network security, S.K. Kataria & Sons

6-3 Recommended books:

William Stallings, (2014) Computer Networks, 5th edition Prentice Hall
Behrouz A Forouzan, (2003) Data Communications and Networking, Mc Grew Hill,
Raymond and R. Panko, (2012) Business Data Networks and Telecommunications, Prentice Hall, 9th edition

6-4 Periodicals, Web sites, etc.:

http://www.prenhall.com/panko/index.httml .
http://www.netacad.com

Course coordinator: Ass. Prof. Dr. Wafaa Boghdady
Head of the Department: Ass. Prof. Dr. Wafaa Boghdady
Date: December 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specification
CMPN 331: Computer Peripherals

A- Affiliation

Relevant program: Computer Engineering and Information Technology BSc Program
Department offering the program: Computer Engineering and Information Technology Department
Department offering the course: Computer Engineering and Information Technology Department
Date of specifications approval: December 2018

B - Basic information

Title: Computer Peripherals **Code**: CMPN331 **level:** Senior 1, 1st or 2nd Semester
Credit Hours:3 **Lectures**: 2 **Tutorial**:2 **Practical** :- **Total:**4
Pre-requisite: CMPN 321

C - Professional information

1 – Course Learning Objectives:

By the end of this course the students should demonstrate the knowledge and understanding of the computer components, and its peripherals. They should be able to connect, interface, operate, maintain, and analyze the computer peripherals

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1- Sophisticated computer system principle of operations, Including high- performance peripheral interfaces (A1, A2).
a2- The instruction set design principles (A4, A5).
a3- All types of semiconductor memory devices and requirements (A6, A8).
a4- The different types of interrupt structures (A11, A15).
a5- Working knowledge of digital communication interface adapters (A12, A13).

b - Intellectual skills:

On successful completion of the course, the student should be able to:
b1-Be aware of importance of computer peripherals (B1, B5).
b2- Compare and put specification of computer/peripherals (B4, B8).

c - Professional and practical skills:

On successful completion of the course, the student should be able to:
c1- Design digital peripherals circuits for Input, Output, Keyboard, and Display Circuits(C1,C4)
c2- Select appropriate and compatible computer/peripherals combinations (C2, C5).
c3-connect, interface, operate, maintain, and analyze the computer peripherals(C14,C15,C16)

d - General and transferable skills:

On successful completion of the course, the student should be able to:
d1- Work in a team and involve in group discussion and seminars (D1, D3).
d2- Communicate effectively and present data and results orally and in written form (D3, D4).
d3- Use ICT facilities in presentations, and manage resources efficiently (D4, D5).
d4- Search for information's in references, journals and in internet(D7).
d5- Practice self-learning(D7, D9).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A2, A4, A5,A6, A8,, A11, A12, A13, A15
B	Intellectual skills	B1, B5, B4,B8
C	Professional and practical skills	C1, C2,C4,C5,C14,C15,C16
D	General and transferable skills	D1, D2,D3, D4, D5,D7,D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
➢ Input devices: Introduction, human factor considerations, keyboards, digitizers, input tables, mouse, track-balls and joy-sticks, voice input systems. I	3	3	
➢ Input devices: Introduction, human factor considerations, keyboards, digitizers, input tables, mouse, track-balls and joy-sticks, voice input systems. II	3	3	
➢ Output display devices: CRT, LCD, Gas-plasma displays, controllers, software support. I	3	3	
➢ Output display devices: CRT, LCD, Gas-plasma displays, controllers, software support. II	3	3	
➢ Output hard copy devices: Plotters, impact printing (line and matrix). Nonimpact printers (Electro-photographic, magneto and iconographic, thermal, ink-jet). Color printing, printer controllers. I	3	3	
➢ Output hard copy devices: Plotters, impact printing (line and matrix). Nonimpact printers (Electro-photographic, magneto and iconographic, thermal, ink-jet). Color printing, printer controllers. II	3	3	
➢ Mass storage devices: Semiconductor, flash, magnetic floppy, hard disk, magnetic tapes, standard cartridge, optical (CD-ROM, WORM), magneto-optical. I	4	4	
➢ Mass storage devices: Semiconductor, flash, magnetic floppy, hard disk, magnetic tapes, standard cartridge, optical (CD-ROM, WORM), magneto-optical. II	4	4	
➢ Multimedia and virtual reality devices Head mounted displays, data gloves. I	2	2	
Total hours	28	28	

4 - Teaching and Learning, Assessment Methods and Grading:

ours ILO's		Teaching Methods									Learning Methods				Assessment Method				
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & projects				Researches and Reports	Modeling and Simulation	Site Visits	Discovering	Written Exam	Practical Exam	Quizzes	Term papers	Assignments
Knowledge & Understanding	a1	1	1		1						1		1		1	1		1	
	a2	1		1	1						1				1	1	1	1	
	a3	1			1								1		1	1		1	1
	a4	1	1	1	1	1					1				1	1	1	1	1
	a5	1			1							1			1	1		1	
Intellectual Skills	b1	1			1	1									1	1			1
	b2	1	1		1	1					1				1	1		1	
Applied Professional Skills	c1	1	1		1	1									1	1		1	
	c2	1			1						1				1	1		1	
	c3	1	1												1	1			
General Tran. Skills	d1	1	1	1		1					1								
	d2	1	1	1							1	1							
	d3	1									1							1	
	d4		1																
	d5		1										1						

5- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7-th Week	20
Semester Work	Quizzes	4 Quizzes (every 3 weeks)	16
	Reports	Two reports per semester	14
	Assignments	Bi-Weekly	10
Written Exam		Sixteenth week	40
Total			100

6- List of references:

6-1 Course notes None

6-2 Required books

Leo F. Doyle, Computer Peripherals, second edition, Prentice Hall, 1990.

Barry B. Berry. The intel microprocessor architecture, programming and interfacing, Prentice Hall, USA, 2003.

6-3 Recommended books: None

6-4 Periodicals, Web sites, etc.

http://hasanpoet.weebly.com/uploads/3/4/9/6/3496531/cpi.pdf
http://www.iitg.ernet.in/asahu/cs421/Lects/Lec01.IntroMotiv2PeriPheral.pdf
http://www.GenLib.org/ .
http://www.talkthecold.com/bizgoogle/ .
http://www.SCI-hub.org/ .
http://www.scrius.com/ .
http://www.Merlot.org/ .
http://www.Vlab.co.in/ .
http://www.W3schools.com/ .

7- Facilities required for teaching and learning:

-

Course coordinator:	Dr. AbdElmoneim Fouda
Head of the Department:	Ass. Prof. Dr. Wafaa Boghdady
Date:	December 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specifications
CMPN335: Operating Systems

A- Affiliation

Relevant program: Computer Engineering and Information Technology BSc Program
Department offering the program: Computer Engineering and Information Technology Department
Department offering the course: Computer Engineering and Information Technology Department
Date of specifications approval: December 2018

B - Basic information

Title: Operating Systems **Code**: CMPN335 **Level:** Semester 9 ,Senior 2
Credit Hours: 3 **Lectures**:2 **Tutorial:**:2 **Practical: 1** **Total:**5
Pre-requisite: CMPN321

C - Professional information

1 – Course Learning Objectives:

By the end of this course, students should be knowledgeable of the functions and services provided by the operating system to the computer system. They should be able to identify various techniques and algorithms applied by the operating system to manage processes and memory as well as IO and secondary storage.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, students should demonstrate knowledge and understanding of:
a1- Functions of the operating system (A1,A2)
a2- Data structures used by the OS to manage computer resources (A1,A2, A18)
a3- Stages and states of the program execution (A4, A18)
a4- Algorithms and techniques used by the OS to manage computer resources (A1, A2, A4,A18)
a5- problems arising in the OS performance and approaches of solving them (A15, A17,A18)

b - Intellectual skills:

On successful completion of the course, the student should be able to.
b1- Trace and analyses process execution inside main memory and inside the CPU (B1,B2, B3,B18)
b2- Identify the reasons of blocking the process during execution (B4, B5, B7,)
b3- Compare the performance of different scheduling algorithms (B4,B5,B16)
b4- Analyze the solution of multiprogramming problems (B3, B17)

c - Professional and practical skills:

On successful completion of the course, the student should be able to:
c1- Implement the OS techniques and algorithms to enforce multiprogramming environment (C1, C2,C19).
c2- Solve problems of concurrent execution and time-sharing (C3, C5, C8, C19).
c3- **Use of and developing open source applications in Linux and Android envirnmensts. (C3,C5,C21)**

d - General and transferable skills:

On successful completion of the course, the student should be able to:
d1- Present problems arising due to multiprogramming (D1, D2, D3).
d2- Prepare analysis reports about performance of various algorithms (D4, D7)
d3- Demonstrating results of implementing algorithms (D8, D9).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A2, A4, A15, A17, A18
B	Intellectual skills	B1,B2, B3, B4, B5, B7, B16, B17,B18
C	Professional and practical skills	C1, C2, C3,C4, C5, C8,C19,C21
D	General and transferable skills	D1, D2, D3, D4, D7, D8, D9

3– Contents

Topic	Lecture hours	Tutorial hours	Practical hours
➢ Operating system concepts	2	2	
➢ -Process Concepts	2	2	
➢ -CPU scheduling.	4	4	
➢ Threads , Interprocess Communication	6	6	
➢ Deadlocks	4	4	
➢ Memory Management and Virtual Memory	4	4	
➢ File Management	2	2	
➢ Input-Output and interrupts	2	2	
➢ Mutlti-Processing systems and Parallel computing	2	2	
➢			
Total hours	28	28	

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments					Researches and Reports	Modeling and Simulation			Written Exam	Practical Exam	Quizzes	Term papers	Assignments			
Knowledge & Understanding	a1	1			1											1				1			
	a2	1		1	1		1									1	1	1		1			
	a3	1		1	1		1									1	1	1		1			
	a4	1	1	1	1	1	1					1				1	1	1	1	1			
	a5	1	1	1	1	1						1				1				1			
Intellectual Skills	b1	1	1	1	1							1	1			1	1	1	1	1			
	b2	1	1	1	1		1					1	1			1	1	1	1	1			
	b3	1	1	1	1		1					1	1			1	1	1	1	1			
	b4	1	1	1	1		1					1	1			1	1	1	1	1			

Applied Professional Skills	c1	1	1	1	1						1	1			1		1	1	1			
	c2	1	1	1	1		1				1	1			1		1	1	1			
General Tran. Skills	d1		1	1			1				1							1				
	d2		1	1			1				1							1				
	d3		1	1							1							1				

5- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7-th Week	20
Semester Work	Quizzes	4 Quizzes (every 3 weeks)	8
	Reports	Two reports per semester	4
	Assignments	Bi-Weekly	8
Practical Exam		Fifteenth week	20
Written Exam		Sixteenth week	40
Total			100

6- List of references:

6-1 Course notes:

"Operating Systems – Lectures Notes"

6-2 Required books

Andrew S. Tatenbaun, (1997),Operating system design & implementation, Prentice Hall

Abraham Silberschatz**,(2010),** oprating system concepts, wiley

William Stallings,(1998(, Operating Systems Internals and Design Principles, Prentice Hall.

6-3 Recommended books:

6-4 Periodicals, Web sites, etc.

http://www.prenhall.com/mano.

7- Facilities required for teaching and learning:

- Data show,
- Software Programs

Course coordinator: Dr. Khaled Morsy
Head of the Department: Prof. Dr. Wafaee Boghdady
Date: December 2018

Modern Academy

for Engineering and Technology in Maadi

Course Specification
CMPN333: Embedded Systems

A- Affiliation

Relevant program: Computer Engineering and Information Technology BSc Program
Department offering the program: Computer Engineering and Information Technology Department
Department offering the course: Computer Engineering and Information Technology Department
Date of specifications approval: December 2018

B - Basic information

Title: Embedded Systems **Code:** CMPN333 **Level:** 3rd (Senior-1), 2nd Semester
Credit Hours: 3 **Pre-requisite:** CMPN310
Contact Hours: **Lectures:** 2 **Tutorial/Exercise:** 2 **Practical:-**: - **Total:** 4

C - Professional information

1 – Course Learning Objectives:

By the end of this course, the students should demonstrate the knowledge and understanding of the microcomputer architecture; MikroC and assembly language programming; I/O methods and interface techniques in parallel and serial connections, synchronous and asynchronous systems; different I/O interrupts, and DMA; interface examples involving standard and non-standard microcomputer interface. By the end of this course, the students will be able to develop the techniques used smart components design, interfacing and applications.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:
a1- Embedded systems descriptions, definitions, and vocabulary (A1, A14).
a2- Embedded system design considerations and requirements, processor selection and tradeoffs. (A4)
a3- The phases of embedded system development and familiarity with hardware and software development and debugging tools. (A6, A15)
a4- Designing input/output hardware to meet the requirements of specific applications. (A12)
a5- Comparison and evaluation of alternative systems to handle multiple interrupts. (A5)

b - Intellectual skills:

On successful completion of the course, the student should be able to:
b1- Focus on the basic embedded system concepts. (B4)
b2- Solve engineering design based on microcontroller in mini-project (B12).
b3- Expose the 8051 instruction set, and learn how to use a cross assembler and simulator to develop code. (B3).
b4- Select a microprocessor appropriate to a particular application. (B8)
b5- Design, create, validate and document structured programs and software solutions to problems. (B2, B3, B13).
b6- Select and use appropriate hardware and software development tools (B14).
b7- Design an embedded microcomputer system to specification (B15).
b8- Present designs for microprocessor-based solutions (B15).

c - Professional and practical skills:

On successful completion of the course, the student should be able to:
c1- Use a cross assembler and simulator to develop code (C14).
c2- Develop code in assembly and MikroC to control the basic hardware (C15).
c3- Design an embedded system based on VHDL codes (C1, C3).
c4- Solve limited operational problems using microcontroller (C4, C5, C6, C13).

d - General and transferable skills:

On successful completion of the course, the student should be able to:

d1- Work in a team and involve in group discussion (D1, D3).

d2- Communicate effectively and present data and results orally and in written form (D3).

d3- Use ICT facilities in presentations (D4).

d4- Search for information's in references and in internet (D7).

d5- Practice self-learning (D7, D9).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A4, A5, A6, A12, A14, A15, A16
B	Intellectual skills	B2,B3, B4, B8, B12, B13, B14, B15
C	Professional and practical skills	C1, C3, C4, C5, C6, C13, C14, C15
D	General and transferable skills	D1, D3, D4, D7, D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
➢ Embedded system designing processes	2	2	
➢ Introducing assembly & MikroC editors software program	2	3	
➢ Describing architecture of a Microcontroller	2	3	
➢ Designing embedded system based on Real time interfacing of a microcontroller with UART serial modules.	4	4	
➢ Designing embedded system for interfacing a microcontroller with LCD and GLCD modules.	4	4	
➢ Designing embedded system for interfacing a microcontroller with GPS and GSM modules.	4	4	
➢ Designing IP smart core for the Embedded systems based on VHDL and FPGA	4	4	
➢ Designing Embedded system based on VHDL and FPGA	4	4	
➢ Mani-project of an embedded system based on MicroC or VHDL codes.	2	--	
Total hours	**28**	**28**	

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments					Researches and Reports	Modeling and Simulation			Written Exam	Practical Exam	Quizzes	Term papers	Assignments			
Knowledge & Understanding	a1	1	1	1	1							1				1		1	1				
	a2	1			1											1		1	1	1			
	a3	1			1											1		1	1	1			
	a4	1	1	1	1	1						1				1		1	1	1			
	a5	1														1		1	1	1			
Intellectual Skills	b1	1			1											1		1		1			
	b2	1			1	1										1		1	1	1			
	b3	1	1	1	1							1				1			1				
	b4	1	1		1							1				1		1	1	1			
	b5	1			1											1		1		1			
	b6	1			1	1										1		1	1	1			
	b7	1	1	1	1							1				1			1				
	b8	1	1		1							1				1		1	1	1			
Applied Professional Skills	c1	1			1											1		1		1			
	c2	1			1	1										1		1	1	1			
	c3	1	1	1	1							1				1			1				
	c4	1	1		1							1				1		1	1	1			
General Tran. Skills	d1			1		1						1							1				
	d2		1	1								1	1						1				
	d3	1	1									1							1	1			
	d4	1	1	1								1											
	d5											1	1						1				

5- Assessment Timing and Grading:

Assessment Method	Timing	Degrees
Semester Work: quizzes assignments and reports	By Weekly	40
Mid-Term Exam	6-th Week	20
Written Exam	Sixteenth week	40
Total		100

6- List of references:

6-1 Course notes:

Rolin D. McKinlay, Janice G. Mazidi, Danny Causey and Muhammad Ali Mazidi, The 8051 Microcontroller, Prentice Hall, 2012

6-2 Required books:

- Elecia White, (2012) Making Embedded Systems: Design Patterns for Great Software, O'Reilly Media, Inc.
- Stephen D., Stephen B., Zvonko G., and Zvonko V., (2004) Fundamentals of Digital Logic with VHDL Design, McGraw-Hill Higher Education.
- Volnei A. Pedroni, (2010) Circuit Design and Simulation with VHDL, 2nd ed. MIT Press Cambridge.

6-3 Recommended books:
Robert Oshana, Mark Kraeling, (2013) Software Engineering for Embedded Systems: Methods, Practical Techniques, Newnes.

6-4 Periodicals, Web sites, etc.
- http://www.8052.com
- http://www.keil.com/
- http://www.mikroC.com/

7- Facilities required for teaching and learning:
- Computer, Data show.
- Xilinx VHDL ISE software program
- MicroC editor as "Proteus" software program

Course Coordinator:	Dr. Assem Badr
Head of the Department:	Ass. Prof. Dr. Wafaa Boghdady
Date:	December 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specification
CMPN 361: Project-1

A- Affiliation

Relevant program:	Computer Engineering and Information Technology BSc Program
Department offering the program:	Computer Engineering and Information Technology Department
Department offering the course:	Computer Engineering and Information Technology Department
Date of specifications approval:	December 2018

B - Basic information

Title: Project-1 **Code:** CMPN 361 **Level**: Senior-1 7th semester
Credit Hours: 2 **Lectures:** 1 **Tutorial/Exercise**:1 **Practica**l: 2 **Total:**4
Pre-requisite:101 Credits

C - Professional information

1 – Course Learning Objectives:

The proposed project must complement the other courses in the electric engineering. Each student must understand the assigned project contribution and know his task. By the end of this project the students should able to implement their engineering knowledge and learned the techniques to achieve the assigned design. The students make the general layout of this project as a practice for the main project (Project2). The students should be capable to implement, document, and test their project using proper measuring devices.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1- The idea of the proposed project (A4, A5, A14)
a2- Making a plan to distribute their tasks along the available duration time (A6, A8).
a3- The techniques to achieve the project design (A4, A5, A14)
a4- Realization and implementation steps for the project design (A4, A5, A14).
a5- Checking and testing for the project design (A4, A5, A15).
a6- Making the final technical report documentation (A4, A5, A10).

b - Intellectual skills:

On successful completion of the course, the student should be able to:

b1- Select proper electric and digital circuit for the assigned project (B3, B5, B7, B12, B13)
b2- Select proper element and components (B2, B5, B7, B9, B10, B15).
b3- Implement the design in real circuit (B4, B5, B7, B11).
b4- Test the implemented circuit (B6).
b5- Record the complete work in final technical report (B5).

c - Professional and practical skills:

On successful completion of the course, the student should be able to:

c1- Convert his block diagram circuit to real electric circuit (C1, C2, C3, C7, C8, C11, C13, C15).
c2- Use the datasheets and websites to select the proper elements (C9, C10, C11, C14).
c3- Use the proper equipment and tools to perform this design (C4, C5, C6, C14, C15).
c4- Use the different measuring devices to check this design (C5, C6, C10, C12)

d - General and transferable skills:

On successful completion of the course, the student should be able to:

d1- Cooperating together in team work (D1, D3).

d2- Communicate effectively and present data and results orally and in written form (D1).
d3- Search for information in libraries and internet (D7).
d4- Practice self-learning and preparing reports (D7, D9).
Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A4, A5, A6, A8,A10, A14, A15
B	Intellectual skills	B2, B3, B4, B5, B6, B7, B9, B10, B11, B12, B13, B15
C	Professional and practical skills	C1, C2, C3, C4, C5, C6, C7, C8, C9, C10, C11, C12, C13, C14, C15
D	General and transferable skills	D1 , D3, D7, D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
➢ Studying the idea of the assigned project.	1	2	
➢ Planning and scheduling the project activities.	2	2	3
➢ Designing the project circuit.	2	2	6
➢ Implementation the project circuit.	2	2	10
➢ Testing the project circuit.	2	2	7
➢ Make final technical report documentation	5	4	2
Total hours	14	14	28

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments					Researches and Reports	Modeling and Simulation			Seminar	Practical Exam	Quizzes	Reports	Assignments			
Knowledge &	a1	1		1	1	1										1			1				
	a2	1		1	1	1	1					1				1			1				
	a3	1		1	1	1	1					1	1			1			1				
	a4	1		1	1	1	1					1	1			1			1				
	a5	1			1		1					1	1			1			1				
	a6	1		1	1	1	1									1			1				
Intellectual Skills	b1			1	1	1	1					1				1			1				
	b2			1	1	1	1					1				1			1				
	b3				1		1					1	1			1			1				
	b4			1	1	1	1						1			1			1				
	b5	1	1	1	1	1	1					1				1			1				
Applie	c1	1		1	1	1	1					1	1			1			1				

	c2			1	1		1									1			1			
	c3			1	1	1	1									1			1			
	c4			1	1	1	1									1			1			
General Tran. Civil	d1	1		1							1											
	d2			1							1											
	d3			1		1																
	d4				1																	

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Assignment and year work	By the semester	60
Assignment and year work Evaluation of oral and final report of seminars	By the end of the seminar periods	40
Total		100

6- List of references:

6-1 Course notes:

6-2 Required books: None

6-3 Recommended books: None

6-4 Periodicals, Web sites, etc.

http://www.electronicshub.org/top-electrical-mini-projects/
http://www.circuitstoday.com/simple-electronics-projects-and-circuits
http://www.examsadda.com/2011/05/mini-projects-for-electronics.html
http://www.projecttitles4free.com/
http://www.gobookee.org/electrical-engineering-students-small-project/
http://www.realworldengineering.org/library_search.html
http://www.stackoverflow.com.
http://www.GenLib.org/

7- Facilities required for teaching and learning:

- Simulator software programs.
- Hardware lab.
- Data show

Course coordinator: Dr. AbdElmoneim Fouda
Head of the Department: Ass. Prof. Dr. Wafaa Boghdady
Date: December 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specification
CMPN336: Software Engineering

A- Affiliation

Relevant program: Computer Engineering and Information Technology BSc Program
Department offering the program: Computer Engineering and Information Technology Department
Department offering the course: Computer Engineering and Information Technology Department
Date of specifications approval: December 2018

B - Basic information

Title: Software Engineering **Code**: CMPN336 **Year/level**: Senior 1, first Semester
Credit Hours: 3 **Lectures**: 2 **Tutorial**:2 **Practical:1** **Total:**5
Pre-requisite: CMPN325

C - Professional information

1 – Course Learning Objectives:

By the end of this course the students should demonstrate the knowledge and understanding of the attributes of good software, the roles of software organization, the technical and the management processes and the different design phases. They should be able to design, modify the software development models and analyze their performance.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:
a1- Selection measures and measure software quality of a given software. (A6, A3, A8).
a2- Software organization and what are the roles it contains and how they interact with each other's. (A3, A7, A8).
a3- Software requirement definition, requirement specification and non-functional requirement. (A13, A4).
a4- Software Development models and the selection criteria between models. (A15, A18).
a5- Software design. (A12, A4).
a6- Software development models and suitability of a model to a specific case. (A13, A4, A18).
a7- Planning software activities with dependencies and determine the overall period and the critical path and the critical activities. (A1, A18).

b - Intellectual skills:

On successful completion of the course, the student should be able to:
b1– Talking in objective manner to capture requirements (B1, B4).
b2 – Analyze the real problems by the software engineering (B7, B9, B14, B17).
b3 – Classify and compare the different ways of manage software (B2, B5).

c - Professional and practical skills:

On successful completion of the course, the student should be able to:
c1- Capture requirement from customers (C1, C4).
c2- Design Software based on requirement document (C2, C3, C13).
c3- Differentiates between software offers and determine the proper deliverables with each case (C9, C4, C10).
c4- Select of proper models and modify to a specific software development project. (C11, C9, C10).
c5- Perform systems analysis and design. (C14, C6, C12).

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d - General and transferable skills:

On successful completion of the course, the student should be able to:
d1- Communicate with others; work in a team and involvement in group discussion (D1, D3, D6).
d2- Present data and results orally and in written form (D6,D4)
d3- Understanding of people and team's formation. (D7,D9)
d4- Practice self-learning (D7, D4)

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A3, A4, A6,A7,A8,A12,A13,A15,A18
B	Intellectual skills	B1,B2,B4,B5,B7,B9, B14,B17
C	Professional and practical skills	C1, C2, C3,C4, C6, C9,C10,C11,C12, C13,C14
D	General and transferable skills	D1, D3, D4, D6, D7, D9

3– Contents

Topic	Lecture hours	Tutorial hours	Practical
➢ Software, software engineering and main topics of software engineering.	2	2	
➢ ISO standards for software quality attributes	2	2	1
➢ Software organization structure and interaction between activities.	2	2	
➢ Software organization roles understanding	2	2	
➢ Software development models	4	4	
• Water fall and evolutionary			1
• Mills increment and mathematical			1
• Spiral model understanding		2	1
➢ Requirement engineering	8	2	
• Requirement Definition			1
• Requirement Specification		2	1
• Non-function requirements		2	1
• UML and requirement engineering			1
➢ Software Design	4	2	1
• Software Design process			1
• Software Design Documents		2	1
➢ Establishment of software organization	2		1
➢ Management of people and planning activities with dependencies.	2	4	
Total hours	28	28	12

4 - Teaching and Learning and Assessment methods:

Course	Teaching Methods	Learning Methods	Assessment Method

		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments					Researches and Reports	Modeling and Simulation			Written Exam	Practical Exam	Quizzes	Term papers	Assignments			
Knowledge & Understanding	a1	1	1	1			1					1				1		1	1				
	a2	1			1	1	1									1		1	1	1			
	a3	1	1	1	1	1						1				1		1	1	1			
	a4	1	1	1			1					1				1		1	1	1			
	a5	1		1	1	1	1					1				1	1	1	1	1			
	a6						1										1		1	1			
	a7	1	1	1	1	1	1					1					1		1				
Intellectual Skills	b1	1	1		1	1 1						1				1		1		1			
	b2	1			1	1										1		1	1	1			
	b3	1	1		1	1	1									1	1		1				
Applied Professional	c1	1	1		1	1	1					1				1	1	1	1	1			
	c2	1			1	1	1									1		1	1	1			
	c3	1		1	1	1	1					1					1		1	1			
	c4	1		1	1	1	1					1					1		1	1			
	c5		1		1	1	1					1				1	1						
General Tran. Skills	d1	1	1	1								1							1				
	d2	1	1	1	1	1						1							1				
	d3				1	1						1							1	1			
	d4		1		1							1				1	1						

5- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7-th Week	20
Semester Work	Quizzes	4 Quizzes (every 3 weeks)	8
	Reports	Two reports per semester	4
	Assignments	Bi-Weekly	8
Practical Exam		Fifteenth week	20
Written Exam		Sixteenth week	40
Total			100

6- List of references:

6-1 Course notes

Lectures Notes of software engineering

6-2 Required books

IAN Summerville, (2010),Software Engineering, parson

6-3 Recommended books

Eveen and Andre Karlisson, (1996), Reuse a holistic approach, Wiley.

6-4 Periodicals, Web sites, etc.

IEEE transactions on Software Engineering.

7- Facilities required for teaching and learning:

- Computer Labs Equipped with any UML software.

Course coordinator:	Dr. Sabry Abdel Meety
Head of the Department:	A. Prof. Dr. Wafaaa Boghdady
Date:	December 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specification
CMPN 433: Computer Organization

A- Affiliation

Relevant program:	Computer Engineering and Information Technology BSc Program
Department offering the program:	Computer Engineering and Information Technology Department
Department offering the course:	Computer Engineering and Information Technology Department
Date of specifications approval:	December 2018

B - Basic information

Title: Computer Organization	**Code**: CMPN433		**Year** : Fourth /First Semester	
Credit Hours: 3	**Pre-requisite**: CMPN321			
Contact Hours:	**Lectures**: 2	**Tutorial/Exercise:**	**Practical:** -	**Total**:4

C - Professional information

1 – Course Learning Objectives:

By the end of this course the students should demonstrate the knowledge and understanding of the basic computer architecture and structure, the basic computer addressing modes and instruction formats, the basic design issues/ parameters required for hardwired control of a simple and basic computer, the basic concepts of micro program approach. They should be able to investigate the different aspects of parallel computing and vector processing.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1 – The attributes of computer architecture and organization (A1 , A2)
a2- The basic computer structure and addressing modes (A1, A2 ,A3)
a3- The stored program concept and different instruction formats of the basic computer (A2, A3,A9)
a4- The concept of register transfer language (A2,A3)
a5- The instruction cycle and timing issues related to hardwired control (A9, A13)
a6- The input-output operations and interrupt mechanism in basic computer (A2,A3,A9,A13)
a7 - The basic concepts of Micro-Programmed Control and Micro-instruction formats (A9, A13, A16)
a8- The different types of parallel processing systems (A3, A13)
a9- Vector processor and arrays-principles. (A2, A3 , A9,A16)

b - Intellectual skills:

On successful completion of the course, the student should be able to:

b1-Investigate on the different approaches of computer instruction formats (B4).
b2- Design a basic computer according to some given characteristics (B1,B2)
b3- Analyze different aspects of basic computer control system (B1, B2, B4, B12)
b4- Manipulate different timing control signals in instruction cycle for basic computer design (B3,B4, B12, B14).
b5- Investigate on the different techniques for parallel computing and vector processing (B4)

c - Professional and practical skills:

On successful completion of the course, the student should be able to:

c1- Apply knowledge of science, and IT to deal with the design of basic computer (C1,C2,C19)

c2- Analyze and design components of basic computer (C2,C3,C19)
c3- Use design tools and techniques for design of basic computer system and control units (C6,C14,C15, C9,C12)
c4- Demonstrate basic organizational and project management skills for design of a new systems (C9).

d - General and transferable skills:
On successful completion of the course, the student should be able to:
d1- Work in a team and involve in group project (D1, D3).
d2- Communicate effectively and present data and results orally and in written form(D3,D4).
d3- Use ICT facilities in presentations, and manage resources efficiently (D4,D5).
d4- Search for information's in references, journals and in internet(D7).
d5- Practice self-learning(D7, D9).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A2,,A3, A 9, A13, A16
B	Intellectual skills	B1,B2, B3,B4,B12,B14
C	Professional and practical skills	C1,C2,C3,C6,C9,C12,C14,C15,C19
D	General and transferable skills	D1, D3, D4, D5,D7, D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
➢ Computer Structure and function	2	2	
➢ Review of sequential circuits (decoders, MUXs, Registers,..)	2	2	
➢ Bus structure and memory transfer	2	2	
➢ Basic computer organization	4	4	
➢ Instruction cycle	2	2	
➢ Design of basic computer (control of registers and memory)	4	4	
➢ Design of basic computer (Accumulator logic)	2	2	
➢ Micro-programmed Control (basic concepts, control memory)	2	2	
➢ Micro-programmed Control (Microprogramming)	2	2	
➢ Micro-programmed Control (Design of control unit)	2	2	
➢ Parallel organization (Multiple Processor organization)	4	4	
Total hours	28	28	-

4- Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments					Researches and Reports	Modeling and Simulation			Written Exam	Class Project	Quizzes	Term papers	Assignments			
Knowledge & Understanding	a1	1	1	1								1				1		1		1			
	a2	1														1		1		1			
	a3	1														1		1		1			
	a4															1		1					
	a5	1		1	1							1	1			1		1		1			
	a6	1		1	1							1				1	1	1					
	a7	1		1	1	1						1	1			1	1	1	1				
	a8	1		1	1	1										1				1			
	a9	1	1	1	1											1				1			
Intellectual Skills	b1	1			1	1										1							
	b2	1	1													1	1		1	1			
	b3	1		1	1	1						1				1							
	b4	1			1							1				1							
	b5	1	1		1	1										1			1	1			
Applied Professional	c1	1			1	1										1				1			
	c2	1	1													1				1			
	c3	1		1		1						1	1			1				1			
	c4	1	1		1	1										1			1	1			
General Tran. Skills	d1	1	1	1		1						1											
	d2	1	1	1		1						1	1										
	d3		1	1								1											
	d4		1	1								1							1				
	d5		1	1								1	1						1				

5- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7-th Week	20
Semester Work	Quizzes	4 Quizzes (every 3 weeks)	16
	Reports	Two reports per semester	14
	Assignments	Bi-Weekly	10
Written Exam		Sixteenth week	40
Total			100

6- List of references:

6-1 Course notes:

Lecture notes and handouts

6-2 Required books

M. Morris Mano,(1997), Computer System Architecture, Prentice Hall, Inc.

amit kumar mishar,(2011), computer architecture & organization, katson

6-3 Recommended books

- William Stallings ,(2003),Computer Organization and Architecture, designing for preference, Prentice hall

6-4 Periodicals, Web sites, etc.:

https://en.wikibooks.org/wiki/IB/Group_4/Computer_Science/Computer_Organisation

https://sites.google.com/site/uopcog/

7- Facilities required for teaching and learning:

- Computer, Data show and Computer package.

Course coordinator:	Dr. Seham Ebrahim
Head of the Department:	Ass. Prof.Dr. Wafaa Boghdady
Date:	December 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specification
CMPN 434: Computer Performance

A- Affiliation

Relevant program: Computer Engineering and Information Technology BSc Program
Department offering the program: Computer Engineering and Information Technology Department
Department offering the course: Computer Engineering and Information Technology Department
Date of specifications approval: December 2018

B - Basic information

Title: Computer Performance **Code:**CMPN434 **Level:** Senior2, second Semester
Credit Hours: 3 **Lectures**: 2 **Tutorial/Exercise**:2 **Practical:** - **Total:4**
Pre-requisite: CMPN 110

C - Professional information

1 – Course Learning Objectives:

By the end of this course the students should demonstrate the knowledge and understanding of the basic concepts of computer performance evaluation, performance measures and parameters, performance evaluation methodology and techniques, machine performance computation, workload and performance evaluation benchmarks. They should be able to explore the characteristic and parameters of queuing network modeling and their fundamental laws.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1- Basic concept of computer performance evaluation (A2, A15).
a2- Different performance measures and parameters (A5, A9, A13)
a3- Performance evaluation methodology and techniques. (A2, A9).
a4- Machine performance computation (A1, A14, A16).
a5- Main characteristic, parameters and fundamental laws of queuing network models (A9, A12, A15).
a6- Computer workload and performance evaluation benchmarks (A2, A3, A15, A16).

b - Intellectual skills:

On successful completion of the course, the student should be able to:

b1-Investigate on the different approaches in performance evaluation (B2, B3 B5, B18).
b2- Follow on a systematic approach to performance evaluation (B12, B5, B18)
b3- Select the appropriate mathematical tools, computing methods, design techniques for modeling and analyzing computer systems (B13, B14, B21)
b4- Manipulate different fundamental laws of queuing network models (B1, B11, B18).
b5- Investigate on the different techniques for performance benchmarks (B8, B13, B14)
b6 – investigate on the quantitative approaches of machine and CPU performance (B2, B3, B5, B20)
b7 - Investigate the reliability of components, systems, and processes. (B6, B9)

c - Professional and practical skills:

On successful completion of the course, the student should be able to:

c1- Apply knowledge of science, and IT to deal with Computer performance (C1, C2,)
c2- Analyze and measure computer performance parameters (C2, C3, C19)
c3- Use a wide range of analytical tools, techniques, and software packages for Computer performance evaluation (C6, C14, C15)

c4- Use computational facilities and techniques, for analysis of queuing network models (C4, C5, C6, C13 C20).

d - General and transferable skills:

On successful completion of the course, the student should be able to:

d1- Work in a team and involve in group project (D1, D3).

d2- Communicate effectively and present data and results orally and in written form (D3, D4).

d3- Use ICT facilities in presentations, and manage resources efficiently (D4, D5).

d4- Search for information's in references, journals and in internet(D7).

d5- Practice self-learning (D7, D9).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A2,A3,,A8, A 9, A12,A13,A14,A15,A16
B	Intellectual skills	B1,B2, B3,,B5,B6,B8,B11,B12, B13 ,B14,B18,B20,B21
C	Professional and practical skills	C1, C2,C3,C4,C5, C6,C13,C14,C15,C19,C20
D	General and transferable skills	D1, D3, D4, D5,D7, D9

3 – Contents

Topic	Lecture hours	Tutorial hours
➢ Introduction to Performance Measurement and evaluation	2	2
• Case Study (1)	2	2
➢ Selection of evaluation techniques and metrics	4	2
• Case Study (2)	2	2
➢ Quantitative approach of machine performance	4	4
➢ An Overview of Queuing network modeling	4	4
➢ Fundamental Laws of network reliability and traffic modeling	4	4
➢ Workload and benchmarking	2	2
➢ Queuing Modeling Tools (Java Modeling Tools)	4	4
Total hours	28	28

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations and	Discussions and	Tutorials	Problem solving	Laboratory &					Researches and Reports	Modeling and Simulation			Written Exam	Practical Exam	Quizzes	Term papers	Assignments			
Knowledge & Understanding	a1	1	1	1	1							1				1		1	1	1			
	a2	1			1											1		1		1			
	a3	1			1											1		1		1			
	a4	1	1	1	1	1										1		1		1			
	a5	1		1	1	1							1			1		1		1			
	a6	1		1	1							1				1		1	1	1			
Intellectual Skills	b1	1			1											1				1			
	b2	1	1													1				1			
	b3	1		1	1							1				1				1			
	b4	1			1							1				1				1			
	b5	1	1		1	1										1				1			
	b6	1																					
	b7	1																					
Applied Professional	c1	1			1	1										1		1	1	1			
	c2	1	1													1		1	1	1			
	c3	1		1		1						1	1						1	1			
	c4	1	1		1	1													1	1			
General Tran. Skills	d1	1	1	1		1						1							1				
	d2	1	1	1		1						1	1						1				
	d3		1	1								1							1				
	d4		1	1								1							1				
	d5		1	1								1	1						1				

5- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7-th Week	20
Semester Work	Quizzes	4 Quizzes (every 3 weeks)	16
	Reports	Two reports per semester	14
	Assignments	Bi-Weekly	10
Written Exam		Sixteenth week	40
Total			100

6- List of references:

6-1 Course notes: Lecture notes and handouts

6-2 Required books

Valvano (2012) Embedded microcomputer system and real time interfacing

John Hennesy, David Patterson, (2007) Computer Architecture a Quantitative Approach, 4th Ed. Elsevier Inc.

R. Jain, (1991) The Art of computer system performance analysis: Techniques for Experiment Design, Measurement, Simulation and Modeling Wiley-& Sons.

6-3 Recommended books:

J. Marsic, (2013) Computer Networks Performance and Quality of Service, New jersey
John Hennesy, David Patterson, (2007) Computer Architecture a Quantitative Approach, 4th Ed. Elsevier Inc.

6-4 Periodicals, Web sites, etc.

Website: http://www.ece.rutgers.edu/~marsic/books/CN/

7- Facilities required for teaching and learning:

- Computer, Data show and Computer programs

Course Coordinator:	Ass. Prof. Dr. Wafaa Boghdady
Head of the Department:	Ass. Prof. Dr. Wafaa Boghdady
Date:	December 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specification
CMPN360: Industrial Training -2

A- Affiliation

Relevant program: Computer Engineering and Information Technology BSc Program
Department offering the program: Computer Engineering and Information Technology Department
Department offering the course: Computer Engineering and Information Technology Department
Date of specifications approval: December 2018

B - Basic information

Title: Industrial Training -2 **Code**: CMP 360 **Level:** Senior-2 10th Semester

Credit Hours: 3 **Lectures**: 1 **Tutorial/Exercise**: - **Practical:** 4 **Total:**5

Pre-requisite: CMPN260+101Credits

C - Professional information

1 – Course Learning Objectives:

Prepare the student to face the practical life, practice his knowledge in a practical field, and choose the field to continue in. The students are carrying out their training in one of the national companies or industrial factories working in the computer engineering and information technology field. The training plan should be approved by a special committee headed by the chairman of the training department. The progress training of student is evaluated by the accreditation committee.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1- Meeting technical and officer tops in a social and commercial context (A9, A10, A11, A20).

a2- Discussing some of the recent technological problems with the manufactures and business tops (A7, A13, A14, A15).

b - Intellectual skills:

On successful completion of the course, the students should be able to:

b1- Enrich their practical learning experience (B3, B4, B6, B8, B10, B12, B17).

b2- Enrich their ability to work within defined constraints (B3, B7, B10, B13, B14, B17).

b3- Enhance their practical think (B1, B2, B4, B7, B11, B17).

b4- Interact with out of campus manufacturers, developer and producer (B3, B4, B12).

c - Professional and practical skills:

On successful completion of the course, the students should be able to:

c1- Confirm their ordinary courses by practical cases (C1, C2, C7, C11).

c2- Investigate the working rules in the companies and corporations (C5, C8, C9, C10, C11, C13, C16).

c3- Identify the hardware/software production cycles (C9, C10, C11, C13, C14).

c4- Enhance their practical activity (C4, C1, C2, C5, C6, C9, C12).

c5- Improve their social meeting and interaction (C2, C5).

d - General and transferable skills:

On successful completion of the course, the student should be able to:

d1- Communicate with others; work in a team and involvement in group discussion (D1, D2, D3, D4)

d2- Present data and results orally and in written form. (D4, D8, D9)

d3- Use ICT facilities in presentations (D3, D6)
d4- Identify the practical up to date techniques and technologies (D2, D3, D4, D6, D7, D9).
d5- Recognize the practical up to date developing tools, programs and devices (D1, D2, D5, D7, D8).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A7, A9, A10,A11,A13, A14, A15, A20
B	Intellectual skills	B1, B2, B3, B4, B6, B7, B8,B10, B11, B12, B13, B14,B17
C	Professional and practical skills	C1, C2, C4,C5,C6, C7,C8, C9, C10, C11, C12, C13, C14, C16
D	General and transferable skills	D1,D2, D3, D4, D5, D6, D7, D8, D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
According to the training course of the national companies or industrial factories. At end of training, student should submit a report with the following Information's: • Profile of the industry • Organization structure • Machine, equipment, devices • Personal welfare scheme • Details of the training undergo • Project undertaken during the training			
Total hours	-	-	90

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations and	Discussions and	Tutorials	Problem solving	& Laboratory					Researches and	Modeling and Simulation			Written Exam	Practical Exam	Quizzes	Report	Assignments			
Knowledge & Understanding	a 1		1				1												1				
	a 2		1				1												1				
Intellectual Skills	b 1		1				1												1				
	b 2		1				1												1				
	b 3		1				1												1				

	b 4		1				1												1				
Applied Professional Skills	c 1		1				1												1				
	c 2		1				1												1				
	c 3		1				1												1				
	c 4		1				1												1				
	c 5		1				1												1				
General Tran. Skills	d 1		1				1												1				
	d 2		1				1												1				
	d 3		1				1												1				
	d 4		1				1												1				
	d 5		1				1												1				

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Training and course Project	At the end of the training period	60
Examine at Department	At the end of semester	40
Total		100

6- List of references:

6-1 Course notes: Non

6-2 Required books: Non

6-3 Recommended books: Non

6-4 Periodicals, Web sites, etc.

www.mcit.gov.eg/Ar/Training/Affiliate/12
www.**cisco**.com/web/ME/ar/learn_events/
http://www-304.ibm.com/services/learning/ites.wss/eg/en?pageType=page&c=V087174W21666K25

7- Facilities required for teaching and learning:

Course Coordinator: Members committee of accreditation company
Head of the Department: A. Prof. Dr. Wafaaa Boghdady
Date: December 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specification
CMPN421: Distributed Computer systems

A- Affiliation

Relevant program:	Computer Engineering and Information Technology BSc Program
Department offering the program:	Computer Engineering and Information Technology Department
Department offering the course:	Computer Engineering and Information Technology Department
Date of specifications approval:	December 2018

B - Basic information

Title: Distributed Computer systems **Code:**CMPN421 **level**: Senior2, 1st semester
Credit Hours: 3 **Lectures**: 2 **Tutorial:2** **Practical:1** **Total:**5
Pre-requisite: CMPN324

C - Professional information

1 – Course Learning Objectives:

By the end of this course the students should demonstrate the knowledge and understanding of the principles and concepts of Distributed Computer systems, the details of the software architecture and communications support required, the commercial Distributed Computer systems. They should be able to operate, maintain, design, calculate and analyze the performance of the Distributed Computer systems.

2 - Intended Learning Outcomes (ILOS)

a – Knowledge and understanding:

By the end of this course the student should have the following Knowledge of:

a1- various examples of distributed systems, and to find an appropriate paradigm for the architecture of a complex distributed application. (A2, A3, A8, A17)
a2 - Fundamental concepts of distributed systems (A3, A5, A13)
a3 - Distribution of files, processing, databases, and operating systems (A12, A14, A15)
a4 – The middleware (A14, A15, A17)
a5 - Current Internet research efforts in order to perform research in networking (A15, A17).

b – Intellectual Skills:

On successful completion of the course, the student should be able to:
bl - Gain hands-on experience on client-server programming and applications (B4, B6, B17)
b2 - Appreciate Problem selection, Solution & research methodology and Presentation (B2, B3, B4, B13)
b3 - Design approaches, implementation, analysis and evaluation of networked systems (B4, B5, B21)
b4 - Develop a working knowledge of the infrastructure required to support distributed systems (B2, B3, B14).
b5 – Define Inter-process communication and remote invocation (B5, B13).

c - Professional and practical skills:

On successful completion of the course, the student should be able to:
cl - Examine the algorithms for both client and server components of a distributed program and apply the different implementation techniques (C1, C2, C3, C14,)
c2 - Connect users and resources (C5, C6, C17,)
c3 - Apply the synchronization technique (C14, C16).

d - General and transferable skills:

On successful completion of the course, the student should be able to:

d1- Work in a team and involve in group discussion (D1, D3, D6).
d2- Communicate effectively and present data and results orally and in written form (D3, D4).
d3- Use ICT facilities in presentations, and manage resources efficiently (D4, D5).
d4- Search for information's in references in internet(D7).
d5- Practice self-learning (D7, D9).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A2,A3, A5, A8,A12, A13,A14, A15, A17
B	Intellectual skills	B2, B3,B4,B5,B6,B13, B14, B17,B21
C	Professional and practical skills	C1, C2,C3,C5, C6, C14,C16,C17
D	General and transferable skills	D1, D3, D4, D5,D6,D7, D9

3 – Contents

	Topic	**Lecture hours**	**Tutorial hours**	**Practical hours**
1	Distributed Systems definitions and technologies	4	4	2
2	Distributed Computer Systems Architectures and models	6	6	3
3	Inter-process communication	4	4	2
4	Distributed file storage, DAS, SAN, and NAS storage	4	4	2
5	Timing issues, co-ordination, concurrency control and transactions	4	6	3
6	Security and fault-tolerance	6	4	2
Total hours		28	28	14

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments					Researches and Reports	Modeling and Simulation			Written Exam	Practical Exam	Quizzes	Term papers	Assignments			
Knowledge & Understanding	a1	1	1	1			1					1				1	1	1		1			
	a2	1					1									1	1	1	1	1			
	a3	1					1									1	1	1		1			
	a4	1	1	1	1	1						1				1		1	1	1			
	a5	1			1		1									1	1	1		1			
Intellectual Skills	b1	1			1		1									1	1	1		1			
	b2	1	1				1									1	1	1		1			
	b3	1		1	1		1					1				1	1			1			
	b4	1			1		1					1				1	1	1		1			

	b5	1	1		1	1										1		1		1		
Applied Professional Skills	c1	1			1	1										1		1				
	c2	1	1				1									1	1	1				
	c3	1		1		1	1					1	1				1					
General Tran. Skills	d1			1		1						1										
	d2		1	1			1					1	1									
	d3	1	1				1					1										
	d4	1	1	1			1					1					1					
	d5			1			1					1	1									

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: quizzes, reports and assignments	Bi-Weekly	20
Mid-Term Exam	6-th Week	20
Practical Exam	Fifteenth week	20
Written Exam	Sixteenth week	40
Total		100

6- List of references:

6-1 Course notes

Wafaa Boghdady, Distributed Computer Systems, Modern Academy notebook, 2018

6-2 Required books

Vikas Chaudhary (2017) Cryptography and network security, S.K. Kataria & Sons
Sanjay Shama 92013) A course in computer network, S.K. Kataria & Sons
Marial (2012) Computer Communications, S.K. Kataria & Sons
Tanenbaum and Marten van Steen, (2007) Distributed system: Principles and Paradigms Handouts, 2nd edition, Prentice hall.

6-3 Recommended books

Tanenbaum and Marten van Steen, (2007) Distributed system: Principles and Paradigms Handouts, 2nd edition, Prentice hall.
George Coulouris, Jean Dollimore and Tim Kind berg, (2005) Distributed Systems, 3rd edition, Addison Wesley

6-4 Periodicals, Web sites, etc.

http://www.prenhall.com/panko/index.httml

7- Facilities required for teaching and learning:

Course Coordinator: Ass. Prof. Dr. Wafaa Boghdady
Head of the Department: Ass. Prof. Dr. Wafaa Boghdady
Date: December 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specification
CMPN332: Digital Image Processing

A- Affiliation

Relevant program:	Computer Engineering and Information Technology BSc Program
Department offering the program:	Computer Engineering and Information Technology Department
Department offering the course:	Computer Engineering and Information Technology Department
Date of specifications approval:	December 2018

B - BASIC INFORMATION

Title: Digital Image Processing **Code**: CMP 432 **level**: Senior 1, first Semester
Credit Hours: 3 **Lectures**: 2 **Tutorial**:1 **Practical**: 2 **Total:**5
Pre-requisite: CMPN210

C - PROFESSIONAL INFORMATION

1 – Course Learning Objectives:

By the end of this course the students should demonstrate the knowledge and understanding of the digital Images processing and earn skills in dealing with images as well as the image processing based systems, the image acquisition, sampling, quantization, related problems, and basics of image processing (neighboring, statistics, and labeling). They should be able to use the image encoding techniques and methodologies to form compressed and effective storage for images with practical and theoretical coverage.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:
a1- Digital image and main phases of a digital image processing based computer system.(A1,A2,A4,A12)
a2- various methods and techniques to enhance an image. (A15,A16)
a3- various methods to compress and encode images. (A16,A2)
a4- techniques to find out an object to segment an image. (A3,A5,A12)
a5- Image transformations using discrete Fourier transform and discrete cosine transform. (A1,A16)
a6- Boundary representation and distance metrics. (A1,A16)
a7- Morphology and features extraction techniques. (A15,A16)

b - Intellectual skills:

On successful completion of the course, the student should be able to:
b1– Build and design of systems that includes software and hardware. (B1,B2,B12)
b2 – Analyze the problem decompositions. (B13,B15,B16)
b3 –Solve problems using transformers to suitable domain. (B7,B12,B17)

c - Professional and practical skills:

On successful completion of the course, the student should be able to:
c1- Design and realize application software's to read and enhancement images of different formats (C1,C2,C3,C4)
c2 - Use compression and transformation programs to design and develop image system. (C5,C7,C13)
c3 – Use image Segmentations applications and familiarization with open CV. (C14,C15)
c4 - Solve limited operational problems related to the image transformation. (C7)
c5 - Calculate the object segmentations and features in software design and develop. (C7,C13,C15) .

d - General and transferable skills:

On successful completion of the course, the student should be able to:
d1- Communicate with others; work in a team and involvement in group discussion (D3,D4)

d2- Present data and results orally and in written form. (D4,D8,D9)
d3- Use ICT facilities in presentations (D3,D6)
d4- Differentiate between the alternatives methodologies of Digital Image Processing (D6, D7).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A2, A3,A4,A5,A12,A15, A16
B	Intellectual skills	B1,B2, B7, B12, B13, B15, B16, B17
C	Professional and practical skills	C1, C2, C3,C4,C5, C7, C13, C14,C15
D	General and transferable skills	D3, D4,D6, D7, D8, D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
➢ Image , Digital image and image processing based systems	2	1	2
➢ Sampling and quantization	2	1	2
➢ Understanding Statistics on image matrix and image histogram.	2	1	2
➢ Images enhancement: Contrast stretching and histogram equalization.	2	1	2
➢ Spatial domain filters	4	2	4
• Median filter			
• Average, Kuharwa			
• Weighted Average, Circular, Cone	2	1	2
➢ Frequency domain	4	3	4
• Transformations Fourier and DCT			
• Low pass filters in frequency domain			
• High pass filters in frequency domain			
• Inverse transform, Power and phase of frequency components			
➢ Image Encoding and compression	4	2	4
• Hoffman, Shannon Fanon encoding			
• Vector quantization, Fractal, and Run length,			
➢ Image segmentation techniques	2	1	2
➢ Morphology, features extraction, boundary description, and distance metrics.	4	1	4
Total hours	28	14	28

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments					Researches and Reports	Modeling and Simulation			Written Exam	Practical Exam	Quizzes	Term papers	Assignments			
Knowledge & Understanding	a1	1	1	1			1					1				1		1	1				
	a2	1			1	1										1		1	1	1			
	a3	1	1	1	1	1						1				1		1	1	1			
	a4	1	1	1			1					1	1			1		1	1	1			
	a5	1		1	1	1	1					1				1	1	1	1	1			
	a6															1			1	1			
	a7	1	1	1	1	1						1	1			1			1				
Intellectual Skills	b1	1	1		1	1						1				1		1		1			
	b2	1			1	1							1			1		1	1	1			
	b3	1	1		1	1	1									1	1		1				
Professional Applied Skills	c1	1	1		1	1	1					1				1	1	1	1	1			
	c2	1			1	1	1									1		1	1	1			
	c3	1		1	1	1	1					1	1						1	1			
	c4	1		1	1	1	1					1	1				1		1	1			
	c5		1		1	1	1					1	1			1	1						
General Tran. Skills	d1	1	1	1			1					1							1				
	d2	1	1	1	1	1	1					1					1		1				
	d3				1	1						1					1		1	1			
	d4		1									1					1						

5- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7-th Week	20
Semester Work	Quizzes	4 Quizzes (every 3 weeks)	8
	Reports	Two reports per semester	4
	Assignments	Bi-Weekly	8
Practical Exam		Fifteenth week	20
Written Exam		Sixteenth week	40
Total			100

6- List of references:

6-1 Course notes

Lectures Notes of Digital Image Processing

6-2 Required books

Rafael C. Gonzalez & Richard E. Woods, (2011) Digital Image Processing, Prentice Hall.

6-3 Recommended books

Eveen and Andro Karlisson, (1996), Reuse a holistic approach, Wiley.

6-4 Periodicals, Web sites, etc.

IEEE transactions on Software Engineering.

7- Facilities required for teaching and learning:

- Computer Labs Equipped with any UML software.

Course coordinator: Prof. Dr. Sabry Abdel Meety
Head of the Department: A. Prof. Dr. Wafaa Boghdady
Date: December 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specification
CMPN 334: Multimedia

A- Affiliation

Relevant program:	Computer Engineering and Information Technology BSc Program
Department offering the program:	Computer Engineering and Information Technology Department
Department offering the course:	Computer Engineering and Information Technology Department
Date of specifications approval:	December 2018

B - Basic information

Title: Multimedia	**Code**:CMPN334	**level**: Senior 1st or 2nd Semester 4		
Credit Hours: 3	**Lectures**: 2	**Tutorial:** 1	**Practical:**2	**Total**:5
	Pre-requisite: CMPN 110			

C - Professional information

1 – Course Learning Objectives:

By the end of this course the students should demonstrate the knowledge and understanding of the contemporary multimedia technologies and standards. They should be able to operate, integrate and evaluate the performance of multimedia systems.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1-Different issues surrounding multimedia, including roles, characteristics and requirements of Multimedia systems (A1, A3)

a2- Basics concepts and theories of digital Audio/ Video, Graphics, and data transmission /compression, and coding (A1, A2, A6)

a3- Gathering, integration and representations of sound, pictures and video, data (A5)

a4- Authentication and delivery of multimedia. (A1, A3)

a5- The developments and trends of multimedia (A17)

a6- Multimedia programming techniques (A18).

b - Intellectual skills:

On successful completion of the course, the student should be able to:

b1- Analyze of multimedia systems components to understand the technological factors that affect their performance. (B1, B5)

b2- Recognize the concepts and representations of sound, pictures and video to multimedia data compression, coding, and transmission. (B2, B3)

b3-analyze data, and organize information to support multimedia activities (B19, B20)

c - Professional and practical skills:

On successful completion of the course, the student should be able to:

c1- Apply knowledge of information technologies to design and improve multimedia environments (C1, C2)

c2- Utilize the wide range techniques and software for multimedia frameworks applications. (C6)

c3 – Use recent tools and programs for deployments and implementations of multimedia activities (C18)

c4-make the effective use of the different coding algorithms for multimedia activities (C10, C11, C19)

d - General and transferable skills:

On successful completion of the course, the student should be able to:

d1- Work in a team and involve in group discussion and seminars (D1, D2, D3).

d2- Communicate effectively and present data and results orally and in written form (D3, D4).

d3- Use ICT facilities in presentations, and manage resources efficiently (D4, D5).

d4- Search for information's in references, journals and in internet(D7).

d5- Practice self-learning (D7, D9).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1,A2,A3,A5,A6,A17,A18
B	Intellectual skills	B1,B2,B3,B5,B19,B20
C	Professional and practical skills	C1,C2,C6,C10,C11,C18,C19
D	General and transferable skills	D1,D2,D3,D4,D5,D7,D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
➢ Introduction: Multimedia applications and requirements : Huffman Coding	2	1	2
➢ Compression Techniques, Lossless Compression algorithms, LZW	2	1	2
➢ Lossless Compression algorithm :Huffman Coding	2	1	2
➢ Audio/Video fundamentals including analog and digital representations, human perception, and audio/video equipment, applications.	2	1	2
➢ Lossless Compression algorithm: Adaptive Huffman Coding.	2	1	2
➢ Lossless Compression algorithm : Arithmetic Coding	2	1	2
➢ Audio and video compression including Perceptual transform coders for images/video hardware/software tradeoffs. Image and video processing Applications and algorithms.	2	1	2
➢ Application and performance comparison of various coding algorithms including hardware/software trade-offs.	2	1	2
➢ Image and video processing applications and algorithms.	2	1	2
➢ Image and video processing applications and algorithms.	2	1	2
➢ Image and video processing applications and algorithms	2	1	2
➢ Lossless Compression algorithm : Binary Arithmetic Coding	2	1	2
➢ Lossy Compression algorithm : Predictive Coding ,Feed Forward, Feed Backward	2	1	2
➢ Multimedia Programming Frameworks: Java for QuickTime, Java Media Framework	2	1	2
Total hours	28	14	28

4 - Teaching and Learning, Assessment Methods and Grading:

Course ILO's		Teaching Methods						Learning Methods					Assessment Method				
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments	projects	Researches and Reports	Modeling and Simulation	Sit Visits	Discovering	Written Exam	Practical Exam	Quizzes	Term papers	Assignments
Knowledge & Understanding	a1	1	1		1		1		1				1		1	1	
	a2	1			1		1						1		1	1	1
	a3	1		1	1	1	1						1		1	1	1
	a4	1	1		1		1						1				
	a5	1			1								1				
	a6	1	1		1		1						1				
Intellectual Skills	b1	1			1		1						1	1	1		1
	b2	1			1		1						1	1	1	1	1
	b3	1			1		1						1	1			
Applied Professional Skills	c1	1	1		1	1							1	1	1		1
	c2	1			1								1	1	1	1	1
	c3				1									1			
	c4	1			1	1										1	
General Tran. Skills	d1	1		1		1			1							1	
	d2	1	1	1					1	1						1	
	d3	1	1						1		1					1	1
	d4	1	1			1			1		1						
	d5										1	1					

5- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7-th Week	20
Semester Work	Quizzes	4 Quizzes (every 3 weeks)	8
	Reports	Two reports per semester	4
	Assignments	Bi-Weekly	8
Practical Exam		Fifteenth week	20
Written Exam		Sixteenth week	40
Total			100

6- List of references:

http://www.acm.org/education/curricula/ComputerScience2008.pdf
http://www.mathwork.com/ .

6-1 Course notes: None

6-2 Required books

Valvano (2012) Embedded microcomputer system and real time interfacing ,Thomson
Jörg Henkel and Muhammad Shaniqua, (2011) Hardware/Software Architectures for Low-Power Embedded Multimedia Systems, Springer.
C. Marlin Brown, (1998) Computer Interface Design Guidelines, Intellect Books.

6-3 Recommended books

P.W. Agnew and A.S. Kellerman, (1996) Multimedia Communication, Addison Wesley.
Jörg Henkel and Muhammad Shaniqua, (2011) Hardware/Software Architectures for Low-Power Embedded Multimedia Systems, Springer.

6-4 Periodicals, Web sites, etc.

http://www.b-u.ac.in/sde_book/multi_system.pdf
http://www.GenLib.org/ .
http://www.talkthecold.com/bizgoogle/ .
http://www.SCI-hub.org/ .
http://www.scrius.com/ .
http://www.Merlot.org/ .
http://www.Vlab.co.in/ .
http://www.W3schools.com/ .

7- Facilities required for teaching and learning:

- Computer Lab.
- Data show
- Computer software packages

Course Coordinator:	Dr. Abdelmoneim Fouda
Head of the Department:	Ass. Prof. Dr. Wafaa Boghdady
Date:	December 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specification
CMPN460: Project-2

A- Affiliation

Relevant program: Computer Engineering and Information Technology BSc Program
Department offering the program: Computer Engineering and Information Technology Department
Department offering the course: Computer Engineering and Information Technology Department

Date of specifications approval: December 2018

B - Basic information

Title: Project-2 **Code:**CMPN460 **Level:** Senior-1 8th semester and Senior-2 9th semester

Credit Hours: 3 **Lectures:** 1 **Tutorial/Exercise**:-1 **Practical**: 4 **Total**:6

Pre-requisite: CMPN 361

C - Professional information

1 – Course Learning Objectives:

The proposed projects must complement the other courses in computer engineering and information technology. The students are given as much freedom as possible in the choice of the idea of their projects. Also they are given much freedom to combine their teamwork. Each student must understand the project contribution and know his project task. By the end of this course the students should able to work together in teamwork to design, implement, document, and test their application using appropriate software simulators and hardware equipment.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1- Combining themselves in interactive and cooperate teamwork (A6, A8, A10).
a2- the idea of project (A4, A5, A14).
a3- Making a plan to distribute their individual tasks along the available duration time (A6, A8).
a4- Analysis each specific portion of the project by completely cooperation with all other students in the teamwork (A4, A5, A14,).
a5- Realization and testing each subunit or/and subprogram individually (A4, A14, A15, A17).
a6- Collection and accumulating all separated subunits or/and subprograms in single application (A4, A14, A15, A17).
a7- Verification and validation for the whole functions of the project (A4, A14, A15, A18).
a8- Make final technical report documentation (A4, A5, A10).

b - Intellectual skills:

On successful completion of the course, the student should be able to:

b1- Work in interactive and cooperate team (B4, B15).
b2- Search for novel ideas in the recently innovated application systems and programs (B2, B3, B8, B14, B17)
b3- Develop imaginative and design abilities (B1, B7, B12, B13, B14, B15).
b4- Integrating engineering knowledge, engineering codes, basic and mathematical sciences in designing system and/or process (B1, B5, B7, B12, B13, B14).
b5- Convert the concepts to real entities (B5, B7, B10, B12, B13, B15, B17).
b6- Integrate the subunits and subprograms (B7, B10, B18).
b7- Measure the enhancement ratios (B5, B11, B18).
b8- Record the complete work in final technical report (B11, B15).

c - Professional and practical skills:

On successful completion of the course, the student should be able to:

c1- Convert his idea to real electric circuit or software program (C1, C2, C3, C7, C8, C11, C13, C15).

c2- Use the datasheets and websites to select the proper elements, software programs and simulators (C9, C10, C11, C14).

c3- Use the standard simulators in his design (C4, C5, C6, C14, C15).

c4- Use the approved simulators to check his design (C4, C5, C6, C15).

c5- Use the different measuring devices to check his design (C5, C6, C10, C12, C16).

d - General and transferable skills:

On successful completion of the course, the student should be able to:

d1- Search for information of the modern computer applications (D7, D8, D9).

d2- Search for information in the up to date productions as components and software program for computer applications (D7, D8, D9).

d3- Think how to modify or market the project idea (D6, D7, D8).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A4, A5, A6, A8, A10, A14, A15, A17,A18
B	Intellectual skills	B1, B2, B3, B4, B5, B7, B8, B10, B11, B12, B13, B14, B15, B17, B18
C	Professional and practical skills	C1, C2, C3, C4, C5, C6, C7, C8, C9, C10, C11, C12, C13, C14, C15, C16
D	General and transferable skills	D6, D7, D8, D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
➢ The students propose their project idea or undertake a dedicated one by the supervisor.	1	1	6
➢ Planning and scheduling the project activities.	1	1	6
➢ Designing of subunits and/or subprograms.	2	2	9
➢ Implementation of subunits and/or subprograms.	1	1	9
➢ Testing of subunits and/or subprograms.	1	2	9
➢ Collection among subunits and/or subprograms to perform application system project.	2	2	9
➢ Testing the whole project functions.	2	2	9
➢ Make final technical report documentation.	2	2	9
➢ Preparing for project presentation.	2	2	9
Total hours	14	14	84

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments					Researches and Reports	Modeling and Simulation			discussion	Practical Exam	Quizzes	Final report	Assignments			
Knowledge & Understanding	a1	1		1																			
	a2	1	1	1	1							1				1			1				
	a3	1		1	1	1	1																
	a4	1			1	1	1					1	1			1			1				
	a5					1	1					1	1			1			1				
	a6			1			1					1	1			1			1				
	a7						1						1										
	a8	1		1	1		1					1				1			1				
Intellectual Skills	b1	1		1																			
	b2	1	1	1								1				1			1				
	b3	1		1	1	1	1					1	1			1			1				
	b4	1		1	1	1						1	1			1			1				
	b5	1		1	1	1	1					1	1			1			1				
	b6	1		1	1	1	1					1	1			1			1				
	b7	1		1	1		1					1	1			1			1				
	b8	1		1	1																		
Applied Professional Skills	c1	1	1																				
	c2	1		1	1	1						1	1			1			1				
	c3	1		1	1	1						1	1			1			1				
	c4	1		1	1	1						1	1			1			1				
	c5	1			1	1							1										
General Tran. Skills	d1			1								1				1			1				
	d2			1								1				1			1				
	d3	1		1	1							1				1			1				

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Evaluation of discussion and final report of project	By the end of the project period	100
Total		100

6- List of references:
6-1 Course notes: Non
6-2 Required books Non
6-3 Recommended books: Non

6-4 Periodicals, Web sites, etc.

- http://www.electronicshub.org/top-electrical-mini-projects/
- http://www.circuitstoday.com/simple-electronics-projects-and-circuits
- http://www.examsadda.com/2011/05/mini-projects-for-electronics.html
- http://www.projecttitles4free.com/
- http://www.gobookee.org/electrical-engineering-students-small-project/
- http://www.realworldengineering.org/library_search.html

7- Facilities required for teaching and learning:

- Software and Hardware Labs.
- Simulator software programs.

Course Coordinator:	Department Stuff
Head of the Department:	Ass. Prof. Dr. Wafaa Boghdady
Date:	December 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specification
CMPN423: Languages and Compilers

A- Affiliation

Relevant program:	Computer Engineering and Information Technology BSc.
Department offering the program:	Computer Engineering and Information Technology Department
Department offering the course:	Computer Engineering and Information Technology Department
Date of specifications approval:	December 2018

B - Basic information

Title: Languages and Compilers	**Code**: CMPN423	**level**: Senior 2, first Semester		
Credit Hours: 4	**Lectures**: 3	**Tutorial**:2	**Practical**: -	**Total:**5

Pre-requisite: CMPN110

C - Professional information

1 – Course Learning Objectives:

By the end of this course the students should demonstrate the knowledge and understanding of the differentiation between the interpreter and the compiler, lexical analysis, formal specification of computer languages, grammar parsers and the advantage structure of compiler. They should be able to design, modify code of models for simple compiler.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1- Principals of language processors (A3, A8.A13).
a2- principles of computer Languages (A1,A3,A5).
a3- Compiler structure (A8).
a4- Scope of Character Scanning and lexical analysis (A8,A17).
a5- Concepts of Syntax Analysis (A2).
a6- different techniques of parsing (A15).
a7- intermediate Code Generation and optomization (A5).

b - Intellectual skills:

On successful completion of the course, the student should be able to:
b1– Build and design parsing tables (B1, B2, B13).
b2 – Analyze of different Language constructs (B5, B9, B14).
b3 – Solve problem using grammars and setup of production rules (B2,B5,B3).

c - Professional and practical skills:

On successful completion of the course, the student should be able to:
c1- Design and realize simple lexical analyzer programs (C5).
c2 – Investigate program structure and select best way to do it (C6,C7).
c3 – Use experimental facilities to investigate the given compile performance (C12, C16, C14).
c4 – Design proper parser suitable for a given computer language (C5).
c5 – Design and use of natural language grammars(C5).

d - General and transferable skills:

On successful completion of the course, the student should be able to:
d1- Communicate with others; work in a team and involvement in group discussion and seminars (D3,D4).

d2- Write technical reports and prepare convenient presentations (D4,D7).
d3- Practice self-learning (D7, D9).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1,A2, A3, A5, A8, A13,A15,A17
B	Intellectual skills	B1, B2,B3, B5, B9, B13, B14
C	Professional and practical skills	C5, C6, C7,C12,C14, C16
D	General and transferable skills	D3, D4, D7, D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
➢ Introduction: structure of a compiler.	3	3	
➢ Lexical analysis: tokens, regular expressions, Lex. ➢ Finite state machine ➢ NFA ➢ DFA ➢ Minimization	12	9	
➢ Parsing: context-free grammars, predictive and LR parsing, recursive descent parsing.	6	4	
➢ Bottom-up parsing	6	3	
• Shift-reduce.	3	3	
• Building bottom-up parse tree			
➢ Intermediate code generation and representation	6	2	
➢ Case study	6		
• Total hours	42	28	-

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments					Researches and Reports	Modeling and Simulation			Written Exam	Practical Exam	Quizzes	Term papers	Assignments			
Knowledge & Understanding	a1	1	1	1								1				1		1	1				
	a2	1			1	1										1		1	1	1			
	a3	1	1	1	1	1						1				1		1	1	1			
	a4	1	1	1	1	1						1				1		1	1	1			
	a5	1		1	1	1						1				1		1	1	1			
	a6																		1	1			
	a7	1	1	1	1	1						1							1				
Intellectual Skills	b1	1	1		1	1						1				1		1		1			
	b2	1			1	1										1		1	1	1			
	b3	1	1		1	1										1			1				
Applied Professional	c1	1	1		1	1						1				1		1	1	1			
	c2	1			1	1										1		1	1	1			
	c3	1		1	1	1						1							1	1			
	c4	1		1	1	1						1							1	1			
	c5		1		1	1						1											
General Tran	d1	1	1	1								1							1				
	d2	1	1	1	1	1						1							1				
	d3				1	1						1							1	1			

5- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7-th Week	20
Semester Work	Quizzes	4 Quizzes (every 3 weeks)	16
	Reports	Two reports per semester	14
	Assignments	Bi-Weekly	10
Written Exam		Sixteenth week	40
Total			100

6- List of references:

6-1 Course notes

Lectures Notes of Languages and Compilers

6-2 Required books

A.V. Aho . J.D.Ullman, (2000).Principles of compiler design, Pearson Education

Randera singh ,(2009), Design and Implementation of Compilers, India-NewAge

Grune , bal,(200), Modern Compiler Design, Wiley,

6-3 Recommended books

N. Appel (2007), Modern Compiler Implementation in C- Andrew, Cambridge University Press.

7- Facilities required for teaching and learning:

- Computer Labs Equipped with Prolog Compiler.

Course coordinator:	Dr. Khaled A. Morsy
Head of the Department:	Prof. Dr. Wafaee Boghdady
Date:	December 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specification
GENN451a : Advanced Computer Systems Implementation.

A- Affiliation

Relevant program:	Computer Engineering and Information Technology BSc Program Electronic Engineering and Communication Technology BSc Program Manufacturing Engineering and Production Technology BSc Program
Department offering the program:	Computer Engineering and Information Technology Department Electronic Engineering and Communication Technology Department Manufacturing Engineering and Production Technology Department
Department offering the course:	Computer Engineering and Information Technology Department
Date of specifications approval:	December 2018

B - Basic information

Title: Advanced Computer Systems Implementation.	**Code**: GENN451a	**Level**: Junior, Semester-6		
Credit Hours: 2	**Lectures**: 2	**Tutorial/Exercise**: - 1	**Practical:** -	**Total**:3

Pre-requisite: CMPN010

C - Professional information

1 – Course Learning Objectives:

By the end of this course the students will be able to introduce effective, reliable and flexible IT services to the success of business initiatives today. Also provide an overview of configuration management, planning for configuration management, implementing configuration management, and running an effective configuration management system using the IT Infrastructure Library (ITIL).

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1- Effective, reliable and flexible IT services. (A8,A10)
a2- The specification, identification of all IT components. (A4,A8)
a3- ITIL for identifying, tracking, and controlling IT environment. (A6,A8)
a4- ITIL configuration management for every IT leader, manager, and practitioner. (A8,A12)
a5- The management, recording of the status and review of information of each of the configuration Items. (A8)
a6- Establishment of a clear roadmap for success, customize standard processes to business unique needs (A8,A10)

b - Intellectual skills:

On successful completion of the course, the student should be able to:

b1- Assess current configuration management maturity and setting goals for improvement. (B8, B9)
b2- Gather and manage requirements to align ITIL with organizational needs. (B13,B15, B18)
b3- Describe the schema of your configuration management database (CMDB). (B9, B15)
b4- Identify, capture, and organize configuration data. (B11)
b5- Choose and run a pilot system. (B13, B14)

c - Professional and practical skills:

On successful completion of the course, the student should be able to:

c1- Choose the best tools for your requirements. (C14)
c2- Integrate data and processes to create a unified logical CMDB and configuration management service. (C6)
c3- Implement pilot projects to demonstrate the value of configuration management and to test your planning. (C13, C14, C15)
c4- Measure and improving CMDB data accuracy. (C5, C10)
c5- Leverage configuration management information. (C10)

d - General and transferable skills:
On successful completion of the course, the student should be able to:
d1- Work in a team and involve in group discussion (D1, D3).
d2- Communicate effectively and present data and results orally and in written form (D3).
d3- Use ICT facilities in presentations (D4).
d4- Search for information's in references and in internet (D7).
d5- Practice self-learning (D7, D9).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A4, A6, A8, A10, A12
B	Intellectual skills	B8, B9, B11, B13, B14, B15, B18
C	Professional and practical skills	C5,C6, C10, C13, C14, C15
D	General and transferable skills	D1, D3, D4, D7, D9

3-Contents

Topic	Lecture hours	Tutorial hours
➢Gathering and Analyzing Requirements.	2	1
➢Determining Scope, Span, and Granularity.	2	1
➢Comparison of alternatives and deciding the proper solution.	2	1
➢Planning for Data Population.	2	1
➢Putting together a useful project plan.	3	2
➢Populating the configuration management database.	2	1
➢Choosing the right tools.	2	1
➢Implementing the process.	3	2
➢Choosing and running a pilot system.	4	1
➢The many uses for configuration information.	2	1
➢Measuring and improving computer systems and computer network performance.	2	1
➢Writing tenders and tender laws	2	1
Total hours	28	14

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments					Researches and Reports	Modeling and Simulation			Written Exam	Practical Exam	Quizzes	Term papers	Assignments			
Knowledge & Understanding	a1	1	1	1								1				1		1	1				
	a2	1														1		1	1	1			
	a3	1														1		1	1	1			
	a4	1	1	1								1				1		1	1	1			
	a5	1														1		1	1	1			
	a6	1	1	1								1				1		1	1	1			
Intellectual Skills	b1	1														1		1		1			
	b2	1														1		1	1	1			
	b3	1	1	1								1				1			1				
	b4	1	1									1				1		1	1	1			
	b5	1														1		1		1			
Applied Professional	c1	1	1	1								1				1		1	1				
	c2	1			1											1		1	1	1			
	c3	1			1											1		1	1	1			
	c4	1	1	1	1							1				1		1	1	1			
	c5	1			1											1		1	1	1			
General Tran. Skills	d1			1								1							1				
	d2		1	1								1	1						1				
	d3	1	1									1							1	1			
	d4	1	1	1								1											
	d5											1	1						1				

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Mid-Term Exam	7-th Week	20

Semester Work	Quizzes	4 Quizzes (every 3 weeks)	8
	Reports	Two reports per semester	4
	Assignments	Bi-Weekly	8
Written Exam		Sixteenth week	40
Total			100

6- List of references:

6-1 Course notes: Non

6-2 Required books

TIEM - CHIEN,(2006), COMPUTER - AIDED MANAFACTURING, PRINTICE HALL,.
SADHU SINGH,(2010),COMPUTER AIDED DESIGN& MANUFACTURING, K P

6-3 Recommended books: Non

6-4 Periodicals, Web sites, etc. http://www.talkthecold.com/bizgoogle/ .http://www.SCI-hub.org/ . http://www.scrius.com/

7- Facilities required for teaching and learning:

- Computer, Data show and Computer programs. Microprocessor Lab.

Course Coordinator: Dr. Assem Badr
Head of the Department: Ass. Prof.Dr. Wafaa Boghdady
Date: December 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specification
GENN451a: Advanced Computer Systems Implementation.

A- Affiliation

Relevant program: Computer Engineering and Information Technology BSc Program
Electronic Engineering and Communication Tech. BSc Program
Manufacturing Engineering and Production Tech. BSc Program

Department offering the program: Computer Engineering and Information Technology Department
Electronic Engineering and Communication Technology Department
Manufacturing Engineering and Production Technology Department

Department offering the course: Computer Engineering and Information Technology Department
Date of specifications approval: December 2018

B - Basic information

Title: Advanced Computer Systems Implementation | **Code**: GENN451a | **Level**: Junior, Semester-6
Credit Hours: 2 | **Lectures**: 2 | **Tutorial/Exercise**: -1 | **Practical:** - | **Total**:3
Pre-requisite: CMPN010

C - Professional information

1 – Course Learning Objectives:

By the end of this course the students will be able to introduce effective, reliable and flexible IT services to the success of business initiatives today. Also provide an overview of configuration management, planning for configuration management, implementing configuration management, and running an effective configuration management system using the IT Infrastructure Library (ITIL).

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1- Effective, reliable and flexible IT services. (A8,A10)
a2- The specification, identification of all IT components. (A4,A8)
a3- ITIL for identifying, tracking, and controlling IT environment. (A6,A8)
a4- ITIL configuration management for every IT leader, manager, and practitioner. (A8,A12)
a5- The management, recording of the status and review of information of each of the configuration Ite (A8)
a6- Establishment of a clear roadmap for success, customize standard processes to business unique needs (A8, A10)

b - Intellectual skills:

On successful completion of the course, the student should be able to:

b1- Assess current configuration management maturity and setting goals for improvement. (B8, B9)
b2- Gather and manage requirements to align ITIL with organizational needs. (B13, B15, B18)
b3- Describe the schema of your configuration management database (CMDB). (B9, B15)
b4- Identify, capture, and organize configuration data. (B11)
b5- Choose and run a pilot system. (B13, B14)

c - Professional and practical skills:

On successful completion of the course, the student should be able to:
c1- Choose the best tools for your requirements. (C14)
c2- Integrate data and processes to create a unified logical CMDB and configuration management service. (C6)
c3- Implement pilot projects to demonstrate the value of configuration management and to test your planning. (C13, C14, C15)
c4- Measure and improving CMDB data accuracy. (C5, C10)
c5- Leverage configuration management information. (C10)

d - General and transferable skills:

On successful completion of the course, the student should be able to:
d1- Work in a team and involve in group discussion (D1, D3).
d2- Communicate effectively and present data and results orally and in written form (D3).
d3- Use ICT facilities in presentations (D4).
d4- Search for information's in references and in internet (D7).
d5- Practice self-learning (D7, D9).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A4, A6, A8, A10, A12
B	Intellectual skills	B8, B9, B11, B13, B14, B15, B18
C	Professional and practical skills	C5,C6, C10, C13, C14, C15
D	General and transferable skills	D1, D3, D4, D7, D9

3-Contents

Topic	Lecture hours	Tutorial hours
➢ Gathering and Analyzing Requirements.	2	1
➢ Determining Scope, Span, and Granularity.	2	1
➢ Comparison of alternatives and deciding the proper solution.	2	1
➢ Planning for Data Population.	2	1
➢ Putting together a useful project plan.	3	2
➢ Populating the configuration management database.	2	1
➢ Choosing the right tools.	2	1
➢ Implementing the process.	3	2
➢ Choosing and running a pilot system.	4	1
➢ The many uses for configuration information.	2	1
➢ Measuring and improving computer systems and computer network performance.	2	1
➢ Writing tenders and tender laws	2	1

Total hours	28	14

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations and	Discussions and	Tutorials	Problem solving	Laboratory &					Researches and Reports	Modeling and Simulation			Written Exam	Practical Exam	Quizzes	Term papers	Assignments			
Knowledge & Understanding	a1	1	1	1								1				1		1	1				
	a2	1														1		1	1	1			
	a3	1														1		1	1	1			
	a4	1	1	1								1				1		1	1	1			
	a5	1														1		1	1	1			
	a6	1	1	1								1				1		1	1	1			
Intellectual Skills	b1	1														1		1		1			
	b2	1														1		1	1	1			
	b3	1	1	1								1				1			1				
	b4	1	1									1				1		1	1	1			
	b5	1														1		1		1			
Applied Professional	c1	1	1	1								1				1		1	1				
	c2	1			1											1		1	1	1			
	c3	1			1											1		1	1	1			
	c4	1	1	1	1							1				1		1	1	1			
	c5	1			1											1		1	1	1			
General Tran. Skills	d1			1								1							1				
	d2		1	1								1	1						1				
	d3	1	1									1							1	1			
	d4	1	1	1								1											
	d5											1	1						1				

5- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7-th Week	20
Semester Work	Quizzes	4 Quizzes (every 3 weeks)	16
	Reports	Two reports per semester	8
	Assignments	Bi-Weekly	16
Written Exam		Sixteenth week	40
Total			100

6- List of references:

6-1 Course notes: Non

6-2 Required books

TIEM - CHIEN,(2006), COMPUTER - AIDED MANAFACTURING, PRINTICE HALL,.
SADHU SINGH,(2010),COMPUTER AIDED DESIGN& MANUFACTURING, K P

6-3 Recommended books: Non

6-4 Periodicals, Web sites, etc. http://www.talkthecold.com/bizgoogle/ .http://www.SCI-hub.org/ . http://www.scrius.com/

7- Facilities required for teaching and learning:

- Computer, Data show and Computer programs. Microprocessor Lab

Course Coordinator: Dr. Assem Badr
Head of the Department: Ass. Prof.Dr. Wafaa Boghdady
Date: December 2018

GENN452: Civilization and Heritage

A- Affiliation

RELEVANT PROGRAM:	Architecture Engineering and Building Technology BSc Program
ment offering the program:	Architecture Engineering and Building Technology Department
Department offering the course:	Architecture Engineering and Building Technology Department
Date of specifications approval:	December, 2018

B - Basic information

Title: : Civilization and Heritage **Code:**Genn452 **Level** :4th., **Tenth Semester (Level Four)**

Credit Hours: 2 **Lectures:** 2 **Tutorial/Exercise**:- **Practical:** -

Elective 2: Humaniterian

Pre-requisite: None.

C - Professional information

1 – Course Learning Objectives:

The course aims to enhance the student's background in the field of social, cultural and humanitarian studies throughout identifying the cultural environment; this includes the meaning, features, characteristics, and social interaction, in addition to its impact on the human's needs in the field of specialization. In addition, it studies the cultural and environmental forms of expressions and the social pattern in cultural heritage throughout analyzing its elements and the alternative of dealing with it. Additionally study some case from old and modern traditional societies in the field of study.

2 - Intended Learning Outcomes (ILOS)

A - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1- Theories, issues, concepts demonstrating the interrelation between Civilization and Culture (A9)

a2- The role of the architect and planner in realizing the cultural and heritage dimensions when designing a new project. (A17)

a3- The role of the architect and planner in the conservation of Architectural heritage (A11)

B - Intellectual skills:

On successful completion of the course, the student should be able to:

b1- Dealing appropriately with Heritage buildings and Architecture (B18, B21).

b2- Adapt innovative approaches in urban and architectural design considering the cultural backgrounds and realities of the local community (B19, B21)

C- Professional and practical skills:

On successful completion of the course, the student should be able to:

c1- Identify, analyse, understand the interrelation between Culture and Architecture (C19).

c2- Generate and develop selective interventions that cope with the significance of Architectural Heritage (C21, C22).

c3- Evaluate and criticize the outcomes of urban and Architectural projects in relation to cultural and heritage considerations (C21, C22).

D - General and transferable skills:

On successful completion of the course, the student should be able to:

d1- Collaborate effectively with the multidisciplinary dimensions of Architectural projects (D3).

d2- Search for information required to develop successful approaches in design (D6).

d3- Refer to relevant literature effectively in research projects (D9).

COURSE CONTRIBUTION IN THE PROGRAM ILO'S

ILO's		Program ILO's
A	Knowledge and understanding	A9, A11, A17
B	Intellectual skills	B18,B19, B21
C	Professional and practical skills	C19, C21,C22
D	General and transferable skills	D3, D6, D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
15. General definitions, terms, and characteristics of culture and Architecture)	2		
16. Definitions, Classification of Heritage, World Heritage sites.	2		
17. The Interrelation between culture and traditional and heritage	2		

18. The Interrelation between culture and Civilization (General theories, concepts and examples)	2		
19. Architecture as cultural and Civilization expression - Features and characteristics (A detailed discussion of the multi-components of culture and its impacts in urban sites.	2		
20. Social interaction and urban environment – perception, environment image and behavior patterns.	2		
21. Midterm Exam	2		
22. The role of participation and community involvement in Architectural and Urban Design (Local Case studies)	2		
23. A brief discussion of the Anthropology as a tool of understanding local and indigenous cultures and its application to Architecture	2		
24. Regionalism of architecture and architectural expression	2		
25. Urban Heritage (A review of Values)	2		
26. Urban and Architectural Conservation (A review of interventions)	2		
27. Local and international case studies of urban and Architectural projects corresponding to the cultural dimension of the societies.	2		
28. Research project presentation and discussion	2		
Total hours	**28**		

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations and	Discussions and	Tutorials	Problem solving	Laboratory &	projects	sketches			Self-learning	Discovering	Researches and	Modeling and	Written Exam	Practical Exam	Quizes	Mid-Term Exam	Assignments	Project	Researche	
Knowledge &	a1	1	1	1										1		1			1			1	
	a2	1	1	1										1		1			1			1	
	a3	1	1	1										1		1			1			1	
Intel lect	b1	1	1	1										1		1						1	

	b2	1	1	1									1		1					1	
Applied Profession	c1	1	1	1									1		1					1	
	c2	1	1	1									1		1					1	
	c3	1	1	1									1		1					1	
General Tran.	d1			1								1	1							1	
	d2			1								1	1		1					1	
	d3			1								1	1							1	

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (%)	Grade (Degrees)
Mid-Term Exam	7-th Week	20%	20
Semester Work:	Quizzes	10%	10
	Reports	5%	5
	Assignments	5%	5
Practical research	Fourteen week	20%	20
Final Exam		40%	40
Total		100%	100

6- List of references:

6-1 Course notes: None.

6-2 Required books:

6-3 Recommended books:

- Fraser, D. (1968) "Village Planning in the Primitive World", Studio Vista, London
- Oliver, P. (1969) "Shelter and Society", Barrie & Rockliff, The Cresset Press, London
- Oliver, P. (1997) "Encyclopaedia of vernacular architecture of the world", Cambridge University Press, New York
- Rapoport, A. (1969) "House, Form and Culture", Englewood Cliffs, N.J

6-4 Thesis, Periodicals, Web sites, etc.

- أشرف كامل بطرس (1998) "الثقافة والنتاج البنائي - منهج لرصد وتحليل واستقراء الأبعاد الثقافية وتوظيفها في عملية البناء"رسالة دكتوراه غير منشورة، كلية الهندسة، جامعة القاهرة.
- حسن المويلحى (2005) "العمارة بين الثقافة والتنمية نحو فهم ثقافة مجتمع المستخدمين لخدمةعملية التنمية من خلال البرمجة المعمارية"رسالة ماجستير غير منشورة، كلية الهندسة، جامعة القاهرة.

4. Silverman, H., & Waterton, E., & Watson, S., (2017), “Heritage in Action: Making the Past in the Present”, Springer International Publishing, Switzerland.
5. Born, G., (2006), “Architecture, Preserving Paradise: The Architectural Heritage and History of the Florida Keys”, The History Press, USA.

- Oliver, P., (1997), “Encyclopedia of vernacular architecture of the world”, Cambridge University Press, New York, USA.

7- Facilities required for teaching and learning:

- Appropriate teaching class including presentation board and data show,
- Resources available in the library

Course coordinator: Dr. Nahed Omran

Head of the Department:	Associate Professor: Ibrahem Gouda.
Date:	December,2018

Modern Academy for Engineering

and Technology in Maadi

Course Specifications

GENN453: Industrial Psychology

A- Affiliation

Relevant program:	Manufacturing Engineering and Production Technology BSc. Program.
Depart offering the program:	Manufacturing Engineering and Production Technology Department
Depart offering the course	Manufacturing Engineering and Production Technology Department
Date specification approval	December 2018

C- BASIC INFORMATION

Title: Industrial Psychology **Code:** GENN453 **Year /level :4/** Semester 10

Credit Hours: 2 **Lectures:** 2 **Tutorial:** - **Practical: -**

Pre-requisite: Non

C – Professional Information

1- Course Learning objectives:

A study of this course will enable the student to improve the performance of the whole work system as well to reduce the stress imposed on the working human being in industry .

2 – Intended Learning Outcomes (ILOs)

A-Knowledge and Understanding:

By the end of the course the student should be able to:

a1- the role of industrial engineer (A4 , A9,A18).

a2- the structural system of human work (A11) .

a3-the physical environmental impacts on human beings which can be assessed quantitatively (A11 , A19) .

B-Intellectual Skills

By the end of the course the student should be able to:

b1- Apply basics of ergonomics to instrument display, machine, control and lay out of work place (B3, B5).

b2- Consider effect of all environmental changes on equipment (B9).

b3- Diminishing the effects of physical environmental impacts on human beings (B9).

C- Professional and Practical Skills

By end of the course the student should be able to :

c1- Create new product design adapted to the customer (C2, C4).

c2- Make the best use of human abilities (C8) .

c3- Use the ergonomic factors in domestic and industrial products (C8) .

D-General and Transferable Skills

By end of the course the student should be able to :

d1-Collaborate effectively with multidisciplinary team (D1, D2).

d2- Effectively manage tasks , time , and ,resources (D6 , D9).

Course Contribution in the program ILO'S

ILO's		**Program ILO's**
A	Knowledge and understanding	A4، A9،A11،A18, A19
B	Intellectual skills	B3،B5،B9
C	Professional and practical skills	C2،C4،C8
D	General and transferable skills	D1،D2,D6,D9

3-Contents

Topic	**Lecture hours**	**Tutorial hours**
Industrial Design – Design concepts	2	
Ergonomics	2	
Application of ergonomics – Instruments – Controls – Work place.	2	
Aesthetic and ergonomics coordination	2	
Working condition and Environment	2	
Heating and Ventilation	2	
Local Ventilation - Industrial Ventilation	2	
Air condition systems – CFC'S - Ozone	2	
Depletion and Global Warning	2	
Noise – Exposure to noise – Noise control	2	
Technique – Vibration	2	
Lighting – Level of luminance – Factors	2	
Affecting the quality of lighting	2	
Human effectiveness	2	
Revision	2	
Total hours	30	

4 - Teaching and Learning and Assessments methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations &	Discussions &	Tutorials	Problem solving	Laboratory					Modeling	Self-learning	Experimental				Class Works	Quizzes	Reports	Mid-Term Exam	Practical Exam	Written Exam
Knowledge & Understanding	a1	1		1															1		1		1
	a2	1		1															1		1		1
	a3	1		1															1		1		1
Intellectual Skills	b1	1		1															1		1		1
	b2	1		1															1		1		1
	b3	1		1															1		1		1
Applied Prof	c1	1		1															1		1		1
	c2	1		1															1		1		1

	c3	1		1														1		1		1
General Tran	d1 d2	1 1		1 1								1 1							1 1			

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: Quizzes & Reports	Bi-Weekly	5
Mid-Term Exam	8th. Week	10
Written Exam	16th. week	35
Total		50

6- List of references:

6-1 Course notes: Lecture notes and handouts prepared by the course coordinator .

6-2 Required books : Non

6-3 Recommended books: Non

6-4 Periodicals, Web sites, etc.: Non

7- Facilities required for teaching and learning:

- Non

Course coordinator: Prof. Mamdouh Saber
Head of the Department: Prof. Dr. Nabil Gadalla
Date: December 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specification
GENN 454: Marketing

A- Affiliation

Relevant program: Manufacturing Engineering and Production Technology BSc Program
Electronic Engineering and Communication Technology BSc Program
Computer Engineering and Information Technology BSc Program
Architecture Engineering and Building Technology BSc Program

Department offering the program: Manufacturing Engineering and Production Technology Department
Electronic Engineering and Communication Technology Department
Computer Engineering and Information Technology Department
Architecture Engineering and Building Technology Department

Department offering the course: Basic science department
Date of specifications approval: June 2018

B - Basic information

Titl : Marketing **Code:** GENN 454 **Level:** Four **Semester:** 9th
Credit Hours: 2 hrs **Lectures:** 2 **Tutorial/Exercise:** - **Practical:** -
Pre-requisite: non

C - Professional information

1 – Course Learning Objectives:

مع نهاية تدريس هذا المقرر يكون الطالب قد اكتسب المهارات التى تمكنه من فهم مجال المبيعات, إدارة قوة المبيعات الاستراتيجية .عملية البيع الشخصية وتنظيم قوى المبيعات, تنميط وتوظيف البائعين, اختيار وتوظيف المتقدمين, تطوير برنامج المبيعات, تحفيز قوى المبيعات, تعويض قوة المبيعات والمصروفات والنقل, قيادة قوة المبيعات، التنبؤ بالمبيعات وتطوير الميزانيات و مناطق المبيعات الأقاليم, تحليل حجم المبيعات, تحليل تكلفة التسويق والربح، تقييم الأداء, كتابة عطاءات المسؤوليات الأخلاقية والقانونية.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1- ادارة المبيعات وتطوير برنامج المبيعات (A9, A1)
a2- تحليل حجم المبيعات, تحليل تكلفة التسويق والربح، تقييم الأداء (A8)
a3- تنميط وتوظيف البائعين, اختيار وتوظيف المتقدمين (A9)

b - Intellectual skills:

On successful completion of the course, the student should be able to.

b1– ان يكتسب الطالب مهارات فى مجال اساسيات ادارة المبيعلت (B1, B2)
b2- ان يدرك الطالب كيفية اختيار وتوظيف المتقدمين وافضل الطرق لتحفيز فريق المبيعات(B1, B2)
b3- ان يستطيع الطالب تحليل تكلفة التسويق حسب مناطق التوزيع و الربح (B1, B2)

d - General and transferable skills:

On successful completion of the course, the student should be able to:
d1- تدريب الطالب على كيفية البحث عن المعلومات فى المراجع وفى الانترنت (D7)
d2- اكساب الطالب كيفية العمل فى فريق واشراكهم فى مناقشات جماعية (D1)
d3- تعليم الطالب على كيفية ايجاد الطرق الازمة لابتكار كل ما هو جديد (D7, D8)

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A8, A9
B	Professional and practical skills	B1, B2
D	General and transferable skills	D1 , D7, D8

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
مجال المبيعات, إدارة قوة المبيعات الاستراتيجية عملية البيع الشخصية وتنظيم قوة المبيعات	6		
تنميط وتوظيف البائعين, اختيار وتوظيف المتقدمين	4		
تطوير برنامج المبيعات, تحفيز قوى المبيعات تعويض قوة المبيعات والمصروفات والنقل	4		
قيادة قوة المبيعات و التنبؤ بالمبيعات	2		
تطوير الميزانيات و مناطق المبيعات الأقاليم	4		
تحليل حجم المبيعات, تحليل تكلفة التسويق والربح	3		
تقييم الأداء, كتابة عطاءات المسؤوليات الأخلاقية والقانونية	3		
مراجعة عامة	2		
Total hours	**28**		

4 - Teaching and Learning and Assessement methods:

Course ILO's		Teaching Methods										Learning Methods				Assessement Method							
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments					Researches and Reports	Modeling and Simulation			Written Exam	Practical Exam	Quizes	Term papers	Assignments			
Knowledge & Understanding	a1	1	1	1								1				1		1					
	a2	1														1		1		1			
	a3	1		1												1		1		1			
Int elle	b1	**1**														1		1		**1**			

	b2	**1**														1		1		**1**			
	b3	**1**	**1**	**1**								**1**				1							
General Tran. Skills	d1	1		1								1											
	d2	1	1	1																			
	d3	1	1																	1			

5- Assessment Timing and Grading:

Asesement Method	Timing	Grade (Degrees)
Mid-Term Exam	7- th Week	20
Research	8- th Week	15
Quizes	Bi –Weekly	20
Assignments	11- th Week	5
Written Exam	Sixteen -th week	40
Total		100

6- List of references:

6-1 Course notes: Non

6-2 Required books

Michael J. Baker, Susan Hart (2016), "The Marketing Book", 7th Edition.

6-3 Recommended books: Non

6-4 Periodicals, Web sites, etc.: Non

7- Facilities required for teaching and learning:

- Computer, Data show and Computer programs

Course coordinator: Dr. Shaymaa Sherif
Head of the Department: Prof. Dr. Ashraf Taha
Date: September, 2019

Modern Academy
for Engineering and Technology in Maadi

Course Specification
CMPN424: Computer Modeling and Simulation

A- Affiliation

Relevant program:	Computer Engineering and Information Technology BSc Program
Department offering the program:	Computer Engineering and Information Technology Department
Department offering the course:	Computer Engineering and Information Technology Department
Date of specifications approval:	December 2018

B - Basic information

Title: Computer Modeling and Simulation **Code**: CMPN424 **level**: Senior 2, second Semester

Credit Hours: 3 **Lectures**: 2 **Tutorial**:2 **Practica**l: **Total:**4

Pre-requisite: CMPN210

C - Professional information

1 – Course Learning Objectives:

By the end of this course the students should demonstrate the knowledge and understanding of the different types of systems, and their interconnections to drive the suitable mathematical model. Specify the elements of modeling and simulation to develop their mathematical models. The student will be able to solve problems using simulation techniques, and achieve the suitable method to test the performance.

2 - Intended Learning Outcomes (ILOS)

a – Knowledge and understanding:

By the end of this course the student should have the following Knowledge of:

a1- Basic concepts of systems, models and simulation (A1, A2).
a2- Types of simulation, Different steps in Simulation Study (A4, A5).
a3- Theoretical background of probabilities and Statistics needed to build a valid and credible Simulation Models (A1,A3,A13)
a4- Fundamentals of Queuing theory, stochastic Model, and Discrete-Event Simulation (A1, A5).
a5- Different aspects of Single – Server Queuing System Simulation(A5)
a6- Basics of estimation and statistical tests as a tools for Estimation of Means, Variance And Correlation(A1)
a7- Principles of Mont Carlo simulation(A2)
a8- Basics of Random Number Generators, Linear Congruent Generators (LCG), Mixed Generator, Multiplicative Generator (A1, A2, A5).
a9- Basics of Sensitivity Analysis, Inspection Approach, and Confidence Interval Approach based on Independent data(A11)

b – Intellectual Skills:

On successful completion of the course, the student should be able to:

b1- Investigate on the appropriate mathematical and computer-based methods for modeling and analyzing different simulation problems (B1).
b2- Solve problem for creating models of simulation (B3)
b3- Suggest different solutions for the problem solving, then select appropriate solutions for engineering problems based on analytical thinking (B2).
b4- Select and appraise appropriate ICT tools to a variety of simulation problems (B8).
b5- Solve simulation problems, often on the basis of limited and possibly contradicting information (B7).

b6- Choose the appropriate mathematical tools, computing methods, design techniques for modeling and analyzing computer systems (B13)
b7- Synthesize, and apply suitable IT tools to computer engineering problems(B14).
b8-Innovate solutions based on non-traditional thinking and the use of latest technologies(B17)
b9- Create systematic and methodic approaches when dealing with new and advancing technology(B12)

c - Professional and practical skills:
On successful completion of the course, the student should be able to:
c1- Use the mathematics, science, information technology, design, and engineering practice integrally to solve and to build a valid and credible Simulation Models(C1)
c2- Improve and create different models of simulation (C2)
c3- Develop simulation programs of Mont Carlo simulation through a wide range of analytical tools, techniques, and software packages pertaining to required (C6)
c4- Apply numerical modeling methods to the Single – Server Queuing System Simulation problems(C7)
c5- Utilize the computational facilities and techniques, to design experiments about Random Number Generators, and Linear Congruent Generators (LCG). collect, analyse and interpret results(C5).

d - General and transferable skills:
On successful completion of the course, the student should be able to:
d1- Work in a team and involve in group discussion and seminars (D1, D3).
d2- Communicate effectively and present data and results orally and in written form (D3, D4).
d3- Use ICT facilities in presentations, and manage resources efficiently (D4, D5).
d4- Search for information's in references, journals and in internet(D7).
d5- Practice self-learning(D7, D9).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A2,A3,A4, A5, A11, A13
B	Intellectual skills	B1, B2, B3,B7,B8,B12, B13, B14, B17
C	Professional and practical skills	C1, C2,C5,C6,C7,
D	General and transferable skills	D1, D3, D4, D5,D7, D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
➢ **Basic concepts and terminologies of systems , models, and simulation:**		3	
-fundamentals of a systems and their terminologies	1		
--fundamentals of models and simulation and their terminologies	1		
-Advantages and disadvantages of simulation	1		
➢ **Review of basic probabilities, Statistics <u>and distribution theory</u> :**		4	
-Set theory, Conditional probability ,compound events and , independent events	1		
-Discrete and Continuous distributions	1		
-Function of a random variable	1		
- Estimation of Means, Variance And Correlation.	1		
➢ Mont Carlo simulation -Case Study	2	2	

➢ Selecting appropriate Probability Distributions specifying a physical phenomenon-Case study	2	2	
➢ **Introduction to Queuing Theory**, and Simulation of Single – Server Queuing System-case study	4	4	
➢ Building Valid and Credible Simulation Models	2	2	
➢ Sensitivity Analysis, Inspection Approach, Confidence Interval Approach Based on Independent Data Testing , Null Hypothesis, Paired t Approach, case study .	4	4	
➢ Random Number Generators, Mid Square Method, -case study	2	2	
➢ Linear Congruent Generators (LCG), Mixed Generator, Multiplicative Generator	2	2	
➢ Seminar	2	2	
Total hours	28	28	

4 - Teaching and Learning and Assessment methods

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments					Researches and Reports	Modeling and Simulation	Site visits		Written Exam	Practical Exam	Quizzes	Term papers	Assignments			
Knowledge & Understanding	a1	1	1	1	1							1				1		1		1			
	a2	1			1											1		1	1	1			
	a3	1			1								1	1		1		1		1			
	a4	1	1	1	1								1										
	a5	1			1	1							1			1		1		1			
	a6	1			1	1						1	1	1		1			1	1			
	a7	1	1	1	1	1						1	1	1		1			1	1			
	a8	1	1	1	1	1						1	1	1									
	a9	1	1	1	1	1						1	1	1									
Intellectual Skills	b1	1			1								1			1		1		1			
	b2	1	1		1								1			1		1		1			
	b3	1		1	1							1	1	1		1				1			
	b4	1			1							1		1		1		1		1			
	b5	1	1		1	1							1			1		1		1			
	b6	1			1	1							1										
	b7	1			1	1								1									
	b8	1			1	1							1	1									
	b9	1			1								1	1									
Appli -	c1	1			1	1							1			1		1					

	c2	1	1												1		1					
	c3	1		1		1						1	1	1								
		Teaching Methods										Learning Methods				Assessment Method						
		Lecture	Presentations and	Discussions and	Tutorials	Problem solving	Laboratory &				Researches and	Modeling and	Site visits		Written Exam	Practical Exam	Quizzes	Term papers	Assignments			
	c4	1	1		1	1							1	1								
	c5	1	1		1									1								
General Tran.	d1			1		1						1										
	d2		1	1								1	1									
	d3	1	1									1										
	d4	1	1	1								1										
	d5			1								1	1									

5- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
	Mid-Term Exam	7-th Week	20
Semester Work	Quizzes	4 Quizzes (every 3 weeks)	16
	Reports	Two reports per semester	14
	Assignments	Bi-Weekly	10
Written Exam		Sixteenth week	40
Total			100

6- List of references:

6-1 Course notes:

Lecture notes and handouts

6-2 Required books

Bernard p. Zeigler (2012), Theory of modeling and simulation ,delhi ,elsevier
M. M.woolfson,(1999), An introduction to computer simulation, USA, OXFORD University Press
Volnei Apedroni,(2010), circuit design and simulation with vhdl, USA, the MIT press

6-3 Recommended books:

D, Kelton, (1998) Simulation Modeling and Analysis, Averill M. L, W, McGraw-Hill, Inc..
Derry Banks, John S. Carson, Barry L. Nelson David M. Nicol, (2005) Discrete-event System Simulation, person education,.
C. M Harris, Ross D., second edition, Fundamental of Queuing Theory, John Wiley. 1990.

6-4 Periodicals, Web sites, etc.: Non

http://www.howstuffworks.com/ .
http://www.GenLib.org/ .
http://www.talkthecold.com/bizgoogle/ .

http://www.SCI-hub.org/ .
http://www.scrius.com/ .
http://www.Merlot.org/ .
http://www.Vlab.co.in/ .
http://www.W3schools.com/

7- Facilities required for teaching and learning:

- Computer Lab.
- Computer, Data show and Computer package.

Course coordinator:	Dr. AbdElmoneim Fouda
Head of the Department:	Ass. Prof. Dr. Wafaa Boghdady
Date:	December 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specification
CMPN422: Artificial Intelligence

A- Affiliation

Relevant program:	Computer Engineering and Information Technology BSc Program
Department offering the program:	Computer Engineering and Information Technology Department
Department offering the course:	Computer Engineering and Information Technology Department
Date of specifications approval:	December 2018

B - Basic information

Title: Artificial Intelligence **Code**: CMPN422 **Level:** Senior-2, Semester-10
Credit Hours: 4 **Lectures**: 3 **Tutorial:** 2 **Practical: 1** **Total:6**
Pre-requisite: CMPN325

C - Professional information

1 – Course Learning Objectives:

By the end of this course the students should demonstrate the knowledge and understanding of the types and principles of artificial intelligence and search strategies as well as the components of AI agents. They should be able to solving problem using AI.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1 - Different artificial intelligent system components. (A1,A3,A5)
a2 - The models used in searching techniques. (A13,A14,A15)
a3 - The components of semantic network and how to use it in solving the AI problems. (A3,A5,A13,A15)
a4 - The categories and components of 'expert system' systems. (A13,A14,A15)
a5 - The roles in expert system development. (A3,A5,A14,A15)
a6 - The principal benefits of expert systems. (A3,A5,A13,A15)
a7 - The possible uses of the neural network types in different areas. (A3,A5,A13)

b - Intellectual skills:

On successful completion of the course, the student should be able to:

b1 - Build a simple artificial intelligent system. (B2,B3,B4,B14)
b2 - Build the successor function for different AI problems. (B2,B3,B4,B14)
b3 - Develop the searching models used in AI. (B4,B14,B16)
b4 - Solve problems using different artificial intelligent techniques. (B2,B4,B14,B16)
b5 - Build an Expert System. (B3,B4,B16)
b6 - Develop the roles in an expert system. (B3,B14,B16)
b7 - Build neural networks for solving AI problems. (B3,B4,B14,B16)
b8 - Build different machine learning algorithms. (B3,B4,B14,B16)
b9 - Build different neural network for different applications. (B3,B4,B14,B16)
b10 - Build all logic gates using neural networks. (B3, B4, B14).

c - Professional and practical skills:

On successful completion of the course, the student should be able to:

c1 - Collect and analyze different types of AI problems. (C3,C11,C13)
c2 - Collect training vectors for neural network training process. (C3,C11,C14)
c3 - Use the neural network and expert system for practical systems. (C12,C13,C14)

c4 - Form intelligent agents systems. (C11,C12,C13,C14)

d - General and transferable skills:

On successful completion of the course, the student should be able to:

d1- Work in a team and involve in group discussion and seminars (D1, D3).
d2- Communicate effectively and present data and results orally and in written form (D3).
d3- Use ICT facilities in presentations (D4).
d4- Search for information's in references and in internet (D7).
d5- Practice self-learning (D7, D9).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1,A3, A5, A13, A14, A15
B	Intellectual skills	B2,B3,B4,B14,B16
C	Professional and practical skills	C3, C11, C12, C13, C14
D	General and transferable skills	D1, D3, D4, D7, D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
➢ Artificial intelligent Concepts.	3	2	1
➢ Fundamentals of neural network	3	2	1
➢ Learning algorithms used in neural network training, Different practical applications using neural network (logic gates).	3	2	1
➢ Solving problems using searching techniques	3	2	1
➢ Non-heuristic techniques, Depth first, breadth first search, uniform cost search.	3	2	1
➢ Non-heuristic techniques, depth limited search, iterative deepening depth first search, bi-directional search, comparing searching techniques.	4	2	1
➢ Heuristic techniques, Greedy best first search, memory bounded heuristic search.	3	2	1
➢ Heuristic techniques, recursive best first search, learning to search better, Heuristic functions.	2	2	1
➢ Expert system architecture.	2	2	1
➢ Expert system, non-production system architecture.	4	2	1
➢ Semantic network basics and components.	3	2	1
➢ Semantic network and optimal search.	3	2	1
➢ Machine learning, frame work for symbol-based learning, version space search.	3	2	1
➢ Elimination algorithm, decision tree (induction algorithm).	3	2	1
Total hours	42	28	14

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments					Researches and Reports	Modeling and Simulation			Written Exam	Practical Exam	quizzes	Term papers	Assignments			
Knowledge & Understanding	a1	1	1	1	1							1				1		1	1				
	a2	1			1											1		1	1	1			
	a3	1			1		1									1		1	1	1			
	a4	1	1	1	1	1	1					1				1		1	1	1			
	a5	1					1									1		1	1	1			
	a6	1	1	1	1		1					1				1		1	1	1			
	a7	1	1	1	1		1					1				1		1	1				
Intellectual Skills	b1	1			1		1									1		1		1			
	b2	1			1	1	1									1		1	1	1			
	b3	1	1	1	1		1					1				1			1				
	b4	1	1		1		1					1				1		1	1	1			
	b5	1			1		1									1		1		1			
	b6	1			1	1	1									1		1	1	1			
	b7	1			1		1									1		1		1			
	b8	1			1	1	1									1		1	1	1			
	b9	1	1	1	1		1					1				1	1		1				
	b10	1	1		1		1					1				1	1	1	1	1			
Applied Professional Skills	c1	1	1	1	1		1					1				1	1	1	1				
	c2	1			1		1									1	1	1	1	1			
	c3	1			1		1									1	1	1	1	1			
	c4	1	1	1	1	1	1					1				1	1	1	1	1			
Tran. General Skills	d1			1		1						1					1		1				
	d2		1	1								1	1				1		1				
	d3	1	1									1					1		1	1			
	d4	1	1	1								1					1						
	d5											1	1				1		1				

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Mid-Term Exam	7-th Week	20

Semester Work	Quizzes	4 Quizzes (every 3 weeks)	8
	Reports	Two reports per semester	4
	Assignments	Bi-Weekly	8
Practical Exam		Fifteenth week	20
Written Exam		Sixteenth week	40
Total			100

6- List of references:
6-1 Course notes: None
6-2 Required books
Er Rajir, (2012) Artificial Intelligence, S CAND.
Nils Jnilsson (2013), artificl intelligence a new synthesis, MK

6-3 Recommended books:
Russell, P, (2003). Nerving Artificial Intelligence, A Modern Approach, 2nd ed. Prentice hall.
David L. Pool, Artificial, (2010), Intelligancefor Da. & Computational Age, Cambrige
6-4 Periodicals, Web sites, etc.
http://aima.cs.berkeley.edu/

7- Facilities required for teaching and learning:
Computer, Data show and Computer programs.

Course coordinator: Dr. Sabry. M Abdul-Meety
Head of the Department: A. Prof. Dr. Wafaa Boghdady
Date: December 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specification
CMPN461: Project-2 b

A- Affiliation

Relevant program: Computer Engineering and Information Technology BSc Program
Department offering the program: Computer Engineering and Information Technology Department
Department offering the course: Computer Engineering and Information Technology Department

Date of specifications approval: December 2018

B - Basic information

Title: Project-2 **Code:**CMPN461 **Level:** Senior-1 8th semester and Senior-2 9th semester

Credit Hours: 3 **Lectures:** 1 **Tutorial/Exercise**:-1 **Practical**: 4 **Total**:6

Pre-requisite: CMPN 460

C - Professional information

1 – Course Learning Objectives:

The proposed projects must complement the other courses in computer engineering and information technology. The students are given as much freedom as possible in the choice of the idea of their projects. Also they are given much freedom to combine their teamwork. Each student must understand the project contribution and know his project task. By the end of this course the students should able to work together in teamwork to design, implement, document, and test their application using appropriate software simulators and hardware equipment.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1- Combining themselves in interactive and cooperate teamwork (A6, A8, A10).
a2- the idea of project (A4, A5, A14).
a3- Making a plan to distribute their individual tasks along the available duration time (A6, A8).
a4- Analysis each specific portion of the project by completely cooperation with all other students in the teamwork (A4, A5, A14,).
a5- Realization and testing each subunit or/and subprogram individually (A4, A14, A15, A17).
a6- Collection and accumulating all separated subunits or/and subprograms in single application (A4, A14, A15, A17).
a7- Verification and validation for the whole functions of the project (A4, A14, A15, A18).
a8- Make final technical report documentation (A4, A5, A10).

b - Intellectual skills:

On successful completion of the course, the student should be able to:

b1- Work in interactive and cooperate team (B4, B15).
b2- Search for novel ideas in the recently innovated application systems and programs (B2, B3, B8, B14, B17)
b3- Develop imaginative and design abilities (B1, B7, B12, B13, B14, B15).
b4- Integrating engineering knowledge, engineering codes, basic and mathematical sciences in designing system and/or process (B1, B5, B7, B12, B13, B14).
b5- Convert the concepts to real entities (B5, B7, B10, B12, B13, B15, B17).
b6- Integrate the subunits and subprograms (B7, B10, B18).
b7- Measure the enhancement ratios (B5, B11, B18).
b8- Record the complete work in final technical report (B11, B15).

c - Professional and practical skills:

On successful completion of the course, the student should be able to:

c1- Convert his idea to real electric circuit or software program (C1, C2, C3, C7, C8, C11, C13, C15).

c2- Use the datasheets and websites to select the proper elements, software programs and simulators (C9, C10, C11, C14).

c3- Use the standard simulators in his design (C4, C5, C6, C14, C15).

c4- Use the approved simulators to check his design (C4, C5, C6, C15).

c5- Use the different measuring devices to check his design (C5, C6, C10, C12, C16).

d - General and transferable skills:

On successful completion of the course, the student should be able to:

d1- Search for information of the modern computer applications (D7, D8, D9).

d2- Search for information in the up to date productions as components and software program for computer applications (D7, D8, D9).

d3- Think how to modify or market the project idea (D6, D7, D8).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A4, A5, A6, A8, A10, A14, A15, A17,A18
B	Intellectual skills	B1, B2, B3, B4, B5, B7, B8, B10, B11, B12, B13, B14, B15, B17, B18
C	Professional and practical skills	C1, C2, C3, C4, C5, C6, C7, C8, C9, C10, C11, C12, C13, C14, C15, C16
D	General and transferable skills	D6, D7, D8, D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
➢ The students propose their project idea or undertake a dedicated one by the supervisor.	1	1	6
➢ Planning and scheduling the project activities.	1	1	6
➢ Designing of subunits and/or subprograms.	2	2	9
➢ Implementation of subunits and/or subprograms.	1	1	9
➢ Testing of subunits and/or subprograms.	1	2	9
➢ Collection among subunits and/or subprograms to perform application system project.	2	2	9
➢ Testing the whole project functions.	2	2	9
➢ Make final technical report documentation.	2	2	9
➢ Preparing for project presentation.	2	2	9
Total hours	14	14	84

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments					Researches and Reports	Modeling and Simulation			discussion	Practical Exam	Quizzes	Final report	Assignments			
Knowledge & Understanding	a1	1		1																			
	a2	1	1	1	1							1				1			1				
	a3	1		1	1	1	1																
	a4	1			1	1	1					1	1			1			1				
	a5					1	1					1	1			1			1				
	a6			1			1					1	1			1			1				
	a7						1						1										
	a8	1		1	1		1					1				1			1				
Intellectual Skills	b1	1		1																			
	b2	1	1	1								1				1			1				
	b3	1		1	1	1	1					1	1			1			1				
	b4	1		1	1	1						1	1			1			1				
	b5	1		1	1	1	1					1	1			1			1				
	b6	1		1	1	1	1					1	1			1			1				
	b7	1		1	1		1					1	1			1			1				
	b8	1		1	1																		
Applied Professional Skills	c1	1	1																				
	c2	1		1	1	1						1	1			1			1				
	c3	1		1	1	1						1	1			1			1				
	c4	1		1	1	1						1	1			1			1				
	c5	1			1	1							1										
General Tran. Skills	d1			1								1				1			1				
	d2			1								1				1			1				
	d3	1		1	1							1				1			1				

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Evaluation of discussion and final report of project	By the end of the project period	100
Total		100

6- List of references:
6-1 Course notes: Non
6-2 Required books Non
6-3 Recommended books: Non

6-4 Periodicals, Web sites, etc.

- http://www.electronicshub.org/top-electrical-mini-projects/
- http://www.circuitstoday.com/simple-electronics-projects-and-circuits
- http://www.examsadda.com/2011/05/mini-projects-for-electronics.html
- http://www.projecttitles4free.com/
- http://www.gobookee.org/electrical-engineering-students-small-project/
- http://www.realworldengineering.org/library_search.html

7- Facilities required for teaching and learning:

- Software and Hardware Labs.
- Simulator software programs.

Course Coordinator:	Department Stuff
Head of the Department:	Ass. Prof. Dr. Wafaa Boghdady
Date:	December 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specification
CMPN 438: Pattern Recognition and Neural Networks

A- Affiliation

Relevant program: Computer Engineering and Information Technology BSc Program
Department offering the program: Computer Engineering and Information Technology Department
Department offering the course: Computer Engineering and Information Technology Department

Date of specifications approval: December 2018

B - Basic information

Title: Pattern Recognition and Neural Networks **Code**: CMPN 438 **level**: Senoir2 , Second Semester

Credit Hours: 3 **Lectures:** 2 **Tutorial**:2 **Practical:-** **Total:**4

Pre-requisites: MTH 103, CMPN 310

C - Professional information

1 – Course Learning Objectives:

By the end of this course the students should demonstrate the knowledge and understanding of the basic knowledge about neuron models, different architectures of artificial neural networks ANN and pattern recognition. They should be able to introduce the concepts and training algorithms for different aspects of ANN paradigm.

2- Intended Learning Outcomes (ILOS)

a – Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1 – Basic concepts and Definitions of pattern and artificial neural network ANN (A1,A2)
a2 –The analogy between human brain cell and artificial neuron (A3)
a3 –The different architectures of artificial neural networks (A4)
a4 - Mathematical basis of training different network architectures (A1,A2)
a5- The Neuron Models. – Mclluph-Pitts model (A13,A15)
a6- Basic architecture of Single-Layer Neurons.- Multi-layer Neurons (A4,A5)
a7 –The different algorithms used to learn different ANN (A11,A12)
a8- Basic principles of Back propagation algorithm (A1,A2,A3)
a9- ANN.-Pattern recognition using neural networks (A11,A17)

b – Intellectual Skills:

On successful completion of the course, the student should be able to:

b1-Investigate on the different architectures of artificial neural networks (B1, B2, B3).
b2- analyze and manipulate Neuron Models. – Mclluph-Pitts model, Single-Layer Neurons and Multi-layer neurons (B4, B5, B7).
b3- Discuss the Single-Layer Neurons. - Multi-Layer Neurons, and perceptron's. Then deduce their mathematical model, then perform the suitable program to solve (B8, B13, B14).
b4- Investigate on different algorithms used to learn different ANN including Back propagation algorithm deduce its mathematical model, then perform the suitable program to solve (B8, B13, B15).
b5- Classify the pattern recognition using neural networks (B5,B7,B11)

c - Professional and practical skills:

On successful completion of the course, the student should be able to:
c1- Apply IT knowledge based for ANN architectures (C1,C2)
c2- Use of different numerical modeling methods, matrix operations, array operations, and recursion rules for manipulating Back propagation algorithm (C1,C2)
c3- Produce graphics in two and three dimension to manipulate multilayer feed-forward ANN (C5,C14)
c4 – Develop different programs to simulate and solve different Single-Layer Neurons. - Multi-Layer Neurons (C6, C7, C14).
c5-Solve different operational problems related to Pattern recognition using neural networks (C6, C7, C15).

d - General and transferable skills:
On successful completion of the course, the student should be able to:
d1- Collaborate effectively within multidisciplinary teamwork, and involve in group discussion (D1, D3).
d2- Communicate effectively and present data and results orally and in written form (D3, D4).
d3- Use ICT facilities in presentations, and manage resources efficiently (D4, D5).
d4- Search for information's in references in internet(D7).
d5- Practice self-learning(D7, D9).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A2, A3, A4,A5, A11,A12, A13,A15,A17
B	Intellectual skills	B1, B2, B3,B4,B5,B7, B8,B11,B13, B14,B15
C	Professional and practical skills	C1, C2,C5, C6, C7,C14,C15
D	General and transferable skills	D1, D3, D4, D5,D7, D9

3 – Contents

Topic	Lecture hours	Tutorial hours
➢ Analogy between human brain cell and artificial neuron	1	
➢ ANN system : Preliminaries	1	
➢ Fundamentals , basic concepts and definitions of pattern recognition and artificial neural net	2	3
➢ Neuron Models. – Mclluph-Pitts model	2	4
➢ ANN architectures	2	4
➢ Single layer perceptron classifier	2	2
➢ Multilayer feed forward networks	2	2
➢ ANN learning and training	2	2
➢ principles of Back propagation algorithm	4	2
➢ Associative memories	4	4
➢ Matching and self-organizing networks	3	2
➢ Pattern recognition using neural networks	2	2
➢ Seminars	1	1
Total hours	28	28

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments	projects	Researches and reports	Modeling and simulation		Researches and Reports	Modeling and Simulation	Site visits	discovering	Written Exam	Practical Exam	Quizzes	Term papers	Assignments			
Knowledge & Understanding	a1	1	1	1									1			1		1		1			
	a2	1											1			1		1	1	1			
	a3	1							1				1			1		1		1			
	a4	1	1	1	1	1						1	1	1		1		1	1	1			
	a5	1		1	1	1						1	1	1		1		1		1			
	a6	1		1	1	1			1			1				1			1	1			
	a7	1	1	1	1	1						1	1	1		1			1	1			
	a8	1		1		1						1	1	1		1							
	a9	1		1		1						1	1			1							
Intellectual Skills	b1	1			1				1							1		1		1			
	b2	1	1											1		1		1		1			
	b3	1		1	1							1		1		1				1			
	b4	1			1							1				1		1		1			
	b5	1	1		1	1										1		1		1			
Applied Professional Skills	c1	1			1	1								1		1		1					
	c2	1	1											1		1		1					
	c3	1		1		1						1	1	1									
	c4	1	1		1	1																	
	c5	1	1		1																		
General Tran. Skills	d1			1		1						1											
	d2		1	1								1	1										
	d3	1	1									1											
	d4	1	1	1								1											
	d5			1								1	1										

5- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
	Mid-Term Exam	7-th Week	20
Semester Work	Quizzes	4 Quizzes (every 3 weeks)	16
	Reports	Two reports per semester	14
	Assignments	Bi-Weekly	10
Written Exam		Sixteenth week	40
Total			100

6- List of references:

6-1 Course notes: Lecture notes and handouts

6-2 Required books

S N Sivanandam, M Paulraj, Introduction to Artificial Neural Networks, Vikas Publishing Hous Pvt,2003
Simon Haykin, Neural Networks, second edition, Prentice Hall, 1999.
Jacek M. ZuradaK., Introduction to Artificial Neural Networks, PWS West, 1995.

6-3 Recommended books:
Jacek M. ZuradaK., Introduction to Artificial Neural Networks, PWS West, 1995.

6-4 Periodicals, Web sites, etc.:
http://www2.econ.iastate.edu/tesfatsi/NeuralNetworks.CheungCannonNotes.pdf
http://www.how stuff works.com/ .
http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.27.9069
http://www.GenLib.org/ .
http://www.talkthecold.com/bizgoogle/ .
http://www.SCI-hub.org/ .
http://www.scrius.com/ .
http://www.Merlot.org/ .
http://www.Vlab.co.in/ .
http://www.W3schools.com/

7- Facilities required for teaching and learning:

- Computer Lab.
- Computer, Data show and Computer package (MATLAB TOOLBOX).

Course coordinator: Dr. AbdElmoneim Fouda
Head of the Department: Ass. Prof. Dr. Wafaa Boghdady
Date: December 2018

Modern Academy for Engineering

and Technology in Maadi

Course Specification

ELCN 425: Digital Signal Processing

A- Affiliation

Relevant program: Electronic Engineering and Communication Technology. BSc Program
Department offering the program: Electronic Engineering and Communication Technology. Department
Department offering the course: Electronic Engineering and Communication Technology. Department
Date of specifications approval: December 2018

B - Basic information

Title: Digital Signal Processing **Code:** ELCN 425 **Year/level:** 4th, Second semister

Credit Hours: 3 **Pre-requisite:** MATH 203, CMP 211

Contact Hours: **Lecturs:** 2 **Tutorial:**2 **Laboratory: 1** **Total:** 5

C - Professional information

1 – Course Learning Objectives:

By the end of this course the students should demonstrate the knowledge and understanding of the basic concepts & theory of Signals, Systems, signal Processing and discrete transformations and digital filters. They should be able to design, calculate and analyze the performance of digital systems.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1- the principles and concepts of digital signal processing (A8, A24).
a2- the concept of Analog-to-Digital and Digital-to-Analog Conversion (A2).
a3- the concept of Discrete Transformations (FS, FT, DFT, FFT and z-Transform) (A5).
a4- the concept of Digital Filters design (FIR & IIR), (A10).

b - Intellectual skills:

On successful completion of the course, the student should be able to.
b1- select appropriate transformation (FS, FT, DFT or FFT), (B1).
b2- solve engineering problems using the concepts of Z-Transform in DS Processing (B7, B14).
b3- logically analyze the digital systems (B11 & B15).
b4- join the different topics in this subject to design a good new digital system (B3, B14).

c - Professional and practical skills:

On successful completion of the course, the student should be able to:
c1- discriminate between different signal types (C2).
c2- use the gained Lab information in this subject to design numerous of digital signal processing systems, e.g., A/D, D/A converters and DSP processor (C2, C5, C15).
c3- design different digital filters (FIR&IIR), (C2, C5, C14).
c4- develop some DSP systems to attain high qualified system (C6).
c5- prepare and present works both in written & oral form (C12).

d - General and transferable skills:

On successful completion of the course, the student should be able to:
d1- search for information from references and internet (D7).
d2- communicate effectively and present data and results orally and in written form(D3).
d3- use ICT facilities in presentations (D4).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A2, A5, A8, A10 & A24
B	Intellectual skills	B1, B3, B7, B11, B14 & B15
C	Professional and practical skills	C2, C5, C6, C12, C14 & C15
D	General and transferable skills	D3, D4 & D7

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
• Signal, system and signal processing	2	2	1
• Classification of signals	1	-	-
• The concept of frequency in continuous-time and discrete-time signals.	2	2	2
• Analog-to-digital and digital-to-analog conversion	1	2	-
• Discrete Fourier Transform (DFT) and its inverse	2	2	2
• Computational complexity of the DFT	4	2	2
• Correlation, cross-correlation, and convolution	4	4	2
• Z- transform and its inverse	4	4	1
• Properties of the Z-transform	2	-	-
• Application of Z-transform in DSP	2	4	2
• Design of the digital filters	-	4	1
• Types of the digital filters and choosing between them	2	-	-
• FIR filter design	2	2	1
• IIF filter design	2	2	1
Total	**30**	**30**	**15**

4 - Teaching and Learning and Assessement methods:

Course ILO's		Teaching Methods										Learning Methods				Assessement Method							
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments					Brain storming	Self Learning	Researches and Reports		Midterm	Quizes	Assignments	Written Exam	Practical Exam			
Knowledge & Understandin	a1	1			1		1						1	1		1	1	1	1	1			
	a2	1		1	1		1							1		1	1	1	1	1			
	a3	1		1	1	1	1							1		1	1	1	1	1			
	a4	1	1	1	1	1	1						1	1			1	1	1	1			

Intellectual Skills	b1	1		1	1	1								1		1	1	1	1				
	b2	1		1	1	1	1					1	1	1			1	1	1				
	b3	1		1	1	1						1	1				1	1	1	1			
	b4	1					1						1	1			1	1		1			
Applied Professional Skills	c1	1			1	1	1						1	1		1	1	1		1			
	c2	1		1	1		1					1		1		1	1	1	1				
	c3	1	1	1	1	1	1						1	1			1	1	1	1			
	c4	1		1			1						1	1			1	1					
	c5	1	1	1			1						1	1			1	1					
General Tran_Skills	d1												1	1				1					
	d2	1											1	1				1		1			
	d3		1	1										1				1					

5- Assessment Timing and Grading:

Asessement Method	Timing	Grade (Degrees)
Semister Work: assignments, Quizes & Reports	Bi-Weekly	20
Mid-Term Exam	6-th Week	20
Practical Exam	Fifteenth week	20
Written Exam	Sixteenth week	40
Total		100

6- List of References

6-1 Course Notes:

- Digital Signal Processing "*Theoretical and* "*Practical parts*"

6-2 Essential Books (Text Books)

- Emmanuel C. Ifeachor and Barriew W. Jervis," Digital signal processing" A practical Approach ", 2nd Ed, prentice-Hall 2002.
- Joun G. proakis and Dimitris G. Manolkis, "Digital signal processing: principles, Algorithms, and Applications", 3rdEd, Macmillman Publishing Compay 1992.

6-3 Recommended Books

- Ashok Ambardar, "Analog and Digital signal processing ",2nd Edition, Brooks/Cole publishing Company,1999
- Sanjit K. Mitra, "Digital Signal Processing: A computer Based Approach", 3rd Ed., McGraw-Hill. International Edition, 2006.

6-4 Periodicals, Web Sites, etc.

- http://www.amazon.com/Digital-Signal-Processing-Practical-Approach/dp/0201596199.
- http://en.wikipedia.org/wiki/Digital_signal_processing.
- http://www.dspguru.com/dsp/links

7- Facilities Required for Teaching and learning

- Lectures room equipped with OHP and data show facility.
- DSP LAB.

Course coordinator: Dr. Samir Kamal
Head of the Department: Prof. Dr. Shouman S.E.I.
Date: December 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specification
CMPN431:Advanced Computer Systems

A- Affiliation

Relevant program: Computer Engineering and Information Technology BSc Program
Department offering the program: Computer Engineering and Information Technology Department
Department offering the course: Computer Engineering and Information Technology Department
Date of specifications approval: December 2018

B - Basic information

Title: Advanced Computer Systems **Code**: CMPN431 **Level**: Senior-2, 9th OR 10th Semester

Credit Hours: 3 **Pre-requisite**: CMPN310

Contact Hours: **Lectures**: 2 **Tutorial/Exercise**: 2 **Practical**: - **Total**:4

C - Professional information

1 – Course Learning Objectives:

By the end of this course the students will know the latest developments in advanced computer systems and their applications within the telecommunications and networking, computational intelligence, data visualization, interactive and collaborative computing, industrial systems, IT security and safety. This by a set of rigorously reviewed world-class manuscripts presenting the state of international practice in Innovations and Advanced Techniques in Computer and Information Sciences and Engineering.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:
a1- Methods of Artificial Intelligence. (A1,A5,A13)
a2- Intelligent Agents and Distributed Activities. (A5,A3,A13,A15)
a3- Distributed Production Networks and Modelling Complex Systems. (A3,A15,A17)
a4- Computer Graphics and Pattern Recognition. (A5,A16,A18)
a5- Computer Security and Safety. (A5,A14,A16,A18)
a6- Logic Synthesis and Simulation. (A1,A3).

b - Intellectual skills:

On successful completion of the course, the student should be able to:
b1- Describe Fuzzy expert systems, covariance matrix, genetic algorithms, neural networks, solutions of integer optimization and visualization of multivariate data. (B1,B2,B4)
b2- Use the negotiations for distributing algorithm, distributed computing, intelligent tutoring system, shared virtual environment, work flow model at distributed intelligent production and knowledge sharing system.(B1,B2,B3,B4)
b3- Classify production at technological process with probability, temporal data presentation, e-business and other problems. (B1,B4,B16)
b4- Describe new approaches to the techniques of image synthesis and face recognition. (B1,B5,B14)

b5- Investigate cryptanalysis of DES cryptographic algorithm, logic of authentication, authentication in distributed supervisory and control systems, authentication protocols with Petri nets, for sharing a key, distributed password, generating bent functions and collaborative risk management. (B1,B2,B3)
b6- Utilize the multi-value logic (MVL) design, the model-checking tool support available for MVL, digital circuit design and the code parallelism paradigm. (B1,B2,B17).

c - Professional and practical skills:

On successful completion of the course, the student should be able to:
c1- Use the fuzzy expert systems, neural network in multidimensional classification problems.(C1,C3)
c2- Use the agent based distribution system. (C5,C6,C14)
c3- Utilize the models and methods of optimal planning, approximation-decomposition method for modelling thermal systems. (C6,C7)
c4- Use the real-time shadow casting in virtual studio, a few approaches to face detection in face recognition systems. (C1,C2,C3).
c5- Apply the software support for collaborative risk management. (C14,C15).
c6- Check method and Validation for VHDLCase Statement Optimization. (C10,C15).

d - General and transferable skills:

On successful completion of the course, the student should be able to:
d1- Work in a team and involve in group discussion and seminars (D1, D3).
d2- Communicate effectively and present data and results orally and in written form (D3).
d3- Use ICT facilities in presentations (D4).
d4- Search for information's in references and in internet (D7).
d5- Practice self-learning (D7, D9).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1,A3,A5,A13,A14,A15,A16,A17,A18
B	Intellectual skills	B1,B2,B3,B4,B5,B14,B16,B17
C	Professional and practical skills	C1, C2, C3, C5, C6,C7, C10,C14, C15
D	General and transferable skills	D1, D3, D4, D7, D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
➢Method of Artificial intelligence.	5	5	
➢Intelligent Agents and Distribute activities.	5	5	
➢Distributed production Networks and modeling complex systems.	5	5	
➢Computer graphics, pattern recognition, computer vision.	5	5	
➢Computer security and safely.	5	5	
➢Logic Synthesis and simulation.	3	3	
Total hours	28	28	

4 - Teaching and Learning and Assessment methods:

Course	Teaching Methods	Learning Methods	Assessment Method

		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments					Researches and Reports	Modeling and Simulation			Written Exam	Practical Exam	Quizzes	Term papers	Assignments			
Knowledge & Understanding	a1	1	1	1	1							1				1		1	1				
	a2	1			1											1		1	1	1			
	a3	1			1											1		1	1	1			
	a4	1	1	1	1	1						1				1		1	1	1			
	a5	1														1		1	1	1			
	a6	1	1	1	1							1				1		1	1	1			
Intellectual Skills	b1	1			1											1		1		1			
	b2	1			1	1										1		1	1	1			
	b3	1	1	1	1							1				1			1				
	b4	1	1		1							1				1		1	1	1			
	b5	1			1											1		1		1			
	b6	1			1	1										1		1	1	1			
Applied Professional Skills	c1	1	1	1	1							1				1		1	1				
	c2	1			1											1		1	1	1			
	c3	1			1											1		1	1	1			
	c4	1	1	1	1	1						1				1		1	1	1			
	c5	1														1		1	1	1			
	c6	1	1	1	1							1				1		1	1	1			
General Tran. Skills	d1			1		1						1							1				
	d2		1	1								1	1						1				
	d3	1	1									1							1	1			
	d4	1	1	1								1											
	d5											1	1						1				

5- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7-th Week	20
Semester Work	Quizzes	4 Quizzes (every 3 weeks)	16
	Reports	Two reports per semester	14
	Assignments	Bi-Weekly	10
Written Exam		Sixteenth week	40
Total			100

6- List of references:

6-1 Course notes:

6-2 Required books

- Ian Sinclair,(2001),building &upgrade your own PC, Newnes

6.3 Recommended Books

6-4 Periodicals, Web sites, etc

http://www.crhc.illinois.edu/ACS/

http://cs.baylor.edu/~maurer/aida/courses/archintro.pdf

http://www.talkthecold.com/bizgoogle/ .
http://www.SCI-hub.org/ .
http://www.scrius.com/

7- Facilities required for teaching and learning:

- Computer, Data show and Computer programs.
- Microprocessor & Network Labs.

Course Coordinator:	Dr. Seham Ebrahim
Head of the Department:	Ass. Prof.Dr. Wafaa Boghdady
Date:	December 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specification
CMPN432: Advanced Database System

A- Affiliation

Relevant program:	Computer Engineering and Information Technology BSc Program
Department offering the program:	Computer Engineering and Information Technology Department
Department offering the course:	Computer Engineering and Information Technology Department
Date of specifications approval:	December 2018

B - Basic information

Title: Advanced Database Systems **Code**: CMPN432 **Level**: Senior 1,Semester 8

Credit Hours: 3 **Lectures**: 2 **Tutorial/Exercise**: 2 **Practical**: - **Total**:4

Pre-requisite: CMP N323

C - Professional information

1 – Course Learning Objectives:

By the end of this course, students should be able to develop accurate, non-redundant data models, realize data models as relational database schemas, and formulate queries via the full range of SQL constructs. also be able to develop database system with the advanced topics in modern database systems, including object-oriented databases, XML databases, distributed databases, and on-line analytical processing. also various data description and query languages, database design, and query processing and optimization, and also look at distributed object model, and data mining and data warehouses.

2 **- Intended Learning Outcomes (ILOS)**

a - Knowledge and understanding:

On successful completion of the course, students should demonstrate knowledge and understanding of:

a1- relational databases: ER model/diagrams to relations/SQL DDL, keys and constraints, Relational normalization: redundancy, anomaly, functional dependence (A1, A2,A3)

a2- Visual query languages, calculi vs algebra, recursion in SQL. (A4,A8)

a3- Object databases: from relational to object-oriented (A15,A18)

a4- XML databases: description, XML query languages , Query processing , Query optimization: (A15,A18)

a5-kinds of data distribution, views of developers; data fragmentation, replication, performance analysis (A18,A19)

a6- data mining; multidimensional model, star schema; aggregation, drilling, rolling, slicing, dicing (A12,A18)

b - Intellectual skills:

On successful completion of the course, the student should be able to.

b1- apply concepts of object data model, the ODMG standard (B2, B18)

b2- apply to object-oriented extensions of SQL, and the distributed object model CORBA (B2, B18)

b3- aware of semi structured data, XML basics and DTD, and XML schema (B4, B15)

b4- considering distributed databases, and OLAP together with data mining and data warehouses (B13, B18,B19)

c - Professional and practical skills:

On successful completion of the course, the student should be able to:

c1- design and implement a database system using object-oriented features and XML (C3,C17)

c2- distinguish between modern data base system (C4,C11,C14)

c3- compressing databases and perform database sizing activities (C20)

d - General and transferable skills:

On successful completion of the course, the student should be able to:

d1- Exchanging ideas and views among team members (D1, D3)

d2- Presenting query results to team members (D4)
d3- Searching for knowledge and using ICT in search and presentation (D7, D9)

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1,A2.A3,A4,A8,A12,A15,A18,A19
B	Intellectual skills	B2,B4,B13,B15,B18,B19
C	Professional and practical skills	C3,C4,C11,C14,C17,C20
D	General and transferable skills	D1, D3, D4, D7, D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
➢ Review of relational databases	2	2	1
➢ Relational calculus: ➢ Visual query languages, calculi vs algebra, recursion in SQL	6	5	2
➢ Object databases • Object-relational databases, objects in SQL • ODMG standard: architecture, ODL, OQL, language bindings • CORBA: IDL, ORB, dynamic invocation, DB services	12	8	2
➢ XML databases: • XML query languages. XSLT: stylesheet, templates, evaluation. • XQuery: FLWR expression, evaluation, built-in functions, user-defined functions, aggregation, quantification	14	6	2
➢ Query processing ➢ Query optimization.	4	5	2
➢ Distributed databases ➢ OLAP, data mining, and data warehouses:	4	2	1
Total hours	42	28	10

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments					Researches and Reports	Modeling and Simulation			Written Exam	Practical Exam	Quizzes	Term papers	Assignments			
Knowledge & Understanding	a1	1			1											1		1		1			
	a2	1			1	1						1				1		1					
	a3	1		1	1	1	1					1				1		1		1			
	a4	1		1	1	1	11					1				1		1		1			

	a5	1	1	1	1	1	1					1				1		1		1			
	a6	1			1	1	1					1						1		1			
Intellectual Skills	b1		1	1	1		1					1				1		1	1	1			
	b2	1	1	1			1					1				1		1	1	1			
	b3	1		1	1	1	1					1				1		1	1	1			
	b4			1	1	1	1					1				1		1	1	1			
Applied Professional Skills	c1	1		1	1	1	1					1				1		1	1	1			
	c2	1	1	1	1	1	1					1	1			1		1	1	1			
	c3	1		1	1	1	1					1				1		1	1	1			
	c4						1																
	c5						1																
General Trans. Skills	d1		1	1								1						1	1				
	d2		1	1								1						1	1				
	d3																	1	1	1			

5- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7-th Week	20
Semester Work	Quizzes	4 Quizzes (every 3 weeks)	8
	Reports	Two reports per semester	4
	Assignments	Bi-Weekly	8
Practical Exam		Fifteenth week	20
Written Exam		Sixteenth week	40
Total			100

6- List of references

6-1 Course notes: available

non

6-2 Required books

P. K. Yadav ,(2013), Introduction Database Management System, KATSON.

Michalle (2011),Malcher,Oracle Database Administration For Microsoft Sql, Mc-Graw Hill

6-3 Recommended books:

6-4 Periodicals, Web sites, etc.

SQL Getting Started (html) | (pdf) | (pdf at Trans Labs)
SQL References, V7.1 (html) | (pdf) | (pdf at Trans Labs)
SQL References, V7.2 (pdf)
Application Development Guide, V7.1 (html) | (direct link to html found by Alex, faster too!) | (pdf)
Application Development Guide, V7.2 (pdf) | (direct link to pdf found by Alex)
Java 1.4.1 API Specification
JDBC 3.0 API Specificity

7- Facilities required for teaching and learning:

Data show, database software

Course coordinator:	Dr. Seham Ebrahim
Head of the Department:	A. Prof. Dr. Wafaa Boghdady
Date:	December 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specification
CMPN437: Computer interfacing

A- Affiliation

Relevant program:	Computer Engineering and Information Technology BSc Program
Department offering the program:	Computer Engineering and Information Technology Department
Department offering the course:	Computer Engineering and Information Technology Department
Date of specifications approval:	December 2018

B - Basic information

Title: Computer Interfacing	**Code**: CMPN437	**level:** Senior 2, first Semester	
Credit Hours: 3	**Lectures**: 2	**Tutorial** :2	**Practical**:- **Total:**4
	Pre-requisite: CMPN321		

C - Professional information

1 – Course Learning Objectives:

By the end of this course the students should demonstrate the knowledge and understanding of the basic principles of embedded systems, input/output, and memory devices. The interface between the microprocessor/microcontroller to the different types of memories and I/O devices including various hardware and software considerations related to such systems. They should be able to understand, operate, and maintain the different methods of communications (both serial and parallel) between humans or machines and the microprocessor/microcontroller.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:

a1- The architecture and operation of Embedded Systems, semiconductor memory devices, I/O devices and interface requirements (A1,A2,A8)

a2- The principals of instruction set design, and interrupt structures of microcontroller/microprocessors. (A4,A5,A6)

a3-The organization and interfacing of input/output(A13)

a4-The organization and interfacing of different memories types(A13)

a5- The working knowledge of serial and parallel communication interface between humans or machines and the microcontroller/microprocessors (A10,A12,A16)

b - Intellectual skills:

On successful completion of the course, the student should be able to:

b1- Be aware of the importance of embedded systems and computer interfaces.(B1,B2,B4)

b2- Put specification and select the appropriate design techniques for interfacing (B5,B7,B13)

c - Professional and practical skills:

On successful completion of the course, the student should be able to:

c1- Design the interface circuits between the microcontroller/microprocessors and I/O devices (C1,C3,C8).

c2- Select appropriate and compatible communication interface between humans or machines and the microcontroller/microprocessors (C3,C9).

c3-Analyse, connect, operate, and maintain the different methods of computer interface (C14,C15,C16)

d - General and transferable skills:

On successful completion of the course, the student should be able to:

d1- Work in a team and involve in group discussion and seminars(D1, D2,D3).
d2- Collaborate with others in a small group to solve a common problem (D1,D3,D4).
d3- Search for extensive knowledge in computer peripherals science (D4,D5).
d4- Search for information's in references, journals and in internet(D7).
d5- Practice self-learning (D7, D9).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A2, A3, A4, A5,A6, A8,A10, A12, A13, A16
B	Intellectual skills	B1, B2, B4,B5, B7,B13
C	Professional and practical skills	C1, C3,C8,C9,C14,C15,C16
D	General and transferable skills	D1,D2,D3,D4,D5, D7, D9

3 Contents

Topic	Lecture hours	Tutorial hours
➢ Introduction to Embedded Systems . Speed vs. Power . The PIC microcontroller . AVR microcontroller . A Tiny 15 Processor . Bus Interfacing . Memory interfacing	4	4
➢ The 68000-Series computers . Architecture . Simple 68000 based computer	4	4
➢ Peripherals and Interfacing . SPI and I2C . Serial Ports . USB . Networks . Analog Sensors . ADC and DAC	4	4
➢ Serial and parallel interfaces -Analog interfaces.-Analog to digital conversion.	4	4
➢ Digital to analog converters.-USB.- Wireless. - Special interfaces.	4	4
➢ Output display devices: CRT, LCD, Gas-plasma displays, controllers, software support.	4	4
➢ Microcontroller PIC16F84	2	2
➢ Mass storage devices: Semiconductor, flash, magnetic floppy, hard disk, magnetic tapes, standard cartridge and optical.	2	2
Total hours	28	28

4 - Teaching and Learning, Assessment Methods and Grading:

Course ILO's	Teaching Methods	Learning Methods	Assessment Method

		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments	projects				Researches and Reports	Modeling and Simulation	Site visits	discovering	Written Exam	Practical Exam	Quizzes	Term papers	Assignments			
Knowledge & Understanding	a1	1	1		1							1		1		1		1		1			
	a2	1												1		1		1	1	1			
	a3	1														1		1		1			
	a4	1														1		1					
	a5	1			1									1		1		1		1			
Intellectual Skills	b1	1			1									1		1		1		1			
	b2	1	1											1		1		1		1			
Applied Profession	c1	1			1	1										1		1					
	c2	1	1		1									1		1		1					
General Tran skills	d1	1		1		1						1											
	d2	1	1	1								1	1										
	d3			1										1									
	d4			1										1									
	d5			1										1									

5- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7-th Week	20
Semester Work	Quizzes	4 Quizzes (every 3 weeks)	16
	Reports	Two reports per semester	14
	Assignments	Bi-Weekly	10
Written Exam		Sixteenth week	40
Total			100

6- List of references:

6-1 Course notes

None

6-2 Required books

v. Jaganathan,(1999),basic electrical electronics computers engineering, publishing house

6-3 Recommended books: None

Qiyang Chen, Human Computer Interaction, Idea Group Publishing, 2001.

Barry B. Berry. The intel micro processor architecture, programming and interfacing, Prentice Hall, USA, 2003.

6-4 Periodicals, Web sites, etc.

http://ultra.bu.edu/facilities/programmingguides/newportmodel6000_prog.pdf

http://www2.gsu.edu/~wwwitr/docs/idguide/

http://www.iitg.ernet.in/asahu/cs421/Lects/Lec01.IntroMotiv2PeriPheral.pdf

http://www.GenLib.org/ .

http://www.talkthecold.com/bizgoogle/ .

http://www.SCI-hub.org/ .

http://www.scrius.com/ .

http://www.Merlot.org/ .

http://www.Vlab.co.in/ .

http://www.W3schools.com/ .

7- Facilities required for teaching and learning:

- Data show.
- White board.

Course Coordinator:	Dr. AbdElmoneim Fouda
Head of the Department:	Prof. Dr. Wafaee Boghdady
Date:	December 2018

Modern Academy

for Engineering and Technology in Maadi

Course Specification
CMPN435: Computer System Technology

A- Affiliation

Relevant program: Computer Engineering and Information Technology BSc Program
Department offering the program: Computer Engineering and Information Technology Department
Department offering the course: Computer Engineering and Information Technology Department
Date of specifications approval: December 2018

B - Basic information

Title: Computer System Technology **Code:** CMPN435 **Level:** 4th(Senior-2), 2nd Semester
Credit Hours: 3 **Pre-requisite:** CMPN321
Contact Hours: **Lectures:** 2 **Tutorial/Exercise:** 2 **Practical:** - **Total:** 4

C - Professional information

1 – Course Learning Objectives:

By the end of this course, the students will be able to identify, classify, install, configure and maintain, detect problems with, troubleshoot, repair or replace Personal Computer hardware components. In addition, they will be able to be familiar with networking fundamentals, devices and protocols, recognize improper configurations.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:
a1- Installation, configuration and troubleshooting the peripherals and input devices. (A4, A15)
a2- Recognition of different display devices and their characteristics, install, configure and maintain display devices. (A4)
a3- The purpose, characteristics, and features of CPUs; install, detect problems with CPU. (A4)
a4- Comparing and contrasting memory types, install, troubleshoot memory.(A13, A16)
a5- Identification types and features, install, configure and maintain motherboard component.(A4)
a6- Installation, configuration and troubleshooting printers.(A15)
a7- Comparing and contrasting the different Windows Operating Systems and their features.(A13, A16)
a8- Networking fundamentals, devices and protocols, recognize improper configurations.(A19)

b - Intellectual skills:

On successful completion of the course, the student should be able to:
b1- Describe the features, functions and uses of the following input devices: keyboard, mouse, microphone, touchpad, digital camera, bar code reader, scanner, webcam. (B5)
b2- Describe the features, functions and display types - projector, CRT and LCD, display connector types and Configure display settings - Refresh rate, Resolution. (B5)
b3- Differentiate between CPU types - AMD, Intel. Multi core - Dual core, Triple core, Quad core, on chip cache - L1, L2 and distinguish 32bit vs. 64 bit CPUs. (B8)
b4- Differentiate among memory types, describe single sided vs. double sided memory and Characterize single channel vs. dual channel memory (B4, B8)
b5- Describe the features, functions and uses of current magnetic storage devices and media including floppy drive, hard drive, zip drive, magnetic tape drive (B4)
b6- Investigate of the features, functions and uses of current optical storage devices and media including CD-ROM, CD-R, CD-RW, DVD-ROM, rewritable DVD (B4, B5)
b7- Recognize form factors of motherboards, distinguish I/O interfaces, differentiate memory slots types , Identify modern processor sockets, differentiate bus architectures, characterize Bus slots , connectors and devices. Identify

IDE, EIDE, SATA, ESATA connectors and devices such as BIOS / CMOS / Firmware - POST, CMOS battery. (B9,B14, B15)
b8- Differentiate between printer types (Laser, Inkjet, Thermal and Impact) and explain how to install printer drivers (compatibility). (B8, B15)
b9- Troubleshooting, Repair and Maintenance Skills by giving a scenario, explain the troubleshooting theory.(B16)
b10- Describe the process and steps to install and configure the Windows OS. In addition, the basics of boot sequences, methods, startup utilities, and errors. (B8, B15)
b11- Summarize networking fundamentals, devices and protocols, recognize improper configurations, categorize network cables and connectors and their implementations, compare and contrast the different network types, and troubleshoot client-side connectivity issues using appropriate tool. (B21)

c - Professional and practical skills:

On successful completion of the course, the student should be able to:
c1- Assemble a computer from all of the individual hardware components, such as the motherboard, processor, memory, hard drive, CD Rom and floppy drives, etc. (C4)
c2- Upgrade computer's hardware components, operating system and software applications. Determine whether it is cost effective to upgrade individual components, upgrade with a barebones system, or simply upgrade to a brand new computer. Receive valuable insight on where to purchase parts and software at substantial savings (C2)
c3- Discuss what components typically cause problems, how to diagnose those problems, and what solutions are effective. And preventative maintenance steps that will help prevent problems from occurring in the first place (C10)
c4- Analyze network multiple PCs in a home or small office to share files and printers, as well as share high-speed internet connection. Discuss Network Interface Cards (NIC), Network protocols such as TCP/IP, routers, firewalls, hubs and CAT 5 cabling. In addition, we will also discuss wireless networks, such as 802.11. Learn the basics about internet security, and how to protect yourself against hackers (C18).

d - General and transferable skills:

On successful completion of the course, the student should be able to:
d1- Work in a team and involve in group discussion and seminars (D1, D3).
d2- Communicate effectively and present data and results orally and in written form (D3).
d3- Use ICT facilities in presentations (D4).
d4- Search for information's in references and in internet (D7).
d5- Practice self-learning (D7).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A4, A13, A15, A16, A19
B	Intellectual skills	B4, B5, B8,B9, B14, B15,B16, B21
C	Professional and practical skills	C2, C4, C10, C18
D	General and transferable skills	D1, D3, D4, D7

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
➢ Technology of computer manufacturing.	1	2	
➢ Materials and devices.-Peripheral devices.	1		
➢ Quality control and reliability measures.	2	2	
➢ PC planning, buying, construction and setup	1	2	
➢ Casings.-The motherboard and its fittings.	2	2	
➢ Adding boards.-Connections.-Preparations.-Upgrading the operating systems.	2		
➢ 64-bit processors.-Using Firewire and USB external drives.	2	2	
➢ Working with DVD rewriting drives	1	2	
➢ Using combined printer-scanners	2	2	

➢ Troubleshooting installation CDs	2	4	
➢ Small-scale networks.-Wireless networks.	2	1	
➢ Technology of computer manufacturing.	2	2	
➢ Materials and devices.-Peripheral devices.	2		
➢ Quality control and reliability measures.	2	2	
➢ PC planning, buying, construction and setup	2	4	
➢ The motherboard and its fittings.	2	1	
Total hours	**28**	**28**	**-**

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments					Researches and Reports	Modeling and Simulation			Written Exam	Practical Exam	Quizzes	Term papers	Assignments			
Knowledge & Understanding	a1	1	1	1	1							1				1		1	1				
	a2	1			1											1		1	1	1			
	a3	1			1											1		1	1	1			
	a4	1	1	1	1	1						1				1		1	1	1			
	a5	1														1		1	1	1			
	a6	1	1	1	1							1				1		1	1	1			
	a7	1	1	1	1							1				1		1	1				
	a8	1			1											1		1	1	1			
Intellectual Skills	b1	1			1											1		1		1			
	b2	1			1	1										1		1	1	1			
	b3	1	1	1	1							1				1			1				
	b4	1	1		1							1				1		1	1	1			
	b5	1			1											1		1		1			
	b6	1			1	1										1		1	1	1			
	b7	1			1											1		1		1			
	b8	1			1	1										1		1	1	1			
	Course	Teaching Methods										Learning Methods				Assessment Method							

		Lecture	Presentations and	Discussions and	Tutorials	Problem solving	Laboratory &					Researches and	Modeling and			Written Exam	Practical Exam	Quizzes	Term papers	Assignments			
	b9	1	1	1	1							1				1			1				
	b10	1	1		1							1				1		1	1	1			
	b11	1			1											1		1		1			
Applied Professional	c1	1	1	1	1							1				1		1	1				
	c2	1			1											1		1	1	1			
	c3	1			1											1		1	1	1			
	c4	1	1	1	1	1						1				1		1	1	1			
General Tran. Skills	d1			1		1						1							1				
	d2		1	1								1	1						1				
	d3	1	1									1							1	1			
	d4	1	1	1								1											
	d5											1	1						1				

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	40
Mid-Term Exam	6-th Week	20
Written Exam	Sixteenth week	40
Total		100

6- List of references:

6-1 Course notes:

6-2 Required books

Ian Sinclair, (2001) Build &Upgrade your own PC, second edition, Biddles Ltd.

6-3 Recommended books:

David Groth, (2001) Complete Study Guide" second edition, Sybex.

6-4 Periodicals, Web sites, etc.

http://www.tcu.gov.on.ca/pepg/audiences/colleges/progstan/techno/compSys3.pdf

7- Facilities required for teaching and learning:

- Computer, Data show and Computer programs.

Course Coordinator: Dr Assem Badr
Head of the Department: Ass. Prof. Dr. Wafaa Boghdady
Date: December 2018

Modern Academy
for Engineering and Technology in Maadi

Course Specification
CMPN436: Fault tolerant Systems

A- Affiliation

Relevant program: Computer Engineering and Information Technology BSc Program
Department offering the program: Computer Engineering and Information Technology Department
Department offering the course: Computer Engineering and Information Technology Department
Date of specifications approval: December 2018

B - Basic information

Title: Fault tolerant Systems **Code**: CMPN436 **level:** Senior 2, fifth Semester
Credit Hours: 3 **Lectures**: 2 **Tutorial**:2 **Practical**: - **Total:**4

Pre-requisite: CMPN010

C - Professional information

1 – Course Learning Objectives:

By the end of this course the students should demonstrate the knowledge and understanding of the reliability of a system and the ability and the speed for recovery from the failure or crash of the system. They should be able to calculate and analyze the Fault of computer systems.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:
a1- Basic concepts and definition of reliability (A1, A2,A6,A20).
a2- Definitions for the basic concepts of fault-tolerant systems (A1, A3, A4,A20).
a3- Recognizing the different types of computers system faults.(A1, A6,A8,A20).
a4- Identification of the different error recovery (A1, A2).
a5- Listing the different types of computer and computer systems (A1,A6).

b - Intellectual skills:

On successful completion of the course, the student should be able to:
b1- Explain and compare the different types of computer faults (B1, B2, B3, B4).
b2- Analyze and identify the different components of a fault-tolerant system (B1,B2,B9).
b3- Discuss and compare the different design strategies (B2, B6).
b4- Explain and compare different error recovery mechanisms (B6).

c - Professional and practical skills:

On successful completion of the course, the student should be able to:
c1. Measure different faults using the appropriate error recovery (C8,C19).
c2. Solve limited operational problems related to the fault-tolerant system (C1, C5, C6,C19).

d - General and transferable skills:

On successful completion of the course, the student should be able to:
d1. Improve presentation skills (D1,D3).
d2 .Develop team work skills (D2, D3).
d3. Search in available data and knowledge resources (D7, D9)

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A2,A3, A4, A6,A8,A20
B	Intellectual skills	B1, B2, B3,B4, B6,B9
C	Professional and practical skills	C1, C5, C6, C8, C19
D	General and transferable skills	D1, D2,D3,D7,D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
➢ Systems and network components	4	4	
➢ System faults - key terms, network and service outages	2	2	
➢ Design strategies for network survivability.	2	2	
➢ Improving network security via fault-tolerance mechanism.	2	2	
➢ Network fault-tolerance and MPLS-based recovery	2	2	
➢ Network fault-tolerance and In-service software upgrades	2	2	
➢ Systems and network components.	2	2	
➢ System faults - key terms, network and service outages	2	2	
➢ Design strategies for network survivability	2	2	
➢ Improving network security via fault tolerance ➢ mechanisms	2	2	
➢ Network fault-tolerance and MPLS-based recovery	2	2	
➢ Network fault-tolerance and In-service software upgrades	4	4	
Total hours	28	28	

4 - Teaching and Learning , Assessment Methods and Grading:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations and M...	Discussions and ...	Tutorials	Problem solving	Laboratory & ...					Researches and Reports	Modeling and Simulation			Written Exam	Practical Exam	Quizzes	Term papers	Assignments			
Knowledge & Understanding	a1	1	1	1	1							1				1		1	1				
	a2	1			1											1		1	1	1			
	a3	1			1	1										1		1	1	1			
	a4	1										1											
	a5	1																1		1			
Intellectual Skills	b1	1			1	1										1		1		1			
	b2	1			1	1										1		1	1	1			
	b3	1																					
	b4	1			1													1					
Applied	c1	1	1		1	1										1		1	1	1			
	c2				1										1								
General	d1	1		1		1						1							1				

	d2	1	1	1							1	1						1				
	d3	1	1								1							1	1			

5- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7-th Week	20
Semester Work	Quizzes	4 Quizzes (every 3 weeks)	16
	Reports	Two reports per semester	14
	Assignments	Bi-Weekly	10
Written Exam		Sixteenth week	40
Total			100

6- List of references:

6-1 Course notes None

6-2 Required books

richared h. belube,(2000), computer simulated exp for electric cicuit, Printice Hall

6-3 Recommended books

Martine L. Shooman, (2001),Reliability of Computer Systems and Networks, John Wiley Interscience

6-4 Periodicals, Web sites, etc.

www.dis.uniroma1.it/irl/docs/ftcorbatutorial

www.ie.u-ryukyu.ac.jp/~wada/design/CS-96-332.pdf

7- Facilities required for teaching and learning:

- Data show

Course Coordinator: Dr. Khaled Morsy
Head of the Department: Prof. Dr. Wafaee Boghdady
Date: December 2018

Modern Academy

for Engineering and Technology in Maadi

Course Specification
CMPN439: Real Time Computing

A- Affiliation

Relevant program: Computer Engineering and Information Technology BSc Program
Department offering the program: Electrical Engineering Department
Department offering the course: Electrical Engineering Department
Date of specifications approval: December 2018

B - Basic information

Title: Real Time Computing **Code**: CMPN439 **Level:** Senior-2, 9th OR 10th Semester
Credit Hours: 3 **Pre-requisite**: CMPN010
Contact Hours: **Lectures**: 2 **Tutorial**: 2 **Practical:** - **Total**:4

C - Professional information

1 – Course Learning Objectives:

By the end of this course the students will be able to provide a comprehensive view of real-time systems with theory, techniques and methods for the practitioner. Address and understand the issues of system software unique to real time and embedded systems.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:
On successful completion of the course, the student should demonstrate knowledge and understanding of:
a1- The fundamental concepts and terminology of real-time systems. (A1)
a2- Analysis real-time systems designs. (A14)
a3- The fundamental problems of real-time systems. (A15)
a4- Interfacing and communicating real time systems. (A18)
a5- Identification and assess the relevant literature and research trends of real-time systems. (A16)

b - Intellectual skills:
On successful completion of the course, the student should be able to:
b1- Define what it means to be a real-time system or application. (B4)
b2- Classify and compare elements of hardware and software as they relate to system performance. (B5)
b3- Discuss timing and related attributes associated with real-time systems. (B13)
b4- Deduce scheduling concepts and algorithms and their relative merits. (B1, B13)
b5- Recognize the systems development process and its relationship to real-time issues. (B9)
b6- Consider the critical requirements imposed by real-time applications. (B7)
b7- Investigate the role of architecture in real-time systems engineering. (B4)
b8- Decide the appropriate analysis and design methods for a real-time system. (B13)

c - Professional and practical skills:
On successful completion of the course, the student should be able to:
c1- Identify possible timing problems including deadlock and priority inversion. (C4)
c2- Apply analysis techniques including rate monotonic analysis. (C7)
c3- Apply techniques for modeling dynamic behavior in real-time systems. (C4, C10)
c4- Consider real-time verification and validation issues and strategies.(C4,C6,C10)
c5- Devise real-time testing strategies and plans to meet performance and quality requirements. (C10)

d - General and transferable skills:
On successful completion of the course, the student should be able to:
d1- Work in a team and involve in group discussion (D1, D3).
d2- Communicate effectively and present data and results orally and in written form (D3).
d3- Use ICT facilities in presentations (D4).
d4- Search for information's in references and in internet (D7).
d5- Practice self-learning (D7, D9).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A14, A15, A16, A18
B	Intellectual skills	B1, B4, B5, B7, B9, B13
C	Professional and practical skills	C4, C6, C7, C10
D	General and transferable skills	D1, D3, D4, D7, D9

3 Contents

Topic	Lecture hours	Tutorial hours
➢ Introduction to real time systems.-Description of real time systems.	1	1
➢ Concepts and issues of real time computing systems	2	2
➢ Measuring real time systems.	4	2
➢ Components of real time systems.	3	2
➢ Functional description of real time systems.	4	4

➢ Software, hardware and performance of RT systems.	4	3
➢ Modular design and programming.	3	4
➢ Interfacing real time systems.	3	6
➢ Real time communication	4	4
Total hours	28	28

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments					Researches and Reports	Modeling and Simulation			Written Exam	Practical Exam	Quizzes	Term papers	Assignments			
Knowledge & Understanding	a1	1	1	1	1							1				1		1	1				
	a2	1			1											1		1	1	1			
	a3	1			1											1		1	1	1			
	a4	1	1	1	1	1						1				1		1	1	1			
	a5	1														1		1	1	1			
Intellectual Skills	b1	1			1											1		1		1			
	b2	1			1	1										1		1	1	1			
	b3	1	1	1	1							1				1			1				
	b4	1	1		1							1				1		1	1	1			
	b5	1			1											1		1		1			
	b6	1			1	1										1		1	1	1			
	b7	1			1											1		1		1			
	b8	1			1	1										1		1	1	1			
Applied Professional	c1	1	1	1	1							1				1		1	1				
	c2	1			1											1		1	1	1			
	c3	1			1											1		1	1	1			
	c4	1	1	1	1	1						1				1		1	1	1			
	c5	1	1	1	1							1				1		1	1				
General Tran. Skills	d1			1		1						1							1				
	d2		1	1								1	1						1				
	d3	1	1									1							1	1			
	d4	1	1	1								1											
	d5											1	1						1				

5- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7-th Week	20
Semester Work	Quizzes	4 Quizzes (every 3 weeks)	8
	Reports	Two reports per semester	4
	Assignments	Bi-Weekly	8

Written Exam	Sixteenth week	40
Total		100

6- List of references:
6-1 Course notes: Non
6-2 Required books
Anthpny T Velte,(2010), cloud computing a practical approach ,MC-Graw hill.
6-3 Recommended books:
6-4 Periodicals, Web sites, etc.
http://www.rcs.et.tum.de

7- Facilities required for teaching and learning:
- Computer, Data show and Computer programs.
- Network Lab.

Course Coordinator: Dr.Seham Ebrahim
Head of the Department: Ass. Prof.Dr. Wafaa Boghdady
Date: December 2018

Appendix 3

شروط النجاح والتخرج وقواعد حساب التقدير

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شروط النجاح والتخرج وقواعد حساب التقدير

الآتى بعد مستخرج من الشق القانونى للائحة الأكاديمية الحديثة للهندسة والتكنولوجيا بالمعادى للدراسة بالساعات المعتمدة (لائحة 2018)

البـاب الثـانـي: نظـــام الـدراســـــة

مـادة [4]
يمنح وزير التعليم العالي بناءً على طلب مجلس إدارة الأكاديمية درجة بكالوريوس الهندسة والتكنولوجيا في أحد التخصصات التالية:
1- الهنـدسـة الكهربيـة:
- هندسة الالكترونيات وتكنولوجيا الاتصالات.
- هندسة الحاسبات وتكنولوجيا المعلومات.
2- الهندسـة الميكانيكيـة:
- هندسة التصنيع وتكنولوجيا الإنتاج.
3- الهـنـدسـة المعماريـة:
- هندسة العمارة وتكنولوجيا البناء

مـادة [5]
مدة الدراسة لنيل درجة البكالوريوس خمس سنوات موزعة على 10 فصول دراسية رئيسية ويمكن للطالب إنهاء متطلبات الحصول على درجة البكالوريوس المذكورة في المادة (29) قبل ذلك بفصل دراسي واحد على الأكثر.

مـادة [6]: مشروع التخرج
يقوم طلبة المستوى الرابع بإعداد مشروع التخرج الذي يحدد موضوعه مجالس الأقسام المختصة، وتخصص له فترة إضافية بعد الامتحان التحريري يحددها مجلس الأكاديمية بناء على اقتراح مجالس الأقسام المختصة، ويكون المشروع مقسماً على فصلين دراسيين متتاليين ليس منهما الفصل الصيفي لجميع البرامج عدا برنامج هندسة العمارة فيتم تسجيل المشروع في الفصل الدراسي الاخير قبل التخرج، ويراعى في اختيار الأقسام لموضوعات المشاريع أن تكون ذات طبيعة تطبيقية أو نظرية أو خليطاً بينهما نابعة من الاحتياجات العملية وطبيعة الدراسة بكل برنامج، ولا يتخرج الطالب إلا بعد أن يستوفي شروط النجاح في المشروع.

مـادة [7]: التدريب العملي والصناعي (التدريب الصيفي)
تشمل الدراسة نظاما للتدريب العملي والصناعي لطلاب الأكاديمية في الإجازة الصيفية وتبدأ عقب انتهاء أداء الامتحانات التحريرية للفصل الدراسي الثاني (الربيع) بما لا يتعارض مع الدراسة في الفصل الصيفي.. ويتم تنفيذ التدريب وتقييم الطلاب كما يلي:
أ) مرحلة التدريب العملي لطلاب المسـتوى صـفر والمسـتوى الأول وأداؤه إلزامي للتسـجيل ببعض المقررات التي تحددها الاقسـام المختصة ويقرها مجلس التعليم بالأكاديمية، ويتم التدريب بعد سداد الطالب مقابل مادي يكافئ ساعتين معتمدتين.
ب) مرحلة التدريب الصناعي التخصصي لكل من طلبة المستوى الثاني والثالث ويتم في الجهات الصناعية ومراكز التدريب المعتمدة تحت إشراف الأكاديمية ويتم التدريب عقب انتهاء الفصل الدراسي الثاني (الربيع) ويقيم كل تدريب بثلاث ساعات معتمدة.

المرحلة الأولى:
التدريب العملي الصيفي لطلاب المستوى صفر والمستوى الأول:
أ) يتم التدريب داخل الأكاديمية في صالات الرسم ومعامل الأكاديمية والورش أو خارج الأكاديمية.
ب) يشتمل هذا التدريب على موضوعات عامة لازمة للبناء المعرفي للهندسة في مجالات تكنولوجيا الحاسبات والأجهزة الكهربية والإلكترونية والرسم الهندسي والمعماري.
ج) يتم تقسيم المتدربين إلى مجموعات طبقا لطبيعة التدريب ويتولى القسم العلمي المختص إدارة التدريب وتحديد المحتوى العلمي والمشرفين والمدربين.
د) يتم التدريب لمدة اسبوعين بما يكافئ 60 ساعة لكل مستوى.
ه) يتم تقييم الطالب من القسم المختص على مجمل أداؤه في فترة التدريب بالإضافة لاختبار شفهي أو عملي طبقا لطبيعة التدريب. وتكون نتيجة التقييم ناجح/راسب (Pass/Fail) ولا تدخل في تقدير التخرج.

المرحلة الثانية:
التدريب الصناعي الصيفي التخصصي للمستوى الثاني والثالث:

أ) يتم هذا التدريب خارج الأكاديمية بمواقع الإنتاج والتنفيذ بالمؤسسات والمصانع والشركات ومراكز التدريب المعتمدة طبقاً للتخصصات المختلفة.
ب) يتم تحديد المحتوى العلمي لبرامج التدريب بالتنسيق بين الأقسام المختصة وجهات التدريب الخارجية وتوثق بتوقيع بروتوكولات تتضمن محتوى التدريب والمسئوليات لكلا الطرفين.
ج) يقوم الطالب باختيار موضوع وجهة التدريب بالتنسيق مع مكتب التدريب بالأكاديمية.
د) يتم التدريب لفترة تكافئ 60 ساعة لكل مستوى على أن يقوم القسم المختص بالإشراف والمتابعة ويرفع المسئول عن الإشراف تقارير دورية إلى القسم العلمي المختص ومكتب التدريب بالأكاديمية عن أداء جهات التدريب وانتظام الطلاب والتعامل مع معوقات التدريب.
ه) بعد الانتهاء من التدريب يقوم كل قسم بتشكيل لجنة ثلاثية من أعضاء هيئة التدريس لمناقشة الطلاب وتقدير التقييم المناسب من إجمالي 100 درجة تشمل تقييم جهة التدريب وتقييم القسم المختص.
و) تضاف عدد ساعات التدريب للساعات المنجزة ويضاف التقييم إلى التقدير التراكمي للطالب عقب انتهاء تقييم التدريب.
ز) يتم عمل استقصاء للطلاب بعد انتهاء التدريب للوقوف على مشاكل التدريب في كل مستوى وتناقش نتيجة الاستقصاء في حضور الشركات وممثلي الأقسام العلمية ومجموعة من الطلاب.

مـادة [8]
يجب على الطلاب حضور ومتابعة الدروس والتمرينات العملية وأعمال الورش والتدريب طبقاً لأحكام اللائحة الداخلية للأكاديمية ويجوز لمجلس إدارة الأكاديمية أن يوقف قيد الطالب لمدة سنة دراسية ولا تزيد عن سنتين إذا تقدم بعذر مقبول يمنعه من الانتظام في الدراسة بعد موافقة رئيس الإدارة المركزية للتعليم الخاص بوزارة التعليم العالي. ويجوز لرئيس الإدارة المركزية مد هذه المدة بحد أقصى ضعف مدة الدراسة بالأكاديمية عند الضرورة القصوى.

البـاب الـثـالـث: قبــول الطـلاب

مـادة [9]
يحدد وزير التعليم العالي بعد اخذ رأى المجلس الأعلى لشئون المعاهد في نهاية كل عام جامعي عدد الطلاب من أبناء جمهورية مصر العربية أو غيرهم الذين يقبلون في الأكاديمية في ضوء احتياجاته في العام الجامعي التالي من الحاصلين على شهادة الثانوية العامة أو شهادة الثانوية الأزهرية أو الديبلومات الفنية نظام الخمس سنوات أو على الشهادات المعادلة ونظام قبولهم.

مـادة [10]
يكون ترشيح الطلاب للأكاديمية عن طريق مكتب تنسيق القبول ما لم يصدر قراراً من وزير التعليم العالي بغير ذلك.

مـادة [11]شروط القبول وقيد الطلاب
أ) يسمح بالقيد بالأكاديمية للطلاب الحاصلين على شهادة الثانوية العامة شعبة رياضيات أو ما يعادلها، ممن يتم توزيعهم على الأكاديمية عن طريق مكتب التنسيق، أو من المحولين من كليات أو معاهد أخرى طبقا للشروط التي يضعها المجلس الأعلى للجامعات. ولا يجوز تجاوز شروط مكتب التنسيق فيما يخص التوزيع أو التحويلات.
ب) أن يثبت الكشف الطبي خلوه من الأمراض المعدية وصلاحيته لمتابعة الدراسة وفقاً للقواعد التي يحددها المجلس الأعلى لشئون المعاهد العليا الخاصة.

مـادة [12]
يعطى كل طالب بطاقة شخصية خاصة تلصق عليها صورته ويوقعها عميد الأكاديمية وتختم بخاتم الأكاديمية ويجب تقديم هذه البطاقة في كل شأن دراسي ولا يسمح لأي طالب بحضور الدروس والمحاضرات والتمرينات العلمية وبتأدية الامتحانات إلا إذا كان يحمل بطاقته.

مـادة [13]
على كل طالب مقيد بالأكاديمية أن يثبت حضوره بالطريق الذي تحدده الأكاديمية.

مـادة [14]
لا يجوز للطالب أن يقيد اسمه في أكثر من معهد في وقت واحد ولا يجوز له أن يجمع بين القيد في معهد غير تابع للوزارة أو أي كلية جامعية ولا يجوز إعادة قيد الطالب بأي معهد للحصول على شهادة سبق له الحصول عليها كما لا يجوز إعادة قيده للحصول على شهادة أخرى من معهد مماثل.

مـادة [15]
يتم قبول تحويل ونقل قيد الطلاب فيما بين المعاهد وفق القواعد الآتية:

أ) لا يجوز النظر في تحويل الطلاب المقيدين بالمستوى صفر بين المعاهد المتناظرة إلا إذا كان الطالب حاصلاً على الحد الأدنى للمجموع الذي وصل اليه القبول في المعهد المطلوب التحويل اليه، ويتم التحويل بموافقة عميدي المعهدين، أما إذا كان الطالب غير حاصل على الحد الأدنى للمجموع الذي وصل اليه القبول في المعهد المطلوب التحويل اليه فيجوز تحويله لأسباب مرضية معتمدة من القومسيون الطبي العام أو لأي ظروف أخرى يقرها مجلس إدارة الاكاديمية.

ب) يجوز النظر في تحويل الطلاب المقيدين بمستوى أعلى من المستوى صفر بين المعاهد المتناظرة إذا وجدت ظروف اجتماعية أو صحية تقتضي التحويل وذلك بموافقة عميدي المعهدين، ويجوز في هذه الحالة قيد الطالب في فرقة مُناظِرة للفرقة التي كان مقيداً بها مع تأدية الامتحانات اللازمة في بعض المقررات أو الإعفاء في مقررات أخرى طبقا لحالته وطبقاً لخطة الدراسة، وتحتسب المدة التي قضاها الطالب الراسب في الفرقة التي ينقل إلى نظيرها ضمن مدة الدراسة المتاحة له للحصول على درجة البكالوريوس.

ج) يجوز نقل قيد الطالب المنقول إلى مستوى أعلى من المستوى صفر بأي من الكليات الجامعية أو من معهد إلى معهد غير مناظر بشرط أن يكون حاصلاً على الحد الأدنى لمجموع الدرجات الذي وصل اليه القبول في المعهد المطلوب النقل اليه سنة حصوله على الشهادة الثانوية أو السنة الجارية أيهما أفضل للطالب وذلك بموافقة عميدي المعهدين .وفي هذه الحالة يكون قيد الطالب في اول مستوى للدراسة بالأكاديمية.

د) يشترط في جميع الحالات السابقة ألا يكون الطالب المطلوب تحويله أو نقل قيده قد استنفذ فرص الرسوب، وألا يكون الطالب قد فصل لسبب تأديبي، كما يشترط تقديم طلب التحويل بالأكاديمية قبل بدء الدراسة، ويجوز لمجلس إدارة الأكاديمية عند الضرورة القصوى قبول التحويل خلال الشهر التالي لبدء الدراسة، وفي جميع الحالات يشترط مراجعة وموافقة رئيس الإدارة المركزية المختص.

مـادة [16]

يجوز أن يقبل بالأكاديمية الطلاب الذين استنفذوا مرات الرسوب في الكليات والمعاهد العالية الغير مناظرة وفقاً للقواعد الآتية:

أ) أن يكون الطالب مقيدا في الكلية أو المعهد العالي في السنة الدراسية السابقة على السنة التي يلتحق فيها بالأكاديمية.

ب) أن يكون قبولهم بموافقة مجلس الاكاديمية.

ج) أن يكون حاصلاً في الشهادة الثانوية العامة شعبة رياضيات أو ما يعادلها على مجموع يؤهله للالتحاق بالأكاديمية في عام حصوله على تلك الشهادة أو في عام إلتحاقه بالأكاديمية أيهما أفضل للطالب.

ويكون التحاق هؤلاء الطلاب بالمستوى صفر مستجدين، وتقدم أوراقهم إلى الاكاديمية لإرسالها للإدارة المركزية المختصة بالوزارة للموافقة.

مـادة [17]

يجوز قيد وإعادة قيد الطالب في الحالات الآتية:

أ) الطالب المستجد الذي لم يستكمل إجراءات قيده لعذر مقبول.

ب) الطالب الذي سحب أوراقه وهو مقيد بالأكاديمية وقدم عذراً.

ج) الطالب الذي لم يتقدم لمكتب التنسيق في سنة حصوله على الثانوية العامة لعذر مقبول.

وفي جميع هذه الحالات تعتبر السنة التي تنقضي دون أن يقيد فيها الطالب نفسه عام رسوب اعتباري. ويكون القيد أو إعادة القيد بقرار من رئيس الإدارة المركزية المختص بعد موافقة مجلس إدارة الأكاديمية على إعادة القيد طبقا لحالة الطالب.

البـاب الـرابـع: الامتحانات

مـادة [18]

إذا انقطع الطالب عن الدراسة لمدة أقصاها ثلاثة فصول دراسية رئيسية بعذر مسبق يقبله مجلس إدارة الاكاديمية فيمكن له ان يواصل دراسته على ان تحسب له المقررات السابق له النجاح فيها ويخضع تخرجه لأية متطلبات جديدة في الفصل الذي اعيد قيده فيه.

مـادة [19]

يصدر سنوياً قرار من وزير التعليم العالي – بناء على عرض رئيس قطاع التعليم – بتعيين رئيس عام الامتحان في الامتحانات النهائية في الأكاديمية.

ويعتبر عميد الأكاديمية رئيساً عاماً لامتحان النقل بها.

ويكون رئيس عام الامتحان مسئولاً مسئولية كاملة عن تنظيم جميع الأعمال المتعلقة بالامتحان.

مـادة [20]

ترسل الاكاديمية إلى الإدارة المختصة بوزارة التعليم العالي قبل بدء موعد الامتحان بشهر على الأقل كشوفا من ثلاث صور بأسماء الطلاب الذين سوف يتقدمون للامتحان سواء في امتحان النقل أو الامتحان النهائي، وتقوم الإدارة المختصة بمراجعة هذه الكشوف للتأكد من صحة قيد الطلاب بالأكاديمية واحقيتهم في تأدية الامتحان ويستبعد الطلاب الذين لا حق لهم في تأدية الامتحان ثم تعتمد هذه الكشوف وتحفظ صورة منها بالإدارة العامة لشئون الطلاب والامتحانات وترسل صورة للأكاديمية وتسلم الصورة الثالثة لرئيس عام الامتحان للعمل بمقتضاها في امتحان نهاية العام الدراسي.

مـادة [21]

تعلن نتيجة امتحان النقل بعد مراجعتها من الإدارة المختصة بوزارة التعليم العالي واعتمادها من مجلس إدارة الاكاديمية كما تعلن نتيجة امتحان البكالوريوس بعد مراجعتها من الإدارة المختصة واعتمادها من وزير التعليم العالي ولا تعلن نتيجة الطلاب ولا يخلى طرفهم إلا بعد سداد جميع الرسوم والمصروفات المستحقة عليهم.

مـادة [22]

أ) تقوم الأكاديمية بتحرير شهادات مؤقته لخريجي السنوات النهائية يوقعها عميد الأكاديمية موضحا بها (الاسم -تاريخ الميلاد - جهة الميلاد – دور التخرج- تقدير مشروع التخرج- المعدل التراكمي - النسبة المئوية - التقدير العام) كما تقوم أيضا بتحرير شهادات تقديرات النجاح في كل مادة.

ب) كما تقوم الأكاديمية بتحرير الشهادات النهائية للخريجين محرراً بها تاريخ منح المؤهل من تاريخ اعتماد وزير التعليم العالي لنتيجة الامتحان وترسل إلى وزارة التعليم العالي لمراجعتها واعتمادها من الأستاذ الدكتور الوزير.

البـاب الخامـس: نظـام الدراسـة والتسجيـل وتـقديـرات النجـاح

مـادة [23]

يختص كل قسم من أقسام الأكاديمية بالتدريس وإجراء البحوث التي تخص مقرراته طبقاً لبرامج الساعات المعتمدة وجداول النظام الكودي للمقررات الدراسية وتفاصيلها. وللأقسام العلمية الحق في اقتراح شروط وضوابط الالتحاق بها طبقا لطبيعة كل قسم والإمكانيات المادية والبشرية المتاحة بالقسم وذلك بعد موافقة مجلس الاكاديمية.

مـادة [24] المقررات العامـة:

يعهد مجلس الأكاديمية إلى قسم أو أكثر بتدريس المقررات العامة ذات الكود (عام) تحت الإشراف المباشر لوكيل الأكاديمية.

مـادة [25]

تتم الدراسة باللغة الانجليزية، وتضع الأكاديمية نظاماً للتأكد من مستوى الطالب في اللغة الانجليزية، ويستثنى من ذلك بعض المقررات الإنسانية (متطلبات المقررات الثقافية العامة) وبعض مقررات الهندسة المعمارية والمدنية، ويكون الامتحان بنفس اللغة التي يدرس بها المقرر. وتحتسب الساعات كما يلي:

أ) ساعات المحاضرات: 1 ساعة محاضرة تساوي 1 ساعة معتمدة.
ب) ساعات التمـــارين: تمرين مدته 1 ساعة يساوي صفر.
ج) تمرين مدته من 2 إلى 3 ساعات يساوي 1 ساعة معتمدة.
د) ساعات المعمل والتطبيقات العملية: ساعتين معمل وتطبيقات تساوي 1 ساعة معتمدة.

مـادة [26]: مواعيد الدراسة والقيد

يقسم العام الدراسي بالأكاديمية إلى ثلاثة فصول دراسية على النحو التالي:

أ) الفصل الدراسي الرئيسي الأول (الخريف): يبدأ في بداية العام الدراسي في شهر سبتمبر ولمدة لا تقل عن 14 أسبوع.
ب) الفصل الدراسي الرئيسي الثاني (الربيع): يبدأ عقب إجازة منتصف العام في شهر فبراير ولمدة لا تقل عن 14 أسبوع.
ج) الفصـل الصيفـي: يبدأ أواخر شهر بعد انتهاء الفصل الدراسي الثاني ولمدة لا تقل عن 7 أسابيع.

مـادة [27]

شروط التسجيل للدراسة بنظام الساعات المعتمدة:

أ) حتى 18 ساعة معتمدة في الفصل الدراسي الرئيسي للطالب الحاصل على معدل تراكمي ≤2.
ب) حتى 14 ساعة معتمدة في الفصل الدراسي الرئيسي للطالب الحاصل على معدل تراكمي < 2.
ج) حتى 21 ساعة معتمدة في الفصل الدراسي الرئيسي للطالب الحاصل على معدل تراكمي ≤ 3.
د) حتى 6 ساعات معتمدة لأي طالب في الفصل الصيفي ويمكن التسجيل حتى 9 ساعات بموافقة المرشد الأكاديمي إذا استدعت متطلبات التخرج ذلك.

ويتم إعداد خريطة للمقررات مع تقسيم المقررات على المستويات الدراسية التصاعدية المحددة بالمادة [28]. ويتم التسجيل طبقا لخريطة المقررات مع الالتزام بتسجيل مقررات المستويات الأدنى واستكمال التسجيل من المستويات الأعلى.
كما يتم تحصيل رسوم الخدمة التعليمية كل فصل دراسي ويكون حسابها طبقاً لعدد الساعات المعتمدة التي يسجل فيها الطالب في كل فصل دراسي، وبحد أدنى ما يقابل رسوم خدمة تعليمية لعدد 12 ساعة معتمدة، إلا إذا كان عدد الساعات المعتمدة المتبقية للطالب للحصول على درجة البكالوريوس أقل من ذلك فتتم محاسبته على الساعات المعتمدة المتبقية فقط للدراسة. وتكون رسوم الخدمة التعليمية للفصل الصيفي طبقاً لعدد الساعات المعتمدة التي يسجل فيها الطالب.

مادة [28]: مستويات الدراسة
يوضح الجدول التالي موقع الطالب ومستويات الدراسة معتمداً على عدد الساعات المعتمدة التي ينتهي الطالب من دراستها.

المستوى الدراسي	تعريف موقع الطالب بنظام الدراسة	نسبة عدد الساعات المعتمدة التي اجتازها الطالب
صفر	Freshman	من0% حتى 20%
الأول	Sophomore	أكثر من20% حتى 40%
الثاني	Junior	أكثر من40% حتى 60%
الثالث	Senior 1	أكثر من60% حتى 80%
الرابع	Senior 2	أكثر من80% حتى 100%

مادة [29]
متطلبات الحصول على درجة البكالوريوس:
أ) الاجتياز بنجاح لمقررات مكافئة لعدد (180) ساعة معتمدة وبمعدل تراكمي لا يقل عن (2).
ب) النجاح في مشروع التخرج.
ج) اجتياز المقررات التي يكون التقييم فيها ناجح / راسب (Pass/Fail) ولا تحتسب ضمن المعدل التراكمي مثل مقررات التدريب الصيفي للمستوي صفر والمستوي الأول.

مادة [30]المرشد الأكاديمي للدارسين

يتم تعيين مرشد أكاديمي لكل (50) طالب على الأكثر من بين أعضاء هيئة التدريس بالأقسام التخصصية ويقوم بمعاونة الطلاب في وضع الخطة الدراسية لهم.

مادة [31]
شروط التعديل والإلغاء والانسحاب وإيقاف القيد:
أ) يحق للطالب تغيير مقررات سجل فيها، بأخرى خلال أسبوعين من بدء الدراسة، ويحق له سحب المقرر خلال أسبوعين من بدء الدراسة مع استرداد الرسوم ولا يسري ذلك على الفصل الصيفي.
ب) يحق للطالب الانسحاب من المقرر خلال ثمانية أسابيع على الأكثر من بداية الدراسة بالفصلين الأول والثاني وثلاثة أسابيع على الأكثر في الفصل الصيفي وفي هذه الحالة لا ترد له الرسوم.
ج) الطالب الذي يرغب في الانسحاب من فصل دراسي، لظروف المرض أو بعذر تقبله الأكاديمية، عليه التقدم بطلب لشئون الطلاب، ويحصل على موافقة مجلس الأكاديمية على الانسحاب، دون استرداد ما سبق سداده من رسوم، ويكون هذا الانسحاب قبل انعقاد الامتحان النهائي لهذا الفصل. ويقوم بإعادة المقررات التي سجل فيها، في فصل دراسي لاحق دراسة وامتحاناً بعد سداد رسوم الخدمة التعليمية المقررة، ولا تحتسب عليه مرة رسوب.

مادة [32]
تقديرات المقررات الدراسية:
أ) تقدر نقاط كل مقرر على النحو الموضح بالجدول رقم (2):

جدول رقم (2)

النسبة المئوية المناظرة	عدد النقاط	التقدير
%97 وأعلى	4.0	A+
%93 حتى أقل من 97%	4.0	A

A-	3.7	حتى أقل من 93%	%89
B+	3.3	حتى أقل من 89%	%84
B	3.0	حتى أقل من 84%	%80
B-	2.7	حتى أقل من 80%	%76
C+	2.3	حتى أقل من 76%	%73
C	2.0	حتى أقل من 73%	%70
C-	1.7	حتى أقل من 70%	%67
D+	1.3	حتى أقل من 67%	%64
D	1.0	حتى أقل من 64%	%60
F	صفر	أقل من 60%	

ب) المقررات التي يسجل فيها الطالب كمستمع، أو التي يُطلب فيها النجاح فقط، أو لم يكملها لسبب قَبِلته الأكاديمية، ولا تدخل في حساب متوسط النقاط، يرصد له أحد التقديرات التالية:

التقدير	المدلول	
AU	Audit	مستمع
P	Pass	ناجح
F	Fail	راسب
W	Withdrawn	منسحب

مـادة [33]

حساب متوسط النقاط: (GPA)

أ) عند إعادة الطالب دراسة مقرر سبق أن حصل فيه على تقدير (F)يحتسب له التقدير الذي حصل عليه في الإعادة بحد أقصى (+B)وعند حساب المعدل التراكمي يحتسب له التقدير الأخير فقط على أن يذكر كلا التقديرين في سجل الطالب الأكاديمي.

ب) تحسب النقاط التي حصل عليها الطالب في كل مقرر على إنها عدد الساعات المعتمدة للمقرر مضروبة في النقاط التي حصل عليها الطالب حسب جدول التقديرات المذكور بالمادة رقم **[32].**

ت) يحسب متوسط نقاط أي فصل دراسي (Semester GPA)، على أنه ناتج قسمة مجموع النقاط التي حصل عليها الطالب في هذا الفصل، مقسوماً على مجموع الساعات المعتمدة لهذه المقررات.

ث) يحسب متوسط النقاط التراكمي (Cumulative GPA) عند نهاية كل فصل دراسي على أنه ناتج قسمة مجموع كل نقاط المقررات التي درسها الطالب على مجموع الساعات المعتمدة لهذه المقررات.

ج) متوسط النقاط التراكمي (Cumulative GPA) عند نهاية الفصل الدراسي الأخير للطالب هو الأساس في تحديد تقدير التخرج والنسبة المئوية.

مـادة [34]

مراتب الشرف ومنح التفوق:

أ) تمنح مرتبة الشرف للطالب الذي لا يقل المعدل التراكمي عن 3.3 مع تحقيق مثل هذا المعدل على الأقل خلال جميع فصول الدراسة ببرامج الساعات المعتمدة أو عند التحاقه بالدراسة من البرامج ذات الفصلين الدراسيين وذلك بعد عمل مقاصه ويشترط لمنح مرتبة الشرف ألا يكون الطالب قد حصل على تقدير (F) في أي مقرر خلال دراسته الجامعية.

ب) عند التحاق أي من الطلاب الثلاثين الأوائل في الثانوية العامة المصرية – تخصص رياضيات ببرامج الساعات المعتمدة يعفي من كافة الرسوم والمصروفات الدراسية خلال الفصل الدراسي الأول لدراسته في الأكاديمية ويظل هذا الإعفاء سارياً طالما حصل الطالب على معدل تراكمي يساوي 3.6 أو أكثر.

ت) تضع الأكاديمية نظاماً لتشجيع المتفوقين عن طريق تخفيض المصروفات بنسب متدرجه مع المعدل التراكمي وتُعلن في بداية كل فصل دراسي قائمة الطلاب المتفوقين ونسب تخفيض المصروفات لكل طالب.

مـادة [35]

الإنذار الأكاديمي - الفصل من الدراسة - آليات رفع المعدل التراكمي:

أ) إذا انخفض المعدل التراكمي للطالب إلى أقل من (2) في أي فصل دراسي يوجه له إنذار أكاديمي يقضي بضرورة رفع الطالب لمعدله التراكمي إلى (2) على الأقل.

ب) يُفصل الطالب المنذر أكاديمياً من الدراسة ببرامج الساعات المعتمدة إذا تكرر انخفاض معدله التراكمي عن (2) ستة فصول دراسية رئيسية متتابعة.

ت) إذا لم يحقق الطالب شروط التخرج خلال الحد الأقصى للدراسة وهو عشر سنوات يتم فصله.
ث) يجوز لمجلس الأكاديمية أن ينظر في إمكانية منح الطالب المعرض للفصل نتيجة عدم تمكنه من رفع معدله التراكمي إلى (2) على الأقل فرصة واحده وأخيره مدتها فصلين دراسيين رئيسيين لرفع معدله التراكمي إلى (2) وتحقيق متطلبات التخرج إذا كان قد أتم بنجاح دراسة 80% من الساعات المعتمدة المطلوبة للتخرج على الأقل.
ج) يجوز للطالب إعادة دراسة المقررات التي سبق نجاحه فيها بغرض تحسين المعدل التراكمي وتكون الإعادة دراسة وامتحانا ويُحتسب له التقدير الأعلى وذلك بحد أقصى 5 مقررات إلا إذا كان التحسين لغرض رفع الإنذار الأكاديمي أو تحقيق متطلبات التخرج وفي جميع الأحوال يُذكر كلا التقديرين في سجله الأكاديمي.

مـادة [36]: تعريف حالة الطالب الدارس بنظام الساعات المعتمدة:
كلما أكمل الطالب 20% من متطلبات التخرج اعتبر منتقلاً من مستوى إلى مستوى أعلى منه (المستويات من صفر إلى أربعة)، ولا يتطلب ذلك تحديد نوعية أو مستوى المقررات التي أكملها الطالب، ويعتبر ذلك نوعاً من التعريف بموقع الطالب بالأكاديمية.

مـادة [37]
أسلـوب تقييم الطالب:

أ) يعقد لكل مقرر امتحان تحريري في منتصف الفصل الدراسي لا تقل درجته عن 10% من مجموع درجات المقرر.
ب) يجوز خفض درجات الامتحان التحريري بحيث لاتقل درجته عن 40% من درجات المقرر، مع وضـــع القواعد والشـــروط المنظمة والتي تؤكد على وجوب حصول الطلاب على نسبة لا تقل عن 40% في الامتحان التحريري من إجمالي درجته، لكي يعد ناجحا حتى لو كان مجموع درجاته في المقرر أعلي من الحد الأدني للنجاح. وفي حالة رسـوب الطالب لهذا السـبب يسـجل (FF) أي راسب لرسوبه في الامتحان التحريري.
ت) يضـع مجلس الأكاديمية القواعد المنظمة لتوزيع درجات أي مقرر طبقا لطبيعته على النحو التالي: الامتحانات الدورية السـريعة (عددها ودرجة كل منها)، الأعمال الإضـــافية التي يقوم بها الطالب، التقارير المقدمة عن أبحاث قام بإعدادها، الاختبارات العملية، الامتحان النهائي للمقرر.
ث) مدة الامتحان التحريري النهائي لاتقل عن ساعتين ويحدد مجلس الأكاديمية مدة الامتحان لكل مقرر حسب طبيعته.
ج) يعد الطالب راسباً إذا كان مجموع درجاته في المقرر أقل من 60% أو لم يحضر الامتحان التحريري في نهاية الفصل الدراسي لحرمانه من الدخول لتجاوز نسـبة الغياب أو بقرار تأديبي. وفي حالة عدم أداء الطالب للامتحان النهائي للفصـل الدراسـي بعذر تقبله الأكاديمية يسمح للطالب إعادة تسجيل المقرر دراسة وامتحانا مع احتساب التقدير الذي يحصل عليه كاملا.
ح) تقيم بعض المقررات مثل التدريب العملي للمستوي صفر والمستوى الأول على أساس ناجح / راسب (Pass/Fail) ولا تدخل في حساب المعدل التراكمي.
خ) يتم توثيق قرارات مجلس الأكاديمية المفسرة لهذه المادة في لائحة تنفيذية ملزمة ومعلنة.

مـادة [38]
نسبـة الحضـور والحرمـان من الامتحـان والأعـذار:
أ) الحد الأدنى لنسبة الحضـور للمقرر لا تقل عن 75% ليسمح للطالب بدخول الامتحان النهائي للمقرر .وفي حالة حرمانه من الامتحان يعتبر راسباً (يعطى درجة صفر في درجة الامتحان النهائي للمقرر).
ب) إذا تقدم الطالب بعذر يقبله مجلس الأكاديمية عن عدم حضـــور الامتحان النهائي لأي مقرر قبل أو بعد يومين من إجراء الامتحان، يحتسب له تقدير" غير مكتمل "في هذا المقرر، بشرط أن يكون ناجحاً في أعمال السنة، وألا يكون قد تم حرمانه من دخول الامتحانات النهائية .وفي هذه الحالة يتاح للطالب الحاصـل على تقدير" غير مكتمل "فرصـة أداء الامتحان النهائي لهذا المقرر في الموعد الذي يحدده مجلس الأكاديمية.
ت) يحق لمجلس الأكاديمية حرمان الطالب من التقدم للامتحان كله أو في بعض المقررات إذا رأى أن انتظامه غير مرضـي طبقاً لأحكام اللائحة الداخلية .وفي هذه الحالة يعتبر الطالب راسبا في المقررات التي حرم من التقدم للامتحان فيها.

مـادة [39]
التحـويل بين نظام الدراسة بالساعـات المعتمـدة وبالفصلين الدراسيين:
أ) يجوز تحويل الطالب المقيد بنظام الساعات المعتمدة إلى نظام الفصلين الدراسيين طالما لم يجتاز 60% من إجمالي الساعات المعتمدة اللازمة للتخرج ويتم إجراء مقاصة للمقررات التي اجتازها الطالب في نظام الساعات المعتمدة وتحدد المقررات المكافئة لها في البرنامج الدراسي المطلوب التحويل اليه.
ب) لا يجوز تحويل طلاب نظام الفصلين الدراسيين المفصولين لاستنفاذ مرات الرسوب في السنة الإعدادي أو السنوات اللاحقة إلى نظام الدراسة بالساعات المعتمدة.
ت) لا يجوز تحويل الطالب من نظام الساعات المعتمدة إلى نظام الفصلين الدراسيين إذا لم يحقق شروط القبول لنظام الفصلين الدراسيين عند التحاقه بالأكاديمية.

ث) يستخدم الجدول التالي لحساب التقديرات المكافئة عند تحويل الطالب بين النظامين أو عند حساب التقدير المكافئ للخريجين المختارين للتعيين كمعيدين.

جدول تكافؤ التقديرات عند التحويل من نظام الفصلين الدراسيين إلى نظام الساعات المعتمدة

نظام الفصلين الدراسيين	نظام الساعات المعتمدة	
النسبة المئوية التي حصل عليها	عدد النقاط	التقدير
% 95 إلى 100%	4.00	A+
90%إلى <95 %	4.00	A
85% إلى <90%	3.70	A-
80% إلى <85%	3.30	B+
75%إلى <80%	3.00	B
71%إلى <75%	2.70	B-
68%إلى <71%	2.30	C+
65%إلى <68%	2.00	C
60%إلى <65%	1.70	C-
55% إلى <60%	1.30	D+
50% إلى <55%	1.00	D
%50 >	0.00	F-

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تم بحمد الله