Computer Engineering And Information Technology BSc Program Specifications (By Law 2012)

September 2015

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 (ARS)، لبرنامج هندسة الإلكترونيات وتكنولوجيا الالاتصالات والمعتمدة من الهيئة القومية للاعتماد وجودة التعليم، الطبعة الأولى يوليو ٢٠١٥، 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. سعيد جاويش
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: Prof. Dr. Said A. Gawish
Assistant Co-ordinator: Dr. Adel Khedr
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.
Program Commencement: 2012
Date of program specifications approval: July 2015

1.2. Staff Members

The Computer Engineering and Information Technology B.Sc. Program is taught by 29 highly qualified staff members, 26 of them are full time employed and 3 are part time staff members in the Electrical Engineering department ,in addition to 21 full time employed staff members teaching the basic science courses. All of the staff members are qualified to teach the courses allocated to them. The staff members are assisted by 65 full time teaching assistants in addition to 19 engineers and 18 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 revolves 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

Program duration: 5 years
The program includes 63 courses of total 180 credit hours. These courses are classified to the following areas:

- Classification according to the relevant sector requirements :
  1) Humanities and social science courses (university requirements)
  2) Basic science (faculty requirements)
  3) Basic specialization courses (department requirements)
  4) Applied specialization courses (specialization requirements)
- Classification according to the relevant sector NARS requirements :
  For the Engineering sector, for example;
  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

Table 1-a Core Human Sciences Courses (12 Compulsory credit Hours).

Course		Hours				Pre-requisite	Subject Area According to NARS					
Code	Title	Cred	Lec	Tut	Lab		Hum. & Soc. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Discretionary
GEN 141	Contemporary Social Issues	2	2	-	-	Non	2					
GEN 142	English Language.	2	2	-	-	Non	2					
GEN 143	History of Engineering and Technology.	2	2	-	-	Non	2					
GEN 241	Presentation Skills.	2	2	-	-	Non	2					
GEN 242	Technical Report Writing.	2	2	-	-	Non	2					
GEN 341	Project Management.	2	2	-	-	Non	2					
Total		12					12					

2.4.1. Humanities and social science courses

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.

Table 1-b Elective Human Sciences Courses (4 Credits Elected).

Course		Hours				Pre-requisite	Subject Area According to NARS						
Code	Title	Cred	Lec	Tut	Lab		Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Discretionary
GEN 351	Engineering Economy.	2	2	-	-	None	4						
GEN 352	Engineering Laws and Regulations.	2	2	-	-	None							
GEN 353	Management International Business and Total Quality Management.	2	2	-	-	None							
GEN 354	Sound Systems and Noise Pollution.	2	2	-	-	None							
GEN 355	Standard Calibers for Communications and Information.	2	2	-	-	None							
GEN 451	Computer Systems Implementation.	2	2	-	-	At least 140 credit hr							
GEN 452	Environmental Effects of Electromagnetic Waves.	2	2	-	-	None							
GEN 453	Industrial Psychology.	2	2	-	-	None							
GEN 454	Basics of Engineering Syndicate Works	2	2	-	-	None							
Total		4*		-	-		4						

*The human courses make a percentage of 8.89% of the total credit sum.

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

Table -2-Mathematics & Basic Science Subjects (36 Compulsory Credit Hours)

Course		Hours				Pre-requisite	Subject Area According to NARS						
Code	Title	Cred	Lec	Tut	Lab		Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Dissertation
CHE 100	Chemistry.	3	2	1	2	None		3					
MNF 100	Introduction to Engineering Materials.	1	1	-	-	None		1					
MNF 101	Engineering Graphics.	3	1	6	-	None		3					
MEC 101	Mechanics -1.	2	1	3	-	None		2					
MEC102	Mechanics-2.	2	1	3	-	MEC 101		2					
MTH 101	Mathematics-1(Algebra and Calculus).	3	2	2	-	None		3					
MTH 102	Mathematics-2(Integration and Analytic Geometry).	3	2	3	-	MTH 101		3					
PHY 101	Physics-1.	3	2	1	2	None		3					
PHY 102	Physics -2.	3	2	1	2	PHY 101		3					
MNF 102	Principles of Production Engineering.	3	1	-	4	MNF 101		3					
MTH 203	Mathematics -3(Differential Equations and Transforms).	3	2	3	-	MTH 102		3					
MTH 204	Mathematics-4(Advanced Calculus).	3	2	3	-	MTH 101		3					
MTH 305	Mathematics -5(Introduction to Prob. and Statistics)	2	1	3	-	MTH 102		2					
MTH 306	Mathematics -6 (Complex Analysis and P.D.E).	2	1	3	-	MTH 102		2					
Total		36						36					

Those courses establish (36) credit hours with percentage of 20 % of the total credit hours.

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.

Table 3 Table of Core Basic Engineering Courses (63 Compulsory Credit Hours).

Course		Hours				Pre-requisite	Subject Area According to NARS						
Code	Title	Cred	Lec	Tut	Lab		Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Discretionary
CMP 110	Program Design and Computer Languages.	4	2	3	2	None			1		3		
ARC 210	Civil Engineering Technology.	3	2	3	-	None			3				
CMP 210	Data Structures and Algorithms.	3	2	2	-	CMP 110			1		2		
ELC 211	Electrical Circuit Analysis-1.	3	2	1	2	MTH 102			3				
ELC 212	Electrical Circuit Analysis-2.	3	2	3	–	ELC 211			3				
ELC 213	Electrical Measurements.	3	2	1	2	ELC 215			3				
CMP 211	Logic Design-1.	4	3	1	2	MTH 101			2			2	
MNF 210	Mechanical Engineering Technology.	3	2	1	2	MEC 102 MNF 100			3				
ELC 214	Modern Theory for Semiconductor Devices.	3	2	1	2	PHY 102			3				
ELC 215	Semiconductors for Microelectronics.	3	2	1	2	ELC 214			3				
CMP 310	Engineering Computer Applications.	3	2	1	2	CMP 110					3		
CMP 311	Numerical Methods with Computer Applications.	3	2	2	-	None			1		2		
ELC 310	Control-1.(Principles of Automatic Control).	4	3	1	2	MTH 203			3		1		
ELC 311	Communications-1.	3	2	1	2	ELC 315					3		
ELC 312	Microelectronic Circuits-1	3	2	1	2	PHY 102			3				

ELC 313	Microelectronic Circuits-2	3	2	1	2	ELC 312			3				
ELC 314	Electronic Measurements.	3	2	1	2	ELC 215			3				
ELC 315	Signal Analysis.	3	2	2	–	MTH 305			3				
CMP 410	Microprocessor Based -Systems.	3	2	1	2	CMP 211			2		1		
ELC 410	Electrical Power Engineering.	3	2	1	2	ELC 211			2			1	
Total		63							45		15	3	

These courses need (63) credit hours establishing a percentage of 35% of the total credits.

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.

Table 4-a Core Applied Engineering Courses (34 Compulsory Credit Hours)

Course		Hours				Pre-requisite	Subject Area According to NARS						
Code	Title	Cred	Lec	Tut	Lab		Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Discretionary
CMP 421	Computer Architecture	3	2	2	-	CMP 211				3			
CMP 422	Computer Graphics and Man Machine Interface.	3	2	1	2	MNF 101 CMP 421				3			
CMP 423	Data Base Management.	4	3	2	-	MTH 102							4
CMP 424	Data Transmission and Computer Networks.	4	3	2	-	CMP 421							4
CMP 425	Information Systems	3	2	2	-	CMP 310							3
CMP 426	Logic Design -2.	3	2	1	2	CMP 211				3			
CMP 521	Distributed Computer Systems.	3	2	2	-	CMP 421							3
CMP 522	Artificial Intelligence.	4	3	2	-	CMP 410				3	1		
CMP 523	Languages and Compilers.	4	3	2	-	CMP 210				3	1		

CMP 524	Computer Modeling and Simulation	3	2	2	-	CMP 110				3			
Total		34								18	2		14

Table 4-b Applied Engineering Elective Courses (12 Credits)

Course		Hours				Pre-requisite	Subject Area According to NARS						
Code	Title	Cred	Lec	Tut	Lab		Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Discretionary
CMP 431	Computer Peripherals.	3	2	2	-	CMP 421				12			
CMP 432	Digital Image Processing.	3	2	1	2	CMP 310							
CMP 433	Embedded Systems	3	2	2	-	CMP 211							
CMP 434	Multimedia	3	2	1	2	CMP 210							
CMP 435	Operating Systems.	3	2	2	-	CMP 421							
CMP 436	Software Engineering.	3	2	2	-	CMP 110							
CMP 531	Advanced Computer Systems.	3	2	2	-	CMP 410							
CMP 532	Advanced Database Systems.	3	2	2	-	CMP 423							
CMP 533	Computer Organization.	3	2	2	-	CMP 421							
CMP 534	Computer Performance.	3	2	2	-	CMP 210							
CMP 535	Computer System Technology.	3	2	2	-	CMP 421							
CMP 536	Fault Tolerant Computing.	3	2	2	-	CMP 110							
CMP 537	Computer Interfacing.	3	2	2	-	CMP 421							
CMP 538	Pattern Recognition and Neural Networks.	3	2	2	-	MTH 203 CMP 410							
CMP 539	Real Time Computing.	3	2	2	-	CMP 110							
Total		12								12			

Table 4c computer major courses (3 credit from communication major)

Course		Hours				Pre-requisite	Subject Area According to NARS						
Code	Title	Cred	Lec	Tut	Lab		Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Discretionary

ELC 422	Digital signal processing	3	2	1	2	MTH 203 CMP 211				3			

2.4.5. 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.
d) The ability to work in a team, search published sources of information, interprets technical data and analyzes and presents findings in various ways.

Table 4-d Table of Projects and Industrial Training (16 Compulsory Credit Hours).

Course		Hours				Pre-requisite	Subject Area According to NARS						
Code	Title	Cred	Lec	Tut	Lab		Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. & ICT	Proj. & Practice	Discretionary
CMP 361	Seminar-1	1	-	1	2	72 Credits						1	
CMP 362	Seminar-2.	1	-	1	2	CMP 361						1	
CMP 461	Project-1.	2	1	1	2	108 Credits						2	
CMP 562	Project-2.	3	1	1	4	CMP 461						6	
CMP 563	Industrial Traning-1.	3	-	-	6	108 Credits						3	
CMP 564	Industrial Training-2.	3	-	-	6	CMP 563						3	
Total		16										16	

The industrial training is carried out in the third and the fourth summers. The results are included into the 9th and 10th semesters.
The total sum of credit hours devoted to applied engineering and design subjects, projects and industrial training is (63) Credit hours establishing a percentage of 36.11% of the total credit.

Table 5: Credit hours distribution

	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			
Humanitarian Courses	16							16	8.89	8-10%
Mathematics and Basic Science Courses		36						36	20	15-20%
Basic Engineering Courses			45		15	3		63	35	30-35%
Applied Engineering Courses Including Projects & Training				33	2	16	14	65	36.11	35-40%
Total Credit Hours	16	36	45	33	17	19	14			
Percentage	8.89	20	25	18.33	9.44	10.55	7.77			
NARS Engineering Requirements	9-12%	20-26%	20-23%	20-22%	9-11%	8-10%	6-8%			

Table 6 shows the credit hours distribution and the requirements of:

- The engineering sector of the supreme council of higher education.
- The Egyptian NARS, August 2009 edition

It is evident that the current program fulfills the NARS and Engineering sector requirements.

2.4.6. Sample study plan

Tables 7 up to 16 show sample study plan, where the courses are distributed over ten major semesters.

Table 7 Freshman, First Semester

Code	Subject	Total Credits	L	Contact Hours		prerequisite
				T	P	
CHE 100	Chemistry.	3	2	1	2	None

GEN 141	Contemporary Social Issues	2	2	-	-	None
MNF 101	Engineering Graphics	3	1	6	-	None
GEN 143	History of Engineering and Technology	2	2	-	-	None
MEC 101	Mechanics -1.	2	1	3	-	None
MTH 101	Mathematics -1 (Algebra and Calculus)	3	2	2	-	None
PHY 101	Physics -1	3	2	1	2	None
Total		**18**				

Table 8 Freshman, Second Semester

Code	Subject	Total Credits	L	Contact Hours		Prerequisite
				T	P	
MNF 100	Introduction to Engineering Materials.	1	1	-	-	None
GEN 142	English Language.	2	2	-	-	None
MEC 102	Mechanics-2	2	1	3	-	MEC 101
MTH 102	Mathematics -2(Integration and Analytic Geometry)	3	2	3	-	MTH 101
PHY 102	Physics-2.	3	2	1	2	PHY 101
MNF 102	Principles of Production Engineering	3	1	-	4	MNF 101
CMP 110	Program Design and Computer Languages.	4	2	3	2	None
Total		**18**				

Table 9 Sophomore, Third Semester

Code	Subject	Total Credits	L	Contact Hours		prerequisite
				T	P	
ARC 210	Civil Engineering Technology.	3	2	3	-	None
ELC 211	Electrical Circuit Analysis-1	3	2	1	2	MTH 102
CMP 211	Logic Design-1.	4	3	1	2	MTH 101
ELC 214	Modern Theory for Semiconductor Devices	3	2	1	2	PHY 102
MTH 203	Mathematics -3 (Differential Equations and Transforms).	3	2	3	-	MTH 102
GEN 241	Presentation Skills.	2	2	-	-	None
Total		**18**				

Table 10 Sophomore, Fourth Semester

Code	Subject	Total Credits	L	Contact Hours		prerequisite
				T	P	
CMP 210	Data Structures and Algorithms.	3	2	2	-	CMP 110
ELC 212	Electrical Circuit Analysis-2	3	2	3	-	ELC 211
ELC 213	Electrical Measurements.	3	2	1	2	ELC 211
MNF 210	Mechanical Engineering Technology.	3	2	1	2	MEC 102 / MNF 100
MTH 204	Mathematics -4(Advanced Calculus)	3	2	3	-	MTH 101
ELC 215	Semiconductors for Microelectronics	3	2	1	2	ELC 214
Total		**18**				

Table 11 Junior, Fifth Semester

Code	Subject	Total Credits	L	Contact Hours		prerequisite
				T	P	
GEN 341	Project Management.	2	2	-	-	None
ELC 310	Control-1 (Principles of Automatic Control).	4	3	1	2	MTH 203
ELC 312	Microelectronic Circuits-1	3	2	1	2	PHY 102
CMP 310	Engineering Computer Applications	3	2	1	2	CMP 110
MTH 305	Mathematics -5 (Introduction to Probability. and Statistics).	2	1	3	-	MTH 102
ELC 315	Signal Analysis	3	2	2	-	MTH 203
CMP 361	Seminar-1	1	-	1	2	72 Credit
Total		**18**				

Table 12 Junior Sixth Semester

Code	Subject	Total Credits	L	Contact Hours		prerequisite
				T	P	
CMP 421	Computer Architecture	3	2	2	-	CMP 211
ELC 311	Communications -1	3	2	1	2	ELC 315
ELC 314	Electronic Measurements	3	2	1	2	ELC 213
CMP 362	Seminar-2.	1	-	1	2	CMP 361
ELC 313	Microelectronic Circuit-2	3	2	1	2	ELC 312
MTH 306	Mathematics -6(Complex Analysis and P.D.E)	2	1	3	-	MTH 102
GEN 353	Management & International Business	2	2	-	-	None
Total		**17**				

Table 13 Summer -1

Code	Subject	Total Credits	L	Contact Hours		prerequisite
				T	P	
CMP 563	Industrial Training-1	3	-	-	6	108 Credits

Table 14 (Senior-1) seventh Semester

Code	Subject	Total Credits	L	Contact Hours		prerequisite
				T	P	
CMP 311	Numerical Methods with Computer Applications.	3	2	2	-	None
CMP 423	Data Base Management.	4	3	2	-	MTH 102
CMP 410	Microprocessor Based Systems.	3	2	1	2	CMP 211
ELC 410	Electrical Power Engineering	3	2	1	2	ELC 211
CMP 435	Operating Systems (Elective #1)	3	2	2	-	CMP 421
GEN 352	Engineering Laws and Regulations	2	2	-	-	None
Total		**18**				

Table 15 (Senior-1) Eighth Semester

Code	Subject	Total Credits	L	Contact Hours		prerequisite
				T	P	
CMP 422	Computer Graphics and Man Machine Interface	3	2	1	2	MNF 101 & CMP 421
CMP 426	Logic Design -2.	3	2	1	2	CMP 211
CMP 424	Data Transmission and Computer Networks.	4	3	2	-	CMP 421
CMP 425	Information Systems.	3	2	2	-	CMP 310
CMP 461	Project -1	2	1	1	2	108 Credits
CMP 436	Software Engineering (Elective # 2)	3	2	2		CMP 110
Total		**18**				

Table 15 A.10 summer -2

Code	Subject	Total Credits	L	Contact Hours		Prerequisite
				T	P	
CMP 564	Industrial Training-2	3	-	-	6	CMP 563

Table 16 Ninth Semester (Senior-2)

Code	Subject	Total Credits	L	Contact Hours		Prerequisite
				T	P	
CMP 523	Languages and Compliers	4	3	2	-	CMP 210
CMP 524	Computer Modeling and Simulation	3	2	2	-	CMP 110
CMP 562	Project -2 (First Stage)	3	1	1	4	CMP 461
CMP 533	(Computer Organization Elective #3)	3	2	2		CMP 421
GEN 242	Technical Report Writing	2	2	-	-	None
Total		**15**				

Table 17 (Senior-2) Tenth Semester

Code	Subject	Total Credits	L	Contact Hours		prerequisite
				T	P	
CMP 521	Distributed Computer Systems	3	2	2	-	CMP 421
CMP 522	Artificial Intelligence.	4	3	2	-	CMP 410
CMP 562	Project-2(Second Stage)	3	1	1	4	CMP 461
CMP432	Digital Image processing (Elective#4)	3	2	1	2	CMP 310
ELC422	Digital signal processing (Elective#5)	3	2	1	2	MTH 203 & CMP 211
Total		**16**				

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 **16 February 2014**. The contribution of each course to the program ILO's were considered during this revision.

year	Semester	Subject of Computer Engineering and Information Technology BSc Program		
		Code	Title	Page number
First Year	first semester	CHE 100	Chemistry.	37
		GEN 141	Contemporary Social Issues	41
		MNF 101	Engineering Graphics	44
		GEN 143	History of Engineering and Technology	48
		MEC 101	Mechanics -1.	51
		MTH 101	Mathematics -1 (Algebra and Calculus)	54
		PHY 101	Physics -1	58
	Second Semester	MNF 100	Introduction to Engineering Materials.	63
		GEN 142	English Language.	67
		MEC 102	Mechanics-2	71
		MTH 102	Mathematics -2(Integration and Analytic Geometry)	74
		PHY 102	Physics-2.	78
		MNF 102	Principles of Production Engineering	82
		CMP 110	Program Design and Computer Languages.	85
year	Semester	Subject of Computer Engineering and Information Technology BSc Program		

		Code	Title	Page number
	Second Semester	CMP 422	Computer Graphics and Man Machine Interface	212
		CMP 426	Logic Design -2.	216
		CMP 424	Data Transmission and Computer Networks.	220
		CMP 425	Information Systems.	224
		CMP 461	Project -1	228
		CMP 436	Software Engineering (Elective # 2)	231
	Third Semester	CMP 564	Industrial Training-2	235
Fifth year	First semester	CMP 523	Languages and Compliers	238
		CMP 524	Computer Modeling and Simulation	242
		CMP 562	Project -2 (First Stage)	246
		CMP 533	(Computer Organization Elective #3)	250
		GEN 242	Technical Report Writing	254
	Second Semester	CMP 521	Distributed Computer Systems	258
		CMP 522	Artificial Intelligence.	261
		CMP 562	Project-2(Second Stage)	228
		CMP432	Digital Image processing (Elective#4)	265
		ELC422	Digital signal processing (Elective#5)	269

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)

Table17 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
CHE 100	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
GEN 141	Contemporary Social Issues	A9, A10	B4, B9, B12	C1,C5	D1, D3, D7, D9
MNF 101	Engineering Graphics	A2,A 4,A5,A8,A10	B3,B5,B7,B8,B9	C2, C3, C4, C11	D1,D3, D9
GEN 143	History of Engineering and Technology	A1, A5, A8, A9, A11,A14	B1, B2, B6, B7	C1,C5	D1, D7, D8
MEC 101	Mechanics -1.	A1, A2, A3, A4	B1, B2	C1, C2	D1, D2
MTH 101	Mathematics -1 (Algebra and Calculus)	A1, A2, A5	B1, B2, B3, B7	C1, C12	D3, D7
PHY 101	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
MNF 100	Introduction to Engineering Materials.	A2, A3, A4, A18	B1, B2, B5, B13, B15, B17	C1,C2,C19	D1, D3, D7, D9
GEN 142	English Language.	A9, A10	B4	C11, C12	D1, D2, D3, D4, D6, D7, D8
MEC 102	Mechanics-2	A1,A2,A3,A4,A5	B1,B2,B5,B13	C1,C3,C5	D1,D2
MTH 102	Mathematics - 2(Integration and Analytic Geometry)	A1, A3, A5	B1, B2, B3, B4, B7, B11	C1, C12	D1, D3, D7
PHY 102	Physics-2.	A1,A3, A5	B2,B3, B4, B5	C1, C5, C12	D5, D7
MNF 102	Principles of Production Engineering	A1,A2,A4	B2,B3,B10,B18.	C1, C3,C7	D1,D3,D7,D9
CMP 110	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, C13,C14,C15	D1,D2,D3,D4,D5,D7,D9 ,

ARC 210	Civil Engineering Technology.	A3,A4,A7,A8	B1,B2,B9	C1,C2,C3,C5,C7	D6
Course		Program Intended Learning Outcomes			
Code	Title	Knowledge and understanding	Intellectual skills	Professional and practical skills	General and transferable skills
ELC 211	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
CMP 211	Logic 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
ELC 214	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
MTH 203	Mathematics -3 (Differential Equations and Transforms).	A1, A2, A5	B1, B2, B3, B7	C1, C12	D3,D7
GEN 241	Presentation Skills.	A9, A10, A12	B14	C11	D1, D2, D3, D5, D7
CMP 210	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
ELC 212	Electrical Circuit Analysis-2	A1, A2, A3, A4, A5, A6	B1, B2, B3, B4, B5, B6, B7	C1,C2	D1, D2, D3, D7, D9
ELC 213	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
MNF 210	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
MTH 204	Mathematics - 4(Advanced Calculus)	A1, A5	B1, B2, B3	C1, C12	D3, D7
ELC 215	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
GEN 341	Project Management.	A1, A3, A4, A10	B9	C12	D1, D3 , D6, D7, D9
ELC 310	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
ELC 312	Microelectronic Circuits-1	A3, A4 , A8 , A13	B2 , B5 , B7	C3 , C17	D3, D5 , D6 ,D7
CMP 310	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, C7,C14,C15	D1,D3,D4,D5,D7,D9
MTH 305	Mathematics -5 (Introduction to Probability. and Statistics).	A1, A2, A5, A10	B1, B2, B3, B4, B7,B11	C1, C2, C7, C13	D3, D7
ELC 315	Signal Analysis	A2	B2	C1,C13	D3,D6,D7,D9
CMP 361	Seminar-1	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
CMP 421	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
ELC 311	Communications -1	A2	B7	C5	D3, D5, D6, D7
ELC 314	Electronic Measurements	A5,A10,A15	B2, B3 ,B12	C3, C12 , C15, C20	D4 ,D6 ,D7
CMP 362	Seminar-2.	A1,A3,A4,A5,A7,A9,A10 ,A11,A15	B1,B2,B4,B5,B12,B13 ,B14,B17	C1,C5,C6,C9,C10,C1 1,C12,C16	D1,D2,D3,D6,D7
ELC 313	Microelectronic Circuit-2	A1,A3,A4,A15	B2,B3,B5	C1,C7,C15,C18	D2,D3,D6,D7,D9
MTH 306	Mathematics - 6(Complex Analysis and P.D.E)	A1, A3, A5	B1, B2, B3, B4, B7	C1,C12	D1, D3, D7
GEN 353	Management & International Business	A6, A7, A10, A12	B3, B4, B5, B9, B10	C1,C5	D1, D3, D7, D9
CMP 563	Industrial Training-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, C10,C11,C13,C14,C1 6	D1,D2,D3,D4,D6,D7,D8 ,D9

CMP 311	Numerical Methods with Computer Applications.	A1,A5	B1,B2,B3,B11	C1,C4	D3,D4,D7
Course		Program Intended Learning Outcomes			
Code	Title	Knowledge and understanding	Intellectual skills	Professional and practical skills	General and transferable skills
CMP 423	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
CMP 410	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
ELC 410	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
CMP 435	Operating Systems (Elective #1)	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
GEN 352	Engineering Laws and Regulations	A5,A6,A9,A10,A11	B3,B4,B9,B12	C1,C5	D1,D3,D7,D9
CMP 422	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
CMP 426	Logic 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
CMP 424	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
CMP 425	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
CMP 461	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
CMP 436	Software Engineering (Elective # 2)	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
CMP 564	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
CMP 523	Languages and Compliers	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
CMP 524	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
CMP 562	Project -2 (First Stage)	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
CMP 533	(Computer Organization Elective #3)	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
GEN 242	Technical Report Writing	A 4, A10, A11	B4	C2,C4,C12,C14	D6,D8
CMP 521	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
CMP 522	Artificial Intelligence.	A1,A3,A5,A13,A14,A15	B2,B3,B4,B14,B16	C3,C11,C12,C13,C14	D1,D3,D4,D7,D9
CMP 562	Project-2(Second Stage)	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
CMP432	Digital Image processing (Elective#4)	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
ELC422	Digital signal processing (Elective#5)	A2, A5, A8, A10	B1, B3, B7, B11, B14 ,B15	C2, C5, C6, C12, C14 , C15	D3, D4 , D7

A1.2 Curriculum Mapping Matrices

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

Code	Subject	Knowledge and understanding																			
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20
CHE 100	Chemistry.	1		1	1	1	1		1			1	1								
GEN 141	Contemporary Social Issues									1	1										
MNF 101	Engineering Graphics		1		1	1			1		1										
GEN 143	History of Engineering and Technology	1				1			1	1		1			1						
MEC 101	Mechanics -1.	1	1	1	1																
MTH 101	Mathematics -1 (Algebra and Calculus)	1	1			1															
PHY 101	Physics -1	1	1	1	1									1							
MNF 100	Introduction to Engineering Materials.		1	1	1														1		
GEN 142	English Language.									1	1										
MEC 102	Mechanics-2	1	1	1	1	1															
MTH 102	Mathematics -2(Integration and Analytic Geometry)	1		1		1															
PHY 102	Physics-2.	1		1		1															
MNF 102	Principles of Production Engineering	1	1		1																
CMP 110	Program Design and Computer Languages.	1	1		1	1			1					1		1	1		1		
ARC 210	Civil Engineering Technology.			1	1			1	1												
ELC 211	Electrical Circuit Analysis-1	1	1	1	1	1	1		1						1						
CMP 211	Logic Design-1.	1	1	1		1									1						
ELC 214	Modern Theory for Semiconductor Devices	1	1	1					1	1											
MTH 203	Mathematics -3 (Differential Equations and Transforms).	1	1			1															
GEN 241	Presentation Skills.									1	1		1								
CMP 210	Data Structures and Algorithms.	1	1	1	1	1				1			1				1		1		
ELC 212	Electrical Circuit Analysis-2	1	1	1	1	1	1														
ELC 213	Electrical Measurements.	1			1										1	1					
MNF 210	Mechanical Engineering Technology.	1		1	1	1															
MTH 204	Mathematics -4(Advanced Calculus)	1				1															
ELC 215	Semiconductors for Microelectronics	1	1	1					1	1											
GEN 341	Project Management.	1		1	1						1										
ELC 310	Control-1 (Principles of Automatic Control).	1			1	1											1				
ELC 312	Microelectronic Circuits-1			1	1				1					1							
CMP 310	Engineering Computer Applications	1	1			1			1				1	1			1				
MTH 305	Mathematics -5 (Introduction to Probability. and Statistics).	1	1			1					1										
ELC 315	Signal Analysis		1																		
CMP 361	Seminar-1	1		1		1			1	1		1				1	1				
CMP 421	Computer Architecture	1	1	1	1	1			1		1			1		1					
ELC 311	Communications -1		1																		
ELC 314	Electronic Measurements					1					1					1					
CMP 362	Seminar-2.	1		1	1	1		1		1	1	1				1					
ELC 313	Microelectronic Circuit-2	1		1	1											1					
MTH 306	Mathematics -6(Complex Analysis and P.D.E)	1		1		1															
GEN 353	Management & International Business						1	1			1		1								
CMP 563	Industrial Training-1					1	1	1						1	1	1	1	1			
CMP 311	Numerical Methods with Computer Applications.	1				1															

Code	Subject	Knowledge and understanding																			
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20
CMP 423	Data Base Management.	1	1		1	1								1		1	1	1			
CMP 410	Microprocessor Based Systems.				1	1				1					1	1	1		1		
ELC 410	Electrical Power Engineering	1		1	1	1	1		1			1		1	1	1	1				
CMP 435	Operating Systems (Elective #1)	1	1		1											1		1	1		
GEN 352	Engineering Laws and Regulations					1	1			1	1	1									
CMP 422	Computer Graphics and Man Machine Interface	1	1		1	1			1				1			1	1				
CMP 426	Logic Design -2.	1	1	1	1	1				1					1						
CMP 424	Data Transmission and Computer Networks.	1	1	1	1	1	1		1				1			1		1	1	1	1
CMP 425	Information Systems.	1	1	1	1			1	1	1			1						1	1	1
CMP 461	Project -1				1	1	1		1		1				1	1					
CMP 436	Software Engineering (Elective # 2)	1		1	1		1	1	1				1	1		1			1		
CMP 564	Industrial Training-2							1		1	1	1		1	1	1					1
CMP 523	Languages and Compliers	1	1	1		1			1					1		1		1			
CMP 524	Computer Modeling and Simulation	1	1	1	1	1						1		1							
CMP 562	Project -2 (First Stage)				1	1	1		1		1				1	1		1	1		
CMP 533	(Computer Organization Elective #3)	1	1	1						1				1			1				
GEN 242	Technical Report Writing				1						1	1									
CMP 521	Distributed Computer Systems		1	1		1			1				1	1	1	1		1			
CMP 522	Artificial Intelligence.	1		1		1								1	1	1					
CMP 562	Project-2(Second Stage)				1	1	1		1		1				1	1		1	1		
CMP432	Digital Image processing (Elective#4)	1	1	1	1	1							1			1	1				
ELC422	Digital signal processing (Elective#5)		1			1			1		1										

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

Code	Subject	Intellectual skills																						
		B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20	B21	B22	B23
CHE 100	Chemistry.	1	1	1	1		1		1		1		1											
GEN 141	Contemporary Social Issues				1					1			1											
MNF 101	Engineering Graphics			1		1		1	1	1														
GEN 143	History of Engineering and Technology	1	1				1	1																
MEC 101	Mechanics -1.	1	1																					
MTH 101	Mathematics -1 (Algebra and Calculus)	1	1	1				1																
PHY 101	Physics -1	1	1	1				1						1				1			1			
MNF 100	Introduction to Engineering Materials.	1	1			1								1		1		1						
GEN 142	English Language.				1																			
MEC 102	Mechanics-2	1	1			1								1										
MTH 102	Mathematics -2(Integration and Analytic Geometry)	1	1	1	1			1				1												
PHY 102	Physics-2.		1	1	1	1																		
MNF 102	Principles of Production Engineering		1	1							1								1					
CMP 110	Program Design and Computer Languages.	1	1	1	1			1						1	1			1	1	1				
ARC 210	Civil Engineering Technology.	1	1							1														
ELC 211	Electrical Circuit Analysis-1	1	1		1	1	1	1																
CMP 211	Logic Design-1.	1	1	1	1				1				1		1									
ELC 214	Modern Theory for Semiconductor Devices	1	1		1	1	1	1	1				1											
MTH 203	Mathematics -3 (Differential Equations and Transforms).	1	1	1				1																
GEN 241	Presentation Skills.														1									
CMP 210	Data Structures and Algorithms.	1	1		1				1				1		1			1	1					
ELC 212	Electrical Circuit Analysis-2	1	1	1	1	1	1	1																
ELC 213	Electrical Measurements.	1		1		1	1	1		1	1	1		1	1									

Code	Subject	Intellectual skills																						
		B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20	B21	B22	B23
MNF 210	Mechanical Engineering Technology.	1	1	1	1	1	1	1					1											
MTH 204	Mathematics -4(Advanced Calculus)	1	1	1																				
ELC 215	Semiconductors for Microelectronics	1	1		1	1	1	1	1				1											
GEN 341	Project Management.									1														
ELC 310	Control-1 (Principles of Automatic Control).	1	1			1		1						1										
ELC 312	Microelectronic Circuits-1		1			1		1																
CMP 310	Engineering Computer Applications	1	1	1		1		1						1	1			1	1					
MTH 305	Mathematics -5 (Introduction to Probability. and Statistics).	1	1	1	1			1				1												
ELC 315	Signal Analysis		1																					
CMP 361	Seminar-1	1	1			1					1			1	1			1						
CMP 421	Computer Architecture	1	1	1	1	1	1	1					1	1				1						
ELC 311	Communications -1							1																
ELC 314	Electronic Measurements		1	1									1											
CMP 362	Seminar-2.	1	1		1	1							1	1	1			1						
ELC 313	Microelectronic Circuit-2		1	1		1																		
MTH 306	Mathematics -6(Complex Analysis and P.D.E)	1	1	1	1			1																
GEN 353	Management & International Business			1	1	1				1	1													
CMP 563	Industrial Training-1	1	1	1	1		1	1	1		1	1	1	1	1			1						
CMP 311	Numerical Methods with Computer Applications.	1	1	1								1												
CMP 423	Data Base Management.		1	1				1	1	1			1			1		1						
CMP 410	Microprocessor Based Systems.	1	1	1	1	1	1			1		1	1	1			1	1						
ELC 410	Electrical Power Engineering	1	1	1			1			1		1												
CMP 435	Operating Systems (Elective #1)	1	1	1	1	1		1									1	1	1					
GEN 352	Engineering Laws and Regulations			1	1					1			1											
CMP 422	Computer Graphics and Man Machine Interface	1	1	1				1	1		1			1										
CMP 426	Logic Design -2.	1		1	1		1	1	1				1		1			1						
CMP 424	Data Transmission and Computer Networks.	1			1	1									1			1				1		
CMP 425	Information Systems.	1	1	1	1								1		1				1	1	1		1	1
CMP 461	Project -1		1	1	1	1	1			1	1	1	1	1		1								
CMP 436	Software Engineering (Elective # 2)	1	1		1	1		1		1					1			1						
CMP 564	Industrial Training-2	1	1	1	1		1	1	1		1	1	1	1	1			1						
CMP 523	Languages and Compliers	1	1	1		1				1				1	1									
CMP 524	Computer Modeling and Simulation	1	1	1				1	1				1	1	1			1						
CMP 562	Project -2 (First Stage)	1	1	1	1	1		1	1		1	1	1	1	1	1		1	1					
CMP 533	(Computer Organization Elective #3)	1	1	1	1								1		1									
GEN 242	Technical Report Writing				1																			
CMP 521	Distributed Computer Systems		1	1	1	1	1							1	1			1				1		
CMP 522	Artificial Intelligence.		1	1	1										1		1							
CMP 562	Project-2(Second Stage)	1	1	1	1	1		1	1		1	1	1	1	1	1		1	1					
CMP432	Digital Image processing (Elective#4)	1	1					1					1	1		1	1	1						
ELC422	Digital signal processing (Elective#5)	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																			
		C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18	C19	C20
CHE 100	Chemistry.	1	1	1		1			1				1								
GEN 141	Contemporary Social Issues	1				1															
MNF 101	Engineering Graphics		1	1	1							1									
GEN 143	History of Engineering and Technology	1				1															
MEC 101	Mechanics -1.	1	1																		
MTH 101	Mathematics -1 (Algebra and Calculus)	1											1								
PHY 101	Physics -1	1					1						1				1	1			
MNF 100	Introduction to Engineering Materials.																				
GEN 142	English Language.											1	1								
MEC 102	Mechanics-2	1		1		1															
MTH 102	Mathematics -2(Integration and Analytic Geometry)	1											1								
PHY 102	Physics-2.	1				1							1								
MNF 102	Principles of Production Engineering	1		1				1													
CMP 110	Program Design and Computer Languages.	1	1	1	1	1	1							1	1	1					
ARC 210	Civil Engineering Technology.	1	1	1		1		1													
ELC 211	Electrical Circuit Analysis-1	1		1		1	1			1	1	1									
CMP 211	Logic Design-1.	1	1	1		1	1														
ELC 214	Modern Theory for Semiconductor Devices	1	1	1	1			1	1			1	1								
MTH 203	Mathematics -3 (Differential Equations and Transforms).	1											1								
GEN 241	Presentation Skills.											1									
CMP 210	Data Structures and Algorithms.	1	1	1		1	1														
ELC 212	Electrical Circuit Analysis-2	1	1																		
ELC 213	Electrical Measurements.		1	1		1										1	1	1	1		1
MNF 210	Mechanical Engineering Technology.	1	1			1	1						1								
MTH 204	Mathematics -4(Advanced Calculus)	1											1								
ELC 215	Semiconductors for Microelectronics	1	1	1	1			1				1	1								
GEN 341	Project Management.												1								
ELC 310	Control-1 (Principles of Automatic Control).	1	1	1		1						1	1		1			1			
ELC 312	Microelectronic Circuits-1			1														1			
CMP 310	Engineering Computer Applications	1	1	1	1	1	1	1							1	1					
MTH 305	Mathematics -5 (Introduction to Probability. and Statistics).	1	1					1						1							
ELC 315	Signal Analysis	1												1							
CMP 361	Seminar-1	1	1			1	1			1	1	1	1		1	1	1				
CMP 421	Computer Architecture	1	1	1	1		1							1	1	1					
ELC 311	Communications -1					1															
ELC 314	Electronic Measurements			1									1			1					1
CMP 362	Seminar-2.	1				1	1			1	1	1	1				1				
ELC 313	Microelectronic Circuit-2	1						1								1			1		
MTH 306	Mathematics -6(Complex Analysis and P.D.E)	1											1								
GEN 353	Management & International Business	1				1															
CMP 563	Industrial Training-1	1	1			1		1	1	1	1	1		1	1		1				

Code	Subject	Professional and practical skills																		
		C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18	C19	C20
CMP 311	Numerical Methods with Computer Applications.	1			1																
CMP 423	Data Base Management.	1			1									1							
CMP 410	Microprocessor Based Systems.					1	1						1		1	1					
ELC 410	Electrical Power Engineering	1	1		1	1			1												
CMP 435	Operating Systems (Elective #1)	1	1	1		1			1											1	
GEN 352	Engineering Laws and Regulations	1				1															
CMP 422	Computer Graphics and Man Machine Interface	1	1	1	1	1	1	1				1		1		1					
CMP 426	Logic Design -2.	1	1	1	1	1	1														
CMP 424	Data Transmission and Computer Networks.	1	1	1		1	1				1	1								1	
CMP 425	Information Systems.	1	1	1	1	1	1							1	1	1		1	1		
CMP 461	Project -1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					
CMP 436	Software Engineering (Elective # 2)	1	1	1	1		1			1	1	1	1	1	1						
CMP 564	Industrial Training-2	1	1		1	1	1	1	1	1	1	1	1	1	1		1				
CMP 523	Languages and Compliers					1	1	1					1		1		1				
CMP 524	Computer Modeling and Simulation	1	1			1	1	1													
CMP 562	Project -2 (First Stage)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
CMP 533	(Computer Organization Elective #3)	1	1	1			1			1			1		1	1				1	
GEN 242	Technical Report Writing		1		1							1		1							
CMP 521	Distributed Computer Systems	1	1	1		1	1								1		1	1			
CMP 522	Artificial Intelligence.			1								1	1	1	1						
CMP 562	Project-2(Second Stage)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
CMP432	Digital Image processing (Elective#4)	1	1	1	1	1		1						1	1	1					
ELC422	Digital signal processing (Elective#5)		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								
		D1	D2	D3	D4	D5	D6	D7	D8	D9
CHE 100	Chemistry.	1	1	1	1	1		1		
GEN 141	Contemporary Social Issues	1		1				1		1
MNF 101	Engineering Graphics	1		1						1
GEN 143	History of Engineering and Technology	1						1	1	
MEC 101	Mechanics -1.	1	1							
MTH 101	Mathematics -1 (Algebra and Calculus)			1				1		
PHY 101	Physics -1	1	1	1	1	1	1	1	1	1
MNF 100	Introduction to Engineering Materials.	1		1				1		1
GEN 142	English Language.	1	1	1	1		1	1	1	
MEC 102	Mechanics-2	1	1							
MTH 102	Mathematics -2(Integration and Analytic Geometry)	1		1				1		
PHY 102	Physics-2.					1		1		
MNF 102	Principles of Production Engineering	1		1				1		1
CMP 110	Program Design and Computer Languages.	1	1	1	1	1		1		1
ARC 210	Civil Engineering Technology.						1		1	
ELC 211	Electrical Circuit Analysis-1	1	1	1			1	1		1
CMP 211	Logic Design-1.	1	1	1	1	1	1	1		1
ELC 214	Modern Theory for Semiconductor Devices	1		1	1			1		1
MTH 203	Mathematics -3 (Differential Equations and Transforms).			1				1		
GEN 241	Presentation Skills.	1	1	1		1		1		
CMP 210	Data Structures and Algorithms.	1	1	1	1		1	1		

ELC 212	Electrical Circuit Analysis-2	1	1	1				1		1
Code	Subject	General and transferable skills								
		D1	D2	D3	D4	D5	D6	D7	D8	D9
ELC 213	Electrical Measurements.	1		1			1		1	1
MNF 210	Mechanical Engineering Technology.	1	1	1				1		1
MTH 204	Mathematics -4(Advanced Calculus)			1				1		
ELC 215	Semiconductors for Microelectronics	1		1	1			1		1
GEN 341	Project Management.	1		1			1	1		1
ELC 310	Control-1 (Principles of Automatic Control).	1		1				1		1
ELC 312	Microelectronic Circuits-1			1		1	1	1		
CMP 310	Engineering Computer Applications	1		1	1	1		1		1
MTH 305	Mathematics -5 (Introduction to Probability. and Statistics).			1				1		
ELC 315	Signal Analysis			1			1	1		1
CMP 361	Seminar-1	1	1	1				1		
CMP 421	Computer Architecture	1		1	1	1	1	1		1
ELC 311	Communications -1			1		1	1	1		
ELC 314	Electronic Measurements				1		1	1		
CMP 362	Seminar-2.	1	1	1			1	1		
ELC 313	Microelectronic Circuit-2		1	1			1	1		1
MTH 306	Mathematics -6(Complex Analysis and P.D.E)	1		1				1		
GEN 353	Management & International Business	1		1				1		1
CMP 563	Industrial Training-1	1	1	1	1		1	1	1	1
CMP 311	Numerical Methods with Computer Applications.			1	1			1		
CMP 423	Data Base Management.	1		1	1			1		1
CMP 410	Microprocessor Based Systems.			1		1		1		1
ELC 410	Electrical Power Engineering		1	1			1	1	1	
CMP 435	Operating Systems (Elective #1)	1	1	1	1			1	1	1
GEN 352	Engineering Laws and Regulations	1		1				1		1
CMP 422	Computer Graphics and Man Machine Interface	1		1	1		1	1	1	1
CMP 426	Logic Design -2.	1	1	1	1	1	1	1		1
CMP 424	Data Transmission and Computer Networks.	1		1	1	1	1	1		1
CMP 425	Information Systems.	1		1	1	1	1	1		1
CMP 461	Project -1	1		1				1		1
CMP 436	Software Engineering (Elective # 2)	1		1	1		1	1		1
CMP 564	Industrial Training-2	1	1	1	1	1	1	1	1	1
CMP 523	Languages and Compliers			1	1			1		1
CMP 524	Computer Modeling and Simulation	1		1	1	1		1		1
CMP 562	Project -2 (First Stage)						1	1	1	1
CMP 533	(Computer Organization Elective #3)	1		1	1	1		1		1
GEN 242	Technical Report Writing						1		1	
CMP 521	Distributed Computer Systems	1		1	1	1	1	1		1
CMP 522	Artificial Intelligence.	1		1	1			1		1
CMP 562	Project-2(Second Stage)						1	1	1	1
CMP432	Digital Image processing (Elective#4)			1	1		1	1	1	1
ELC422	Digital signal processing (Elective#5)			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

Modern Academy for Engineering & Technology

Basic Sciences Department

Course Specification

CHE 100: 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:	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:	Basic Science Department
Date of specifications approval:	September, 2015

B - Basic information

Title: Chemistry			**Code:** CHE 100		**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 systems with a better quality.(B1,B3.B4,B12,B10)
b5-Think in a creative new scientific ideas 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	2	-

Electrochemistry &Metallic corrosion.	4	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	-	-	10
Revision and sheets	2	2	6
Total hours	**30**	**15**	**30**

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)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	10
Mid-Term Exam	6-th Week	10
Practical Exam	Fifteenth week	20
Written Exam	Sixteenth week	60
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:

W. Steedman, R. B. Snadden, Iain Howe Anderson, Chemistry for the engineering and applied sciences, Pergamon Press, 1980.

6-3 Recommended books:

Non

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 Shimaa Nabih Esmail
Head of the Department: Dr. Laila Soliman
Date: September 2015

Modern Academy for Engineering & Technology

Basic Sciences Department

Course Specification

GEN 141: 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:	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:	Basic science department
Date of specifications approval:	September 2015

B - Basic information

Title Contemporary Social Issues:	**Code:** GEN 141	**Level:** Freshman,	**Semester**: First
Credit Hours: 2	**Lectures:** 2 **Pre-requisite:** non	**Tutorial/Exercise:** -	**Practical:** -

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 - أصول المجتمع - العادات والتقاليد المرعية – المواطنة - العوامل المحفزة لحب الوطن (الحرية - احترام الرأي الآخر - عدم التمييز العنصري - الديمقراطية).	6	-	-
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	**30**	**-**	**-**

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					
	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							

Profes sional	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:

Assessment Method	Timing	Grade (Degrees)
quizzes assignments	Bi-Weekly	15
Mid-Term Exam	6-th Week	15
Written Exam	Sixteenth week	70
Total		100

6- List of references:

6-1 Course notes :

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

.

6-2 Required books

S. Nasef, Contemporary Social Issues, 2007.

6-3 Recommended books:

Non

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. Laila Solaiman
Date: September 2015

Modern Academy for Engineering & Technology

Manufacturing Engineering and Production Technology Department

Course Specification
MNF101: Engineering Graphics

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: 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: Manufacturing Engineering and Production Technology Department
Date of specifications approval: September 2015

B - Basic Information

Title: Engineering Graphics **Code:** MNF101 **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]
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]
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	A2, A4, A5, A8, A10
B	Intellectual skills	B3, B5, B7, B8,B9
C	Professional and practical skills	C2, C3, C4, C11
D	General and transferable skills	D1, D3, D9

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
Revision	1	6
Total hours	**15**	**90**

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 & Experiment	Modeling	Self-learning	Homework	Seminars	Quizzes	Reports	Mid-Term Exam	Practical Exam	Written Exam
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
	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	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
Gener	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
Mid-Term Exam	6th. Week	10
Written Exam	16th. week	70
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: Dr. Nabil Gadallah
Head of the Department: Dr. Abdelmagid Abdelatif
Date: September 2015

Modern Academy for Engineering & Technology

Basic Sciences Department

Course Specification

GEN 143: History of Science & 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: 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: Basic Science Department

Date of specifications approval: September, 2015

B - Basic information

Title: History of Science and Technology **Code:** GEN 143 **Level:** Freshman Semester: First/Second.

Hours **Credit** 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)

c - Professional and practical skills:

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

c1- ان يتمكن الطالب من توظيف المعلومات التاريخية والمعرفية فى الابتكارات الهندسية (C1,C5)

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	Intellectual skills	B1, B2, B6, B7
C	Professional and practical skills	C1, C5
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		
مراجعة عامة	2		
Total hours	**30**		

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
	a2	1	1	1				1					1	1
	a3	1	1					1					1	1
	a4	1	1	1				1					1	1
Intellectual	b1	**1**	**1**					**1**					**1**	**1**
	b2	**1**	**1**					**1**					**1**	**1**
	b3	**1**	**1**					**1**					**1**	**1**
	b4	1	1					1					1	
Professional	c1	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:

Assessment Method	Timing	Grade (Degrees)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	30
Mid-Term Exam	6-th Week	-
Practical Exam	Fifteenth week	-
Written Exam	Sixteenth week	70
Total		100

6- List of references:

6-1 Course notes: -

S. R. Goda, History of Science and Technology, Lecture notes, Modern Academy, 2012.

6-2 Required books: Non

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. .

7- Facilities required for teaching and learning:

- Computer Data show Library and Internet

Course coordinator: Dr Marwa Mohamed Fouad
Head of the Department: Professor Dr Laila Soliman
Date: September 2015

Modern Academy for Engineering & Technology

Basic Sciences Department

Course Specification

MEC 101: 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: 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: Basic Science Department
Date of specifications approval: September, 2015

B - Basic information

Title: Mechanics-1 **Code:** MEC 101 **Level:** Freshman. **Semester:** First.
Hours Credit 2 hrs **Lectures** 1 hrs **Tutorial:** 3 hrs **Practical:** None

C - Professional information

1 – Course Learning Objectives:

After the study of this course the student should be able to use and apply the basic concepts of statics in both plane and space in real engineering problems.

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	Intellectual skills	B1, B2
C	Professional and practical skills	C1, C2
D	General and transferable skills	D1, D2

3 – Contents

Topic	Lecture hours	Tutorial hours	practical
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)	2	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	4	
Total hours	**15**	**45**	**-**

4 – Teaching, Learning and Assessment 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	1	1			
	a2	1			1	1										1		1	1	1			
	a3	1			1	1						1				1		1	1	2			
	a4	1			1	1						1				1		1	1	1			
Intellectual	b1	1			1											1		1		1			
	b2	1			1	1										1		1	1	1			
Applied	c1	1			1	1										1		1	1	1			
	c2	1			1											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	6-th Week	10
Written Exam	Fifteen week	70
	Total	100

6- List of references:

6-1 Course notes:

Hassan Awad, Mechanics I, Lecture notes, Modern Academy.

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.

www.mathwprlds.com www.exchange.com

Course coordinator: Professor Dr Hassan Awad
Head of the Department: Dr Laila Soliman
Date: September 2015

Modern Academy for Engineering & Technology

Basic Sciences Department

Course Specification

MTH 101: 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:	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:	Basic Sciences Department
Date of specifications approval:	September, 2015

B - Basic information

Title: Mathematics-1	Code: MTH101	Level: First	Semester: First
Credit Hours: 3	Lectures: 2	Tutorial/Exercise: 2	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	Intellectual skills	B1, B2, B3, B7
C	Professional and practical skills	C1, C12
D	General and transferable skills	D3, D7

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
➢ Functions	3	2	
➢ Differentiation	3	4	
➢ Trigonometric and inverse trigonometric functions	4	4	
➢ Exponential and logarithmic functions	2	2	
➢ Hyperbolic and inverse hyperbolic functions	2	2	
➢ Taylor and binomial expansions	2	2	
➢ Matrices with applications	6	6	
➢ Vectors in the Euclidean space	2	2	
➢ Real vector spaces	2	2	
➢ Polar coordinates	2	2	
➢ Final Revision	2	2	
Total hours	30	30	

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:

Asesement Method	Timing	Grade (Degrees)
Quizes, assignments, term paper	Weekly	15
Mid-Term Exam	7-th Week	15

Written Exam	Sixteenth week	70
Total		100

6- List of references:

6-1 Course notes:

Algebra and Calculus By Dr. Sameh Alshenawy and Dr. Sabry Abd El-Aziz

6-2 Required books

E. W. Swokoski, "Calculus", 6-th Edition, PWS Publishing Company, Boston, 1994.
R. E. Larson and B. H. Edwards, "Elementary Linear Algebra", 2-nd Edition, DG Heath and Company, Toronto, 1991.

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. Lila Soliman
Date: September, 2015

Modern Academy for Engineering & Technology

Basic Sciences Department

Course Specification

PHY 101 : Physics I

A- Affiliation

	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
Departments offering the programs:	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:	Basic Sciences Department
Date of specifications approval:	September 2015

B - Basic Information

Title: Physics1 **Code: PHY101** **Level: Freshman.** **Semester: First.**
Credit Hours: 3 **Lectures:** 2 **Tutorial/Exercise:**1 **Practical:** 2

C - Professional Information

1 – Course Learning Objectives:

The student should be able to use and apply basic concepts, principles and fundamental topics of classical physics concerning properties of matter, heat and waves in both engineering and real life.

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	Intellectual skills	B1, B2, B3, B7, B13, B17, B20
C	Professional and practical 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, veleocity, acceleration.	2		
Relation between linear and angular quantities.	1	2	4
Applications on rotational motion.	2	1	
Universal garavitational 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
Characterstics of fluids and stream lines.	1	1	2
Fundemental 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	4
Mathematical representation of waves and speed of transverse waves.	2		2
The principle of superposition.	1		
Standing waves and Sound waves.	2	1	4
Total hours	**30**	**15**	**30**

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	Quizes	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			
	a6	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			
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	Quizes	Term papers	Assignments			
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)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	10
Mid-Term Exam	6-th Week	10
Practical Exam	Fifteenth week	20
Written Exam	Sixteenth week	60
Total		100

6- List of references:

6-1 Course notes:

- M. El- Tawab Kamal , Abo- Elyzeed B. Abo- Elyzeed, Marwa Yahia Shoeib and Nagat A. Salam Elmahdy, Physics 1- Lecture Notes, Modern Academy, 2012.
- M. El- Tawab Kamal , Abo- Elyzeed B. Abo- Elyzeed, Marwa Yahia Shoeib and Nagat A. Salam Elmahdy, Physics Lab (1) Note, Modern Academy, 2012.

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6-2 Required books

Raymond A. Serway, Physics for Scientists and Engineers, Thomson Brooks, 2004; 6th Edition.

6-3 Recommended books:

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

6-4 Periodicals, Web sites, etc.

http.www.saunderscollege.cpm/physics
http://en.wikipedia.org/wiki/Bernoul/principle
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, Internet, and Data Show
3. Laboratories (Lab 1, Lab 2).

Course coordinator: Dr. Nagat A. Elmahdy

Head of the Department: Prof. Dr. Laila Soliman
Date: September, 2015

Modern Academy for Engineering & Technology

Manufacturing Engineering and Production Technology Department

Course Specification
MNF100: 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: 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: Mechanical Engineering Department.

Date of specifications approval: September 2015

B - Basic Information

Title: Introduction to Engineering Materials | **Code:**MNF100 | **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 (A4).

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)
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:
None.

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	3		
2- Ferrous alloys and their properties			
2-1 Steel; types and uses			
2-2 Cast iron; types and uses	8		
3- Non-ferrous alloys and their properties			
3-1 Copper and its alloys			
3-2 Aluminum and its alloys			
4- Other engineering alloys	3		
5- Selection of Materials			
Total hours	**15**		

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			
	a4	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. Skills	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, quizzes assignments and reports	Bi-Weekly	20
Mid-Term Exam	8-th Week	10
Written Exam	Sixteenth week	70
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. Abdelrady Okasha
Head of the Department: Dr. Abdelmagid Abdelatif
Date: September, 2015

Modern Academy for Engineering & Technology
Basic Sciences Department
Course Specification
GEN 142: English Language

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: 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: Basic Sciences Department
Date of specifications approval: September, 2015

B - Basic information

Title: English Language	**Code:**GEN142	**Level:** Freshman	**Semester:** First
Credit Hours: 2	**Lectures:**2	**Tutorial:**	**Practical:**
	Pre-requist: -		

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 everyday 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) communicating effectively in written and oral forms, even at the very beginning levels. (A9), (A10)

a3) differentiating 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- present data and results orally. (D1, D2, D3, D6)
d3- communicate effectively in written form.(D3), (D7)
d4- search for information 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	Intellectual skills	B4
C	Professional and practical 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 and Reading	2		
At the Doctor's(to be continued) Grammar: perfect tenses& prefixes	2		
Global Warming: Reading Speaking : English communication skillsSuffixes & adj. and 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 becontiued) Grammar : relative clauses	2		

Qualities and Flaws : Reading Speak: dicussingqualities and flaws of each one (pair work Grammar: Possession Pronouns+ Adjectives	2		
Qualities and Flaws (to becontinued) List. & Speak:dicussing the topic	2		
People Idioms Grammar:gerund "& to infinitive & adjectives with prepositions	2		
English proverbs Grammar: problem verbs	2		
Revision	2		
Total hours	**30**		

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Warming up	Discussions	Tutorials	Problem solving						Researches and Reports	Modeling and Simulation			Written Exam	Class work	Quizzes	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 Transferable 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							1				

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: quizzes, assignments and class participation	Bi-Weekly	20
Mid-Term Exam	7-th Week	10
Written Exam	Sixteenth week	70
Total		100

6- List of references:

6-1 Course notes:

Neveen Samir, English Language, lecture notes, Modern Academy Press, 2010.

6-2 Required books

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

6-3 Recommended books:

Shelton, James**, English for Engineering,** NTC publishing Group, Illinois, USA,2008.

6-4 Periodicals, Web sites, etc.:

- http://www.bbc.co.uk/learningenglish
- http://www.rong-chang.com/
- http://legacy.australianetwork.com/studyenglish/
- http://toeic-town.net/wp-content/uploads/fc/grammarinuse-sample.jpg

7- Facilities required for teaching and learning:

- Data show
- Library and Internet

Course coordinator: Dr. Neveen Samir
Head of the Department: Prof. Dr Layla Solaiman
Date: Sept., 2015

Modern Academy for Engineering & Technology

Basic Sciences Department

Course Specification

MEC 102: 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: 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: Basic Science Department

Date of specifications approval: September, 2015

B - Basic information

Title: Mechanics-2 **Code:** MEC 102 **Level:** Freshman. **Semester**: Second
Hours Credit 2 hrs. **Lectures** 1 hrs. **Tutorial:** 3 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- definition 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	Intellectual skills	B1, B2, B5, B13,
C	Professional and practical skills	C1, C3, C5
D	General and transferable skills	D1, D2

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical
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	
Curvilinear Motion of particle:			
Normal and Tangential.	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 central force.	1	4	
Principle of Impulse and Momentum for particle.	2	5	
Total hours	**15**	**45**	

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	Quizes	Term papers	Assignments			
Knowledge	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			
	a4	1			1	1						1				1		1	1	1			
	a5	1			1											1		1	1	1			
Intellectual	b1	**1**			**1**											1		1		**1**			
	b2	**1**			**1**	**1**										1		1	**1**	**1**			
Applied	c1	1			1	1										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:

Assessment Method	Timing	Grade (Degrees)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	20
Mid-Term Exam	6-th Week	10
Written Exam	Sixteenth week	70
Total		100

6- List of references:

6-1 Course notes:

Hassan Awad, Mechanics II, Lecture Notes, Modern Academy.

6-2 Required books:

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

6-3 Recommended books:

R.C. Hibbeler Engineering mechanics, Dynamics.

6-4 Periodicals, Web sites, etc.

www.mathwprlds.com www.exchange.com

Course coordinator: Dr. Hassan Awad
Head of the Department: Prof. Dr. Laila Soliman
Date: September 2015

Modern Academy for Engineering & Technology

Basic Sciences Department

Course Specification

MTH 102: Mathematics-2(Integration and analytic geometry)

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:	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:	Basic Science Department
Date of specifications approval:	September, 2015

B - Basic information

Title: Mathematics - 2	**Code:** MTH102	**Level:** Freshman	**Semester:** Second
Credit Hours: 3	**Lectures:** 2	**Tutorial:** 3	**Practical:** --
	Pre-requisite: MTH 101		

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 the concepts of integral calculus and analytic geometry with 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. Definition of anti-derivative, indefinite integral, definite integrals.(A1, A5)

a2. Methods of integration (integration by parts, substitution). (A1, A5)

a3. Integration rules of trigonometric functions, integration of rational functions, improper integrals. (A1, A5)

a4. Basic concepts of convergence of infinite sequences and series. (A1, A3)

a5. Equations of lines, planes and conic sections. (A1, A3)

b. Intellectual skills:

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

b1. Investigate the geometric interpretation of the integration. (B1, B2, B3)
b2. Develop techniques for using basic integration formulas to obtain indefinite integrals of complicated functions.(B1, B2, B3, B7)
b3. Explore some of the geometric applications of the definite integral by using it to compute areas between curves, volumes of solids, arc length and surface area. (B1, B2, B3, B4, B7)
b4. Develop several tests to determine whether a series is convergent or divergent without explicitly finding its sum. (B1, B2, B3, B4, B7)
b5. Estimate of the sum of the convergent series and the error using various methods. (B1, B11)
b6. Derive the equation and main geometric properties of lines, planes and conic sections. (B2, B3, B4)

c - Professional and practical skills:

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

c1. Use integration to evaluate area between curves, volume of solids with known cross sections, arc length. (C1, 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. 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, A3, A5
B	Intellectual skills	B1, B2, B3, B4, B7, B11
C	Professional and practical skills	C1, C12
D	General and transferable skills	D1, D3, D7

	Topic	Lecture hours	Tutorial hours
1	Anti-derivative, indefinite integral	2	2
2	Definite integrals and the fundamental thearem of calculus	2	3
3	Methods of integration (integration by parts, substitution)	4	6
4	Integration of trigonometric functions	2	4
5	Trignometric Substitutions	2	2
6	Integration of rational functions	2	4
7	Miscellaneous Substitutions, improper integrals	2	4
8	Application of definite integral(area, volume, arc length, surface area)	3	4
9	Sequences, series	4	6
10	Equations of lines, planes and circles	3	4

11	Conic sections (parabola, ellipse, hyperbola)	4	6
	Total hours	**30**	**45**

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	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	1	1			
	a5	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			
	b3	1	1	1	1	1						1				1			1	1			
	b4	1			1	1										1				1			
	b5	1			1	1										1			1	1			
	b6	1		1	1	1						1				1			1	1			
Applied Professional Skills	c1	1		1	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)
Quizzes, assignments, term papers	Weekly	15
Mid-Term Exam	7-th Week	15
Written Exam	Sixteenth week	70
Total		100

6- List of references:

6-1 Course notes:

S. Shenawy and S. Abd-elaziz, Integration and Analytic Geometry, Lecture Notes, 2012

6-2 Required books

E. W. Swokoski, Calculus, 6ed, PWS Publishing Company, Boston, 1994.

P. H. Selby, Analytic Geomatry, Books for Professional, Inc., 1986

6-3 Recommended books:

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

6-4 Periodicals, Web sites, etc.

www.sosmath.com ,

www.17calculus.com ,

www.mathwords.com.

7- Facilities required for teaching and learning:

- Library, Required references
- Computer, Internet
- Data show
- Required Computer programs

Course coordinator: Dr. Sabry Abd El-Aziz
Head of the Department: Prof. Dr. Laila Soliman
Date: September, 2015

Modern Academy for Engineering & Technology

Basic Sciences Department

Course Specification

PHY 102:Physics 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: 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: Basic Science Department
Date of specifications approval: September, 2015

B - Basic information

Title: Physics 2 **Code:** PHY102 **Level:** First. Semester: Second.

Credit Hours 3 hrs Lectures 2 hrs Tutorial 1 hr Practical 2 hrs

C - Professional information

1 – Course Learning Objectives:

By the end of this course the students should demonstrate the knowledge and understanding of the fundamental concepts of the electricity and magnetism 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 , A3) .
a2- Gausses law in electricity for different type of charged bodies (A1 , A3).
a3- Laws of electric capacitors and effect of dielectric (A5).
a4- Direct current, resistance and solution of simple electric circuits and kerchief's laws (A5)
a5- Analogy between magnetic field and electric field., and application of Ampere's law, Gausse's law in magnetism (A3) .
a6- Magnetic properties of matter (A3, A5).
a7- Fundamental theories of Electro-magnetic waves and main physical phenomena of physical optics (interference, diffraction and polarization) (A5) .

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).
b2- Study of capacitors' and dielectric effect, uses of capacitors, and use Kirchoff's laws to solve simple electric circuits (B3,B4).
b3- Investigate and compere 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,B4, B5).

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 carey-foster bridge (C1, C5,C12).
c2- Determine time constant for (Rc) circuits (C1, C5, C12).
c3- Determine power, focal length for lenses and mirrors (convex and concave) (C1, C5, C12).
c4- Perform a physical experiment (Absorption co-efficient, polarization and Newton's rings) (C1,C5, C12).

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 (D7)
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,A3, A5
B	Intellectual skills	B2,B3, B4, B5
C	Professional and practical skills	C1, C5, C12
D	General and transferable skills	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	1	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	2	1	2
Diffraction of light, Some applications	2	1	2

Total hours	30	15	30

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	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	b1	**1**			**1**	**1**				1		1	1	**1**
	b2	**1**			**1**	**1**				1		1	1	**1**
	b3	**1**		**1**	**1**			**1**					1	**1**
Applied	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	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	10
Mid-Term Exam	6-th Week	10
Practical Exam	Fifteenth week	20
Written Exam	Sixteenth week	60
Total		100

6- List of references:

6-1 Course notes

M. El- Tawab Kamal , Abo- Elyzeed B. Abo- Elyzeed, Marwa Yahia Shoeib and Nagat A. Salam Elmahdy, PHY 102- Physics 2

6-2 Required books:

Halliday, D., Resnick, R., Wallker, J.(1993) Fundamentals of Physics .John Wiley, New York.
Serway, R. A. (1990) Physics for Scientists and Engineers with Modern Physics, 3rd ed. Wiely, New Yourk.

6-3 Recommended books

M. El- Tawab Kamal , Abo- Elyzeed B. Abo- Elyzeed, Marwa Yahia Shoeib and Nagat A. Salam Elmahdy, PHY 102- Physics 2

6-4 Periodicals, Web sites, etc.

www.bookstore.org
http://2020ok.com/14545.htm
http://booksgoogle.com/

7- Facilities required for teaching and learning:

- Physics Lab.
- Computer, and Data show

Course coordinator: Dr. M El- Tawab Kamal
Head of the Department: Professor Dr. Laila Soliman
Date: September 2015

Modern Academy for Engineering & Technology

Manufacturing Engineering and Production Technology Department

Course Specification

MNF102: Principle of Production Engineering

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:	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:	Manufacturing Engineering and Production Technology Department
Date of specifications approval:	September, 2015

B - Basic Information

Title: Principle of Production Engineering **Code:** MN 102 **Year/level:** Fresh man Second Semester

Credit Hours: 3 **Lectures:** 1 **Tutorial/Exercise:**-

Practical: 4 **Total:** 3

Pre-requisite: MNF 101

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 (B8)

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	Intellectual skills	B2,B3,B10,B18.
C	Professional and practical 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		
➢ Properties of materials and testing principles	2		4
➢ Sand casting, melting of metal & furnaces. Solidification, pattern allowances, sand molding & gating system. Die casting, centrifugal & investment casting.	2		8
➢ Types of welding, oxy- acetylene welding, electric- arc welding, submerged arc welding, MIG, TIG, resistance welding, soldering & brazing	2		8
➢ Hot & cold forming, rolling, extrusion, wire drawing & sheet metal forming	3		10
➢ Metal cutting processes (Turning, milling, shaping, grinding and drilling)	4		30
Total hours	**15**		**60**

4 - Teaching and 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	1	1	1	1
	a3	1	1	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				1	1	1	1	1	
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
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	1
	b4	1	1	1	1		1			1		1	1	
Applied Prof. Skills	c1			1			1			1	1			1
	c2	1	1		1	1				1	1			1
	c3	1	1		1					1			1	1
General	d1		1	1				1						
	d2			1				1				1		
	d3												1	
	d4							1			1			

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	10
Mid-Term Exam	6-th Week	10
Practical Exam	Fifteenth week	20
Written Exam	Sixteenth week	60
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.:

http://www.sme.org/manufacturingengineering/
http://www.chalmers.se/en/education/programmes/masters-info/Pages/Production-Engineering.aspx
http://w3bin.com/websites/production-engineering

7- Facilities required for teaching and learning:

- Lecture room , and workshops

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

Head of the Department: Dr. Abdelmagid Abdelatif

Date: September 2015

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department

Course Specifications

CMP 110: 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:	September 2015

B - Basic information

Title: Program Design and Computer Languages	**Code:** CMP110	**Year/level:** Freshman - Fall, Spring and Summer Semesters
Credit Hours: 4	**Lectures**: 2	**Tutorial**: 3 **Practical**: 2
	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- Analyze 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	3	2
➢ Program documentation and flow charts	2	3	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	3	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)	2	2	2
➢ Classes and objects	2	2	2
➢ 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	**30**	**45**	**30**

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							

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations	Discussions	Tutorials	Problem solving	Laboratory &					Researches	Modeling and			Written Exam	Practical Exam	Quizzes	Term papers	Assignments			
General and	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)
Semester Work: seminars, quizzes, assignments and reports	Bi-Weekly	10
Mid-Term Exam	6th Week	10
Practical Exam	14th, 15th weeks	20
Written Exam	Sixteenth week	60
Total		**100**

6- List of references

6-1 Course notes:

- Lecture notes and handouts

6-2 Required books:

- Walter Savitch, Problem Solving With C++, Pearson Education Inc., 2006.
- Deitel & Deitel, C++ How To program, Prentice Hall, 2001.
- Al Stevens, C++ Programming Bible, IDG, 2000.

6-3 Recommended books:

- C++ Essentials, Sharam Hekmat, PragSoft Corporation,www.pragsoft.com, 2005

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: Prof. Dr. Said Gawish
Date: September 2015

Modern Academy for Engineering & Technology

Architecture Engineering and Building Technology Department

Course Specification

ARC 210: Civil Engineering Technology

A- Affiliation

Relevant programs: 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

Departments offering the programs: 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: Architecture Engineering and Building Technology Department

Date of specifications approval: October, 2013

B - Basic information

Title: Civil Engineering Technology
Code: ARC 210
level: sophomore, Third Semester
Credit Hours:3
Lectures: 2
Tutorial: 2
Pre-requisite: None

C - Professional Information

1 – Course Learning Objectives

A study of this course will enable the student to:

- Introduce the principles of Civil engineering technology.
- Study civil engineering applications on different constructions.

2 - Intended Learning Outcomes (ILOS)

A - Knowledge and understanding

By the end of the course the student should gain the following knowledge:
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
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 hou
• Introduction	2		2
• Fundamentals of surveying	2		2
• 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	**30**		**30**

Teaching and Learning Methods

Course ILO's		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
Knowledgea4	a1	1			1	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
	a5	1			1	1		1	1	1			1			1

Intellectual	b1		1	1				1	1	1						1
	b2			1	1	1		1								1
	b3				1	1		1	1				1		1	1
Applied	c1							1		1						
	c2				1	1		1					1		1	1
	c3				1	1		1	1	1			1		1	1
	c4				1	1		1	1				1		1	1
General Tran.	d1		1			1		1			1					1

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees
Semester Work: quizzes assignments and reports	Bi-Weekly	10
Mid-Term Exam	7th Week	10
Practical Exam	-	20
Written Exam	Sixteenth week	60
Total		100

6- List of References
6-1 Course notes
Civil Engineering Technology, Adham Elalfy,

6-2 Required books

المواد الهندسيه، د. كريم محمد عطا، دار الكتب، ١٩٩٥

6-3 Recommended books

- **Civil engineering books in the library**

6-4 Periodicals, Web sites, etc.
www.ACI.com

7- Facilities Required for Teaching and Learning
Blackboard / whiteboard / OHP / Data Show.
Survey lab.

Course coordinator: **Assist. Prof. Adham ElAlfy**

Head of the Department: **Assist. Prof. Nahed Omran**

Date: **September 2015**

Modern Academy for Engineering & Technology

Electronic Engineering and Communications Technology Department

Course Specification

ELC211: Electrical Circuit Analysis-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:	Electronic Engineering and Communications Technology Department
Date of specifications approval:	October, 2013.

B - Basic information

Title: Electrical Circuit Analysis-1 **Code:** ELC211 **Level:** Sophomore, Third Semester

Credit Hours: 3 **Lectures:** 2 **Tutorial:**1 **Practical:** 2

Pre-requisite:MTH102

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, natura of RL and RC circuits, step response of first order RL and RC circuits, natural and step responses of RLC circuits, and sinusoid 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, A2, A3)
a2-Voltage, current, and power calculations for a simple resistive circuits. (A1, A3, A5)
a3- Applications of Ohm's and Kirchhoff's Laws. (A1, A3, A5)
a4- Series, parallel, and delta-star connections principles. (A1, A4, A5)
a5- Different techniques of circuit analysis. (A1, A5, A15)
a6- Operational-amplifier characteristics and applications. (A1, A2, A15)
a7- Characteristics of a sinusoidal current and voltage. (A1, A6, A8)
a8- Basic concepts of RL and RC circuits. (A1, A3, A5)
a9- Basic concepts of RLC circuits. (A1, A3, A5)

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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, 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, C
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, A2, A3, A4, A5, A6, A8, A15
B	Intellectual skills	B1, B2, 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:

Topics	Lecture hours	Tutorial hours	Prac ho
1. Units Dimensions and Standards.	2	1	2
2. Circuit Variables and elements.	2	1	2
3. Simple Resistive Circuit.	4	2	4
4. Node Voltage Method.	2	1	2
5. Mesh Current method	2	1	2
6. Source Transformation and Supper Position Principle.	4	2	4
7. Thevenin’s Theorem.	4	2	4
8. Operational Amplifiers.	4	2	4
9. Inductance, Capacitance and Mutual Impedances.	2	1	2
10. Response of RL and RLC Circuits.	4	2	4
Total hours	30	15	3

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
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	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
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 Professional Skills	c1						1							
	c2						1							
	c3						1							
	c4						1							
	c5						1							
	c6						1							
General Tran. Skills	d1						1							
	d2						1							
	d3						1							

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: seminars, quizzes	Bi-Weekly	10
Mid-Term Exam	6-th Week	10

Practical Exam	Fifteenth week	20
Written Exam	Sixteenth week	60
Total		100

6- List of references:

6-1 Course notes

1- Electrical Circuit Analysis-1 "*Theoretical part*".

2-Electrical Circuit Analysis-1 "*Practical part*".

6-2 Required books

1. Boylestad, ***Introductory Circuit Analysis***, Tenth Edition, 2003.
2. David E. Jonson, ***Electrical Circuit Analysis***, Prentice Hall, USA, 1999
3. Bird, John. (2010) Electrical circuit theory and technology. China: newens..

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.
- http://www.facstaff.bucknell.edu/mastascu/elessonsHTML/Circuit/Circuit1.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. Mokhtar Abd El- Haleem.*

Date: 1 / 7 / 2015.

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department

Course Specification

CMP 211: 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: September 2015.

B - Basic information

Title: Logic Design-1 **Code:** CMP 211 **Level:** Sophomore, First Semester

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

Pre-requisite: MTH 101

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, decorder, encorder, 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 circiuits (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 ouput 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
➢ Introduction	3	1	-
• Basic Definitions.			
• Laws of Boolean algebra.			
➢ Logic Functions Representation & Realization	2	1	3
• 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	1	
• Matching logic functions with gate systems.			
➢ Logic function minimization	2	1	-
• Using basic laws of Boolean.	1		
• Using karnaugh map minization.	1	2	-
• Using Quine-Mc Clusky's Methods.	1		
• Minimization of multiple-output Logic Functions.	1	1	-
➢ Combinational logic modules	2	1	2
• Half and full adders, Parallel adder connection, look ahead carry.			
➢ Decoders and de-multiplexers	1		2
➢ Encoders	1		
➢ Data selectors (multiplexers)	1		
• Parity checkers.	1	1	2
• Read only memories.	2		2
• Binary comparators.	2		2
➢ Sequential logic circuit elements	2		-
• State diagram and state table representation of sequential circuits.			
➢ Asynchronous and synchronous sequential elements	2	1	3
• S-R Flip-Flop, and J-K Flip Flop.			
• D Flip-Flop, and T Flip Flop.	2	1	3
• Racing in sequential circuits.	1		-
• Master-slave and Edge-triggered Flip-Flops.	2		2
➢ Sequential logic circuit modules	1		-
• Introduction.			
➢ Registers and shift registers	3	1	2
➢ Asynchronous and synchronous counters	4	2	3
➢ Counter using shift-registers (Johnson and ring counters)	3		1
➢ Random access memories (basic cell, addressing and read-write operations)	3	1	3
Total hours	**45**	**15**	**30**

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 Skills	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)

Semister Work: seminars, quizzes assignments and reports	Bi-Weekly	10
Mid-Term Exam	6-th Week	10
Practical Exam	Fifteenth week	20
Written Exam	Sixteenth week	60
Total		100

6- List of references:

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

6-2 Required books:

- Mohi Eldin Rateb, "Digital Logic Circiuts", Modern Academy Press, 2002.
- Mano, M.M, and Kime, C.R,"Logic and Computer Design Fundamental", 2nd ed., Englewood cliffs, NJ: Prentice Hall, 2000.
- Nelson, V.P, Nagel, H.T., Carroll, B.D., and Irwin, J.D.,"Digital Logic Circuit Analysis and Design", NJ: Prentice Hall, 1995.

Even, Guy and Medina Moti. (2014) Digital logic design. USA: Cambridge univercity.

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6-3 Recommended books:

- Warkely, J.F, "Digital Design: Principles and Practices", 2nd ed. Englewood cliffs, NJ: Prentice Hall, 2000.
- Mano, M.M, "Digital Design" 2nd ed. Englewood cliffs, NJ: Prentice Hall, 1991.
- Weste, Neil. (2011) Integrated circuit design. USA: Addision Wesly.

6-4 Periodicals, Web sites, etc.

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

7- Facilities required for teaching and learning: None.

Course coordinator: Prof. Dr. Mohi-Eldin Rateb

Head of the Department: Prof. Dr. Mokhtar Abdelhalem

Date: September 2015

Modern Academy for Engineering & Technology

Basic science Department

Course Specification

ELC214: Modern Theory for Semiconductor Devices

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: Electronic Engineering and Communications Technology Department
Computer Engineering and Information Technology Department
Manufacturing Engineering and Production Technology Department

Department offering the course: Basic Science Department

Date of specifications approval: September, 2015

B - Basic information

Title: : Modern Theory for Semiconductor Devices **Code:** ELC214 **Level:** sophomore. **Semester:** 3rd

Credit Hours	3 hrs	**Lectures**	2 hrs	**Tutorial**	1 hrs	**Practical**	2 hr
		Pre-requisite:	PHY 102				

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 understanding 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	1		
Classical and modern theory of light	1		1
Plank's explanation for black body radiation	1	2	2
Photo electric effect	1	2	2
Compton experiment	1	2	2
Compton scattering	2	2	
Particles behaving as a wave and particle wave complementarity	1	2	2
Introduction to wave mechanics	2	2	1
The uncertainty principle	2	2	1
Wave function for free particle	1		
Wave function of the particle	3	2	1
The simple harmonic oscillator	2	2	1
Scanning tunneling microscopy	2	2	
Introduction to atomic physics	1		
Models of atoms	2	2	1
Bonding mechanisms	2	4	1
Bonding in solids	3	2	
Classical free electron model of metals	3	2	
Total hours	**30**	**15**	**30**

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	Quizes	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
	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	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	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
	c5						1				1			
	c6						1				1			
General	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-2 Weeks	10
Mid-Term Exam	6-th Week	10
Practical Exam	Fifteenth week	20
Written Exam	Sixteenth week	60
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: Dr. Abeer Serag El-deen
Head of the Department: Prof. Dr. Laila Soliman
Date: September 2015

Modern Academy for Engineering & Technology

Basic Sciences Department

Course Specification

MTH 203: 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:	Electronic Engineering and Communications Technology Department Computer Engineering and Information Technology Department Manufacturing Engineering and Production Technology Department
Department offering the course:	Basic Scienc Department
Date of specifications approval:	September, 2015

B - Basic information

Title: Differential Equations and Transforms		**Code:** MTH203	**Level:** Sophomore		**Semester:**Third		
Hours	**Credit** 3hrs	**Lectures** 2hrs	**Tutorial**	3hrs	**Practical**	—	

Pre-requisite: MTH 102

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	Intellectual skills	B1, B2, B3, B7
C	Professional and practical skills	C1, C12
D	General and transferable skills	D3, D7

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
Definitions, order, degree.	1	1	—
First 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.	6	8	—
Total hours	**30**	**45**	—

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	1		
	c2	1	1			1	1		
	c3	1	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	10
Mid-Term Exam	6-th Week	20
Written Exam	Sixteenth week	70
Total		100

6- List of references:

6-1 Course notes:

Essawi, A. M. and El-Sayed, A. T. (2013) Differential Equations and Transforms, Lecture notes, 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: Dr. Ashraf Taha EL-Sayed
Head of the Department: Prof.Dr. Lila Soliman
Date: September 2015

Modern Academy for Engineering & Technology

Basic Sciences Department.

Course Specification
GEN241: Presentation Skills

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:	Electronic Engineering and Communications Technology Department Computer Engineering and Information Technology Department Manufacturing Engineering and Production Technology Department.
Department offering the course:	Basic Sciences Department.
Academic level:	Sophomore
Date of specifications approval:	October, 2013

B - Basic information

Title: Presentation Skills **Code:** GEN241 **Level:** Sophomore ,Third semester

Credit Hours: 2 **Lectures:** 2 **Tutorial:**-

Pre-requisite: None

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 examines 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-Practical and Professional 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:

Topics	Lecture hours	Tutorial hours	Practical hours
1- Preparation of short talks.	2		
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.	8		
2- To improve the student communications skills / Seminar training	4		
3- To develop the student acquiring power of leadership	2		
4-. Training on active listening and negotiation.	4		
5- To understand and practice what's body language.	2		

6- How to write a technical report.	2		
7- C.V Writing	2		
8- Preparation of an attractive C.V. containing personal data qualifications, posts, and publications. - Interview Preparations.	2		
Total hours	**28**		

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**	X	X											X	
	a2	X								X			X		
	a3		X	X					X	X			X		
Intellectual Skills	**b1**	X	X	X				X	X	X			X	X	
Applied Professional Skills	**c1**		X	X					X	X					
General Tran. Skills	**d1**		X	X				X		X					
	d2		X	X										X	
	d3		X	X				X						X	
	d4		X	X				X						X	
	d5	X	X							X			X	X	

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)

Semester Work: seminars, assignments and reports	Weekly	40
Written Exam	Sixteenth week	60
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

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

7- Facilities required for teaching and learning:

Lectures room equipped with OHP and data show facility.

Course coordinator: Dr. Lubna Fekry

Head of the Department: Prof. Dr. Mokhtar Abd El- Haleem

Date: August 2015

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department

Course Specification

CMP 210: 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: Electronic Engineering and Communications Technology Department

Date of specifications approval: September 2015

B - Basic information

Title: Data Structures and Algorithms **Code:** CMP 210 **Level:** Sophomore, Second Semester

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

Pre-requisite: CMP 110

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.			
• Travering and searching linked lists for sorted and unsorted			
• 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			
• Threads and in order threading.			
• Path length and Huffman's tree achieving using Huffman's			
➢ Searching	6	7	-
• 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 • Introduction. • Sorting algorithms using selection, exchange, insertion • Complexity of algorithms. • Bubble sort algorithms as an example for exchange technique. • Binary sort (quick sort) algorithm. • Heap sort algorithms.	5	4	-
Total hours	30	30	-

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)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	20
Mid-Term Exam	6-th Week	10
Practical Exam	Fifteenth week	-
Written Exam	Sixteenth week	70
Total		100

6- List of references:

6-1 Course notes:

Data structures theory & Algorithms, Modern Academy Press, 2002.

6-2 Required books

- Mohi Eldin Rateb, Data structures theory & Algorithms, Modern Academy Press, 2002.
- Micheal Main and Water Savitch, Data Structure and other Objects, Benjamine/Cummings, CA, 1995.
- Nell, Susan Lily, Data Structure using Pascal, Prentice Hall, Inc., 1981.
- Adam Drozdek, Data Structure and Algorithms in C++, Cengage Learning , 4th edition, 2012.

6-3 Recommended books:

- Ellis Horowitz, Sartaj Sohni, Fundamnetals of Data Structires, Computer Science Press, Inc., 1982.
- 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: Prof. Dr. Mohi-Eldin Rateb
Head of the Department: Prof. Dr. Said Gawish
Date: September 2015

Modern Academy for Engineering & Technology

Electronic Engineering and Communications Technology Department

Course Specification
ELC212: Electrical Circuit Analysis-2

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:	Electronic Engineering and Communications Technology Department
Academic level:	Sophomore
Date of specifications approval:	October, 2013

B - Basic information

Title: Electrical Circuit Analysis-2 **Code:** ELC212 **Level:** Sophomore, Fourth Semester
Credit Hours: 3 **Lectures:** 2 **Tutorial:**3 **Practical: –**
Pre-requisite: ELC211

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 of:

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, A6)

a7- Principles of the two-port circuits. (A2, A6)

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:

c - Professional and practical skills:

By the end of this 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 simusoidal sources. (C1, C2)

c5- Design the frequency- selective circuit. (C1, C2)

c6- Implement the techniques of two- port terminated network and anlyze it to obtain its charachteristics. (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, A6
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:

Topics	Lecture hours	Tutorial hours	Practical hours
1-Sinusoidal steady- state analysis.	2	3	-
2-Techniques of circuit analysis in AC.	4	6	-
3- Sinusoidal steady- state power calculation.	4	6	-

4-Balanced three- phase circuit.	4	6	-
5- Introduction to Laplace- Transform.	2	3	-
6- Laplace- Transform circuit analysis.	4	6	-
7- Techniques of circuit analysis using Laplace- Transform.	4	6	-
8- Frequency selective circuits.	4	6	-
9- Two- ports networks.	2	3	-
Total hours	**30**	**45**	

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	
	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	
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	
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**
	c5	**1**		**1**		**1**		**1**		**1**			**1**	**1**	**1**

	c6	**1**		**1**		**1**		**1**		**1**			**1**	**1**	**1**
General Tran. Skills	**d1**									1					
	d2			1	1										
	d3								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	-
Written Exam	Sixteenth week	60
Total		100

6- List of references:

6-1 Course notes

1- 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.
- Hugbes, Edward. (2012) Electrical and electronic technology.USA: pearson.

6-3 Recommended books

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

6-4 Periodicals, Web sites, etc.

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

- 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. Mokhtar Abd El- Haleem.*
Date: 1 / 7 / 2015

Modern Academy for Engineering & Technology

Electronic Engineering and Communications Technology Department

Course Specification

ELC 213: Electrical Measurements

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.
Department offering the course:	Electronic Engineering and Communication Technology Department.
Date of specifications approval:	October, 2012.

B - Basic information

Title: Electrical Measurements **Code:** ELC 213 **Level:** Sophomore, Fourth Semester

Credit Hours: 3 **Lectures:** 2 **Tutorial:** 1 **Practical:** 2

Pre-requisite: ELC 211

C - Professional information

1 – Course Learning Objectives:

The objective of this course is to enable the students to understand and analyze the different types of errors of the electrical measurements. They should understand the construction, basic concepts, and operation of the different electrical measuring instruments such as: Voltmeters, ammeters, wattmeter, Ohmmeter, galvanometers….etc. Also it enables the students to understand the Principles of design, procedures, and error analysis of different methods used for measuring electrical quantities (such as power, resistors, and storage elements).

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

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

a1- Concepts of different system of units, analysis of measurement errors, accuracy classes and standards of measuring instruments (A1).

a2- Construction of analog measuring instruments (A4).

a3- Principles of operation, and performance of analog measuring instruments (A14,A15).

a4- Principles of design, properties, procedures, and error analysis of different methods used for measuring electrical quantities (such as power, resistors, and storage elements) (A4,A15).

b - Intellectual skills:

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

b1- Select, and analyze the more appropriate electrical measuring circuit and instruments for a given electric measurement (V, I, P, R, or Z) (B3,B5,B7).

b2- Deduce the torque equation of the electrical measuring instruments (B1,B3).

b3- Evaluate the properties of the electrical measuring instruments (B5,B13).

b4- Investigate the effect of the measuring instruments on the accuracy of electrical measurements (B6,B10,B14).

b5-Analyze the resulting error of the electrical measurements (B5,B9,B11).

c - Professional and practical skills:

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

c1- Design, assemble, and operate the most suitable electrical measuring circuit diagram from the measuring errors point of view (C3,C16,C17).

c2- Calculate, and analyze the resulting systematic errors (C2,C5,C18).

c3- Use relevant electrical laboratory equipment and analyze the results correctly (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 (D1,D3).

d2- Present data and results orally and in written form (D6).

d3- Prepare and present technical reports (D8,D9).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A4, A14, A15
B	Intellectual skills	B1,B3,B5,B6,B7,B9,B10,B11,B13, B14
C	Professional and practical skills	C2,C3,C5,C15,C16,C17,C18, C20
D	General and transferable skills	D1,D3,D6,D8, D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
➢ Units, Dimensions, and Standards.		1	
➢ Types and Analysis of Errors in Electrical Measurements.	2	1	2
➢ Fundamentals of Analogue Electrical Measuring Instruments.	2	1	2
➢ Deflection Type Permanent Magnet Moving Coil and Electro-	4	2	2
➢ Galvanometers, and DC Multi-Range Voltmeters, and	4	2	4
➢ AC Rectifier Type Voltmeters and Ammeters.	2		2
➢ Series and Multi-Range Ohmmeters.	2	1	2
➢ DC and AC Electro-dynamic Voltmeters, Ammeters, and Wattmeters	4	2	4
➢ DC and AC Power Measurements.			2

➢ Accurate measurements of very low, low, High, and very High Resistances	4	2	4
➢ Capacitance and Inductance Measurements Using AC Bridges	4	2	4
➢ Impedance measurements using resonance method.	2	1	2
Total hours	30	15	30

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods						Learning Methods					Assessment Method						
		Lecture	Tutorials	Problem solving	Laboratory &Experiments			Researches and Reports	Self learning				Written Exam	Practical Exam	Quizzes	Mid-Term Exam	Assignments		
Knowledge & Understanding	a1	1	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				
Intellectual Skills	b1	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	1		
	b5	1	1	1	1			1	1				1	1	1	1	1		
Applied Prof. 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			
General Trans. Skills	d1	1			1			1	1										
	d2	1	1	1	1			1	1					1	1		1		
	d3	1	1	1	1			1	1					1	1		1		

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Assignments, reports & Quizzes	Bi-Weekly	10

Mid-Term Exam	6-th Week	10
Practical Exam	Fifteenth week	20
Written Exam	Sixteenth week	60
Total		100

6- List of references:

6-1 Course notes:

- Shouman E.I. SHOUMAN, ELC 213, ***Electrical Measurements***, Cairo, 2013.
- Shouman E.I. SHOUMAN, ELC 213: ***Electrical Measurements (Lab.)***, Cairo, 2013

6-2 Required books

- Albert D. Hefrick, and William D. Cooper, ***Modern Electronic Instrumentation and Measurement Techniques***, Prentice- Hall International, Inc., London UK, 2009.
- Robert A. Witte, Electronic Test Instruments; ***Analog and Digital Measurements***, Prentice Hall PTR USA, 2002.

6-3 Recommended books:

- David A Bell, ***Electronic Instrumentation and Measurements***, Oxford univ. press, 1997.
- Larry D. Jones, and A. Foster Chin, ***Electronic Instruments and Measurements***, Prentice-Hall International, Inc., London UK, 1991.

7- Facilities required for teaching and learning:

Electrical and Electronic Lab.

Course coordinator: Prof. Dr. Shouman E.I. SHOUMAN
Head of the Department: Prof. Dr. Mokhtar Abd-ElHalim
Date: August 2015

Modern Academy for Engineering & Technology

Manufacturing Engineering and Production Technology Department

MNF 210: Mechanical Engineering Technology
Course Specifications

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:	Manufacturing Engineering and Production Technology Department
Date of specifications approval:	September 2015

B - Basic Information

Title: Mechanical Engineering Technology **Code:** MNF 210 **Year/level:** 2nd year / 2nd semester

Teaching Hours: 3 credits **Lectures: 2** **Tutorial: 1**

Practical: 2 **Total: 5**

C - Professional Information

1 – Course Learning Objectives

This course provides the student with knowledge and understanding of the importance of mechanical engineering for electrical engineers, and basic concepts and definitions concerning mechanics and heat. Student will gain the essence of fluid mechanics, thermodynamic, heat transfer, and mechanical power transmission.

2 - Intended Learning Outcomes (ILOS)

A - Knowledge and understanding

By the end of the course the student should acquire knowledge & clear understand of:

a1 - Different systems of dimensions and units. (A1)

a2 - Basic physical and mechanical principles and phenomena.(A4)

a3- Theoretical and practical background of fluid mechanics, thermo-dynamics, and heat transfer.(A1, A3, A4)

a4 - Physical and mathematical theories to analyze a fluid flow, thermo-dynamic, and heat transfer problems.(A5)
a5 - Basic principles and application to practical engineering problems.(A4)

B - Intellectual skills

By the end of the course the student should be able to:
b1- Use of different systems of dimensions and units. (B12)
b2-Apply physics and mathematical concepts to fluid flow, thermodynamics and heat transfer problems.(B1, B3, B4)
b3-Analyze simple problems concerning fluid statics, thermodynamics, heat transfer, and power transmission. (B6)
b4- Solve real problems using engineering and science fundamentals. (B2, B5, B7)

C - Professional and practical skills

. By the end of the course the student should be able to:
c1- Integrate knowledge from different courses to solve simple physical problems.(C1, C2, C6)
c2-Apply basic knowledge in analyzing practical engineering problem. (C5)
c3- Perform an experiment concerning fluid mechanics, thermo-dynamics, and heat transfer measurements. (C5)
c4-Perform standard and practical technical reports and presentations.(C12)

D - General and transferable skills

By the end of the course the student should be able to:
d1- Apply knowledge from different resources to solve a problem. (D9)
d2- Present the results of experiments concerning physical phenomenon in a professional manner. (D3)
d3- Search for information and engage in continued learning advanced courses. (D7)
d4- Collaborate effectively within team to perform the required tasks. (D1)
d5- Perform the assigned tasks correctly and in time. (D2)

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A3, A4, A5
B	Intellectual skills	B1, B2, B3, B4, B5, B6, B7, B12
C	Professional and practical skills	C1, C2, C5, C6, C12
D	General and transferable skills	D1, D2, D3, D7, D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
Importance of Thermodynamics, Fluid Flow, Heat Transfer for Electrical Eng.	2	2	4
Fundamentals of Mechanics and Heat	6	3	4
Fluid Flow	6	4	4
Thermodynamics	6	6	4
Heat Transfer	6	4	4
Power Transmission	4	2	4

Total hours	30	21	24

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	Projects	Researches and Reports	Modeling and Simulation	Site Visits	Discovering	Written Exam	Practical Exam	Quizzes	Term papers	Assignments
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
	a4	1			1	1							1		1		1
	a5	1			1	1				1			1		1		1
Intellectual	b1	1			1	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
Applied	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.	d1	1	1		1	1			1	1			1		1	1	1
	d2	1	1		1	1			1	1			1		1	1	1
	d3	1	1		1	1			1	1			1		1	1	1
	d4	1	1		1	1			1	1			1		1	1	1
	d5	1	1		1	1			1	1			1		1	1	1

5 – Assessment Methods, Timing , and Grading

Tools	Time schedule	Grading
Assignments, Quizzes, and year work	Bi-weekly	20
Lab. Experiments	weekly	10
Experimental Exam.	13-th week	10
Final Written exam	Sixteenth Wk	60
	total	100

6- List of References

6.1 Course notes

Lecture notes and handouts

6.2 Required books

- Moran M.J. & Shapiro H.N., Fund. of Engineering Thermodynamics, 4th Ed., John Wiley & Sons, 1999.
- Fox and Mc Donald, Introduction to Fluid Mechanics, 5th Ed.

6.3 Recommended books

- Eastop and McCorran, Applied Thermodynamics for Engineering Technology, Longman Scientific and Technology
- Cengel Y. A. and Boyes M.A., Thermodynamics: An Engineering Approach, 3rd edition, WCB McGraw-Hill, 1998.
- Holman J.P., Thermodynamics, 4th edition, McGraw-Hill, 1998.
- Munson B. R., Young D. F. and Okiishi T. H., Fundamentals of Fluid Mechanics, John Wiley & Sons, Inc., 4th Ed., 2000.
- White F. M., Fluid Mechanics, 4th Ed., McGraw-Hill, 1999.

6.4 Periodical, Web sites, etc.

http://www.learncheme.com/screencasts/fluid-mechanics
https://faculty.psau.edu.sa/.../doc-4-**ppt**-5f41caa07641b4b19aaf61278a0
http://www.moog.com/

7- Facilities required for teaching and learning:

Laboratory – Web sites visits.

Course coordinator:	Dr. Abdelmagid A. Abdalla
	Dr. Metwally H. Metwally
Head of the department:	Dr. Abdelmagid A. Abdalla
Date:	September 2015

Modern Academy for Engineering & Technology

Basic Science Department

Course Specification

MTH 204: 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 Communications Technology Department Computer Engineering and Information Technology Department
Department offering the course:	Basic Science Department
Date of specifications approval:	September, 2015

B - Basic information

Title: Advanced Calculus **Code:** MTH204 **Level:** Sophomore **Semister:** Fourth

Hours **Credit/Total** 3hrs **Lectures** 2hrs **Tutorial** 3hrs **Practical** —

Pre-requisite: MTH 101

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	Intellectual skills	B1, B2, B3
C	Professional and practical skills	C1, C12
D	General and transferable skills	D3, D7

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.	3	4	—
Total hours	**30**	**45**	—

4 - Teaching and Learning and Assessment methods:

Course	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	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
Course ILO's		Teaching Methods				Learning Methods	Assessment Method		
		Lecture	Discussions and seminars	Tutorials	Problem solving	Researches and Reports	Written Exam	Quizzes	Assignments
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	1		
	c2	1	1			1	1		
General	d1		1	1		1	1		1
	d2	1			1	1	1		1

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	10
Mid-Term Exam	6-th Week	20
Written Exam	Sixteenth week	70
Total		100

6- List of references:

6-1 Course notes:

Essawi, A. M., Wafaee, M. and El-Sayed, A. T. (2013) Advanced Calculus, Lecture Notes 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: Dr. Ashraf Taha EL-Sayed
Head of the Department: Prof.Dr. Lila Soliman
Date: September 2015

Modern Academy for Engineering & Technology

Basic Sciences Department

Course Specification

ELC215: Semiconductor for Microelectronics

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: Basic Science department

Date of specifications approval: September, 2015

B - Basic information

Title: Semiconductor for Microelectronics **Code:** ELC 215 **Level:** sophomore **Sememster**: 4th

Credit Hours: 3 **Lectures:** 2 **Tutorial/Exercise:**1 **Credit Hours: 3**

Pre-requisite: ELC214

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, principal of operation and applications of PN junction (diode). They have to study the characteristics (forward and reversals) of zene rand 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 characteristic.

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 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, principal of operation and applications of PN junction (diode (A1, A3).
a5- the characteristics (forward and reversals) 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 characteristic. (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, C2,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		
Classifyl deffernt types of semiconductors	1		1
Crystal structur and band structure of semiconductor	1	2	2
Conduction in deffernt types of semiconductor	2	2	2

P-N junction	1	2	2
Forward and revers biase and breakdown	2	2	
Diode	1	2	2
Zener diode	2	2	1
Tunnel diode	2	2	1
Solar cell	1		
Application of diodes	3	2	1
Schottky diode	2	2	1
Tunnel diode	2	2	
Bipolar junction transistor (BJT)	2	2	1
Junction field effect transistor (JFET)	2	4	1
Metal oxide semiconductor transistor(MOSFT)	3	2	
Physical structure, basic configuration and I-V characteristics	3	2	
Total hours	**30**	**15**	**30**

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 Professionall 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 Tran. 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)
Semester Work: seminars, quizzes assignments and reports	Bi-2 Weeks	10
Mid-Term Exam	6-th Week	10
Practical Exam	Fifteenth week	20
Written Exam	Sixteenth week	60
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: Dr. Abeer Serag El-deen
Head of the Department: Prof. Dr. Laila Soliman
Date: September, 2015

Modern Academy for Engineering & Technology

Manufacturing Engineering and Production Technology Department

Course Specification

GEN 341: Project Management

A- Affiliation

Relevant program: Electronic Engineering and Communications Technology Department
Computer Engineering and Information Technology Department
Manufacturing Engineering and Production Technology Department

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

Department offering the course: Manufacturing Engineering and Production Technology Department

Date of specifications approval: October, 2012

B - Basic information

Title: Project Management **Code:** GEN 341 **Year/level:** junior , 5th semester
Credit Hours: 2 hours **Lectures:** 2 **Tutorial:** **Practical:** none
Pre-requisite:

C - Professional information

1 – Course Learning Objectives:

The objective of this course is to enable the students to manage a new project by giving them knowledge and skills to do this.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

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

a1- What is meant by feasibility study (A3)
a2- definition of a project , project management (A3)

a3- phases of a project, steps of managing a project (A3).
a4- body knowledge of the project management
a5- Roll of the project manager (A1, A4).
a6- Planning the project (A10).

b - Intellectual skills:
On successful completion of the course, the student should be able to.
b1- Evaluate the feasibility study of a new project (B9)
b2-manage a project(B9)
c - Professional and practical skills:
On successful completion of the course, the student should be able to:
c1- Carry out a feasibility study for a new project (C12)
c2- Manage a project (C12).
c3- Solve an operational research problems using different techniques (C12)

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, D1).
d2- Present data and results orally and in written form (D3, D9).
d3- Effectively manage tasks , time, and resources (D6)
d4- Search for information's in references and in internet (D7).
d5- Practice self-learning (D7).

Course Contribution in Program ILO s

	ILO's	Program ILO's
A	Knowledge and understanding	A1, A3, A4, A10
B	Intellectual skills	B9
C	Professional and practical skill	C12
D	General and transferable skills	D1, D3 , D6, D7, D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
➢ Introduction	2	-	
➢ Feasibility study	-	-	
• Market study	2		
• Technical study	2		
• Financial & Economic study	2		
• Environmental study	2		
• Project management	-	-	
• Phases of a project & steps of managing a project	2		
• The project management body of knowledge	2		
• The roll of the project manager	2		
• Planning of a project	2		

• Developing a mission, vision , goals and objective for the project	2		
• Linear Programming	2	-	
• Transportation Problems	2	-	
• Assignment Problems (A project)	6	-	
Total hours	**30**	**-**	**-**

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					Seminars	Quizzes	Reports	Mid-Term Exam	Practical Exam	Written Exam
Knowledge & Understanding	1		1									1					1	1		1		1
Intellectual Skills	1		1									1					1	1		1		1
Applied Professional Skills	1		1															1		1		1
General Tran. Skills	1		1									1					1					

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: Seminars, Quizzes & Reports	Bi-Weekly	20
Mid-Term Exam	6-th Week	10
Practical Exam		
Written Exam	Sixteenth week	70
Total		100

6- List of references:

6-1 Course notes: Printed lecture

6-2 Required books

James P. Lewis, ***Fundamentals of Project Management***, AMACOM 3 rd Edition McGraw-Hill, NY, 2007.

6-3 Recommended books: Non

6-4 Periodicals, Web sites, etc. AMACOM publications

7- Facilities required for teaching and learning:

- Lecturing room

Course coordinator: Dr. Ahmed Sarhan
Head of the Department: Dr. Abd El Mageed Abdullah
Date: August 2015

Modern Academy for Engineering & Technology

Electronic Engineering and Communications Technology Department

Course Specification

ELC310:Control- I (Principles of Automatic Control)

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: Electronic Engineering and Communications Technology Department

Date of specifications approval: September, 2015

B - Basic information

Title: Control – I **Code:ELC310** **Year/Level:** Junior , Fifth semester

Credit Hours: 4 **Lectures:**3 **Tutorial:**1 **Practical:**2

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 of:

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).	2		4
➢ Mathematical background for solving of linear time-invariant systems (differential equations & Laplace transform).	3	2	
➢ Transfer function of system, block algebra & Mason's gain formula.	3	1	
➢ Closed loop system subjected to disturbances & errors of system.	2	1	4
➢ State-space representation of dynamic system & state transition matrix& solution of state equation.	4	1	
➢ First order & second order open and closed loop responses.	3	1	4
➢ Effect of roots of the system characteristic equation (poles of system) on the system transient response parameters.	2	1	2
➢ Basic control actions (P, PI, PD and PID), and system performance.	6	2	8
➢ Stability of linear control system (Routh-Hurwitz criterion).	3	1	2
➢ Root locus plots concept and system analysis.	3	2	
➢ Frequency response analysis and Bode diagrams.	4	1	2
➢ The concept of stability in the frequency domain (polar diagram &Nyquist criterion).	6	1	2
➢ Design of control system via root locus and frequency domain.	4	1	2
Total hours	**45**	**15**	**30**

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods										Learning Methods				Assessment Methods							
		Lecture	Laboratory & Experiments	Discussions & Seminars	Tutorials	Problem solving						Modeling	Researches & Reports						Quizzes	Assignments	Mid-Term Exam	Practical Exam	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		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						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	1	1
	b4	1			1	1							1						1	1	1		1
	b5	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	1	1
	c4	1	1		1	1						1	1						1	1	1	1	1
	c5		1		1	1						1	1							1		1	
General Tran. Skills	d1				1	1							1										
	d2	1	1		1								1							1	1	1	1
	d3	1	1										1										
	d4												1							1	1		1

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: Seminars, Quizzes& Reports	Bi-Weekly	10
Mid-Term Exam	6-th Week	10
Practical Exam	Fifteenth week	20
Written Exam	Sixteenth week	60
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 book :

Ogata, K. (2010) Modern Control Engineering.Prentice-Hall,INC.

6-3 Recommended books:
Kuo, B.C.(2003) 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:	Dr. Mokhtar Abd El- Haleem
Date:	September 2015

Modern Academy for Engineering & Technology

Electronic Engineering and Communications Technology Department

Course Specification

ELC312: Microelectronics Circuits-1

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: Electronic Engineering and Communications Technology Department

Date of specifications approval: October, 2013

B - Basic information

Title: Microelectronics Circuits-1 **Code:** ELC312 **Level:** Junior, Fifth Semester

Credit Hours: 3 **Lectures:** 2 **Tutorial:**1 **Practical:** 2

Pre-requisite: PHY102

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

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		1	1	
	a2	1			1						1	1	1	1	
	a3	1			1									1	
	a4	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	
	b4	1												1	
Applied Professional Skills	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		
	d2	1				1									
	d3	1				1			1				1		
	d4			1											

Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	10
Mid-Term Exam	6-th Week	10
Practical Exam	Fifteenth week	20
Written Exam	Sixteenth week	60
Total		100

6- List of references:

6-1 Course notes

1- Microelectronics Circuits-1 "*Theoretical part*"

2- Microelectronics Circuits-1 "*Practical part*"

6-2 Required books

Malvino, ***Electronic Principles***, Macmillan Mc Graw Hill Inc, 1998.

Smith, Sedra. (2011) Microelectronic circuits. USA: oxford.

6-3 Recommended books

Sedra-Smith, ***Microelectronics Circuits***, Oxford University Press, 1998.

6-4 Recommended web sites

1. **www.Sedra.com**
2. **www.Floyd.com**
3. **www.Mawino.com**

7- Facilities required for teaching and learning:

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

Course coordinator: *Prof. Dr. Hany Tawfik*
Head of the Department: *Prof. Dr. Mokhtar Abd El- Haleem*
Date: August 2015

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department

Course Specification

CMP 310: 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: September 2015

B - Basic information

Title: Engineering Computer Applications **Code**: CMP 310 **Year/level:** Junior , First Semester
Credit Hours: 3 **Lectures**: 2 **Tutorial**:1 **Practical**: 2
Pre-requisite: CMP 110

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- analyze 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	3		4
➢ Computer Application using MATLAB-Mathematical Models of systems	3	1	4
➢ Introduction to Simulink	3	2	3
➢ Seminar	1		1
Total hours	30	15	30

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	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)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	10
Mid-Term Exam	6-th Week	10
Practical Exam	Fifteenth week	20
Written Exam	Sixteenth week	60
Total		100

6- List of references:

6-1 Course notes:

Lecture notes and handouts

6-2 Required books

- D. Hanselman and B. Littlefield, Mastering MATLAB7, Prentice Hall, 2005
- David C. Kuncicky ,"Matlab Programming ",Pearson Prentice Hall ,2004.

- Amos Giltat," Matlab An Introduction with Applications", John Wiley.2004

6-3 Recommended books:

Thomas K., Jewelly, Computer Applications for Engineers, Prentice Hall, 1990.

- Jaan Kiusalaas, Numerical Methods in Engineering with MATLAB, Cambridge University Press, 2010.
- Sommervile, Ion. (2011) Software engineering. USA: Parson

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. AbdElmoneim Fouda
Head of the Department: Prof. Dr. Said Gawisha
Date: September 2015

Modern Academy for Engineering & Technology

Basic Sciences Department

Course Specification

MTH 305: Mathematics-5 (Introduction to Probability and Statistics)

A- Affiliation

Relevant program:	Electronic Engineering and Communication Technology BSc Program Computer Engineering and Information Technology BSc Program
Department offering the program:	Electrical Engineering Department
Department Date offering the course:	Basic Sciences Department
of specifications approval:	September, 2015

B - Basic information

Title: Mathematics-5(Probability and statistics) **Code:** MTH 305 **Level:** Junior **Semester**: 5th

Credit Hours: 2 **Lectures:** 1 **Tutorial:** 3 **Practical:** -

Pre-requisite: MTH102

C - Professional information

1 - Course Learning Objectives:

The main objective of this course is to enable the student to gain, investigate and learn the main concepts of functions, set theory, random events, probability functions, mathematical expectation, conditional probability, Binomial distribution, normal distribution, Sampling and the central limit theorem, Estimation, hypothesis testing, regression and correlation and Chi-square analysis and analysis of variance.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

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

a1- main rules and notions of functions and set theory. (A1, A2, A10)

a2- basics and different rules of probability theory.(A1, A2, A10)

a3- discrete and continuous probability distributions and rules of their expectation and their standard deviation(A1, A2, A10).

a4- notions of descriptive statistics, probability concepts, binomial and normal distributions, as well as the notions of conditional probability and counting techniques. (A1, A5, A10)

a5- principles of sampling and the central limit theorem, estimation, hypothesis testing, regression and correlation and Chi-square analysis. (A1, A2, A5, A10)

a6- basic concepts of statistics, measures of location and measures dispersion. (A1, A2)

b - Intellectual skills:

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

b1- describe discrete data graphically and compute measures of centrality and dispersion. (B1, B2)

b2- compute probabilities by applying different probability rules and theorems of probability.(B1, B2, B4, B7)

b3- construct the probability distribution of a random variable, based on a real-world situation, and use it to compute expectation and variance.(B1, B2, B7)

b4- apply basic concepts of probability functions, Mathematical expectation, variables, discrete distribution, binomial distribution, continuous distribution, and normal distribution to applications. (B1, B2)

b5- evaluate and analyze basic concepts of statistics, sampling, the central limit theorem, estimation, hypothesis testing, regression, Chi-square analysis of variance. (B1, B2, B3, B11)

c - Professional and practical skills:

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

c1- apply probability and statistics methods to engineering problems(C1, C2, C7, C13)

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, A10
B	Intellectual skills	B1, B2, B3, B4, B7,B11
C	Professional and practical skills	C1, C2, C7, C13
D	General and transferable skills	D3, D7

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
Functions, curve equation relationship.	2	6	
Set theory, Random events, and probability functions.	2	6	
Mathematical expectation, conditional probability.	2	6	
Binomial distribution, normal distribution.	2	6	
Sampling and the central limit theorem.	2	6	
Estimation, hypothesis testing.	1	3	
Regression and correlation.	2	6	
Chi-square analysis and analysis of variance.	2	6	
Total hours	**15**	**45**	

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	1	1	
	a5	1	1	1	1			1	1			1	1	1	
	a6	1	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			
Applied Professional Skills	c1	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)
Semester Work: quizzes and assignments	Bi-Weekly	20
Mid-Term Exam	8-th Week	10
Written Exam	Sixteenth week	70
Total		100

6- List of references:

6-1 Course notes:

Nabela El-sawy , **Introduction to Probability and Statistics**, Lecture Notes, Modern Academy, 2013.

6-2 Required books

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

R.E. Walpole, R.H. *Myers* and S.L. *Meyers*, *Probability and Statistics* for Engineers and Scientists, sixth edition. *Prentice-Hall 1998*

6-3 Recommended books:

John Neter, G.A. Whitmore, William Wasserman, Applied Statistics, Fourth Edition, Needham Heights, MA: A *Division of Simon* & *Schuster*, Inc.,1993.

6-4 Periodicals, Web sites, etc.

www.mathworlds.com
www.sosmath.com

7- Facilities required for teaching and learning:

- Library
- Internet

Course coordinator: Dr. Osama El-Gayar
Head of the Department: Dr. Lila Soliman
Date: September 2015

Modern Academy for Engineering & Technology

Electronic Engineering and Communications Technology Department

Course Specification

ELC315: Signal Analysis

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:	Electronic Engineering and Communications Technology Department
Academic level:	Junior
Date of specifications approval:	October, 2013

B - Basic information

Title: Signal Analysis **Code:** ELC315 **Level:** Junior, Fifth Semester

Credit Hours: 3 **Lectures:** 2 **Tutorial:**2 **Practical:** -

Pre-requisite: MTH305

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 correlation, 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- Various types of signal classifications. (A2)

a2- Physical meaning of auto- correlation and cross- correlation between signals. (A2)

a3- Difference between signal mathematical representation in time and frequency domains. (A2)

a4- Properties of Fourier transformation. (A2)

a5- Characteristics of linear system and features of signal distortion over linear and non- channels. (A2)

a6- Basics of random process and random variables. (A2)

a7- Some important definitions related to random variables such as; mean and covariance. (A2)

b - Intellectual skills:

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

b1- Classify signal using many ways. (B2)

b2- Apply signal transformation from time to frequency domains and vice versa. (B2)

b3- Calculate signal energy and power. (B2)

b4-Obtain mean and covariance functions for any random variable. (B2)

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 channel equalizer to combat both linear and non- linear channel distortion. (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**	A2
B	**Intellectual skills**	B2
C	**Professional and practical skills**	C1,C13
D	**General and transferable skills**	D3, D6, D7, D9.

3- Contents:

Topics	Lecture hours	Tutorial hours	Practical hours
1- Introduction to Signals, Classification of signals and Signal Operators.	٤	٤	-
2- Signal Comparison- Correlation..	٢	٢	-
3- Signal Representation by orthogonal signal set – Fourier series.	٢	٢	-
4- Analysis and Transmission of Signals.	٤	٤	-
5- A periodic Signal representation by Fourier Integral.	٤	٤	-
6- Transforms of same useful function and properties of Fourier Transform.	٢	٢	-
7- Signal transmission through linear system and signal distortion over spectral channel	٤	٤	-
8-Energy and power spectral densities. - Random processes.	٢	٢	-
9- Probability – Random variables – Statistical averages.	٢	٢	-
10- Mean – Correlation and Covariance function.	٢	٢	-
11-Transmission of Random process through linear filter.	٢	٢	-
12- Optimum Receiver – Mate fed filter receiver and correlation receiver.	٢	٢	-
Total hours	**30**	**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	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	
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	
	b4	1			1	1		1					1	1	
Applied Professional Skills	c1	1				1		1			1	1	1	1	
	c2	1				1		1			1	1	1	1	
General Tran. Skills	d1	1							1						
	d2	1							1						
	d3	1							1						
	d4	1							1						

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	15
Mid-Term Exam	6-th Week	15
Written Exam	Sixteenth week	70
Total		100

6- List of references:

6-1 Course notes

Signal Analysis (I) "*Theoretical part*"

6-2 Required books

1- B. Lathi, Modern Digital and Analog communication systems, oxford press 1998.

2- Electronic Communication systems,: kendey,Davis Mc Graw-Hill Book

Fadali, M. Sami. (2013) Digital control engineering analysis and design. USA: Academic press

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. Ahmed El-Dieb*

Head of the Department: *Prof. Dr. Mokhtar Abd El- Haleem*

Date: August 2015

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department

Course Specification
CMP 361: Seminar-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: September 2015

B - Basic information

Title: Seminar-1 **Code:** CMP 361 **Level:** Junior 5th Semester
Credit Hours: 1 **Lectures:** - **Tutorial/Exercise**:1 **Practical**: 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 up date 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 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	-	15	30

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			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 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				
Ge ner al	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	30
Assignment and year work Evaluation of oral and final report of seminars	By the end of the seminar periods	70
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: Prof. Dr. Said Gawish
Head of the Department: Prof. Dr. Said Gawish
Date: September 2015

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department

Course Specification

CMP 421: Computer Architecture

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: September 2015

B - Basic information

Title: Computer Architecture **Code**: CMP 421 **Year/Level:** Senior 1, First Semester

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

Pre-requisite: CMP 211

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 Secondary storage (A13).
a6- Architecture and organization of Memory unit (A8,A13,A15).
a7- Concepts of Operating system support (A1,A2,A13).
a8- Basic requirements for Programming the basic computer ((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 Programming the basic computer (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 control unit (C2, C3)
c3- Use a wide range of analytical tools, techniques, and software packages pertaining for programming the basic computer (C6, C14, C15)
c4- Utilize computational facilities and techniques, to design different architectures of memories experiments. Then collect, analyze and interpret results (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	
➢ Addressing Modes	4	4	
➢ Arithmetic and logic units	4	4	
➢ Memory unit	4	4	
➢ Secondary storage	4	4	
➢ Computer Architecture.	4	4	
➢ Operating system support	4	3	
➢ Programming the basic computer	3	4	
➢ Seminars	1	1	
Total hours	30	30	-

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)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	20
Mid-Term Exam	6-th Week	10
Practical Exam	Fifteenth week	-
Written Exam	Sixteenth week	70
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.

M.Mano, (1996), Computer System Architecture, Prentice Hall.

Thomas C.Bartee, (1991), Computer Architecture and Logic Design, Mc Graw Hill, 1991.

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: Prof. Dr. Said Gawisha

Date: September 2015

Modern Academy for Engineering & Technology

Electronic Engineering and Communications Technology Department

Course Specification

ELC311: Communications-1

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: Electronic Engineering and Communications Technology Department

Date of specifications approval: October, 2013

B - Basic information

Title: Communications-1 **Code:** ELC311 **Year/level:** Junior, Sixth Semester

Credit Hours: **Lectures:** 2 **Tutorial:**1

Practical: 2 **Total:** 3

C - Professional information

1 – Course Learning Objectives:

The objective of this course is to introduce main principles of communication system beginning from old analog communication system tell modern digital communication systems. In addition, main stages of communication system will be explained in details in this course stressing on various types of analog modulation / demodulation 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- Principles of communications system and its stages. (A2).
a2- Classifications of signals, communication channels and media (A2).
a3- Systems and signals representations in communications systems. (A2)
a4- Main concept of information theory. (A2)
a5- Modulation process – comparison between analog and digital modulation – C.W. modulation techniques. (A2)
a6- Different between baseband and band pass modulation. (A2)
a7- Various types of analog modulation techniques. (AM – FM – PM) (A2)
.

b - Intellectual skills:

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

b1- Classify electrical signal based on signal waveform. (B7)
b2- Decide which modulation technique suitable for communication user needs among analog techniques. (B7)
b3- Estimate waveform, spectrum and bandwidth at the output of each stage in analog communication system. (B7)

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. (C5)
c2- Observe and record input and output signals obtained by each communication system module using oscilloscopes then comment on results. (C5)
c3- Take measurements for signal voltages and frequency obtained at the output of various types of filters and oscillators. (C5)
c4-Examine simple communication system using various forms of analog modulation/ demodulation modules: DSB-SS, SSB, FM, and PM. (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).
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
B	Intellectual skills	B7.
C	Professional and practical skills	C5.
D	General and transferable skills	D3, D5, 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- Systems and signals representations in comm. systems.	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	10
Mid-Term Exam	6-th Week	10
Practical Exam	Fifteenth week	20
Written Exam	Sixteenth week	60
Total		100

7- Facilities required for teaching and learning:

- Lectures room equipped with OHP and data show facility.

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- *Electronic Communication systems,* kendey,Davis Mc Graw-Hill Book

6-3 Recommended books

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

6-4 Recommended Web site

https://en.wikipedia.org/wiki/Communications_system

Course coordinator:	*Prof. Dr. Adel El- Sherif*
Head of the Department:	*Prof. Dr. Mokhtar Abd El- Haleem*
Date:	August 2015

Modern Academy for Engineering & Technology

Electronic Engineering and Communications Technology Department

Course Specification

ELC314: Electronic Measurements

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:	Electronic Engineering and Communications Technology Department
Academic level:	Junior
Date of specifications approval:	October, 2013

B - Basic information

Title: Electronic Measurements **Code:** ELC314 **Level:** Junior, Fifth Semester

Credit Hours: 3 **Lectures:** 2 **Tutorial:**1 **Practical:** 2

Pre-requisite: ELC215

C - Professional information

1 – Course Learning Objectives:

- Understand the measurement techniques using different equipment
- Be familiar with the oscilloscope & use it to measure phase, voltage & frequency
- Understand the principle of operation of digital measuring 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- The different types of oscilloscopes & electronic analog voltmeters. (A5, A15)
a2- The digital voltmeters circuits. (A5, A15)
a3- The digital frequency meter circuits. (A15)
a4- The distortion meter & spectrum analyzer. (A10, A15)

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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)

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-Use the Email for communication. (D6)
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,A10,A15
B	Intellectual skills	B2, B3 ,B12
C	Professional and practical skills	C3, C12 , C15, C20
D	General and transferable skills	D4 ,D6 ,D7

1- Contents:

Topics	Lecture hours	Tutorial hours	Practical hours
1-Basics of digital instruments.	4	2	2
2- Time-base display systems, frequency meter system &measurements.	4	2	2
3- Errors &reciprocal counting, digital volt-meter and digital display.	2	2	2
4- Dual trace oscilloscopes, supplies, performance and testing	10	2	2
5- Signal generators, low frequency, pulses, RF & Frequency synthesizers.	2	2	2
6- Distortion analyzer, the Q-meter spectrum analyzer.	2	2	2
7- Measurement of physical quantities: Transducers, Displacement, Temperature, Photoelectric transducers.	4	2	2
8- Data A question system , A/D converters	2	1	1
Total hours	**30**	**15**	**15**

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	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
Intellectual Skills	b1	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
	b4	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	1		1	1
	c3	1			1		1		1				1	1	1
General Tran. Skills	d1						1		1						
	d2	1		1			1			1	1		1	1	1
	d3	1		1			1				1	1		1	1
	d4						1		1						

4- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	10
Mid-Term Exam	6-th Week	10
Practical Exam	Fifteenth week	20
Written Exam	Sixteenth week	60
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 ,***Instrumentation & Measurement***, 2nd edition , 1994.

Albert and Willia. (2009) Modern electronic instrumentation and measurement. India: Phi.

6-3 Recommended books

Larray D. Jones A. Foster Chin, ***Electronic Instruments and Measurements***, 2nd edition, Prentice Hall, Inc., 1991.

6-4 Recommended Web Site

www.LarryDJonesA.com http://www.thegreenbook.com/ http://www.brighthubengineering.com/

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. Mokhtar Abd El- Haleem*

Date: August 2015

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department

Course Specification

CMP 362: Seminar-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: September 2015

B - Basic information

Title: Seminar-2 **Code:** CMP 362 **Level**: Junior 6th Semester

Credit Hours: 1 **Lectures**: - **Tutorial/Exercise**:1 **Practical**: 2

Pre-requisite: CMP 361

C - Professional information

1 – Course Learning Objectives:

The proposed seminar topic must differ than the normal covered topics in the lectures. The student is allowed to select the topics of seminar from the latest technological aspects on the basis of the experience gained from seminar-1.The students are given as much freedom as possible in the choice their issues. Also they are given much freedom to combine their teamwork. The student may have the chance to discuss some of the recent technological problems with the manufactures and business tops.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

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

a3- Definition of advanced trends of seminar topics (A1, A3, A5).
a4- The relationship between the topics of seminar and the normal lecture courses (A7, A9,).
a5- Structure of seminar content that simplify it (A4).
a6- Definition and evaluation of up-to-date technology (A10,A15).
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- Applying modern terns of seminars (B5, B13).
b2- Enrich researching experience (B13, B14, B17).
b3- Enhance their think with advanced ideas (B1, B2).
b4- Selecting the appropriate technology tools for seminar topic (B4, B13, B12).

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- Interact with companies and corporations (C9, C10, C11).

c3- Manage their time effectively (C9, C10).
c4- Presenting the topics of seminars in professional manner (C1, C5, C6).
c5- Exchange Knowledge and skills with stuff member and students (C11).

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).
d3- Effectively manage time to resent the main topics clearly (D6)

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A3, A4, A5, A7, A9, A10, A11, A15
B	Intellectual skills	B1, B2, B4, B5, B12, B13,B14, B17
C	Professional and practical skills	C1, C5, C6, C9, C10, C11, C12, C16
D	General and transferable skills	D1, D2, D3,D6, D7

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
The course consists of a number of 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	-	15	30

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			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				
	b4		1	1	1	1						1				1			1				
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			Seminars	Practical Exam	Quizzes	Term papers	Assignments			
Applied Professional 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							
General Tran. Skills	d1		1	1	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)
Assignment and year work	By the semester	30
Assignment and year work Evaluation of oral and final report of seminars	By the end of the seminar periods	70
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: Prof. Dr. Said Gawish

Head of the Department: Prof. Dr. Said Gawish
Date: September 2015

Modern Academy for Engineering & Technology

Electronic Engineering and Communications Technology Department

Course Specification

ELC313: Microelectronics Circuits-2

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: Electronic Engineering and Communications Technology Department
Date of specifications approval: October, 2013

B - Basic information

Title: Microelectronics Circuits-2 **Code:** ELC313 **Level:** Junior, Sixth Semester
Credit Hours: 3 **Lectures:** 2 **Tutorial:**2 **Practical:** 2
Pre-requisite: ELC312

C - Professional information

1 – Course Learning Objectives:

- 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**

5- Contents:

Topics	Lecture hours	Tutorial hours	Practical hours
1. Bipolar Junction Transistors.	1	0.5	1
2. The I-V curve of BJT.	1	0.5	٢
3. BJT Operating Regions.	1	0.5	٢
4. BJT Circuit Configurations**.**	6	2	٦
5. Transistor Amplifier.	8	٤	١٠
6. Graphical Analysis.	1	١	٢
7. Frequency Response.	4	١	٢,٥
8. Amplifier Frequency Response.	4	١,٥	١
9. Effect of Internal Transistor Capacitance.	2	2	١
10. Types of power amplifiers	1	٠,٥	٠,٥
11. Class A power amplifier.	1.5	1	١
12. Signal Generators& Wave shaping circuits**.**	0.5	٠,٥	١

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	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
	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	
	b3				1	1	1	1	1			1	1	1	
	b4				1	1		1					1	1	
	b5				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								
	d2						1								
	d3						1								

6- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	10

Mid-Term Exam	6-th Week	10
Practical Exam	Fifteenth week	20
Written Exam	Sixteenth week	60
Total		100

6- List of references:

6-1 Course notes

1- Microelectronics Circuits-2 "*Theoretical part*"

2-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.

6-4 Periodicals, Web sites, etc

- **www.Sedra.com**
- **www.Floyd.com**

  www.Mawino.com

7- Facilities required for teaching and learning:

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

Course coordinator: *Dr. Eman Mohammed Mahmoud*

Head of the Department: *Prof. Dr. MokhtarAbd El- Haleem*

Date: 20 / 7 / 2015

Modern Academy for Engineering & Technology

Basic Sciences Department

Course Specification

MTH 306: Mathematics-6 (Complex Analysis and Partial Differential Equations)

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: Basic Science Department

Date of specifications approval: September, 2015

B - Basic information

Title: Mathematics-6 **Code:** MTH306 **Level:** Junior **Semester** : 6 th

Credit Hours: 2 **Lectures:**1 **Tutorial:**3 **Practical:** --

Pre-requisite: MTH 102

C - Professional information

1 – Course Learning Objectives:

By the end of this course the students should be able to demonstrate and apply the knowledge and understanding of the the concepts of partial differential equations, wave equation, heat equation Laplace equation by their solutions by different methods with their applications and learn complex analysis with their application.

2 - Intended Learning Outcomes (ILOS)

a. Knowledge and understanding:

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

a1.Comlex numbers,D'Moiver theorem, complex and analytic functions.(A1, A5)
a2.Conformal mappings and bilinear transformation. (A1, A5)
a3.Power series and integration by integration by methods of residues. (A1, A5)
a4.Basic concepts,classification and canonical form of PDEs. (A1, A3)
a5.Method of separation of variables for heat, wave and Laplace equations. (A1, A3)
a6. Solution of PDEs using Laplace trans form. (A1, A3)

b. Intellectual skills:

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

b1. InvestigateD'Moiver theorem, complex and analytic functions.(B1, B2, B3)
b2. Explore and recognize conformal mappings and bilinear transformation.(B1, B2, B3, B7)
b3. Expand and integrate complex functions using different methods.(B1, B2, B3, B4, B7)
b4. Develop several methods for soving PDEs. (B1, B2, B3, B4, B7)
b5. Apply the method of separation of variables to solve heat, wave and Laplace equations. (B1, B3, B4)
b6. Solve PDEs using Laplace transform. (B2, B3, B4)

c - Professional and practical skills:

c1. Solve partial differential equations describing real systems(C1, 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.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, A3, A5
B	Intellectual skills	B1, B2, B3, B4, B7
C	Professional and practical skills	C1, C12
D	General and transferable skills	D1, D3, D7

	Topic	Lecture hours	Tutorial hours
1	Complex numbers, arithmetic operations, polar forms	1	3
2	D'Moiver theorem, complex functions. Analytic function	1	3
3	Elementary functions of complex variables	1	3
4	Mapping, and conformal mapping.	1	3
5	Bilinear transformation, complex integrals.	1	3
6	Power series (Taylor and Laurent series).	1	3
7	Integration by method of residues.	1	3
8	Introduction to PDEs, Basic concepts of PDEs	1	3
9	Classifications and conical forms of 2^{nd} order linear PDEs.	1	3
10	Method of separation of variables for heat equation.	2	6
11	Wave and Laplace equations. D'Alembert solution of wave equation.	2	6
12	Solution of PDEs using Laplace transforms.	2	6
	Total hours	**15**	**45**

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods										Learning Methods				Assessement Method							
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving						Researches and Reports	Modeling and Simulation			Written Exam	Practical Exam	Quizes	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	1	1			
	a5	1	1		1	1						1				1		1	1	1			
	a6	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	1			
	b4	1			1	1										1				1			
	b5	1			1	1										1			1	1			
	b6	1		1	1	1						1				1			1	1			
Applied Professional	C 1	1		1		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)
Quizzes, assignments, term papers	Weekly	15
Mid-Term Exam	6-th Week	15
Written Exam	Sixteenth week	70
Total		100

6- List of references:

6-1 Course notes:

Moamen Wafaae and Ashraf Taha , Complex Analysis and partial Differential Equations, Lecture Notes, Modern Academy, 2013.

6-2 Required books

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

6-3 Recommended books:

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

6-4 Periodicals, Web sites, etc.

www.sosmath.com

7- Facilities required for teaching and learning:

- Library, Required references
- Computer, Internet

Course coordinator: Dr. Ghada Salem
Head of the Department: Prof. Dr.LailaSoliman
Date: Septmper, 2015

Modern Academy for Engineering & Technology

Basic Sciences Department

Course Specification

GEN 353: Management, International Business, and Total Quality Management

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: Basic Science Department

Date of specifications approval: September, 2015

B - Basic information

Title: Management, International Business, and Total Quality Management

Code:GEN353 **Level:** Tenth Semester (Senior-2)

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

Pre-requisite: non

C - Professional information

1 – Course Learning Objectives:

مع نهاية تدريس هذا المقرر يكون الطالب قد اكتسب مهارات الإدارة والتخطيط وكيفية صياغة واتخاذ القرارات الإدارية وكذلك التنظيم الإدارى وبناء الهياكل التنظيمية وايضا مفهوم وكيفية تفعيل كلا من التوجيه والقياده والرقابه والإلمام بإدارة الأعمال الدولية وايضا استيعاب وتطبيق مفهوم إدارة الجوده الشامله.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

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

a1- الإدارة والتخطيط و صياغة واتخاذ القرارات الإدارية(A٧, A10)

a2- التنظيم الإدارای وبناء الهياكل التنظيميه(A٧)

a3- التوجيه والقياده والرقابه وإدارة الاعمال الدولية وإدارة الجوده الشامله (A٦, A٧, A12)

b - Intellectual skills:

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

b1- ان يتعلم الطالب مفهوم الإدارة والتخطيط وكيفيه صياغة واتخاذ القرارات الإدارية (B3, B4, B9)

b2- ان يدرك الطالب اهمية و كذا تفعيل التنظيم الإدارى وبناء الهياكل (B5, B10)

b3- ان يتعلم الطالب كيفية التوجيه والقياده والرقابه وإدارة الأعمال الدولية و إدارة الجوده الشامله (B4, B٥, B9, B10)

c - Professional and practical skills:

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

c1- ان يمارس الطالب مهارات القيادة لفريق من زملائة اثناء 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	A6, A7, A10, A12
B	Intellectual skills	B3, B4, B5, B9, B10
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
مفهوم الإدارة والتخطيط .	٤		
صياغة واتخاذ القرارات الإداريه .	٤		
التنظيم الإدارى وبناء الهياكل التنظيمية.	٦		
التوجيه والقياده والرقابه .	٨		
مدخل إلى إدارة الأعمال الدولية وإدارة الجوده الشامله .	٨		
Total hours	**30**		

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				
Intellectual Skills	b1	1														1		1	1	1			
	b2	1				1										1		1	1	1			
	b3	1	1	1								1				1			1	1			
Professional	c1	**1**	**1**					**1**				1											

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

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
quizzes assignments	Bi-Weekly	15
Mid-Term Exam	6-th Week	15
Written Exam	Sixteenth week	70
Total		100

6- List of references:

6-1 Course notes:

None

6-2 Required books

- Robbins & coulter, ***Management***, 7th edition, 2003.
- Michael R. Czinkota, ***International Business***, 7th edition, 2005.

6-3 Recommended books:

None

6-4 Periodicals, Web sites, etc.:

None

7- Facilities required for teaching and learning:

- Computer, Datashow and Projector.

Course coordinator: Dr.MarwaShoeib
Head of the Department: Prof. Dr. Laila Solaiman
Date: August 2015

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department

Course Specification

CMP 563: 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: September 2015

B - Basic information

Title: Industrial Training -1 **Code**: CMP 563 **Level**: Senior-2 9th Semester
Credit Hours: 3 **Lectures**: - **Tutorial/Exercise:** - **Practical**: 6
Pre-requisite: 108 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 & Understanding	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)
Report from student	At the end of the training period	100
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: Prof. Dr. Said Gawish
Date: September 2015

Modern Academy for Engineering & Technology

Basic Sciences Department

Course Specification

CMP 311: Numerical Methods with Computer Applications

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: Basic Sciences Department

Date of specifications approval: September, 2015

B - Basic information

Title: Numerical Methods with Computer Applications | **Code:** CMP 311 | **Level:** Junior | **Semister:** 6 th

Credit Hours: 3 | **Lectures:** 2 | **Tutorial:** 2 | **Practical: -**

Pre-requisite: None

C - Professional information

1 – Course Learning Objectives:

The main objective of this course is to introduce some numerical methods for solving many mathematical Problems.

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 modles (C1).
c2- Use appropriate IT packages effectively (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.	4	4	
Total hours	**30**	**30**	

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)
Semester Work: quizzes assignments	Bi-Weekly	10
Mid-Term Exam	8-th Week	20
Written Exam	Sixteenth week	70
Total		100

6- List of references:

6-1 Course notes:

Osama El-Gayar, Numerical Methods for Engineers, Lecture Note, Modern Academy, 2005.

6-2 Required books

Richavd L.Brude "Numerical Analysis",4th ed., Mc Graw Hill, 1995.

Amir Wadi Al-khafaji ,John R.Tooley "Numerical methods in Engineering Practice", U.S.A. New York,1990.

6-3 Recommended books: Non

6-4 Periodicals, Web sites, etc.

http://math.fullerton.edu/mathews/numerical.html

7- Facilities required for teaching and learning:

- Library
- Internet

Course coordinator: Dr. Nabila Elsawy
Head of the Department: Prof.Dr. Lila Soliman
Date: Septamper, 2015

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department

Course Specification

CMP 423: 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: September 2015

B - Basic information

Title: Database Management **Code**: CMP 423 **Level:** Senior 1, 8th Semester
Credit Hours: 4 **Lectures**: 3 **Tutorial/Exercise**: 2 **Practical**: --
Pre-requisite: MTH 102

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	
➢ Data analysis	4	4	
➢ Building data models	4	4	
➢ Data model normalization forms	3	6	
➢ Analyzing functional dependency in the data model	6	2	
➢ Converting data model into schema design.	6	2	
➢ Structured Query Language	10	6	
➢ Security in databases	6	2	
Total hours	45	30	

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			
	a2	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			
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			
	b4			1	1	1						1				1		1	1	1			

Course ILO's		Teaching Methods										Learning				Assessment Method							
		Lecture	Presentations	Discussions and	Tutorials	Problem solving	Laboratory &					Researches and	Modeling and			Written Exam	Practical Exam	Quizzes	Term papers	Assignments			
Applied	c1	1		1	1	1						1				1		1	1	1			
	c2	1	1	1	1	1						1	1			1		1	1	1			
	c3	1		1	1	1						1				1		1	1	1			
	c4																						
	c5																						
General Tran.	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)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	20
Mid-Term Exam	6-th Week	10
Written Exam	Sixteenth week	70
Total		100

6- List of references:

- Ramez Elmasri, Shamkant Navath, Fundamentals of database systems, Third edition, Addison Wesley,2000.
- C.J.Date, An introduction to database systems, seventh edition, Addison Wesley Longman Inc., 2000.
- 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, Database Systems: Design, Implementation, and Management, Cengage Learning, 2012.

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. Adel Khedr
Head of the Department: Dr. Said Gawish
Date: September 2015

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department

Course Specification

CMP 410: Microprocessor Based-Systems

A- Affiliation

Relevant program: Computer Engineering and Information Technology BSc Program
Electronic Engineering and Communication 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: September 2015

B - Basic information

Title: Microprocessor Based-Systems **Code**: CMP 410 **Level**: Senior-1, 7th Semester

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

Pre-requisite: CMP 211

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 microprocessor and microcontroller (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 microprocessor and microcontroller (A4, A14).

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	2	--
➢ Assembly instructions for MCS-51.	3	1	4
➢ The Addressing modes for MCS-51.	2	1	--
➢ The instruction formats for MCS-51.	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.	3	2	4
➢ The interface with input units (such as sensors, keypad …etc).	3	1	2
➢ The interface with output units (such as motors, monitors …etc)	3	1	2
➢ Task for mini-project.	2	--	4
Total hours	30	15	30

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	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			
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 Professional Skills	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 Tran. Skills	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	Degrees
Semester Work: seminars, quizzes assignments and reports	By Weekly	10
Mid-Term Exam	6-th Week	10
Practical Exam	Fifteenth week	20
Written Exam	Sixteenth week	60
Total		100

6- List of references:

6-1 Course notes:

Assem B, The Microprocessor Based Systems, lecture note, 2015

6-2 Required books:

Rolin D. McKinlay, Janice G. Mazidi, Danny Causey and Muhammad Ali Mazidi, The 8051 Microcontroller, Prentice Hall, 2012

6-3 Recommended books:

Yogendra Gandole, A Text Book of Advanced Microprocessors and Microcontroller, Lambert Academic Publishing, 2012.

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 kits.
- Simulator software programs.
- Data show

Course coordinator: Dr. Assem Badr
Head of the Department: Prof. Dr. Said Gawish
Date: September 2015

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department

Course Specification

ELC 410: 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: September 2015

B - Basic information

Title: Electrical Power **Code**: ELC 410 **Level:** Junior, Second Semester

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

Pre-requisite: ELC 211

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
➢ Circiut analysis of transformers.	3	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	4
➢ Circuit equations of DC machine.	2	2	2
➢ DC machine efficiency.	2	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	2	-
➢ Operation synchronous machine.	2	1	2
➢ Types of power converters.	1	-	-
➢ Application and operation of power converters.	1	1	2
Total hours	30	15	30

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		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							

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
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)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	10
Mid-Term Exam	8-th Week	10
Practical Exam	Fifteenth week	20
Written Exam	Sixteenth week	60
Total		100

6- List of references:

6-1 Course notes:

- S. A. Gawish, Electrical Machines & Power, Cairo, 2008.
- S. A. Gawish, Electrical Machines & Power, Practical Part, Cairo, 2008.

6-2 Required books

- Stephan J. Chapman," Electrical Machinery fundametals", 4th edition, Mc Graw-Hill, 2005.

6-3 Recommended books:

- A. E. Fitzgerald, C. Kingsley, and S.D.U. man, "Electrical Machinery", 6th edition, 2003.
- 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: Prof. Dr. Said A. Gawish.

Head of the Department: Prof. Dr. Said A. Gawish.
Date: September 2015

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department

Course Specifications

CMP 435: 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: September 2015

B - Basic information

Title: Operating Systems **Code**: CMP 435 **Level:** Semester 9 ,Senior 2
Credit Hours: 3 **Lectures**:2 **Tutorial/Exercise**:2 **Practical:**
Pre-requisite: CMP 421

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).

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
C	Intellectual skills	B1,B2, B3, B4, B5, B7, B16, B17,B18
B	Professional and practical skills	C1, C2, C3,C4, C5, C8,C19
D	General and transferable skills	D1, D2, D3, D4, D7, D8, D9

3– Contents

Topic	Lecture hours	Tutorial hours	Practical hours
➢ Operating system concepts -Multiprocessing-CPU scheduling.	6	6	
➢ Deadlocks-Race conditions-Memory management-I/0 management.	6	6	
➢ File management. - Distributed systems	6	6	
➢ Hardware concepts. -Software concepts.	4	4	
➢ Design issues. - Communication in distributed systems.	2	2	
➢ Layered protocol. - Client server model.	2	2	
➢ Synchronization in distributed system.	2	2	
➢ Clock synchronization.	2	2	
Total hours	30	30	

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			
	b1	1	1	1	1							1	1			1	1	1	1	1			

Intellectual Skills	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			

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			
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)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	10
Mid-Term Exam	6-th Week	10
Practical Exam	14th Week	20
Written Exam	Sixteenth week	60
Total		100

6- List of references:

- Andrew S. Tatenbaun, Modern Operating Systems, second edition, Prentice Hall.2001.
- Harvy Deitel, An Introduction to Operating Systems, Addison Wisely, 1999.
- William Stallings, Operating Systems Internals and Design Principles, Prentice Hall.1998.

6-1 Course notes: Operating System Lecture Book

6-2 Required books Abrahm. (2010) Operating system concepts. Delhi: Wiley.

6-3 Recommended books: Michael Walters and Michael Palmer, Guide to Operating Systems, Cengage Learning, 2011.

6-4 Periodicals, Web sites, etc.

http://www.tutorialspoint.com/operating_system/index.htm

7- Facilities required for teaching and learning:

- Data show,
- Software Programs

Course coordinator: Dr. Khaled Morsy
Head of the Department: Dr. Said Gawish
Date: September 2015

Modern Academy for Engineering & Technology

Basic Sciences Department

Course Specification

GEN 352:التشريعات والقوانين الهندسية

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
epartment offering the program:	Electronic Engineering and Communications Technology Department Computer Engineering and Information Technology Department Manufacturing Engineering and Production Technology Department
Department offering the course:	Basic Scienc Department
Date of specifications approval:	September, 2015

B - Basic information

Title:التشريعات والقوانين الهندسية		**Code:GEN 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 المصـــطلحات والمفاهيم القانونية و التشـــريعات الصـــناعية المصـــرية - قوانين وتشـــريعات اعمال البناء والتخطيط العمرانى و قوانين وتشـــريعات بيئية لحماية البيئة المصرية و المناقصات والعطاءات- قانون تنظيم المناقصات والعطاءات و العقود الهندسية الدولية و العقود الهندسية المحلية و المطالبات والتحكيم.

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- انيفكر 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 وإجراءوكتابةتقريرعنمشروعأو 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	8		
قوانين وتشريعات بيئية لحماية البيئة المصرية	6		
المناقصات والعطاءات. - قانون تنظيم المناقصات والعطاءات	6		
العقود الهندسية المحلية - العقود الهندسية الدولية- المطالبات والتحكيم	6		
Total hours	**30**		

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 sol ing	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						
	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								

Profes sional	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:

Assessment Method	Timing	Grade (Degrees)
quizzes assignments	Bi-Weekly	15
Mid-Term Exam	6-th Week	15
Written Exam	Sixteenth week	70
Total		100

6- List of References

6-1 Course notes

د شعبان رجب جودة، قوانين وتشريعات هندسيه، الأكاديمية الحديثه للهندسة و التكنولوجيا، المعادى، ٢٠١٤.

6-2 Required books

6-3 Recommended books

جمال الدين احمد نصار، محمد ماجد خلوصى، قانون وتشريعات وعقود الاتحاد الدولى للمهندسين الاستشاريين، القاهرة، ٢٠٠٨.

6-4 Periodicals, Web sites, etc.

www.alamiria.com

7- Facilities required for teaching and learning:

- Library
- Internet

Course coordinator: Dr. Ghada Salem
Head of the Department: Prof. Dr. Lila Soliman
Date: September 2015

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department

Course Specification

CMP 422: 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: September 2015

B - Basic information

Title: Computer Graphics and Man-Machine Interface

Code: CMP422

Year/level: Senior 1, first Semester

Credit Hours: 3

Lectures: 2

Tutorial:1

Practical: 2

Prerequisites: MNF 101 and CMP 421

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. (A4, A5,A12)
a4- Projection of 3-D views on 2-D plane based on perspective projection. (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	2	1	2
• Column based filling	2	1	2
• Seed filling	2	1	2
➢ Transformations			2
• 2D transformations	2	1	
• 3D transformations	2	1	2
• Composite transformations	2	1	2
• Inverse transforms			
➢ Projection			2
• Parallel Projection	2	1	
• Perspective Projection	2	1	2
➢ Lightening based on local reflection model.	4	2	6
➢ Containment and Clipping.	2	1	2
Total hours	30	15	30

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	1			
	a4	١	١	١			1					١	١			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)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	10
Mid-Term Exam	6-th Week	10
Practical Exam	Fifteenth week	20
Written Exam	Sixteenth week	60
Total		100

6- List of references:

6-1 Course notes

Lectures Notes of Computer Graphics and Man-Machine Interface

6-2 Required books

Peter Shirley,(2004) Fundamentals of computer graphics

6-3 Recommended books

- JAMES D. FOLEY,(1999), Introduction to computer graphics, Addison-wesley,
- Eric Lengyel,(2012), Mathematics for 3D Game Programming and Computer Graphics, Cengage Learning.

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. Abdellatief Hussien Abouali
Head of the Department: Prof. Dr. Saed Gawish
Date: September 2015

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department

Course Specification

CMP 426: Logic 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: September 2015

B - Basic information

Title: Logic Design-2 **Code**: CMP 426 **Level:** Junior, First Semester
Credit Hours: 3 **Lectures**: 2 **Tutorial/Exercise**: 1 **Practical**: 2

Pre-requisite: CMP 211

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 application by 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- Problems of digital nature and sequential behavior to a state diagram description in case of small numbers of states problems (A1, A5).
a2- Evaluation of the minimum cost circuit realization (A4, A5, A14).
a3- The state table for a given sequential circuit (A2, A5).
a4- Estimation the size of the problem to choose either flip-flop or modular realization circuitry (A2, A4, A5).
a5- The proper layout design of the data path that fits the allocated problem requirements (A3, A4, A9,A14).
a6- The control system of the given problem which secures the correct sequence of output signals, which control the transfer of data among path and registers (A4, A14).
a7- The verification of the overall design correctness (A1, A4, and A14).
a8- The memory circuit required to transfer data from and to data path under control of control unit, and the associated address, and data registers for exciting microinstructions if exist (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

Topic	Lecture hours	Tutorial hours	Practical hours
➢ Introduction	3	1	3
• Aims realized through the topics of this subjects.			
• Logic gate types (RTL, DTL, TTL, ECL) and others.			
➢ Synthesis of sequential logic circuits	8	4	8
• State diagrams and state table representation.			
• The mealy and Moore models.			
• Synthesis procedure of completely specified sequential circuits.			
➢ Building state diagram (table)			
➢ Using state reduction techniques (state equivalent) and specially the implication chart method			
➢ State assignment techniques			
➢ Excitation functions derivation			
• Controllable counters as an example for a Moore model.			
➢ Analysis of sequential circuits			
➢ Modular design approaches using register transfers and data paths	6	3	6
• Digital systems subdivision (Data path and control).			
• Register transfer operations.			
• Arithmetic micro operations.			
• Logic micro operations.			
• Shift micro operations.			
• Multiplexer-based micro operations.			
• Trieste bus based transfers.			

• Memory based transfer. • A data path design proposed model. • Design of arithmetic logic unit (ALU). • Control word based design.			
➢ Sequencing control and algorithmic state machines (ASM) • The control unit. • The ASM chart construction. • An illustrative model (binary multiplier). • Hardwired control. • Realization of the sequencing part of the ASM chart using sequence register and decoder and using one flip-flop per state. • Micro programmed control.	7	4	7
➢ Memory system design • Static RAMs (RAM cell and RAM bit slice) • Coincident selection. • Dynamic RAMs (Basic cell, addressing and refreshing). • Memory system hierarchy. • Cache memory. • Design using ROM-RAM combination. • Design involving decoder implementation. • Design using memory array configuration. • Increasing the size of physical memory space.	6	3	6
Total hours	30	15	30

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		
Course ILO's		Teaching Methods						Learning Methods	Assessment Method					
		Lecture	Presentations and Mavies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments	Researches and Reports	Modeling and Simulation	Written Exam	Practical Exam	Quizzes	Term papers	Assignments
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	10
Mid-Term Exam	6-th Week	10
Practical Exam	Fifteenth week	20
Written Exam	Sixteenth week	60
Total		100

6- List of references:

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

6-2 Required books

- Mano, M.M, and Kime, C.R, Logic and Computer Design Fundamental, 2nd ed., Englewood cliffs, NJ: Prentice Hall, 2000.
- Nelson, V.P, Nagel, H.T., Carroll, B.D., and Irwin, J.D., Digital Logic Circuit Analysis and Design, NJ: Prentice Hall, 1995.

6-3 Recommended books:

- Warkely, J.F, Digital Design: Principles and Practices, 2nd ed. Englewood cliffs, NJ: Prentice Hall, 2000.
- Mano, M.M, Digital Design 2nd ed. Englewood cliffs, NJ: Prentice Hall, 1991.

6-4 Periodicals, Web sites, etc.

http://www.prenhall.com/mano

7- Facilities required for teaching and learning

- Logic lab. and Computers.
- Data show and Computer programs.

Course coordinator: Prof. Dr. Mohi-Eldin Rateb

Head of the Department: Prof. Dr. Mokhtar Abdelhalem

Date September 2015

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department

Course Specification

CMP 424: 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: September 2015

B - Basic information

Title: Data Transmission and Computer Networks **Code**: CMP 424 **level**: Senoir2/ 1st semester

Credit Hours: 4 **Lectures:** 3 **Tutorial**:2 **Practical**: -

Pre-requisite: CMP 421

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 Internet standards used when you dial into the Internet from home or on the road in order to access a World Wide Web server (web server) (A1, A2, A18,A20).
al0- The needs for quality of service guarantees and improved Security (A1, A6, A20).
al1 -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:

bl - 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
➢ Introduction. -Fundamentals of comp networks.	3	3	
➢ Media of network -Types of network.	3	3	
➢ Topology of networks. -protocols of networks.	3	3	
➢ OSI Model.-Digital communication overview.	3	3	
➢ Information theory and source coding.	3	3	
➢ Queuing theory for packet networks	3	3	
➢ Protocols of network.	4	4	
➢ Public networks, Integrated Services, and Digital Network (ISDN)	4	4	
➢ Digital communication over view.	4	4	
Total hours	30	30	

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			
	a3	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			
	a7	1	1	1	1	1						1				1			1	1			
	a8	1		1								1				1				1			
	a9		1	1	1							1				1				1			
	a10	1	1			1						1				1							
	a11	1	1													1							
	a12	1	1		1											1			1				
	a13	1	1	1								1				1							
Intellectual Skills	b1	1		1	1							1				1		1		1			
	b2	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		1		1			
	b6		1																				
Applied Profession	c1	1			1	1										1		1	1				
	c2	1	1													1		1	1	1			
	c3	1		1		1						1							1				
General Tran. Skills	d1			1		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	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	10
Written Exam	Sixteenth week	70
Total		100

6- List of references:

6-1 Course notes:

Data Transmission and Computer Network, Cairo: MAM Press

6-2 Required books

- Jerry Fitzgerald and Alan Dennis (2005), Business Date Communications and Networking, John Wiley,
- Behrouz A Forouzan (2003), Data Communications and Networking, Mc Grew Hil.
- William Stallings (1991) , Computer Networks, Prentice Hall,

6-3 Recommended books:

- Raymond and R. Panko, Business Data Networks and Telecommunications, Prentice Hall, 8th edition,2010

6-4 Periodicals, Web sites, etc.:

http://www.prenhall.com/panko/index.httml .

Course coordinator: Prof. Dr. Wafae Boghdady
Head of the Department: Prof. Dr. Said Gawish
Date: September 2015

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department

Course Specification

CMP 425: 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: September 2015

B - Basic information

Title: Information Systems **Code**:CMP425 **Level:** Senior1, First Semester
Credit Hours: 3 **Lectures**: 2 **Tutorial/Exercise**:2 **Practical**: -
Pre-requisite: CMP 310

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.
.

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	6	6	
Total hours	30	15	

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	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)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	10
Mid-Term Exam	7-th Week	10
Project (analysis, design and implementation of a real-world Information System)	Due : 12th week	10
Written Exam	Sixteenth week	70
Total		100

6- List of references:

6-1 Course notes: Non

6-2 Required books

- James A.O' Brine , "Introduction to Information Systems" 7th ed. Irwin, 1994.

E.whitman, Michael. (2013)Principles of information security. India: CL.

6-3 Recommended books:

- Kendall& Kendall, Introduction to Information Technology, Pearson Education Inc., 2005.
- James A.O' Brine, Management Information System, International fourth edition, Mc Graw Hill, 1999.
- Dryden Press, Information Systems and the Internet, fourth edition ,1990
- Ralph Stairand George Reynolds, Fundamentals of *Information Systems*, Cengage Learning, 2013.

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: Dr. Said Gawish
Date: September 2015

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department

Course Specification

CMP 461: 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: September 2015

B - Basic information

Title: Project-1 **Code:** CMP 461 **Level**: Senior-1 7th semester
Credit Hours: 2 **Lectures:** 1 **Tutorial/Exercise**:1 **Practica**l: 2
Pre-requisite: 108 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.	2	2	
➢ Planning and scheduling the project activities.	2	2	3
➢ Desining the project circuit.	2	2	6
➢ Implementation the project circuit.	2	2	14
➢ Testing the project circuit.	2	2	7
➢ Make final technical report documentation	5	5	
Total hours	15	15	30

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				

Course ILO's		Teaching Methods										Learning Methods				Assessment Method							
		Lecture	Presentations and	Discussions and	Tutorials	Problem solving	Laboratory &					Researches and	Modeling and			Seminar	Practical Exam	Quizzes	Reports	Assignments			
Applied Professional Skills	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. Skills	d1	1		1								1											
	d2			1								1											
	d3			1		1																	
	d4				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:

6-2 Required books:

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:

- Simulator software programs.
- Hardware lab.

Course Coordinator: Department Stuff
Head of the Department: Prof. Dr. Said Gawish
Date: September 2015

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department

Course Specification

CMP 436: 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: September 2015

B - Basic information

Title: Software Engineering | **Code**: CMP 436 | **Year/level**: Senior 1, first Semester

Credit Hours: 3 | **Lectures**: 2 | **Tutorial**:2 | **Practical:** -

Pre-requisite: CMP 110

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's between models. (A15,A18).
a5- Software design. (A12,A4).
a6- Software development models and suitability of a model to a specific cases. (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).
.

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 teams 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
➢ Software, software engineering and main topics of software engineering.	2	2
➢ ISO standards for software quality attributes	2	2
➢ Software organization structure and interaction between activities.	2	2
➢ Software organization roles understanding	2	2
➢ Software development models	6	4
• Water fall and evolutionary		
• Mills increment and mathematical		
• Spiral model understanding		2
➢ Requirement engineering	8	2
• Requirement Definition		
• Requirement Specification		2
• Non-function requirements		2
• UML and requirement engineering		
➢ Software Design	4	2
• Software Design process		
• Software Design Documents		4
➢ Establishment of software organization	2	
➢ Management of people and planning activities with dependencies.	2	4
Total hours	30	30

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	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			
	a7	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			
	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	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 Transferable Skills	d1	1	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	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	10
Written Exam	Sixteenth week	70
Total		100

6- List of references:

6-1 Course notes

Lectures Notes of software engineering

6-2 Required books

IAN Summerville, (2010),Software Engineering

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: Dr. Abdellatief Hussien Abouali
Head of the Department: Prof. Dr. Saed Gawish
Date: September 2015

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department

Course Specification

CMP 564: 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: September 2015

B - Basic information

Title: Industrial Training -2 **Code**: CMP 564 **Level:** Senior-2 10th Semester
Credit Hours: 3 **Lectures**: - **Tutorial/Exercise**: - **Practical:** 6
Pre-requisite: CMP 563

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. T
are carrying out their training in one of the national companies or industrial factories working in the computer engineering and
technology field. The training plan should be approved by a special committee headed by the chairman of the training depa
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	P
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	-	-	

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 & Understanding	a1		1				1												1		
	a2		1				1												1		
Intellectual Skills	b1		1				1												1		
	b2		1				1												1		
	b3		1				1												1		
	b4		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		
General Tran. Skills	d1		1				1												1		
	d2		1				1												1		
	d3		1				1												1		
	d4		1				1												1		
	d5		1				1												1		

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Report from student	At the end of the training 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.

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: Prof. Dr. Said Gawish
Date: September 2015

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department

Course Specification

CMP 523: 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: September 2015

B - Basic information

Title: Languages and Compilers **Code**: CMP 523 **level**: Senior 2, first Semester
Credit Hours: 4 **Lectures**: 3 **Tutorial**:2 **Practical**: -
Pre-requisite: CMP 210

C - Professional information

1 – Course Learning Objectives:

By the end of this course the students should demonstrate the knowledge and understanding of the differentiation betwe interpreter and the compiler, lexical analysis, formal specification of computer languages, grammar parsers and the adva 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 computer text languages (A3, A8.A13).
a2- Requirements for development of computer Languages (A1,A3,A5).
a3- Prolog programming language (A8).
a4- Scope of Character Scanning and lexical analysis (A8,A17).
a5- Concepts of Universal representation (A2).
a6- Object oriented programming principals and theory (A15).
a7- The code optimization techniques and heap allocations (A5).

b - Intellectual skills:

On successful completion of the course, the student should be able to:
b1– Build and design of systems that include complex analysis like languages (B1, B2, B13).
b2 – Analyze of deferent Computer Language (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 smart applications using Prolog program (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 implementation of interpreter (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	Prac
➢ Introduction: structure of a compiler.	2		
➢ Lexical analysis: tokens, regular expressions, Lex.	2	2	
➢ Parsing: context-free grammars, predictive and LR parsing, recursive descent parsing.	4	2	
➢ Abstract syntax: semantic and semantic actions	2	2	
• Semantic analysis and symbol tables.		4	
• Prolog introduction	2		
• Bindings, and type-checking	4		
• Abstract parse trees	2	2	
➢ Stack frames: representation and abstraction. ➢ Intermediate code generation and representation		2	
• Stack frames representation	2		
• Stack frames abstraction	4	2	
• Intermediate code representation trees	2	2	
• Intermediate code translation components	2		
➢ Basic blocks and traces: canonical trees and conditional branches.	2	2	
• Canonical tree			
• Conditional Branches	2	4	
➢ Instruction selection: algorithms for selection, RISC and CISC.	2		
➢ Liveness analysis: solution of dataflow equations.	6	4	
➢ Register allocation: coloring by simplification, coalescing.	3	2	
Total hours	45	30	

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 Skills	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. Skills	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)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	20
Mid-Term Exam	6-th Week	10
Written Exam	Sixteenth week	70
Total		100

6- List of references:

6-1 Course notes

Lectures Notes of Advanced Computer System,Cairo:MAM press

6-2 Required books

A.V. Aho . J.D.Ullman, (2000).Principles of compiler design, Pearson Education

6-3 Recommended books

N. Appel (2007), Modern Compiler Implementation in C- Andrew, Cambridge University Press.

6-4 Periodicals, Web sites, etc.

Engineering a Compiler-Cooper & Linda, Elsevier.

7- Facilities required for teaching and learning:

- Computer Labs Equipped with Prolog Compiler.

Course coordinator: Prof. Dr. Abdellatief Hussien Abouali
Head of the Department: Prof. Dr. Saed Gawish
Date: September 2015

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department

Course Specification

CMP 524: 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: September 2015

B - Basic information

Title: Computer Modeling and Simulation **Code**: CMP 524 **level**: Senior 2, second Semester
Credit Hours: 3 **Lectures**: 2 **Tutorial**:2 **Practica**l: -
Pre-requisite: CMP 110

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 syst
their interconnections to drive the suitable mathematical model . Specify the elements of modeling and simulation to dev
mathematical models. The student will be able to solve problems using simulation techniques, and achieve the suitable n
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 Gene
(A1, A2, A5).
a9- Basics of Sensitivity Analysis, Inspection Approach, and Confidence Interval Approach based on Independent data(A1

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 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, analyze 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
➢ **Basic concepts and terminologies of systems , models, and simulation:** -fundamentals of a systems and their terminologies --fundamentals of models and simulation and their terminologies -Advantages and disadvantages of simulation	 1 1 1	3	
➢ **Review of basic probabilities, Statistics <u>and distribution theory</u> :** **-**Set theory, Conditional probability ,compound events and , independent events -Discrete and Continuous distributions -Function of a random variable - Estimation of Means, Variance And Correlation**.**	 1 1 1 1	4	
➢ Mont Carlo simulation -Case Study	2	2	
➢ Selecting appropriate Probability Distributions specifying a physical phenomena-Case study	2	2	
➢ **<u>Introduction to Queuing Theory</u>**, 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	4	4	
➢ Linear Congruent Generators (LCG), Mixed Generator, Multiplicative Generator	2	2	
➢ Seminar	2	2	
Total hours	30	30	

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						
Applied Professional Skills	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 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
	c4	1	1		1	1								1	1					
	c5	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)
Semister Work: seminars, quizzes assignments and reports	Bi-Weekly	10
Mid-Term Exam	6-th Week	20
Written Exam	Sixteenth week	70
Total		100

6- List of references:

6-1 Course notes:

Lecture notes and handouts

6-2 Required books

D, Kelton , second edition.Simulation Modeling and Analysis, Averill M. L, W, , McGraw-Hill, Inc.1998.
Derry Banks , John S. Carson, Barry L. Nelson David M. Nicol , Discrete-event System Simulation, person education,2005.
M.M. Wooltson ,G J. Pert, An Introduction to Computer Simulation, Oxford University Press,1999

6-3 Recommended books:

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: Prof. Dr. Said Gawisha
Date: September 2015

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department

Course Specification

CMP 562: 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: September 2015

B - Basic information

Title: Project-2 **Code:** CMP 562 **Level:** Senior-1 8th semester and Senior-2 9th semester

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

Pre-requisite: CMP 461

C - Professional information

1 – Course Learning Objectives:

The proposed projects must complement the other courses in computer engineering and information technology. The stude given as much freedom as possible in the choice of the idea of their projects. Also they are given much freedom to combi teamwork. Each student must understand the project contribution and know his project task. By the end of this course the s should able to work together in teamwork to design, implement, document, and test their application using appropriate s 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, A).
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 a 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 (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, C1

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 (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	
➢ The students propose their project idea or undertake a dedicated one by the supervisor.	1	1	
➢ Planning and scheduling the project activities.	2	1	
➢ Designing of subunits and/or subprograms.	2	2	
➢ Implementation of subunits and/or subprograms.	1	2	
➢ Testing of subunits and/or subprograms.	1	2	
➢ Collection among subunits and/or subprograms to perform application system project.	2	2	
➢ Testing the whole project functions.	2	2	
➢ Make final technical report documentation.	2	2	
➢ Preparing for project presentation.	2	2	
Total hours	15	15	

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:	Prof. Dr. Said Gawish
Date:	September 2015

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department

Course Specification

CMP 533: 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: September 2015

B - Basic information

Title: Computer Organization **Code**: CMP533 **Year** : Fourth /First Semester
Credit Hours: 3 **Lectures**: 2 **Tutorial/Exercise:**2 **Practical:** -

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 archit structure, the basic computer addressing modes and instruction formats, the basic design issues/ parameters r hardwired control of a simple and basic computer, the basic concepts of micro program approach. They should 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,
D	General and transferable skills	D1, D3, D4, D5,D7, D9

3 – Contents

Topic	Lecture hours	Tutorial 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	
➢ Parallel organization (Multiple Processor design and vector processing)	2	2	
Total hours	30	30	

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)
Semester Work: seminars, quizzes assignments , class project and reports	Bi-Weekly	20
Mid-Term Exam	7th Week	10
Written Exam	Sixteenth week	70
Total		100

6- List of references:

6-1 Course notes:

Lecture notes and handouts

6-2 Required books

M. Morris Mano, Computer System Architecture, Prentice Hall, Inc., 1993.

6-3 Recommended books

- William Stallings Computer Organization and Architecture, designing for preference, Prentice hall, 1996.
- Donald Hearn and others, Parallel computer architecture, 1999.
- Subrata Ghoshal, Computer Architecture and Organization: From 8085 to core2Duo & beyond, Pearson Education India, 2011.

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. Khaled Morsy
Head of the Department: Dr. Said Gawisha
Date: September 2015

Modern Academy for Engineering & Technology

Manufacturing Engineering and Production Technology Department

Course Specification

GEN 242: Technical Report Writing

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: Electronic Engineering and Communication Technology Department
Computer Engineering and Information Technology Department
Manufacturing Engineering and Production Technology Department

Department offering the course: Manufacturing Engineering and Production Technology Department

Date of specifications approval: September 2015

B - Basic information

Title: Technical Report Writing **Code:** GEN 242 **Level:** junior, First Semester
Credit Hours: 3 **Lectures:** 2 **Tutorial/Exercise:**2 **Practical: -**
Pre-requisite: NON

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 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 m 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:

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,C14
D	General and transferable skills	D6, D8

3 – Contents

	Lecture hours	Tutorial hours	F
• Introduction: Paper Presentation	2	2	
• Steps to a Successful Writing Assignment	2	2	
• The Writing Process	2	2	
• Mechanics	4	4	
• Research Papers and Reports	2	2	
• Technical Report Writing	4	4	
• Resumes and Cover Letters	2	2	
• Using Words Correctly	2	2	
• Report and Thesis Layout	2	2	
• Technical Writing Ethics	2	2	
• A Structured Approach to Presenting Postgraduate Research Theses	2	2	
• Publishing from the thesis	2	2	
• Writing a research paper (Isn't it a bit early)	2	2	
Total Hours	30	**30**	

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 & 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	
	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	
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 (D
Semester Work: seminars, quizzes assignments and reports	Bi-weekly	20 p
Mid-Term Exam	Eighth week	10 po
Written Exam	Sixteenth week	70 po
Total		100 p

6- List of references:

6-1 Course notes:

Gadallah Nabil, ***Technical Report Writing***, Modern Academy for Engineering and Technology, Cairo, Egypt, 2005

6-2 Required books

- Deborah, C.A. & Margaret D. Blickle, ***Technical Writing, Principles and Forms***, 2nd. Ed., MacMillan Publishing., 2001

6-3 Recommended books:

1. Douglas Godfrey, ***ASLE Author's Guide***, Jan. ,1977

And in Arabic:

2. نبيل جادالله ، "البحوث وكتابة التقارير" ، القاهرة ، ٢٠٠١/٢٠٠٢.

6-4 Periodicals, Web sites, etc.

www.technical-writing.com

7- Facilities required for teaching and learning:

nternet educational lab, Computer and Data show

Course coordinator:	Prof. Dr. Nabil Gadallah
Head of the Department:	Dr. Abdelmegid Abdellatif
Date:	August 2015

Modern Academy for Engineering & Technology

Electrical Engineering Department

Course Specification

CMP 521: 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: September 2015

B - Basic information

Title: Distributed Computer systems **Code:** CMP 521 **level**: Senior2, 1st semester

Credit Hours: 3 **Lectures**: 2 **Tutorial**: 2 **Practi**

Pre-requisite: CMP 421

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 Computer systems, the details of the software architecture and communications support required, the commercial Distributed systems. They should be able to operate, maintain, design, calculate and analyze the performance of the Distributed Compute

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 implementatio (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
1	➢ Distributed Systems definitions and technologies	4	4
2	➢ DPS Architectures and models	4	4
3	➢ Inter-process communication	4	4
4	➢ Distributed file storage	8	8
5	➢ Timing issues, co-ordination, concurrency control and transactions	6	6
6	➢ Security and fault-tolerance	4	4
Total hours		30	30

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			
Intellectual Skills	b1	1			1											1		1		1			
	b2	1	1													1		1		1			

		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				
	b3	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						
	c2	1	1													1		1						
	c3	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)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	20
Mid-Term Exam	6-th Week	10
Written Exam	Sixteenth week	70
Total		100

6- List of references:

6-1 Course notes

Wafae Boghdady ,Lecture and Lab notes

6-2 Required books

Tanenbaum and Marten van Steen, (2007),Distributed system: Principles and Paradigms Handouts, 2nd edition, prentice hall.

6-3 Recommended books

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: Prof. Dr.Wafae Boghdady
Head of the Department: Prof.Dr.Said Gawish
Date: September 2015

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department

Course Specification

CMP 522: 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: September 2015

B - Basic information

Title: Artificial Intelligence **Code**: CMP 522 **Level:** Senior-2, Semester-10
Credit Hours: 4 **Lectures**: 3 **Tutorial/Exercise**: 2 **Practical: -**
Pre-requisite: CMP 410

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	
➢ Fundamentals of neural network	3	2	
➢ Learning algorithms used in neural network training, Different practical applications using neural network (logic gates).	3	2	
➢ Solving problems using searching techniques	3	2	
➢ Non-heuristic techniques, Depth first, breadth first search, uniform cost search.	3	2	
➢ Non-heuristic techniques, depth limited search, iterative deepening depth first search, bi-directional search, comparing searching techniques.	4	4	
➢ Heuristic techniques, Greedy best first search, memory bounded heuristic search.	3	2	
➢ Heuristic techniques, recursive best first search, learning to search better, Heuristic functions.	4	2	
➢ Expert system architecture.	3	2	
➢ Expert system, non-production system architecture.	4	2	
➢ Semantic network basics and components.	3	2	
➢ Semantic network and optimal search.	3	2	
➢ Machine learning, frame work for symbol based learning, version space search.	3	2	
➢ Elimination algorithm, decision tree (induction algorithm).	3	2	
Total hours	45	30	

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				
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			
	b9	1	1	1	1							1				1			1				
	b10	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			
	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	20
Mid-Term Exam	6-th Week	10
Written Exam	Sixteenth week	70
Total		100

6- List of references:

6-1 Course notes: None

6-2 Required books

G. F. Luger,(2001) Artificial Intelligence, Pearson edu. , 4th ed.

6-3 Recommended books:

- Russell, P,(2003). Nerving Artificial Intelligence, A Modern Approach, second ed.T. Prentice hall .
- Stuart Jonathan Russell and Peter Norvig, (2011).*Artificial Intelligence*: A Modern Approach.

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-Moetty
Head of the Department: Prof.Dr. Saied Gawish
Date: September 2015

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department

Course Specification

CMP 432: 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:	September 2015

B - BASIC INFORMATION

Title: Digital Image Processing **Code**: CMP 432 **level**: Senior 1, first Semester

Credit Hours: 3 **Lectures**: 2 **Tutorial**:1 **Practical**: 2

Pre-requisite: CMP 310

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	6	4	6
• 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	30	15	30

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	١	١	١			1					١	١			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				
Applied Professional 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)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	10
Mid-Term Exam	6-th Week	10
Practical Exam	Fifteenth week	20
Written Exam	Sixteenth week	60

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. Abdellatief Hussien Abouali
Head of the Department: Prof. Dr. Saed Gawish
Date: September 2015

Modern Academy for Engineering & Technology

Electronic Engineering and Communications Technology Department

Course Specification

ELC 422: Digital Signal Processing

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: Electronic Engineering and Communications Technology Department
Date of specifications approval: September, 2015

B - Basic information

Title: Digital Signal Processing **Code:** ELC 422 **Year/level:** Senior 1, Second semester
Credit Hours: 3 **Lectures:** 2 **Tutorial:**1 **Practical**: 2
Pre-requisite: MATH 203, CMP 211

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, A2).
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
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	1	1	2
• Classification of signals	1	-	2
• The concept of frequency in continuous-time and discrete-time signals.	2	-	2
• Analog-to-digital and digital-to-analog conversion	1	-	2
• Fourier series (FS) and Fourier Transform (FT)	1	1	2
• Discrete Fourier Transform (DFT) and its inverse	2	4	4
• Computational complexity of the DFT	4	4	2
• Autocorrelation, cross-correlation, and convolution	4	6	4
• Z- transform and its inverse	4	4	-
• Properties of the Z-transform	2	-	-
• Application of Z-transform in DSP	2	4	-
• Design of the digital filters	-	6	2
• Types of the digital filters and choosing between them	2	-	-
• FIR filter design	2	-	4
• IIF filter design	2	-	4
Total	**30**	**15**	**30**

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	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 Transferable Skills	d1												1	1				1						
	d2	1											1	1				1		1				
	d3		1	1										1				1						

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: Seminars, Quizzes & Reports	Bi-Weekly	10
Mid-Term Exam	6-th Week	10
Practical Exam	Fifteenth week	20
Written Exam	Sixteenth week	60
Total		100

6- List of References

6-1 Course Notes:

- Digital Signal Processing "*Theoretical part*"
- Digital Signal Processing "*Practical part*"

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.

Madisty, Viloy. (2010) Digital signal processing handbook fundamentals. USA: Acid free paper.

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.
- Computer Lab installed by DSP Kits and MATLAB software.

Course coordinator: Dr. Samir Kamal
Head of the Department: Prof. Dr. Mokhtar Abd El Haleem
Date: September, 2015

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department

Course Specification

GEN 451: Computer Systems Implementation

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: September 2015

B - Basic information

Title: Computer Systems Implementation **Code**: GEN 451 **Level**: Junior, Semester-6

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

Pre-requisite: After at least 140 Credit Hours

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
➢ Gathering and Analyzing Requirements.	2
➢ Determining Scope, Span, and Granularity.	2
➢ Comparison of alternatives and deciding the proper solution.	2
➢ Planning for Data Population.	2
➢ Putting together a useful project plan.	3
➢ Populating the configuration management database.	3
➢ Choosing the right tools.	2
➢ Implementing the process.	3
➢ Choosing and running a pilot system.	4
➢ The many uses for configuration information.	2
➢ Measuring and improving computer systems and computer network performance.	3
➢ Writing tenders and tender laws	2
Total hours	30

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)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	20
Mid-Term Exam	6-th Week	10
Written Exam	Sixteenth week	70
Total		100

6- List of references:

6-1 Course notes: Non

6-2 Required books

Larry Klostober, Implementing ITIL Configuration Management, 2nd Edition, IBM Press, 2008.

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: Prof.Dr. Saied Gawish
Date: September 2015

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department

Course Specification

GEN 454: Basics of Engineering Syndicate Works

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: September 2015

B - Basic information

Title: Basics of Engineering syndicate works **Code**: GEN 454 **level:** senior 1, First Semester
Credit Hours: 2 **Lectures**: 2 **Tutorial**: **Practical:** -
Pre-requisite: None

C - Professional information

1 – Course Learning Objectives:

By the end of this course the students should demonstrate the knowledge and understanding the positive role of Egyptian engineering syndicate such as:

- developing scientific and professional level for engineers and maintain the profession's dignity and to develop and apply the principles for organizing practice and performance of members of their duties in the service of the country and monitor its implementation.
- It also working to mobilize the forces of members and organize their efforts in the service of society to achieve national goals and objectives of economic development and facing applied problems and to give possible solutions and positive involvement in the national action.
- This is beside its role in developing and publishing researches and studies in different engineering fields and relating scientific researches and engineering with production sites by studying production methods and the means of improving and increasing it and reducing its costs.

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 main rolls and laws for the Egyptian Engineering Syndicate (A7,A8).
a2- The principals of Engineer's Syndicate Cycle (A9, A10).
a3- Charter of honor for engineers (A11, A13).

b - Intellectual skills:

On successful completion of the course, the student should be able to:
b1- Aware of importance of engineering studies (B8,B9).
b2- Compare and choose of his specialty field (B11,B13).

c - Professional and practical skills:

On successful completion of the course, the student should be able to:
c1- Know and aware how to find his/her training courses and jobs by engineering syndicate (C10,C11).
c2- acquire the maximum benefits from the syndicate (C12,C13).

d - General and transferable skills:

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

d1- have social relationships between the families in the sport clubs (D1,D2).

d2- have extensive knowledge from the periodic courses that are held there (D3,D6,D7) .

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A7, A8, A9, A10, A11, A13
B	Professional and practical skills	B8, B9, B11, B13
C	Intellectual skills	C10, C11,C12,C13
D	General and transferable skills	D1, D2,D3, D6,D7

3 – Contents

Topic	Lecture hours
➢ Engineering education in Egypt	4
➢ Establishment of engineering faculties in Egypt and ➢ Scientific fields of specialization of engineering faculties	4
➢ Engineers Syndicate in Egypt and Charter of honor for ➢ engineers.	4
➢ Phases of developing Engineer's Syndicate	4
➢ Egyptian Association for Engineers	4
➢ Services provided by engineer's syndicate for engineers and their families	4
➢ Rules and regulations which control engineers at work.	6
Total hours	30

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					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				
	a3	1														1							
Intellectual Skills	b1	1														1							
	b2	1	1													1				1			
Applied Professional	c1	1				1										1							
	c2	1	1													1							

General Tran skills	d1	1		1		1																	
	d2	1	1	1																			

6- List of references:

6-1 Course notes

Non

6-2 Required books:

None

6-3 Recommended books: None

6-4 Periodicals, Web sites, etc.

- http://www.eea.org.eg/
- http://au.alexu.edu.eg/English/Life@AU/Alumni/Pages/Alumni-Syndicate/Engineering-Syndicate.aspx

7- Facilities required for teaching and learning:

- Data show.
- White board.

Course Coordinator: Dr. Assem Badr
Head of the Department: Prof. Dr. Said Gawish
Date: September 2015

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department

Course Specification

CMP 431: 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: September 2015

B - Basic information

Title: Computer Peripherals **Code**: CMP431 **level:** Senior 1, 1st or 2nd Semester
Credit Hours:3 **Lectures**: 2 **Tutorial**:2 **Practical** :-
Pre-requisite: CMP 421

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, 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).

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 ionographic, 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 ionographic, 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	4	4	
Total hours	30	30	

4 - Teaching and Learning , Assessment Methods and Grading:

ours ILO's		Teaching Methods									Learning Methods				Assessment Method				
		Lecture	Presentations and	Discussions and	Tutorials	Problem solving	Laboratory & projects				Researches and	Modeling and	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						

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 micro processor 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:

- Data show.
- Hardware computer Lab.

Course Coordinator: Dr. Abdelmoneim Fouda

Head of the Department: Prof. Dr. Said Gawish
Date: September 2015

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department

Course Specification

CMP 433: 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: September 2015

B - Basic information

Title: Embedded Systems **Code:** CMP 433 **Level:** Senior-2, 7th OR 8th Semester
Credit Hours: 3 **Lectures:** 2 **Tutorial/Exercise:** 2 **Practical**: -
Pre-requisite: CMP 211

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; C 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 in microcomputer 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 C to control the basic hardware (C15).
c3- Design an embedded system in a manner similar to that practiced in industry (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 design process	2	2	
➢ Introducing Microcontrollers training kit for simulation software	2	2	
➢ The Microcontrollers Architecture	2	2	
➢ I/ O ports of microcontroller and its Timers.	4	4	
➢ Addressing modes.-Instruction set of microcontroller.	4	4	
➢ Interrupts.-Serial communication.-Memory decoding.	4	4	
➢ Embedded system based on VHDL and FPGA	4	4	
➢ Embedded computing platform – distributed embedded architectures – system analysis and architecture design – design example – Programming project.	4	4	
➢ Real time interfacing with LCD, ADC, sensors , stepper motors, keyboard , DAC	4	4	
Total hours	30	30	

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	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: seminars, quizzes assignments and reports	By Weekly	20
Mid-Term Exam	6-th Week	10
Written Exam	Sixteenth week	70
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, Making Embedded Systems: Design Patterns for Great Software, O'Reilly Media, Inc., 2012.

6-3 Recommended books:

Robert Oshana, Mark Kraeling, Software Engineering for Embedded Systems: Methods, Practical Techniques, Newnes, 2013.

6-4 Periodicals, Web sites, etc.

- http://www.8052.com
- http://www.keil.com/
- http://www.mikroe.com/

7- Facilities required for teaching and learning:

- Computer, Data show and Computer programs.
- Microprocessor and microcontroller Lab.
- VHDL lab.

Course Coordinator: Dr. Assem Badr

Head of the Department: Prof. Dr. Saied Gawish

Date: September 2015

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department

Course Specification

CMP 434: 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: September 2015

B - Basic information

Title: Multimedia **Code**: CMP 434 **level**: Senior 1st or 2nd Semester

Credit Hours: 3 **Lectures**: 2 **Tutorial**:1 **practical**: 2

Pre-requisite: CMP 210

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 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.	4	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	2	4
➢ Multimedia Programming Frameworks: Java for QuickTime, Java Media Framework	2	1	2
Total hours	30	15	30

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 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)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	10
Mid-Term Exam	6-th Week	10
Practical Exam	Fifteenth week	20
Written Exam	Sixteenth week	60
Total		100

6- List of references:

6-1 Course notes : None

6-2 Required books

C. Marlin Brown, Computer Interface Design Guidelines, Intellect Books, 1998.

6-3 Recommended books

- Distributed Multimedia: Technologies, Applications, and Opportunities in the Digital Information Industry (1st Edition), 2000.
- P.W. Agnew and A.S. Kellerman , Multimedia Communication, Addison Wesley, 1996.
- Jörg Henkel and Muhammad Shafique, Hardware/Software Architectures for Low-Power Embedded Multimedia Systems, Springer, 2011.

6-4 Periodicals, Web sites, etc.

http://www.b-u.ac.in/sde_book/multi_system.pdf
http://www.acm.org/education/curricula/ComputerScience2008.pdf
http://www.mathwork.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.
- Data show
- Computer software packages

Course Coordinator: Dr. Abdelmoneim Fouda
Head of the Department: Prof. Dr. Said Gawish
Date: September 2015

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department

Course Specification

CMP 531: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: September 2015

B - Basic information

Title: Advanced **Code**: CMP 531 **Level**: Senior-2, 9th OR 10th Semester
Credit Hours: 3 **Lectures**: 2 **Tutorial/Exercise**: 2 **Practical**: -
Pre-requisite: CMP 410

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.	5	5	
Total hours	30	30	

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			
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)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	20
Mid-Term Exam	6-th Week	10
Written Exam	Sixteenth week	70
Total		100

6- List of references:

6-1 Course notes:

6-2 Required books

Jerzy Soldek, Khalid Saeed, Jerzy Pejas, Advanced Computer Systems, Kluwer Academic, 2007.

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: Prof.Dr. Saied Gawish
Date: September 2015

Course Specifications

Computer Engineering and Information Technology Department

CMP 532: Advanced Database 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:	September 2015

B - Basic information

Title: Advanced Database Systems	Code: CMP 532	Level: Senior 1,Semester 8	
Credit Hours: 4	Lectures: 3	Tutorial/Exercise: 2	Practical: --
	Pre-requisite: CMP 423		

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 semistructured 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	
➢ Relational calculus: ➢ Visual query languages, calculi vs algebra, recursion in SQL	6	5	
➢ Object databases • Object-relational databases, objects in SQL • ODMG standard: architecture, ODL, OQL, language bindings • CORBA: IDL, ORB, dynamic invocation, DB services	15	8	
➢ XML databases: • XML query languages. XSLT: stylesheet, templates, evaluation. • XQuery: FLWR expression, evaluation, built-in functions, user-defined functions, aggregation, quantification	14	8	
➢ Query processing ➢ Query optimization.	4	5	
➢ Distributed databases ➢ OLAP, data mining, and data warehouses:	4	2	
Total hours	45	30	

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	Quizes	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			
	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			
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			
	b4			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	1	1			
	c3	1		1	1	1						1				1		1	1	1			
	c4																						
	c5																						
General Tran. 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)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	20
Mid-Term Exam	6-th Week	10
Written Exam	Sixteenth week	70
Total		100

6- List of references

6-1 Course notes: available

6-2 Required books

- Silberschatz, A, Korth, HF & Sudarshan, S 2005, *Database systems concepts*, 5th edn, McGraw-Hill, Boston.

6-3 Recommended books:

- Jiawei Han, Micheline Kamber, Jian Pei 2011, Data mining: Concepts and techniques, 3rd edn..
- Elmasri, R & Navathe, SB 2004, Fundamentals of database systems, 4th edn, Pearson/Addison-Wesley, New York.

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 Specificati

7- Facilities required for teaching and learning:

- Datashow,
- database software

Course coordinator:	Dr. Seham Ebrahim
Head of the Department:	Dr. Said Gawish
Date:	September 2015

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department

Course Specification

CMP 534: 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: September 2015

B - Basic information

Title: Computer Performance **Code:** CMP 534 **Level:** Senior2, second Semester
Credit Hours: 3 **Lectures**: 2 **Tutorial/Exercise**:2 **Practical:** -
Pre-requisite: CMP 210

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 approaches 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

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 Queuing network modeling	4	4
➢ Workload and benchmarking	4	4
➢ Queuing Modeling Tools (Java Modeling Tools)	4	4
Total hours	30	30

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			
	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)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	20
Mid-Term Exam	6-th or 7th Week	10
Written Exam	Sixteenth week	70
Total		100

6- List of references:

6-1 Course notes: Lecture notes and handouts

6-2 Required books

- R. Jain , The Art of computer system performance analysis: Techniques for Experiment Design , Measurement, Simulation and Modeling Wiley-& Sons, April 1991.

6-3 Recommended books:

- Edward D. Lazowska, John Zahorjan, G Socott Graham, and Keneth C. Sevick, Quantitative System Performance ,Computer System Analysis Using Queuing Network Models Prentic Hall Inc, 1984.
- John Hennesy, David Patterson, Computer Architecture A Quantitative Approach, 4th Ed. Elsevir Inc., 2007.

6-4 Periodicals, Web sites, etc.

- None.

7- Facilities required for teaching and learning:

- Computer, Data show and Computer programs

Course Coordinator: Dr. Khaled Morsy
Head of the Department: Dr. Said Gawish
Date: September 2015

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department

Course Specification

CMP 535: 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: September 2015

B - Basic information

Title: Computer System Technology **Code:** CMP 535 **Level:** Senior-2, 9th OR 10th Semester

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

Pre-requisite: CMP 421

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.	3	2	
➢ 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	
➢ Casings.-The motherboard and its fittings.	3	2	
Total hours	30	30	-

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			
Int	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 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			
	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	20
Mid-Term Exam	6-th Week	10
Written Exam	Sixteenth week	70
Total		100

6- List of references:

6-1 Course notes:

6-2 Required books

Ian Sinclair, Build &Upgrade your own PC, second edition, Biddles Ltd., 2001.

6-3 Recommended books:

David Groth, Complete Study Guide" second edition, Sybex, 2001.

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.
- Network Lab.

Course Coordinator: Dr. Assem Badr
Head of the Department: Prof. Dr. Saied Gawish
Date: September 2015

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department

Course Specification

CMP 536: 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: September 2015

B - Basic information

Title: Fault tolerant Systems **Code**: CMP 536 **level:** Senior 2, fifth Semester
Credit Hours: 3 **Lectures**: 2 Tutorial:2 **Practical**: -
Pre-requisite: CMP 110

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	4	4	
➢ 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	30	30	

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					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 Professi	c1	1	1		1	1										1		1	1	1			
	c2				1										1								
General Tran. Skills	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)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	20
Mid-Term Exam	6-th Week	10
Written Exam	Sixteenth week	70
Total		100

6- List of references:

6-1 Course notes None

6-2 Required books

Martine L. Shooman, Reliability of Computer Systems and Networks, John Wiley Interscience,2001

6-3 Recommended books

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. Said Gawish
Date: September 2015

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department

Course Specification

CMP 537: 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: September 2015

B - Basic information

Title: Computer Interfacing **Code**: CMP 537 **level:** Senior 2, first Semester
Credit Hours: 3 **Lectures**: 2 **Tutorial** :2 **Practical**:-
Pre-requisite: CMP 421

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	4	4
➢ Mass storage devices: Semiconductor, flash, magnetic floppy, hard disk, magnetic tapes, standard cartridge and optical.	2	2
Total hours	30	30

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 Professional	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)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	20
Mid-Term Exam	6-th Week	10
Written Exam	Sixteenth week	70
Total		100

6- List of references:

6-1 Course notes

None

6-2 Required books

Qiyang Chen, Human Computer Interaction, Idea Group Publishing, 2001.
Barry B. Berry. The intel micro processor architecture, programming and interfacing, Prentice Hall, USA, 2003.

6-3 Recommended books: None

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. Said Gawish
Date: September 2015

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department

Course Specification

CMP 538: 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: September 2015

B - Basic information

Title: Pattern Recognition and Neural Networks **Code**: CMP 538 **level**: Senoir2 , Second Semester

Credit Hours: 3 **Lectures:** 2 **Tutorial**:2 **Practical:-**

Pre-requisites: MTH 203, CMP 410

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	4
➢ principles of Back propagation algorithm	4	2
➢ Associative memories	4	4
➢ Matching and self organizing networks	3	2
➢ Pattern recognition using neural networks	4	2
➢ Seminars	1	1
Total hours	30	30

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)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	20
Mid-Term Exam	6-th Week	10
Written Exam	Sixteenth week	70
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: Prof. Dr. Said Gawisha
Date: September 2015

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department

Course Specification

CMP 539: 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: September 2015

B - Basic information

Title: Real Time Computing **Code**: CMP 539 **Level:** Senior-2, 9th OR 10th Semester
Credit Hours: 3 **Lectures**: 2 **Tutorial/Exercise**: 2 **Practical:** -
Pre-requisite: CMP 110

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	6	6
Total hours	30	30

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			
	a3	1			1											1		1	1	1			
	a4	1	1	1	1	1						1				1		1	1	1			

	a5	1														1		1	1	1			
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			
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 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				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	20
Mid-Term Exam	6-th Week	10
Written Exam	Sixteenth week	70
Total		100

6- List of references:

6-1 Course notes: Non

6-2 Required books

Ian Sinclair, Build &Upgrade your own PC, second edition, Biddles LTd, 2001.

6-3 Recommended books:

David Groth, Complete Study Guide" second edition, Sybex, 2001.

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: Prof.Dr. Saied Gawish

Date: September 2015

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Appendix 3

شروط النجاح والتخرج وقواعد حساب التقدير

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الآتى بعد مستخرج من الشق القانونى للائحة الأكاديمية الحديثة للهندسة والتكنولوجيا بالمعادى للدراسة بالساعات المعتمدة (لائحة ٢٠١٢)

الباب الثاني
نظام الدراسة

مادة [٢]

يمنح وزير التعليم العالي بناءً على طلب مجلس إدارة الأكاديمية درجة بكالوريوس الهندسة والتكنولوجيا في أحد التخصصات التالية:-

[١] الهندسة الكهربية:

أ ـ هندسة الالكترونيات وتكنولوجيا الاتصالات .

ب ـ هندسة الحاسبات وتكنولوجيا المعلومات.

[٢] الهندسة الميكانيكية:

ـ هندسة التصنيع وتكنولوجيا الإنتاج .

[٣] الهندسة المعمارية:

ـ هندسة العمارة وتكنولوجيا البناء

وتتم الدراسة في هذه التخصصات حالياً بنظام الدراسة الفصلية. ، ويتم التحول للدراسة في هذه البرامج بنظام الساعات المعتمدة اعتباراً من العام الدراسي ٢٠١٢-٢٠١٣. ويسمح لمن يرغب من الطلاب بالتحويل من نظام الدراسة الفصلية إلى نظام الدراسة بالساعات المعتمدة بمقاصة لمن يرغب من الطلاب بحيث لا تقل عدد الساعات المعتمدة التي على الطالب أن يسجل فيها عن ٥٠% من مجموع الساعات المعتمدة للبرنامج ككل (لا تقل عن ٩٠ ساعة معتمدة)، على أن تستمر الدراسة بنظام الدراسة الفصلية للطلاب المقيدين بالأكاديمية قبل عام ٢٠١٢-٢٠١٣ ممن لم يحولوا للدراسة بنظام الساعات المعتمدة وذلك حتى تخرجهم.

مادة [٣]

تُمنح درجة البكالوريوس في الهندسة والتكنولوجيا للطلبة الذين يجتازون بنجاح دراسة مقررات بإجمالي ١٨٠ ساعة معتمدة، مع الحصول على المعدل التراكمي المطلوب للتخرج.

مادة [٤] : مدة الدراسة بنظام الساعات المعتمدة

- مدة الدراسة لنيل درجة البكالوريوس خمس سنوات موزعة على ١٠ فصول دراسية رئيسية ويمكن للطالب إنهاء متطلبات الدراسة قبل ذلك بفصل واحد على الأكثر.
- الحد الأقصى للدراسة ١٦ فصلا دراسيا ويفصل الطالب بعدها ويجوز إعادة قيده بموافقة مجلس الأكاديمية.

مادة [٥] : متطلبات الدراسة في برنامج الساعات المعتمدة

طبقاً لما ورد في الإطار المرجعي للوائح المعاهد الصناعية والهندسية التي تعمل بنظام الساعات المعتمدة فإن الجدول رقم (١) يبين نسب المقررات الإنسانية، و المقررات الأساسية، و المقررات الهندسية الأساسية، و المقررات الهندسية التخصصية، لكل من برامج بكالوريوس الحاسبات والاتصالات والعمارة والتصنيع و المدنى وقد روعي في اختيار نسب المقررات للبرامج توافقها مع متطلبات المجلس الأعلى للجامعات الموضحة بالجدول.

جدول رقم (١)

البيان (ساعات معتمدة)		برنامج اتصالات	برنامج حاسبات	برنامج عمارة	برنامج تصنيع
المواد الإنسانية (8-10%)	مواد إجبارية	١٢	١٢	١٤	١١
	مواد اختيارية	٤	٤	٤	٦
	النسبة المئوية الكلية	%٨,٩	٨,٩%	%١٠	%٩,٤
المواد الأساسية (15-20%)	مواد إجبارية	٣٦	٣٦	٢٨	٣٢
	مواد اختيارية	-	-	-	-
	النسبة المئوية الكلية	%٢٠	%٢٠	%١٥,٦	%١٧,٨
	مواد إجبارية	٦٣	٦٣	٦٠	٥٤

المواد الهندسية الأساسية (30-35%)	مواد اختيارية	-	-	-	٣
	النسبة المئوية الكلية	%٣٥	%٣٥	%٣٣,٣	%٣١,٧
المواد الهندسية التخصصية (35-40%)	مواد إجبارية	٥٠	٥٠	٦٠	٦٥
	مواد اختيارية	١٥	١٥	١٤	٩
	النسبة المئوية الكلية	%٣٦,١	%٣٦,١	%٤١,١	%٤١,١

مادة [٦]

يقوم طلبة المستوى الخامس بإعداد مشروع البكالوريوس الذى يحدد موضوعه مجالس الأقسام المختصة، وتخصص له فترة إضافية بعد الامتحان التحريري يحددها مجلس الأكاديمية بناء على اقتراح مجالس الأقسام المختصة، ويجوز أن يكون المشروع مقسماً على فصلين دراسيين متتاليين، ويراعى في اختيار الأقسام للمشاريع أن تكون ذات طبيعة تطبيقية أو نظرية أو خليطاً بينهما نابعة من الاحتياجات العملية وطبيعة الدراسة بكل قسم، ولا يتخرج الطالب إلا بعد أن يستوفي شروط النجاح في المشروع.

مادة [٧] : التدريب العملي

أولاً: تشمل الدراسة نظاماً للتدريب العملي لطلاب الأكاديمية في الأجازة الصيفية عقب أداء امتحانات آخر العام الدراسي بفترة قصيرة، على ألا يتعارض مع انتظام دراسة الطالب خلال الفصول الصيفية، وينقسم التدريب العملي إلى مرحلتين:

(أ) مرحلة التدريب الصيفي لطلبة المستوى الأول والثاني: هذا التدريب غير مقيم بساعات معتمدة، ولكن أداؤه إلزامي للتسجيل بالمستوى التالي، وفى حالة الظروف القهرية، يُفوض مجلس الأكاديمية فى السماح بأدائه في وقت لاحق.

(ب) مرحلة التدريب التخصصي لطلبة المستوى الثالث والرابع، ويقيم كل تدريب بثلاثة ساعات معتمدة، وتضاف نتيجة كل تدريب إلى تقييم الفصلين الأول والثاني من المستوى الخامس على التوالي.

ويتم التدريب بالتفاصيل الآتية:-

أ- التدريب الصيفي

(١) طلاب المستوى الأول

يتم هذا التدريب داخل صالات الرسم ومعامل الأكاديمية أو خارجها، ويشمل هذا التدريب الموضوعات العامة اللازمة للبناء المعرفى للمهندس، ويشتمل التدريب على الحاسبات والرسم الهندسي والاجهزة الكهربية والالكترونية والرسم المعمارى ومقدمة لاستخدام برامج الحاسب الآلى وأى موضوعات اخرى يقرها مجلس الاكاديمية. ويقسم الطلاب إلى مجموعات بحد أقصى ٢٥ طالب في المجموعة، ويتولى الإشراف على كل مجموعة عضو هيئة تدريس، وإثنين من أعضاء الهيئة المعاونة، واثنين من الفنيين، بالإضافة إلى مشرف إداري، ويتم التدريب لفترة أربعة أسابيع خلال فصل الصيف.

(٢) طلاب المستوى الثاني

يتم التدريب داخل الأكاديمية أو خارجها ، لتدريب الطلاب فى مجالات الدراسة التى يقترحها القسم ويقرها مجلس الاكاديمية ، ويقسم الطلبة إلى مجموعات بحد أقصى ٢٠ طالب في كل مجموعة، ويشرف على كل مجموعة عضو هيئة تدريس، ومعيد أو مهندس، وفني مرافق للمجموعة، بالإضافة إلى مشرف إداري على المجموعة، ويتم التدريب لفترة أربعة أسابيع خلال فصل الصيف.

ب – التدريب الصناعي التخصصي التطبيقى

(١) طلاب المستوى الثالث

يتم تدريب الطلبة بمواقع الإنتاج والتنفيذ بالمؤسسات والمصانع والشركات، التي تعمل في التخصص الذي يدرس به الطالب تحت إشراف أعضاء هيئة التدريس ومعاونيهم والفنيين ورجال الصناعة.

يعين لكل مجموعة من الطلاب أحد أعضاء هيئة التدريس، يفضل أن يكون هو المشرف الأكاديمي لمتابعة الطالب في التدريب وتلقي التقارير التي تفيد مدى تقدم الطالب في التدريب من الطالب نفسه ومن الجهة القائمة بالتدريب، وعقب انتهاء التدريب يقوم كل قسم بتشكيل لجنة من أعضاء هيئة التدريس لمناقشة الطالب في التدريب الذي قام به وإعطاؤه تقديره المناسب طبقا لما هو وارد بالجدول رقم (٢).

ومدة التدريب من أربعة إلى ستة أسابيع حسب الخطة التى توضع لهذا التدريب. ويمكن إجراء التدريب بمعامل الأكاديمية التخصصية، بناءً على توصية المرشد الأكاديمي ومجلس القسم وتصديق عميد الأكاديمية.و تضاف النقاط التي حصل عليها الطالب في هذا التدريب إلى النقاط التي حصل عليها في الفصل الدراسي الأول من المستوى الخامس.

(٢) طلاب المستوى الرابع

يتم التدريب بنفس الكيفية التي يتم بها تدريب المستوى الثالث على أن يضاف تقدير هذا التدريب إلى نتيجة الفصل الدراسي الثاني للمستوى الخامس. ويتم التدريب في مؤسسة غير التي أتم فيها تدريب المستوى الثالث إلا إذا استدعى الأمر استكمال التدريب في نفس المؤسسة، ويكون ذلك بناء على توصية المرشد الأكاديمي، وموافقة مجلس القسم. ويمكن تأدية هذا التدريب كذلك بمعامل الأكاديمية التخصصية بناءً على توصية المرشد الأكاديمي ومجلس القسم وتصديق عميد الأكاديمية.

ثانياً: (أ) الإشراف العام على التدريب:

يحدد مجلس الأكاديمية منسقا من كل قسم لتنسيق العمل مع قسم التدريب فى أول كل عام دراسى.

(ب) التمويل

١- يسدد كل طالب مبلغ ٥٠٠ جنيه عن كل سنة في مرحلة التدريب الصيفي (المستوى الأول والثاني) ويجوز زيادة هذا المبلغ طبقا لدراسة التكلفة الفعلية للتدريب بعد تصديق رئيس الإدارة المركزية المختص بوزارة التعليم العالى.

٢- يسدد كل طالب ما قيمته ثلاثة ساعات معتمدة عن كل مستوى في مرحلة التدريب الصيفى التخصصي لتغطية تكاليف التدريب(المستوى الثالث والرابع).

٣- توضع حصيلة التدريب في صندوق ذو طابع خاص (وحدة الورش والمعامل للتدريب) للصرف منه على أغراض التدريب، حسب اللوائح المنظمة للصندوق. ولمجلس إدارة وحدة الورش والمعامل للتدريب العملي أن يغير قيمة التدريب المالية طبقاً للظروف المحيطة.

٤- تقوم وحدة الورش والمعامل للتدريب العملى بسداد مستحقات المؤسسات القائمة بالتدريب، مضافاً إليها المصروفات الإدارية والمتابعة والإشراف والمناقشة من حصيلة الصندوق.

الباب الثالث
قبول الطلاب

مادة [٨]

يحدد وزير التعليم بعد اخذ رأى المجلس الأعلى لشئون المعاهد فى نهاية كل عام جامعى عدد الطلاب من ابناء جمهورية مصر العربية أو غيرهم الذين يقبلون فى الأكاديمية فى ضوء احتياجاته فى العام الجامعى التالى من الحاصلين على شهادة الثانوية العامة أو على الشهادات المعادلة ونظام قبولهم.

مادة [٩]

يكون ترشيح الطلاب للقبول بالأكاديمية عن طريق مكتب التنسيق ما لم يصدر قرار من وزارة التعليم بغير ذلك

مادة [١٠]

- يشترط في قيد الطالب في غير معاهد الدراسات العليا :

(١) أن يكون حاصلاً على شهادة الدراسة الثانوية العامة (علمى رياضة) أو ما يعادلها ويكون القبول بترتيب درجات النجاح ويقبل كذلك الحاصلون على دبلوم المدارس الثانوية الفنية فى بعض المعاهد ووفقاً للقواعد والشروط التي يحددها وزير التعليم.

(٢) أن يثبت الكشف الطبي خلوه من الأمراض المعدية وصلاحيته لمتابعة الدراسة وفقاً للقواعد التي يحددها المجلس الأعلى لشئون المعاهد.

(٣) أن يكون متفرغاً للدارسة بالأكاديمية وذلك وفقاً لأحكام اللوائح الداخلية للمعاهد.

(٤) أن يكون محمود السيرة حسن السمعة.

مادة [١١]

- 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. على كل طالب مقيد بأحد المعاهد أن يثبت حضوره بالطريق الذي يحدده المعهد.

مادة [١٢]

- 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.

مادة [١٣] تحويل الطلاب ونقل قيدهم

تحويل ونقل قيد الطلاب إلى الأكاديمية لبدء الدراسة بالفصل الدراسى الثانى بقرار من الإدارة المركزية المختصة بوزارة التعليم العالى. وطبقاً لما ورد في نص المادة (٤١) من قانون ٥٢ لسنة ١٩٧٠ ولائحة المعاهد رقم (١٠٨٨) لسنة ١٩٨٧: تحويل ونقل قيد الطلاب فيما بين المعاهد وفق القواعد الآتية:

١) لا يجوز النظر في تحويل الطلاب المقيدين بالمستوى الأول بين المعاهد المتناظرة إلا إذا كان الطالب حاصلاً على الحد الأدنى للمجموع الذي وصل إليه القبول في المعهد المطلوب التحويل إليه، ويتم التحويل بموافقة مديري المعهدين.

٢) يجوز النظر في تحويل الطلاب المقيدين بمستوى أعلى من المستوى الأول بين المعاهد المتناظرة إذا وجدت ظروف اجتماعية أو صحية تقتضى التحويل وذلك بموافقة مديري المعهدين.

٣) يجوز نقل قيد الطالب المنقول إلى مستوى أعلى من المستوى الأول بأي من الكليات الجامعية أو من معهد إلى معهد غير مناظر بشرط أن يكون حاصلاً على الحد الأدنى لمجموع الدرجات الذي وصل إليه القبول في المعهد المطلوب النقل إليه سنة حصوله على الشهادة الثانوية أو المستوى الجاري أيهما أفضل للطالب وذلك بموافقة مديري المعهدين. وفي هذه الحالة يكون قيد الطالب فى اول مستوى للدراسة بالأكاديمية.

٤) يشترط في جميع الحالات السابقة ألا يكون الطالب المطلوب تحويله أو نقل قيده قد استنفذ فرص الرسوب، وألا يكون الطالب قد فصل لسبب تأديبي، وفى جميع الحالات يشترط تقديم طلب التحويل في المعهد المطلوب التحويل إليه قبل بدء الدراسة، ويجوز لمجلس إدارة الأكاديمية عند الضرورة القصوى قبول التحويل خلال الشهر التالي لبدء الدراسة، كما يشترط مراجعة وموافقة رئيس الإدارة المركزية المختصة.

٥) يجوز نقل قيد الطلاب المفصولين بغير الطريق التأديبي من الكليات العسكرية أو كلية الشرطة لعدم الصلاحية للحياة العسكرية وكذا المفصولين لإستنفاذ مرات الرسوب بالمعاهد التي مدة الدراسة بها أربع سنوات مستجدين بالمستوى الأول بشرط أن يكون الطالب حاصلاً على المجموع الكلى والمواد المؤهلة، إن وجد، سنة حصوله على الثانوية العامة. وان يكون تقديم طلب الالتحاق فى السنة الدراسية التى فصل الطالب خلالها او فى السنة الدراسية اللاحقة بها على الأكثر إذا كان فصله قد تم بعد بدء الدراسة بالمعهد فى السنة السابقة على تقديمه بطلب الالتحاق.

وطبقاً لما ورد في نص المواد (٤٢،٤٤) من قانون ٥٢ لسنة ١٩٧٠ ولائحة المعاهد رقم (١٠٨٨) لسنة ١٩٨٧:

- يجوز أن يقبل بالأكاديمية الطلاب الذين استنفذوا مرات الرسوب في الكليات والمعاهد العالية وفقاً للقواعد الآتية:-

(أ) أن يكون الطالب مقيدا فى الكلية أو المعهد فى السنة الدراسية السابقة على السنة التى يلتحق فيها بالأكاديمية.

(ب) أن يكون حاصلاً في الشهادة الثانوية العامة (علمى رياضة) أو ما يعادلها على مجموع يؤهله للالتحاق بالأكاديمية في عام حصوله على تلك الشهادة أو في عام التحاقه بالأكاديمية أيهما أفضل للطالب.

ويكون التحاق هؤلاء الطلاب بالمستوى الأول مستجدين، وتقدم أوراق هؤلاء الطلاب إلى الاكاديمية لإرسالها للإدارة المختصة بالوزارة ويكون قبولهم بموافقة مجلس إدارة الاكاديمية .

- يجوز قيد وإعادة قيد الطالب في الحالات الآتية:-

١) الطالب المستجد الذي لم يستكمل إجراءات قيده لعذر مقبول.

٢) الطالب الذي سحب أوراقه وهو مقيد بالأكاديمية وقدم عذراً.

٣) الطالب الذي لم يتقدم لمكتب التنسيق في سنة حصوله على الثانوية العامة لعذر مقبول.

وفى جميع هذه الحالات يعتبر عام رسوب السنة التى تنقضى دون ان يقيد فيها الطالب نفسه ويكون القيد أو إعادة القيد وبقرار من رئيس الإدارة المركزية المختص أو بموافقة مجلس إدارة الأكاديمية على حسب الاحوال.

- يجوز لمجلس أدارة الأكاديمية أن يوقف قيد الطالب لمدة سنة دراسية ولا تزيد المدة عن سنتين أذا تقدم بعذر مقبول يمنعه من الانتظام فى الدراسة و يجوز لرئيس الإدارة المركزية مد هذه المدة بحد أقصى ضعف مدة الدراسة بالأكاديمية عند الضرورة القصوى.

الـبــاب الــرابـــع
الامتحانات

مادة (١٤)

- إذا فصل الطالب من الأكاديمية بسبب استنفاذ مرات الرسوب فى مقرر إجبارى أو أكثر يمكن بموافقة مجلس أدارة الأكاديمية أعادة قيده بالأكاديمية كطالب مكن الخارج مع حضور التمارين العملية ويكون أعادة القيد بحد أقصى ثلاثة فصول دراسية فيما رسب فيه الطالب.
- يسدد الطالب التكلفة الكاملة لدراسته فى المقررات المسجل فيها طبقاً لأخر حساب ختامى للأكاديمية بالإضافة إلى رسم إعادة قيد يحدده مجلس أدارة الأكاديمية على أن يتحول إلى طالب نظامى مرة أخرى بعد انتفاء سبب فصله من الأكاديمية.

مادة (١٥)

- يمكن للطالب الانقطاع عن الدراسة لمدة تزيد عن ثلاثة فصول دراسية بعذر مسبق يقبله مجلس إدارة الأكاديمية يواصل بعده الدراسة.
- أما إذا انقطع الطالب عن الدراسة لمدة أقصاها ثلاثة فصول دراسية بعذر مسبق يقبله مجلس إدارة الاكاديمية فيمكن له ان يواصل دراسته على ان تحسب له المقررات السابق له النجاح فيها بدرجة (جيد) على الاقل ويخضع تخرجه لأية متطلبات جديدة فى الفصل الذى اعيد قيده فيه بالإضافة لإعادته للمواد التى حصل فيها على تقدير مقبول على الأكثر.
- يفصل الطالب من الأكاديمية إذا انقطع الطالب عن الدراسة بدون عذر مسبق لفترة فصلين دراسيين أو إذا انقطع عن الدراسة لنفس هذه المدة رغم رفض مجلس إدارة الأكاديمية للعذر الذى تقدم به.
- أما إذا انقطع الطالب عن الدراسة لمدة تزيد عن سته فصول دراسية عادية بعذر مسبق يقبله مجلس إدارة الأكاديمية فيمكنه العودة للدراسة بالأكاديمية على ان يعامل معاملة الطالب المستجد ولا تحسب له اية نقاط عن المقررات التى سبق له النجاح فيها قبل انقطاعه.

مادة (١٦)

طبقا للمادة (٥٠) من القانون رقم (٥٢) لسنة ١٩٧٠ ولائحته التنفيذية الصادرة بقرار وزير التعليم العالى رقم ١٠٨٨ لسنة ١٩٨٧ بالنسبة للمعاهد العالية لخاصة فيكون عميد الأكاديمية هو الرئيس العام للامتحانات بالأكاديمية والوكيل المختص نائبا له وأن تشكل لجان العمل للامتحانات وفقا للقواعد المنظمة لذلك بالأكاديمية وعلى ان يعتمد هذا التشكيل من رئيس القطاع المختص.

مادة (١٧)

ترسل الاكاديمية الى الإدارة المختصة بوزارة التعليم العالى قبل بدء موعد الامتحان بشهر على الأقل كشوفا من ثلاث صور بأسماء الطلاب الذين سوف يتقدمون للامتحان سواء فى امتحان النقل أو الامتحان النهائى، وتقوم الإدارة المختصة بمراجعة هذه الكشوف للتأكد من صحة قيد الطلاب بالأكاديمية واحقيتهم فى تأدية الامتحان ويستبعد الطلاب الذين لا حق لهم فى 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 فى امتحان نهاية العام الدراسى.

مادة (١٨)

تعلن نتيجة امتحان النقل بعد مراجعتها من الإدارة المختصة بوزارة التعليم العالى واعتمادها من مجلس إدارة الاكاديمية كما تعلن نتيجة امتحان البكالوريوس بعد مراجعتها من الإدارة المختصة واعتمادها من وزير التعليم ولا تعلن نتيجة الطلاب ولا يخلى طرفهم إلا بعد سداد جميع الرسوم والمصروفات المستحقة عليهم.

مادة (١٩)

- تقوم الأكاديمية بتحرير شهادات مؤقته لخريجى السنوات النهائية يوقعها عميد الأكاديمية موضحا بها (الاسم- تاريخ الميلاد – جهة الميلاد – دور التخرج- مشروع التخرج – التقدير العام). كما تقوم أيضا بتحرير (شهادات تقديرات النجاح فى كل مادة).
- كما تقوم الأكاديمية بتحرير الشهادات النهائية للخريجين محررا بها تاريخ منح المؤهل من تاريخ اعتماد وزير التعليم لنتيجة الامتحان وترسل الى وزارة التعليم العالى لمراجعتها واعتمادها من الأستاذ الدكتور الوزير.

البـــاب الخامس
قواعد التدريس والقيد والتسجيل وتـقديرات النجاح

مادة [٢٠] : الأقسام العلمية المشاركة في تنفيذ برامج الساعات المعتمدة

يختص كل قسـم من أقسـام الأكاديمية بالتدريس وإجراء البحوث التى تخص مقرراته طبقا لبرامج السـاعات المعتمدة وجداول النظام الكودي للمقررات الدراسية وتفاصيلها.

مادة [٢١] : المقررات العامة

يعهد مجلس الأكاديمية إلى قسـم أو أكثر بتدريس المقررات العامة ذات الكود (عام) تحت الإشـراف المباشـر لوكيل الأكاديمية.

مادة [٢٢] : شروط القيد

يتم القيد للدراسة بنظام الساعات المعتمدة اعتباراً من العام الدراسي ٢٠١٢-٢٠١٣ للطلبة الحاصلين على شهادة الثانوية العامة قسم رياضيات أو ما يعادلها، ممن تم توزيعهم عن طريق مكتب التنسيق أو المحولين من كليات أخرى طبقاً للشروط التي يضعها المجلس الأعلى للجامعات أو المحولين من نظام الدراسة الفصلية إلى نظام الدراسة بنظام الساعات المعتمدة من طلاب الأكاديمية، بحيث لا يتم نقل أكثر من ٥٠% من الساعات المعتمدة من إجمالي ما تم دراسته بالنظام الفصلي طبقاً لما ورد في المادة ٢٨ من قانون ٥٢ لسنة ١٩٧٠.

مادة [٢٣] : ساعات التدريس بنظام الساعات المعتمدة

(أ) ساعات المحاضرات: ١ ساعة محاضرة تساوي ١ ساعة معتمدة

(ب) ساعات التمـــارين : تمرين مدته ١ ساعة يساوي صفر
تمرين مدته من ٢ إلى ٣ ساعات يساوي ١ ساعة معتمدة

(ج) ساعات المعمل والتطبيقات العملية: ساعتين معمل أو تطبيقات تساوي ١ ساعة معتمدة

تتم الدراسـة باللغة الانجليزية، وتضـع الأكاديمية نظاماً للتأكد من مسـتوى الطالب في اللغة الانجليزية، ويسـتثنى من ذلك بعض المقررات الإنسانية والهندسة المعمارية والمدنية، ويكون الامتحان بنفس اللغة التي يدرس بها المقرر.

مادة [٢٤] : مواعيد الدراسة والقيد

يقسم العام الدراسى بالأكاديمية إلى ثلاثة فصول دراسية على النحو التالي :

الفصل الدراسي الأول : يبدأ في بداية العام الدراسى فى شهر سبتمبر ولمدة ١٥ أسبوع دراسى.

الفصل الدراسي الثاني : يبدأ عقب إجازة منتصف العام ولمدة ١٥ أسبوع دراسى.

الفصـل الصيفـــــي : يبدأ خلال أسـبوعين من نهاية امتحانات الفصـل الدراسـى الثانى ولمدة ٨ أسـابيع دراسية.

ويتم القيد لأي مرحلة خلال الأسابيع الثلاثة السابقة لبدء الفصل الدراسي بشرط استيفاء شروط القيد ودفع الرسوم المقررة، ويشترط للتسجيل في أي مقرر ألا يقل عدد الطلبة الراغبين في التسجيل عن عشرة طلاب، ويمكن أن يقل هذا العدد في الحالات الاستثنائية بموافقة مجلس أدارة الأكاديمية.

مادة [٢٥] : شروط التسجيل للدراسة بنظام الساعات المعتمدة

- يتقدم الطالب لتسـجيل المقررات كل فصـل دراسـي، وبحد أقصـى ١٨ سـاعة معتمدة، بشـرط اسـتيفاء شـروط التسجيل في كل مقرر، وبعد استشارة المرشد الأكاديمي، وفي المواعيد المحددة بتوقيتات التسجيل، مادة ١٧ من قانون ٥٢ لسـنة ١٩٧٠، وقواعده التي تصـدرها الأكاديمية سـنوياً وتنشـر في دليل الطالب، ولا يعتبر التسـجيل نهائياً إلا بعد دفع رسوم الخدمة التعليمية المقررة لكل فصل دراسي.
- يتم تقسـيم المقررات على المسـتويات التصـاعدية الخمس التالية الموضـحة تفصـيلا بخريطة المقررات. ويتم التسجيل للمقررات طبقا لخريطة المقررات مع الالتزام بتسجيل مقررات المستويات الأدنى واستكمال ساعات التسجيل من المستوى الأعلى.

-١	Freshman	المستوى الأول
-٢	Sophomore	المستوى الثانى
-٣	Junior	المستوى الثالث
-٤	Senior 1	المستوى الرابع
-٥	Senior 2	المستوى الخامس

- يمكن للطالب الذى يبلغ معدله التراكمى ٣,٣ أو أكثر، التسجيل فى أكثر من ١٨ ساعة معتمدة وبحد أقصى ٢١ ساعة معتمدة فى الفصل الدراسى التالى لحصوله على هذا المعدل ابتداء من المستوى الثانى.

- يمكن للطالب التسجيل فى الفصل الدراسى الصيفى فى مقررات لا تزيد ساعاتها المعتمدة عن ٦ ويكون تسجيل الطالب اختياريا فى هذا الفصل الدراسى للنجاح فى مقرر رسب فيه أو رفع درجاته فى مقررات سبق نجاحه فيها أو لدراسة مقرر واحد من المستوى التالى يشرط حصوله على معدل تراكمى ٣,٣ او أكثر فى الفصل الرئيسى السابق . ويجوز أن يتم التسجيل بحد أقصى ٩ ساعات معتمدة لدواعى التخرج أو اجتياز متطلبات التسجيل.
- عند التسجيل فى مقررات جديدة، يراعى نجاح الطالب فى المقررات المؤهلة طبقا للائحة الدراسية.
- لا يجوز للطالب أن يدرس مقرر ومتطلبه السابق فى نفس الفصل الدراسى إلا إذا كان تخرجه يتوقف على ذلك.
- الطالب المتأخر عن مواعيد التسجيل، لا يتم تسجيله في المقررات الدراسية إلا إذا كان هناك مكان له، وللأكاديمية أن تقرر رسوم تأخير يحددها مجلس إدارة الأكاديمية تتناسب مع مدة التأخير بحد أقصى ٢٥% من رسوم التسجيل.
- على الطالب تحقيق معدل تراكمى لا يقل عن (٢) فى اى وقت فإذا قل يتم إنذاره ولا يصرح له بالتسجيل فى الفصل التالى لأكثر من ١٢ ساعة معتمدة وعند التكرار لفصلين متتاليين بعد ذلك يتم فصله نهائيا.
- يسمح للطالب بإعادة التسجيل في أي مقرر رسب فيه، ويعيده دراسة وامتحاناً بعد دفع رسوم الخدمة التعليمية المقررة. وفي هذه الحالة يحسب تقديره فيه بحد أقصى ٢ (C) ولا يدخل تقدير الرسوب السابق في حساب المتوسط التراكمي.
- للطالب الحق في تحسين متوسطه التراكمي بإعادة التسجيل في مقرر أو أكثر يكون قد سبق حصوله فيه على تقدير أقل من (٢). ويحسب له التقدير الجديد لهذا المقرر، ويتم حساب المتوسط التراكمى طبقا للتقدير الأخير.
- يمكن تسجيل طلاب كمستمعين في بعض المقررات نظير رسوم تقررها الأكاديمية، فى حدود ٧٥% من رسوم التسجيل للطلاب النظاميين، لو كان هناك مكان لهم، وذلك بعد تسجيل الطلاب النظاميين، ولا يحق لهم دخول الامتحان أو الحصول على شهادة بالمقررات.

المراقبة الأكاديمية

- إذا حصل الطالب عند نهاية أى فصل دراسى رئيسى على معدل تراكمى أقل من (٢) يوضع تحت المراقبة الأكاديمية.
- أثناء وضع الطالب تحت المراقبة الأكاديمية لا يسمح له بالتسجيل فى مقررات تزيد عن ١٢ ساعة معتمدة فى الفصل الدراسى الرئيسى الواحد.
- يلتزم الطالب أثناء وضعه تحت المراقبة الأكاديمية بالاجتماع مع مرشده الأكاديمى كل أسبوعين على الأقل، ويقوم المرشد الأكاديمى بمتابعة التحصيل الدراسى للطالب مع أساتذته.

حالات عرض الطلاب على مجلس الأكاديمية للنظر فى فصلهم

- الطالب المستجد الذى لم يجتاز ٣٠ ساعة معتمدة على الأقل خلال العامين الدراسيين الأولين (أو أول أربعة فصول دراسية أساسية).
- الطالب المستجد الذى لا يتمكن من رفع متوسط نقاطه التراكمى إلى ١,٥ فى نهاية الفصل الدراسى الرئيسى الرابع من بدء التحاقه بالأكاديمية.
- الطالب الذى يقل متوسطه التراكمى عن (٢) فى سته فصول دراسية متصلة أو فى ثمانية فصول دراسية غير متتالية.
- الطالب الذى لا يتمكن من استكمال متطلبات التخرج خلال ١٦ فصل دراسى رئيسى، عدا الفصول التى يتم فيها إيقاف قيده بعذر يقبله مجلس الأكاديمية. ويجوز إعادة قيده بشرط أن يزيد عدد الساعات المعتمدة التي إجتازها بنجاح عند إعادة القيد على ١٣٥ ساعة معتمدة. وفى هذه الحالة يمكن لمجلس الأكاديمية أن يمنح هذا الطالب فرصا إضافية بحد أقصى أربعة فصول دراسية رئيسية.
- الطالب الذى ينقطع عن الدراسة فصلين دراسيين أساسيين متتاليين أو ثلاث فصول دراسية أساسية غير متتالية دون عذر تقبله الأكاديمية.

مادة [٢٦] : رسوم الدراسة

- وتظل قيمة الساعة المعتمدة كما هي لأي طالب من وقت التحاقه بالأكاديمية وحتى تخرجه. وتزاد قيمة الساعة المعتمدة سنوياً بنسبة ٥% من قيمتها في العام السابق وذلك لكل دفعة من الطلبة الجدد. ويجوز زيادة هذا المبلغ طبقا لدراسة التكلفة الفعلية للتعليم بعد تصديق رئيس الإدارة المركزية المختص بوزارة التعليم العالى.

- يسدد الطالب رسوم تسجيل لمقررات الفصل الدراسى الصيفى بزيادة ٢٥% عن رسوم التسجيل للفصول الرئيسية.
- أما بالنسبة للطلبة الوافدين من غير أبناء جمهورية مصر العربية، فيقومون بتسديد الرسوم الإضافية وقيمة رسوم الخدمة التعليمية بالعملة الأجنبية، حسب القيمة التي يحددها وزير التعليم العالي، بشرط أن تكون هذه العملة قابلة للتحويل، ويمكن للطلبة الوافدين تسديد رسوم الخدمة التعليمية بالعملة المحلية، وذلك بتصديق من رئيس مجلس إدارة الأكاديمية.
- يتم تحصيل رسوم الخدمة التعليمية كل فصل دراسي ويعد السداد شرطا لإتمام التسجيل.
- يتم حساب رسوم الخدمة التعليمية طبقاً لعدد الساعات المعتمدة التي يسجل فيها الطالب لكل من الفصل الدراسي الأول والفصل الدراسي الثاني، بحد أدنى ما يقابل رسوم خدمة تعليمية لعدد ١٢ ساعة معتمدة لكل فصل دراسى، 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.
- يتم تحصيل رسوم التسجيل المقررة للوزارة سنويا فى بداية كل عام دراسى.

مادة [٢٧] : متطلبات الحصول على درجة البكالوريوس بالساعات المعتمدة

يشترط لتخرج الطالب ما يلى:

- أن يجتاز الطالب عدداً من الساعات المعتمدة المقررة، ومقدارها ١٨٠ساعة معتمدة، وبمعدل تراكمى لا يقل عن (٢) متضمنة مشروع البكالوريوس طبقا للمادة [٦].
- أن يؤدى التدريب العملى طبقا لما ورد في المادة [٧].
- أن يجتاز بنجاح الرخصة الدولية لقيادة الحاسب الآلي (ICDL).

مادة [٢٨] : المرشد الأكاديمي للدارسين بنظام الساعات المعتمدة

- يعين وكيل الأكاديمية لكل طالب، عند التحاقه بالدراسة، مرشداً أكاديمياً من بين أعضاء هيئة التدريس، يمكن أن يستمر معه حتى نهاية الدراسة.
- يلتزم المرشد الأكاديمي بمتابعة أداء الطالب، ومعاونته في اختيار المقررات كل فصل دراسي، ويمكن للمرشد الأكاديمي أن يطلب وضع الطالب تحت المراقبة الاكاديمية لفصل دراسي واحد، مع خفض عدد الساعات المسجل فيها طبقا لما ورد بالمادة]٢٤[.

مادة [٢٩] : شروط التعديل والإلغاء والانسحاب وإيقاف القيد

- يحق للطالب تغيير مقررات سجل فيها، بأخرى خلال أسبوعين من بدء الدراسة، ولا يسري ذلك على الفصل الصيفي.
- يحق للطالب الانسحاب من المقرر خلال ثمانية أسابيع على الأكثر من بداية الدراسة بالفصلين الأول والثاني وثلاثة أسابيع على الأكثر في الفصل الصيفي وفى هذه الحالة لا ترد له الرسوم.
- 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 الامتحان النهائى لهذا الفصل بأسبوع واحد على الأقل. ويقوم بإعادة المقررات التي سجل فيها، في فصل دراسي لاحق دراسة وامتحاناً بعد سداد رسوم الخدمة التعليمية المقررة، ولا تحسب عليه كمرة رسوب.

مادة [٣٠] : تقديرات المقررات الدراسية

- تقدر نقاط كل مقرر على النحو الموضح بالجدول رقم (٢):

جدول رقم (٢)

التقدير	عدد النقاط	التقدير المكافئ	النسبة المئوية المناظرة
A+	4.0	ممتاز (+)	٩٥% وأعلى
A	3.7	ممتاز	٩٠% حتى أقل من ٩٥%
A-	3.3	ممتاز (-)	٨٥% حتى أقل من ٩٠%
B+	3.0	جيد جداً (+)	٨٠% حتى أقل من ٨٥%
B	2.7	جيد جداً	٧٥% حتى أقل من ٨٠%

C+	2.3	جيد (+)	٧٠% حتى أقل من ٧٥%
C	2.0	جيد	٦٥% حتى أقل من ٧٠%
D+	1.7	مقبول (+)	٦٠% حتى أقل من ٦٥%
D	1.3	مقبول	٥٥% حتى أقل من ٦٠%
D-	1.0	مقبول (-)	٥٠% حتى أقل من ٥٥%
F	صفر	راسب	أقل من ٥٠%

- يتم إنذار الطالب الذى يحصل على تقدير أقل من (٢) فى أى مقرر لإعادة دراسته لتحسين النتيجة إلى (٢) على الأقل.
- المقررات التي يسجل فيها الطالب كمستمع، أو التي يطلب فيها النجاح فقط، أو لم يكملها لسبب قبلته الأكاديمية، ولا تدخل في حساب متوسط النقاط، يرصد له أحد التقديرات التالية:

التقدير		المدلول
S	Satisfactory	مرضي
U	Unsatisfactory	غير مرضي
W	Withdrew	انسحاب
AU	Audit	مستمع
F	Fail	راسب
P	Pass	ناجح

مادة [٣١] : حساب متوسط النقاط (GPA)

- لا يعتبر الطالب ناجحاً في أي مقرر إلا إذا حصل على تقدير -D على الأقل.
- لا يحصل الطالب على البكالوريوس، إلا إذا حقق متوسط نقاط قدره (٢) على الأقل.
- تحسب نقاط كل مقرر على أنها عدد ساعاته المعتمدة مضروبة فى عدد النقاط التى حصل عليها الطالب، جدول رقم (٢).
- يحسب مجموع النقاط التي حصل عليها الطالب في أي فصل دراسي، على أنها مجموع نقاط كل المقررات التي درسها في هذا الفصل الدراسي.
- يحسب متوسط نقاط الطالب لأي فصل دراسي (المتوسط الفصلي GPA)، على أنه ناتج قسمة مجموع النقاط التي حصل عليها الطالب في هذا الفصل، على مجموع الساعات المعتمدة لهذه المقررات. ويكون تقدير الطالب فى هذا الفصل وفقا للجدول رقم (٢).
- يحسب متوسط نقاط التخرج (بعد نجاحه في مجمل متطلبات التخرج)، على أنها ناتج قسمة مجموع نقاط كل المقررات التي درسها الطالب على مجموع الساعات المعتمدة لهذه المقررات متضمنة المقررات التى أعادها الطالب (سواء لسابق رسوبه فيها أو للتحسين وتحتسب نقاط هذه المقررات فى المرة الأخيرة فقط) ويكون تحديد التقدير التراكمى وفقا للجدول رقم (٢).

مثال : بفرض حصول الطالب في فصل دراسي على التقديرات الموضحة بالجدول رقم (٣):
بالرجوع إلى الجدول رقم (٢) يتم تحديد عدد النقاط للتقدير الذي حصل عليه الطالب لكل مادة، وبضرب عدد النقاط في عدد الساعات المعتمدة لكل مادة وجمع هذه النقاط، يتم احتساب إجمالي النقاط. وحاصل قسمة إجمالي النقاط على إجمالي عدد الساعات المعتمدة لكل المواد هو متوسط نقاط الفصل.

- تمنح مرتبة الشرف للطالب الذى لا يقل المعدل التراكمى الفصلى له عن 3.3 خلال جميع الفصول الدراسية الرئيسية، على ألا يكون الطالب قد رسب فى أى مقرر خلال دراسته لمرحلة البكالوريوس.

جدول رقم (٣)

المادة	عدد الساعات المعتمدة	التقدير	النقاط	عدد النقاط المحتسبة
لغة انجليزية	٣	A+	٤	١٢
برمجة حاسب	٣	C	٢	٦
فيزياء	٣	B+	٣	٩

كيمياء	٣	A+	٤	١٢
إنتاج	٣	C	٢	٦
إجمالي عدد النقاط = ٤٥	إجمالي عدد الساعات المعتمدة = ١٥ متوسط نقاط الفصل الدراسى (GPA) = ٤٥ ÷ ١٥ = ٣			

مادة [٣٢] : تعريف حالة الطالب الدارس بنظام الساعات المعتمدة
كلما أكمل الطالب ٢٠% من متطلبات التخرج اعتبر منتقلاً من مستوى إلى مستوى أعلى منه (المستويات من ١ إلى ٥)، ولا يتطلب ذلك تحديد نوعية أو مستوى المقررات التي أكملها الطالب، ويعتبر ذلك نوعاً من التعريف بموقع الطالب بالأكاديمية.

مادة [٣٣] : أسلوب تقييم الدارس بنظام الساعات المعتمدة

(أ) توضح التفاصيل الآتية بهذه اللائحة توزيع درجات كل مقرر بين: أعمال الفصل، امتحان عملي/شفوي، امتحان نصف الفصل، الامتحان التحريري النهائي.

(ب) يعقد لكل مقرر امتحان تحريري في نهاية الفصل الدراسي لا تقل درجته عن ٦٠% من مجموع درجات المقرر، وذلك بواقع ٦٠% للامتحان التحريرى للمواد ذات الشق العملي و ٢٠% أعمال السنة و٢٠% للامتحان العملي وبواقع ٧٠% للامتحان التحريري للمواد التى لا تتضمن شق عملى و٣٠% لأعمال السنة. مدة الامتحان ٣ ساعات لجميع المواد عدا المواد الإنسانية فتكون ساعتين فقط. يستثنى من ذلك مقررات تحددها اللائحة مثل مشروع التخرج والتدريب الصيفي والندوات والأبحاث، وبعض المواد التي تخص تخصص العمارة، وهي على وجه التحديد مواد التصميم المعماري، التصميمات التنفيذية، الإنشاء المعماري ومواد البناء، الظل والمنظور، تطبيقات حاسب آلى، تخطيط المدن والإسكان، التصميم العمراني والتدريب البصرى. حيث تشكل درجات التحريري ٤٠% من مجموع الدرجات و ٦٠% لأعمال السنة، ومدة امتحان مادتي التصميم المعماري والتصميمات التنفيذية هي ٧ ساعات، ومواد الانشاء المعمارى والظل والمنظور والتصميم العمرانى ٥ ساعات، مواد التخطيط والاسكان ٤ ساعات وباقي المواد ٣ ساعات.

(ج) يعقد لكل مقرر امتحان تحريري في منتصف الفصل الدراسي لا تقل درجته عن ١٠% من مجموع درجات المقرر باستثناء المقررات التي تحددها اللائحة مثل مشروع التخرج والتدريب الصيفي والندوات والأبحاث.

(د) يعد الطالب راسباً فى المقرر إذا حصل فيه على مجموع درجات أقل من ٥٠% (تقدير F)، أو لم يحضر الامتحان التحريري لحرمانه من الدخول، أو لم يحضر الامتحان بدون عذر تقبله الأكاديمية. وفى هذه الحالة له أن يعيده دراسة وامتحانا مرة أو مرات أخرى حتى ينجح فيه.

(ه) يجوز السماح للطالب بإعادة بعض المقررات التي نجح فيها من قبل أو إضافة مقررات جديدة له، بغرض رفع متوسط النقاط ليحقق متطلبات التخرج.

مادة [٣٤] : نسبة الحضور والحرمان من الامتحان والأعذار

(أ) الحد الأدنى لنسبة الحضور للمقرر (لا تقل عن ٧٥%) ليسمح للطالب بدخول الامتحان النهائي للمقرر. وفي حالة حرمانه من الامتحان يعتبر راسباً (يعطى درجة صفر في درجة الامتحان النهائي للمقرر). وفى حالة ثبوت أن التغيب كان بعذر مقبول يمكن عقد امتحان للطالب في هذا المقرر خلال ثلاثة أسابيع من بدء الفصل الدراسي التالي مباشرة، بعد سداد الرسوم المحددة.

(ب) إذا تقدم الطالب بعذر يقبله مجلس الأكاديمية عن عدم حضور 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 الحاصل على تقدير "غير مكتمل" فرصة أداء الامتحان النهائي لهذا المقرر في الموعد الذي يحدده مجلس الأكاديمية.

(ج) يجب على الطلاب متابعة الدروس والاشتراك فى التمرينات العملية وأعمال الورش والتدريب أو قاعات البحث وفقا لأحكام اللائحة الداخلية ولمجلس الأكاديمية الحق فى حرمان الطالب من التقدم للامتحان كله أو فى بعض المواد إذا رأى أن مواظبته غير مرضية طبقا لأحكام اللائحة الداخلية. وفى هذه الحالة يعتبر الطالب راسبا فى المقررات التى حرم من التقدم للامتحان فيها.

مادة [٣٥] : التحويل إلى برامج الساعات المعتمدة

يضـع مجلس الأكاديمية ضـوابط وشـروط التحويل إلى البرامج بنظام السـاعات المعتمدة بحيث لا يتم نقل أكثر من ٥٠% من الساعات المعتمدة من إجمالي ما تم دراسته بالنظام الفصلي.

مادة [٣٦] : النظام الكودى للمقررات

يتم تحديد كود المقررات الدراسية طبقا للجدول رقم (٤)

مفتاح الكود $L_1\ L_2\ L_3$ $N_1\ N_2\ N_3$ (مثال: MEC101 Mechanics)

جدول رقم (٤)

مفتـــــــــاح الكـــــــود $L_1\ L_2\ L_3$ $N_1\ N_2\ N_3$	
١- $L_1\ L_2\ L_3$ ثلاثة حروف ترمز إلى القسم والتخصص المسئول عن تدريس المقرر	
قسم العمارة	ARC
قسم الحاسبات	CMP
قسم الاتصالات	ELC
تخصص الرياضيات قسم العلوم الأساسية	MTH
تخصص الفيزياء قسم العلوم الأساسية	PHY
تخصص الميكانيكا قسم العلوم الأساسية	MEC
تخصص الكيمياء قسم العلوم الأساسية	CHE
قسم هندسة التصنيع	MNF
تخصص المواد الإنسانية وتتبع وكيل الأكاديمية إشرافيا	GEN
٢- N_1 رقم يرمز إلى المستوى التي تدرس به المادة	
$N_1 = 1$	المستوى الأول
$N_1 = 2$	المستوى الثاني
$N_1 = 3$	المستوى الثالث
$N_1 = 4$	المستوى الرابع
$N_1 = 5$	المستوى الخامس
٣- N_2 رقم يرمز إلى نوعية المادة التي ينتمي إليها المقرر	
$N_2 = 0$	مادة أساسية أو مادة تحضيرية
$N_2 = 1$	مادة هندسية أساسية
$N_2 = 2$	مادة هندسية تخصصية إجبارية
$N_2 = 3$	مادة هندسية تخصصية اختيارية
$N_2 = 4$	مادة إنسانية إجبارية
$N_2 = 5$	مادة إنسانية اختيارية
$N_2 = 6$	المشروع والندوات والتدريب الصناعي
٤- N_3 رقم يرمز إلى مسلسل المقرر داخل التخصص	