

**Computer Engineering and Information
Technology
BSc Program Specifications
By Law 2020
August 2020**

مقدمة

الهندسة هي المعرفة بالعلوم الطبيعية والرياضية، والتي تكتسب بالدراسة والخبرة والممارسة، وتطبق بوعي لتطوير أساليب تستخدم اقتصاديا لتطوير المواد وقوى الطبيعة لصالح البشرية. وهي أيضا المقدرة على الشروع في النشاط والسلوك المرتبط بالعمليات الهندسية والنظم والمشاكل والفرص، والتاريخ، والمستقبل، والتأثيرات، والأخلاق والمردودات. كما أنها تتطوى على المعرفة، وطرق التفكير والتصرفات والقدرات. كما تساعد الهندسة في إعداد الأفراد لتقديم خيارات مدروسة في إطار كونهم مستهلكين أو عمالا أو مواطنين وأعضاء في المجتمع الدولي. وينبغي أن يحقق التعليم الهندسي التميز والتفوق في التعليم العالي والدراسات العليا والبحوث، والخدمة العامة، وتطوير المعارف الهندسية. ويهدف التعليم الهندسي إلى 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 الهندسي يهدف إلى تحفيز الطلاب وأعضاء هيئة التدريس على التعلم والنمو، كذلك تحقيق وتلبية احتياجات المجتمع قومياً وإقليمياً ودولياً. كما يهدف أيضا إلى إعداد الطلبة لمهنة منتجة ومفيدة في المجال الهندسي مبنية على أسس أخلاقية ومعنوية قوية.

ويختص المهندسون بحل المشاكل الواقعية، 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 أمنا وملائمة للاستعمال اليومي. كما يسعون إلى التطوير من خلال الاختراع والتصميم والتصنيع والبناء. كما تهدف مجمل الأنشطة الهندسية إلى الحصول على نتائج إيجابية لتحسين المعيشة بيد أن 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 تلوث الهواء لا يمكن أن تُحل بدون اعتبار التناقضات الأخلاقية والسياسية والقانونية والاجتماعية. علاوة على ذلك، يجب أن يأخذ في الاعتبار تأثير الحلول الهندسية المتاحة على مصالح الأفراد والمجموعات.

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

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

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

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

وقسم الهندسة الكهربائية (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 الذي وفر الخبرات اللازمة والتدريب والاستشارات لإتمام مواصفات البرنامج.

والله ولي التوفيق،،،

د. عبد المنعم فودة
رئيس قسم الهندسة الحاسبات

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Computer Engineering and Information Technology B.Sc. Program Specifications

1.General

1.1BASIC INFORMATION

Program Title:	Computer Engineering and Information Technology B.Sc. Program
Program Type:	Single
Department:	Computer Engineering and Information Technology Department
Coordinator:	Dr. Abdelmenam Fouda
Assistant Co-ordinator:	Dr.Seham Ebrahim
External Evaluators:	
Academic Standard:	The current program fulfils the requirements of the National Academic Reference Standards (NARS) Engineering 2 nd Edition,2018, for the Basic Electrical Engineering graduate and similar programs
Program Started on:	2001
Dates of program specifications approval:	August 2020

1.2 STAFF MEMBERS

The Computer Engineering and Information Technology B.Sc. Program is taught by 8 highly qualified faculty members, all of the faculty members are qualified to teach the courses allocated to them. The staff members are assisted by 13 full time teaching assistants in addition to 6 engineers and 4 technicians. Their personnel resume is included in the course's files.

1.3 PROGRAM REVIEWING

Internal and External Reviewers

The program was evaluated internally by the quality office. evaluation report showed that the program specification agrees with the Adopted Academic Reference Standards.

The program specifications were evaluated by two external evaluators.

2. Professional Information

2.1PREAMBLE

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 (NARS) Engineering 2nd Edition 2018 for All Engineering Programs the Basic Electrical Engineering graduate and similar programs.

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

2.2. PROGRAM MISSION AND AIMS

2.2.1. Program Mission

The mission of the computer engineering and information technology BSc program is the preparation of a distinguished elite able to compete scientifically and professionally at the local, regional and international levels by providing students with knowledge, concepts and technological skills developed in a framework of cultural, social and Ethical values. The graduate of this program should possess the qualities and satisfies the requirements needed by both public and private sectors.

2.2.2. Academy mission

The Modern Academy for engineering and Technology aims at preparing distinguished engineering cadres capable of competing scientifically and professionally on the local and regional levels to meet the needs of the society in the various sectors of the country. This is achieved through providing students with modern advanced technological knowledge, concepts and skills via various programs, within a frame of cultural, social and ethical values.

2.2.3. Conformity of the program mission to the modern academy mission

		Modern Academy Mission Keywords			
		The graduates can compete scientifically and professionally on the local and regional levels	The graduate's qualification meets the needs of the society in the various sectors of the country	The graduates are provided with modern technological knowledge, concepts and skills	The graduated qualification is achieved within a frame of cultural, social and ethical values
Key words of the program	Innovative graduates			✓	
	Interaction with challenges	✓	✓		
	Challenges on local level	✓	✓	✓	
	Challenges on regional	✓	✓	✓	
	Satisfaction of the requirements of the society		✓	✓	
	Governmental, private and public sectors.		✓		
	Cultural values				✓
	Social values				✓
	Ethical values				✓

2.2.4 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. It also provides them with a solid foundation to develop their skills needed for a wide range of professional engineering careers. It provides a balance of theoretical, design and practical subjects which allows them to exploit their individual talents.

2.2.5. Conformity of the program aims to its mission

		Program Mission Keywords								
		Innovative graduates	Interaction with challenges	Challenges on local level	Challenges on regional level	Satisfaction of the requirements of the society	Governmental, private and public sectors.	Cultural values	Social values	Ethical values
Key words of the program	appropriate theoretical knowledge	✓								
	appropriate technical	✓				✓	✓			
	professional market			✓	✓	✓	✓	✓	✓	✓
	professional engineering	✓	✓	✓	✓	✓	✓			

exploit their individual talents	✓	✓	✓	✓	✓	✓			
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2.3. GRADUATE CAREER OPPORTUNITIES

Computer Engineering and Information Technology engineer may work in: private and governmental firms, where it is required to design, Operate, develop, or maintain computer systems software Engineering, communication network design, maintain, cyber security and Data Science. The graduate is able to work in Artificial Intelligent and machine Learning application and also advanced non-traditional information processing technology. The graduate is also ready for using Embedded system with all its elements.

2.3.1. The attributes of the graduate

The Engineering Graduate must:

1. Master a wide spectrum of engineering knowledge and specialized skills and can apply acquired knowledge using theories and abstract thinking in real life situations;
2. Apply analytic critical and systemic thinking to identify, diagnose and solve engineering problems with a wide range of complexity and variation;
3. Behave professionally and adhere to engineering ethics and standards;
4. Work in and lead a heterogeneous team of professionals from different engineering specialties and assume responsibility for own and team performance;
5. Recognize his/her role in promoting the engineering field and contribute in the development of the profession and the community;
6. Value the importance of the environment, both physical and natural, and work to promote sustainability principles;
7. Use techniques, skills and modern engineering tools necessary for engineering practice;
8. Assume full responsibility for own learning and self-development, engage in lifelong learning and demonstrate the capacity to engage in post-graduate and research studies;
9. Communicate effectively using different modes, tools and languages with various audiences; to deal with academic/professional challenges in a critical and creative manner;
10. Demonstrate leadership qualities, business administration and entrepreneurial skills.

2.4. COMPETENCIES

The computer Engineering and Information Technology BSc Competencies:

NARS Competencies of Engineering Graduate	<p>C1. Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic Science and mathematics.</p> <p>C2. Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.</p> <p>C3. Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.</p> <p>C4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.</p> <p>C5. Practice research techniques and methods of investigation as an inherent part of learning.</p> <p>C6. Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.</p> <p>C7. Function efficiently as an individual and as a member of multi-disciplinary and multicultural teams.</p> <p>C8. Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.</p> <p>C9. Use creative, innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.</p> <p>C10. Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.</p>
NARS Competencies of Engineering Programs of the Basic Electrical	<p>C11. Design and implement: elements, modules, sub-systems or systems in electrical/electronic/digital engineering using technological and professional tools.</p> <p>C12. Estimate and measure the performance of an electrical/electronic/digital system and circuit under specific input excitation, and evaluate its suitability for a specific application.</p> <p>C13. Adopt suitable national and international standards and codes to: design, build, operate, inspect and maintain electrical/electronic/digital equipment, systems and services.</p>
ARS Competencies of the computer Engineering and Information Technology	<p>C14 Modern trends in the field of networking and data transmission widely used nowadays, and Fundamental concepts of distributed systems</p> <p>C15 Capability of integrating computer objects running on different system configurations and, operate computer-based systems specifically designed for business applications</p> <p>C16 Use appropriate specialized computer software, computational tools and design packages throughout the phases of the life cycle of system development</p> <p>C17 Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs and systems</p> <p>C18 Analyze data / information to support activities of business system users</p> <p>C19 Build and run databases and integrate them with business processing requirements</p> <p>C20 Innovating solutions based on non-traditional thinking and the use of latest technologies</p>

2.5. CURRICULUM STRUCTURE AND CONTENT

The curriculum of the Computer Engineering and Information Technology BSc program consists of **63** courses of total 165 credit hours. covering topics in Humanities and Social (HSS), Business Administration (BAS) Sciences, Mathematics and Basic Sciences (MBS), Engineering Culture Sciences (ECS), Basic Engineering Sciences (BES), Applied Engineering and Design Sciences (AEDS), and Project and Industrial Training (PIT) as required by the Supreme Council of Universities (SCU) in Egypt.

2.5.1. University Requirements (General cultural courses requirements)

The main purpose of a university education is not only to prepare students for successful careers but also to provide them with the knowledge and skills to develop a rational, well-rounded, and successful personal identity through:

- 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.
- The ability to consider and evaluate the impact of the technology on the society, public health, and safety.
- 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
- The ability to engage in life-long learning and respond effectively to the needs of the society.

The university requirements courses are unified for all the programs of the Modern Academy. They consist of 16 credits (9.7 % of total 165 credits), which are satisfied by completing eight (8) courses:

- Six (6) compulsory courses equivalent to 12 credits (7.27%), as listed in table 1- a.
- Two (2) elective course equivalent to 4 credits (2.42%), as listed in table 1- b.

**Table 1-a Compulsory Courses of University Requirements
(12 credit Hours, 7.27% of total 165 credits).**

Course Code	Total Credit	Contact Hours				Course Title	Prerequisites	Subject Area						
		L	T	P	Total			Hum. & Soc. Sc.	Business Admins.	Math. & B. Sc.	Engineering	Basic Eng. Sc.	App. Eng. & Des.	Proj. & Ind.
GENn041	2	2	-	-	2	Contemporary Social Issues	None	2						
GENn042	2	2	-	-	2	English Language.	None	2						
GENn043	2	2	-	-	2	History of Engineering and Technology.	None	2						
GENn141	2	2	-	-	2	Presentation Skills.	None	2						
GENn142	2	2	-	-	2	Technical Report Writing.	None	2						
GENn341	2	2	-	-	2	Project Management.	None		2					
Total	12	12	-	-	12	7.27 %		10	2					

**Table 1-b Elective Courses of University Requirements
(4 Credits Hours, 2.42% of total 165 credits).**

	Course Code	Total Credit	Contact Hours				Course Title	Prerequisites	Subject Area						
			L	T	P	Total			Hum. & Soc. Sc.	Business Admins.	Math. & B. Sc.	Engineering Culture	Basic Eng. Sc.	App. Eng. & Des.	Proj. & Ind. Training
Elective	GENn351	2	2	-	-	2	Technical English.	GENn042	2						
	GENn352	2	2	-	-	2	Risk Management	None							
	GENn353	2	2	-	-	2	Industrial Psychology.								
Elective 2	GENn451	2	2	-	-	2	Environmental Effects of Electromagnetic Waves.	None	2	2					
	GENn452	2	2	-	-	2	Civilization and heritage								
	GENn453	2	2	-	-	2	Marketing								
Total		4*	4			4	2.42 %		2*	2*					

The University Requirements make 9.69% of the total credit hours.

2.5.2. Faculty/Institute requirements (Mathematics, Basic Sciencee, and Engineering Culture Courses)

Mathematics, Basic Sciences & Engineering culture courses give the following skills:

Mathematics

Institute requirements provide students with the knowledge and skills that are essential to develop a successful engineer. The Institute core that is common to all credit hours programs is implemented through:

- Acquiring knowledge in mathematical and analytical methods.
- The ability to reason about and conceptualize engineering components, systems or processes using analytical methods as related to the Electronic Engineering and Communication Technology.
- The ability to analyze and model engineering components, systems, and processes specific to the Electronic Engineering and Communication Technology.
- The skill of using probability and statistical methods.

Basic Sciences

- Acquiring knowledge of physics, chemistry, mechanics, earth Sciences, biological Sciences and other specific subjects which focus on understanding the physical world.
- The ability to select and apply scientific principles in practical problem solving.
- 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.

Engineering culture

- a) Acquiring knowledge in the areas related to different engineering trends.
b) The ability to overview basic knowledge about different engineering specializations.

The Institute Requirements (Mathematics, Basic Science, and Engineering Culture Courses) courses are unified for all the programs of the Modern Academy. They consist of fifteen (15) courses with 40 credits (24.24 % of total 165 credits), as listed in table 2.

**Table 2 Courses of Institute Requirements
(40 credits, 24.24% of total 165 credits)**

Course Code	Total Credit	Contact Hours				Course Title	Prerequisites	Subject Area						
		L	T	P	Total			Hum. & Soc. Sc.	Business Admins.	Math. & B. Sc.	Engineering	Basic Eng. Sc.	App. Eng. & Des.	Proj. & Ind.
CHEn001	3	2	1	2	5	Chemistry.	None			3				
MECn001	2	1	3	-	4	Mechanics -1.	None			2				
MECn002	2	1	3	-	4	Mechanics-2.	MECn001			2				
MTHn001	3	2	3	-	5	Mathematics-1(Algebra and Calculus).	None			3				
MTHn002	3	2	3	-	5	Mathematics-2(Integration and Analytic Geometry).	MTHn001			3				
PHYn001	3	2	1	2	5	Physics-1.	None			3				
PHYn002	3	2	1	2	5	Physics -2.	PHYn001			3				
MNFn001	2	1	3	-	4	Engineering Graphics 1	None				1	1		
MNFn002	2	1	3	-	4	Engineering Graphics 2	MNFn001				1	1		
MNFn003	3	2	-	3	5	Principles of Production Engineering.	None				1	2		
CMPn010	4	2	3	2	7	Program Design and Computer Languages.	None				4			
MTHn107	3	2	2	-	4	Mathematics -7 (Introduction to Prob. and Statistics)	MTHn002			3				
ENGn213	3	2	-	2	4	Advanced Computer Systems Implementation.	CMPn010*					2	1	
ENGn311	2	2	1	-	3	Engineering Economy.	None		1			1		
ENGn312	2	2	-	-	2	Engineering Laws and Professional ethics.	None					2		
Total	40	26	27	13	66	24.24%		1	22	7	9	1		

2.5.3. Requirements of the general specialization of the program (Basic Engineering Courses)

General specialization of program enables the students to:

- Integrating knowledge and understanding of mathematics and physical Sciences to develop basic engineering laws and concepts related to the Computer Engineering and Information Technology.
- 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.
- Deal effectively with numbers and concepts to identify/solve complex and open-ended engineering problems.

The requirements of the general specialization of Computer Engineering and Information Technology bachelor program consist of 59 credits (35.76% of total 165 credits), as listed in table 3.

Table 3 Requirements of the general specialization of the program
(59 credits ,35.76% of total 165 credits)

Course Code	Total Credit	Contact Hours				Course Title	Prerequisites	Subject Area						
		L	T	P	Total			Social & Hum. Sc.	Business	Math. & B. Science	Engineering Culture	Basic Engineering Sc.	Applied Eng. & Project & Ind.	Thesis
MTHn103	3	2	3	-	5	Mathematics -3(Differential Equations and Transforms).	MTHn002			3				
MTHn104	3	2	3	-	5	Mathematics-4(Advanced Calculus).	MTHn001			3				
ELCn114	2	1	2	1	4	Modern Theory of Solids	PHYn002			2				
CMPn110	3	2	2	-	4	Data Structures and Algorithms.	CMPn010					1	2	
ELCn111	3	2	1	2	5	Electrical Circuit Analysis-1.	MTHn002 ELCn060					2		1
ELCn112	3	2	3	—	5	Electrical Circuit Analysis-2.	ELCn111					2		1
ELCn113	3	2	1	2	5	Electrical Measurements.	ELCn111					2		1
CMPn111	4	3	2	1	6	Logic Circuits Design-1.	MTHn001					2	2	
MTHn208	2	2	1	-	3	Mathematics -8 (Complex Analysis and P. D. E).	MTHn002			2				
ELCn115	2	1	2	1	4	Semiconductors for Microelectronics.	ELCn114					2		
CMPn210	3	2	1	2	5	Engineering Computer Applications.	CMPn010					1	2	
ELCn210	4	3	1	2	6	Control-1. (Principles of Automatic Control)	MTHn103					2	2	
ELCn211	3	2	2	—	4	Signal Analysis.	MTHn103					3		
ELCn212	3	2	1	2	5	Microelectronic Circuits-1	ELCn115 CMPn160					2	1	

ELCn214	3	2	1	2	5	Electronic Measurements.	ELCn113					3		
ELCn215	3	2	1	2	5	Communications-1.	ELCn211					3		
ELCn218	3	2	2	1	5	Electrical Power Engineering.	ELCn112					3		
CMPn310	3	2	1	2	5	Microprocessor Based - Systems.	CMPn111					1	2	
CMPn321	3	2	2	-	4	Computer Architecture	CMPn111					1	2	
CMPn325	3	2	2	-	4	Information Systems	CMPn110	2				1		
Total	59	40	34	20	94	35.76%		2		10		31	13	3

2.5.4. Requirements of the specific specialization of the program

Applied Engineering and Design

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

Projects and Industrial Training:

- Gaining the knowledge and experience of applying the different principles and techniques introduced in the program of study.
- 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.
- The ability to investigate, plan and execute technical research specific to the Computer Engineering and Information Technology over an extended period of time; meeting deadlines and putting technical work in a social and commercial context.
- The ability to work in a team, search published sources of information, interprets technical data, analyzes, and presents findings in various ways.
- The requirements of the specific specialization courses (Applied Engineering and Design, projects & Training) of the Computer Engineering and Information Technology bachelor program consist of 50 credits (30.3% of total 165 credits), which are satisfied by completing seventeen (17) courses:
 - Twelve (12) Compulsory Core Computer Major Courses equivalent to 35 credits (21.21%), as listed in table 4- a.
 - Five (5) courses: equivalent to 15 credits (9.09%), as listed in table 4- b.

Table 4-a Requirement of the specific specialization of the program
Compulsory courses (35 Credits.21.21% of total 165 credits)

Course Code	Total Credit	Contact Hours				Course Title	Prerequisites	Subject Area						
		L	T	P	Total			Social & Hum. Sc.	Business Administration	Math. & B. Science	Engineering Culture	Basic Engineering Sc.	Applied Eng. & Design	Project & Ind. Training
ELCn060	-					Summer Training-1.								
CMPn160	-					Summer Training-2.	ELCn060							
CMPn260						Industrial Training-1.	+66 Credits CMPn160							
CMPn261	1	-	2			Seminar	+66 Credits						1	
CMPn322	3	2	1	2	5	Computer Graphics and Man Machine Interface.	CMPn010 CMPn321					1	2	
CMPn324	4	3	2	1	6	Data Transmission and Computer Networks.	CMPn321					1	3	
CMPn323	4	3	2	1	6	Data Base Management.	CMPn110					1	3	
CMPn326	3	2	1	2	5	Logic Circuits Design -2.	CMPn111					1	2	
CMPn360	0					Industrial Training-2.	CMPn260 + 99Credits							
CMPn361	2	-	2	2	4	Project-1.	+66 Credits							2
CMPn421	3	2	2	1	5	Distributed Computer Systems.	CMPn324					1	2	
CMPn422	3	2	2	1	5	Artificial Intelligence.	CMPn321					2	1	
CMPn423	3	2	2	-	4	Languages and Compilers.	CMPn110					1	2	
CMPn424	3	2	2	-	4	Computer Modeling and Simulation	CMPn210					1	2	
CMPn460	3	2	-	2		Project-2. A	CMPn361- CMPn360 +132 Credit						1	2
CMPn461	3	2	-	2		Project-2-b	CMPn460						1	2
Total	35	22	17	14	42	21.21%						9	20	6

Table 4-b Requirements of the specific specialization of the program
Elective Courses
(15credits, 9.09% of 165 Credit Hours)

	Course Code	Total Credit	Contact Hours				Course Title	Prerequisites	Subject Area						
			L	T	P	Total			Social & Hum. Sc.	Business Administration	Math. & B. Science	Engineering Culture	Basic Engineering Sc.	Applied Eng. & Design	Project & Ind. Training
Elective 3	CMPn333	3	2	1	2	4	Embedded Systems	CMPn310							
	CMPn335	3	2	2	1	5	Operating Systems.	CMPn321						3	
	CMPn433	3	2	2	-	4	Computer Organization.	CMPn321							
Elective 4	CMPn331	3	2	2	-	4	Computer Peripherals.	CMPn321							
	CMPn336	3	2	2	1	5	Software Engineering.	CMPn323						3	
	CMPn439	3	2	2	-	4	Real Time Computing.	CMPn310, CMPn324							
Elective 5	CMPn332	3	2	1	2	5	Digital Image Processing.	CMPn210							
	CMPn334	3	2	1	2	5	Multimedia	CMPn324						3	
	CMPn431	3	2	2		4	Advanced Computer Systems.	CMPn310							
Elective 6	CMPn435	3	2	2		4	Computer System Technology.	CMPn321						3	
	CMPn436						Fault Tolerant Computing.	CMPn421							
	CMPn437						Computer Interfacing.	CMPn321							
	CMPn438						Pattern Recognition and Neural Networks.	MTHn103 CMPn310							
Elective 7	CMPn434	3	2	2	-	4	Computer Performance.	CMPn110							
	CMPn432	3	2	2	1	5	Advanced Database Systems.	CMPn323							
	ELCn425	3	2	2	1	5	Digital Signal Processing.	MTHn103 CMPn111						3	
	Total	15*												15	

2.5.6. A SAMPLE STUDY PLAN

A sample study plan for the Computer Engineering and Information Technology BSc program is presented as one recommended sequence to complete the graduation requirements over 10 main semesters, the Fall

and Spring semesters per academic year. Since the program is based on the credit hours system of education, the student does not have to take the courses during the semester indicated in the study plan as long as the course prerequisites are satisfied. The academic year is divided into 2 main semesters. In addition to summer courses that enable high caliber students to finish the program in nine semesters only (each summer term shouldn't exceed 6 credit hours)

Table 5 First Semester (Level zero)

Code	Subject	Total Credits	Contact Hours			
			L	T	P	Total
CMPn010	Program Design and Computer Languages.	4	2	3	2	7
GENn041	Contemporary Social Issues	2	2	-	-	2
MNFn001	Engineering Graphics-1	2	1	3	-	4
GENn043	History of Engineering and Technology	2	2	-	-	2
MECn001	Mechanics -1	2	1	3	-	4
MTHn001	Mathematics -1 (Algebra and Calculus)	3	2	3	-	5
PHYn001	Physics -1	3	2	1	2	5
Total		18	12	13	4	29

Table 6 Second Semester (Level zero)

Code	Subject	Total Credits	Contact Hours			
			L	T	P	Total
CHEn001	Chemistry.	3	2	1	2	5
MNFn002	Engineering Graphics-2	2	1	3	-	4
GENn042	English Language.	2	2	-	-	2
MECn002	Mechanics-2	2	1	3	-	4
MNFn003	Principles of Production Engineering	3	2	-	3	5
MTHn002	Mathematics -2(Integration and Analytic Geometry)	3	2	3	-	5
PHYn002	Physics-2.	3	2	1	2	5
Total		18	12	11	7	30

Table 7 Summer Training

Code	Subject	Total Credits	Contact Hours			
			L	T	P	Total
ELCn060	Summer Training-1	-	-	-	-	-
Total		-	-	-	-	-

Table 8 Third Semester (Level one)

Code	Subject	Total Credits	Contact Hours			
			L	T	P	Total
CMPn111	Logic Circuits Design-1.	4	3	2	1	6
ELCn111	Electrical Circuit Analysis-1	3	2	1	2	5
ELCn114	Modern Theory of Solids	2	1	2	1	4
GENn141a	Presentation Skills.	2	2	-	-	2
MTHn103	Mathematics -3 (Differential Equations and Transforms).	3	2	3	-	5
ENGn311a	Engineering Economy	2	2	1	-	3
Total		16	12	9	4	25

Table9 Fourth Semester (Level one)

Code	Subject	Total Credits	Contact Hours			
			L	T	P	Total
CMPn110	Data Structures and Algorithms.	3	2	2	-	4
ELCn112	Electrical Circuit Analysis-2	3	2	3	-	5
ELCn113	Electrical Measurements.	3	2	1	2	5
ELCn115	Semiconductors for Microelectronics	2	1	2	1	4
ENGn213	Advanced Computer Systems Implementation.	3	2		2	4
MTHn104	Mathematics -4(Advanced Calculus)	3	2	3	-	5
Total		17	11	11	5	27

Table10 Summer Training

Code	Subject	Total Credits	Contact Hours			
			L	T	P	Total
CMPn160	Summer Training-2	-	-	-	-	-
Total		-	-	-	-	-

Table 11 Fifth Semester (Level two)

Code	Subject	Total Credits	Contact Hours			
			L	T	P	Total
CMPn210	Engineering Computer Applications	3	2	1	2	5
CMPn325	Information Systems.	3	2	2	-	4
ELCn211	Signal Analysis	3	2	2	-	4
ELCn212	Microelectronic Circuits-1	3	2	1	2	5
GENn341b	Project Management.	2	2	-	-	2
MTHn107	Mathematics -7 (Introduction to Probability. and Statistics).	3	2	2	-	4
Total		17	12	8	4	24

Table12 Sixth Semester (Level two)

Code	Subject	Total Credits	Contact Hours			
			L	T	P	Total
CMPn261	Seminar	1	-	2	-	2
CMPn321	Computer Architecture	3	2	2	-	4
ELCn210	Control-1 (Principles of Automatic Control).	4	3	1	2	6
ELCn214	Electronic Measurements	3	2	1	2	5
GENn142	Technical Report writing	2	2	-	-	2
MTHn208	Mathematics -8(Complex Analysis and P.D.E)	2	2	1	-	3
Total		15	11	7	4	22

Table 13 Summer Training

Code	Subject	Total Credits	Contact Hours			
			L	T	P	Total
CMPn260	Industrial Training -1	-				
Total		-				

Table 14 Seventh Semester (Level three)

Code	Subject	Total Credits	Contact Hours			
			L	T	P	Total
ELCn215	Communications -1	3	2	1	2	5
CMPn323	Data Base Management.	4	3	2	1	6
CMPn310	Microprocessor Based Systems.	3	2	1	2	5
ELCn218	Electrical Power Engineering	3	2	2	1	5
CMPn361	Project -1	2	-	2	2	4
Elective 1	Elective course of University Requirements	2	2	-	-	2
	• GENn351b Technical English					
	• GENn352 Risk Management					
	• GENn353 Industrial Psychology.					
Total		17	11	8	8	27

Table 15 Eighth Semester (Level three)

Code	Subject	Total Credits	Contact Hours			
			L	T	P	Total
CMPn322	Computer Graphics and Man Machine Interface	3	2	1	2	5
CMPn324	Data Transmission and Computer Networks.	4	3	2	1	6

Elective 3	<u>Elective Course of Specific Specialization</u> <ul style="list-style-type: none"> • CMPn335 Operating Systems • CMPn333 Embedded Systems • CMPn433 Computer organization 	3	2	2	1	5
Elective 4	<u>Elective Course of Specific Specialization</u> <ul style="list-style-type: none"> • CMPn336 Software Engineering • CMPn331 Computer Peripherals • CMPn439 Real Time Computing 	3	2	2	1	5
CMPn326	Logic Design -2.	3	2	1	2	5
Total		16	11	8	7	26

Table 16 Summer Training

Code	Subject	Total Credits	Contact Hours			
			L	T	P	Total
CMPn360	Industrial Training -2	-	-	-	-	-
Total		-	-	-	-	-

Table 17 Ninth Semester (Level Four)

Code	Subject	Total Credits	Contact Hours			
			L	T	P	Total
CMPn421	Distributed Computer Systems	3	2	2	1	5
Elective 5	<u>Elective Course of Specific Specialization</u> <ul style="list-style-type: none"> • CMPn332 Digital Image processing • CMPn334 Multimedia • CMPn431 Advanced Computer Systems 	3	2	1	2	5
CMPn460	Project -2a (First Stage)	3	2	-	2	4
CMPn423	Languages and Compilers	3	2	2	-	4
ENGN312	Engineering Laws and Professional ethics	2	2			2
Elective 2	<u>Elective course of University Requirements</u> <ul style="list-style-type: none"> • GENn451 Environmental Effects of Electromagnetic Waves • GENn452 Civilization and heritage • GENn453 Marketing 	2	2	-	-	2
Total		16	12	5	5	22

Table 18 Tenth Semester (Level Four)

Code	Subject	Total Credits	Contact Hours			
			L	T	P	Total
CMPn424	Computer Modeling and Simulation	3	2	2	-	4
CMPn422	Artificial Intelligence.	3	2	1	2	5
CMPn461	Project-2-b	3	2	-	2	4
Elective 6	<u>Elective Course of Specific Specialization</u>	3	2	2	-	4
	• CMPn437 Computer Interfacing					
	• CMPn435 Computer systems Technology					
	• CMPn436 Fault tolerant computing					
	• CMPn438 Pattern Recognition and Neural Networks					
Elective 7	<u>Elective Course of Specific Specialization</u>	3	2	2	1	5
	• CMPn432 Advanced Database Systems					
	• ELCn425 Digital Signal Processing					
	• CMPn434 computer performance					
	•					
Total		15	10	6	6	22

2.5.7. CONFORMITY to the ENGINEERING SECTOR of the SCU

The Computer Engineering and Information Technology BSc program includes 63 courses of total 165 credit hours, 257 contact hours. These courses are classified according to the requirements of the engineering sector of the supreme council of higher education to the following subject areas:

	Achieved	Range
1. University Requirements	9.7%	6-10%
2. Faculty/Institute requirements	24.24%	22-30%
3. Requirements of the general specialization of the program	35.76%	30-35%
4. Requirements of the specific specialization of the program	30.3%	20-30%

The program credit hours were also classified according to the reference framework approved by the (SCU) on 2016 to the following subject areas:

	Achieved	Range
1. Social and Humanitarian Sciences	8.48%	(8-10%)
2. Business Administration	2.42%	(2-4%)
3. Mathematics and Basic Sciences	19.39%	(18-22%)
4. Engineering Culture	4.85%	(4-6%)
5. Basic Engineering Sciences	29.7%	(25-30 %)
6. Applied Engineering and Design	29.7%	(25-30 %)
7. Project & Industrial Training	5.45%	(4-6%)

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

Table 19 conformity to the engineering sector of the SCU

	Subject Area							Total Credit Hours	Percentage	Requirements of the Engineering Sector Committee
	Social & Hum. Sc.	Business Administration	Math. & B. Science	Engineering Culture	Basic Engineering Sc.	Applied Eng. & Design	Project & Ind. Training			
University Requirements	12	4	-	-	-	-	-	16	9.70%	6-10%
Faculty/Institute requirements	-	1	22	6	10	1	-	40	24.24%	22-30%
Requirements of the general specialization of the program	2	-	10	-	31	13	3	59	35.76%	30-35%
Requirements of the specific specialization of the program	-	-	-	-	9	35	6	50	30.30%	20-30%
Total Credit Hours	14	5	32	6	50	49	9	165		
Percentage	8.48%	3.03%	19.39%	3.64%	30.30%	29.70%	5.45%			
Requirements of the Engineering Sector Committee for subject areas	8--10%	2—4 %	18—22 %	4—6%	25—30%	25—30%	4—6%			

2.6. COURSE COMPETENCES MAPPING / PROGRAM COMPETENCES

The contribution of the individual courses to the program competences are indicated in the courses specifications and revised following the evaluation of the mapping matrix.

Table 20 Program competences/Course Competences Mapping

Courses		Program Competences																			
Code	Title	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
CMPn010	Program Design and Computer Languages.	1	1	1	1	1	1			1	1										
GENn041	Contemporary Social Issues		1	1	1	1		1	1	1	1										
MNFn001	Engineering Graphics-1	1	1	1	1	1	1	1	1	1	1	1	1	1	1						
GENn043	History of Engineering and Technology							1	1	1	1										
MECn001	Mechanics -1.	1				1		1	1	1	1										
MTHn001	Mathematics -1 (Algebra and Calculus)	1				1		1	1	1	1										
PHYn001	Physics -1	1	1	1	1	1	1	1	1	1	1										
CHEn001	Chemistry.	1	1	1	1	1	1	1	1	1	1										
MNFn002	Engineering Graphics-2	1	1	1	1	1	1	1	1	1	1										
GENn042	English Language.					1			1	1	1										
MECn002	Mechanics-2	1				1		1	1	1	1										
MTHn002	Mathematics -2(Integration and Analytic Geometry)	1	1			1		1	1	1	1										
PHYn002	Physics-2.	1	1	1	1	1		1	1	1	1										
ELCn060	Summer Training-1	1	1	1	1	1			1												
CMPn111	Logic Circuits Design-1.	1	1	1	1	1					1	1	1	1							
ELCn111	Electrical Circuit Analysis-1	1			1	1	1	1	1	1					1		1		1		
ELCn114	Modern Theory of Solids	1	1	1	1	1		1	1	1	1				1	1	1	1			

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Courses		Program Competences																			
Code	Title	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
GENn1 41	Presentatio n Skills.					1		1	1		1										
MTHn1 03	Mathematic s -3 (Differentia l Equations and Transforms).	1	1			1		1	1	1	1										
ENGn3 11b	Engineerin g Economy	1	1	1	1	1		1	1	1	1	1	1		1						
CMPn1 10	Data Structures and Algorithms .	1	1	1					1	1	1										
ELCn1 12	Electrical Circuit Analysis-2	1				1		1		1	1			1	1			1			
ELCn1 13	Electrical Measureme nts.	1	1	1	1	1	1	1		1	1		1	1	1						
ELCn1 15	Semicondu ctors for Microelectr onics	1	1	1	1	1	1	1	1	1	1	1	1	1	1						
ENGn3 12	Engineerin g Laws and Professiona l ethics		1	1	1	1	1	1	1	1	1	1									
ENGn2 13a	Advanced Computer Systems Implementa tion		1	1			1	1	1	1		1	1		1	1		1			
MTHn1 04	Mathematic s - 4(Advance d Calculus)	1				1		1	1	1	1										
CMPn1 60	Summer Training-2	1	1	1	1	1						1	1	1				1			1
CMPn2 10	Engineerin g Computer Application s	1	1	1	1	1			1		1	1	1	1							
CMPn3 25	Information Systems.	1	1	1					1			1	1		1	1	1	1	1	1	
ELCn2 11	Signal Analysis	1	1	1	1			1	1	1	1		1	1	1						
ELCn2 12	Microelectr onic Circuits-1	1	1	1		1		1	1	1	1		1								

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Courses		Program Competences																			
Code	Title	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
GENn3 41B	Project Management.	1			1		1		1	1	1	1		1	1	1			1		
MTHn1 07	Mathematics -7 (Introduction to Probability. and Statistics).	1	1			1		1	1	1	1										
CMPn2 61	Seminar	1				1		1	1			1			1	1					
CMPn3 21	Computer Architecture	1						1	1	1	1	1	1	1							
ELCn2 10	Control-1 (Principles of Automatic Control).	1	1	1		1		1	1	1	1	1	1	1		1	1	1	1		
ELCn2 14	Electronic Measurements	1	1	1	1			1	1	1	1		1	1	1						
GENn1 42	Technical Report writing					1	1		1												
MTHn2 08	Mathematics -8 (Complex Analysis and P.D.E)	1				1		1	1	1	1										
CMPn2 60	Industrial Training -1	1					1		1		1	1			1	1	1		1	1	1
ELCn2 15	Communications -1	1		1		1			1	1	1	1	1		1			1	1		
CMPn3 23	Data Base Management.	1	1	1	1			1	1	1	1		1			1		1			
GENn3 53	Elective1 Industrial Psychology		1	1	1	1	1	1	1	1	1										
GENn3 52	Elective1 Risk Management			1	1	1		1	1	1	1										
GENn3 51	Elective1 Technical English.					1			1	1	1										
ELCn2 18	Electrical Power Engineering	1	1	1	1	1	1	1	1	1		1	1	1	1						

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Courses		Program Competences																			
Code	Title	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
CMPn3 10	Microprocessor Based Systems.	1	1	1	1	1			1			1	1	1							
CMPn3 61	Project -1	1	1	1	1	1	1					1	1	1			1	1			1
CMPn3 22	Computer Graphics and Man Machine Interface		1		1	1		1			1					1	1				1
CMPn3 24	Data Transmission and Computer Networks.	1						1	1	1	1				1	1	1	1	1	1	1
CMPn4 33	Elective3 Computer organization	1						1	1	1	1	1	1	1		1		1			1
CMPn3 33	Elective3 Embedded Systems	1	1	1	1	1	1			1	1	1	1	1		1	1	1	1	1	1
CMPn3 35	Elective3 Operating Systems	1	1	1					1		1	1	1			1	1	1	1		1
CMPn4 39	Elective4 Real Time Computing	1	1	1	1	1						1	1	1				1	1		1
CMPn3 31	Elective4 Computer Peripherals	1	1	1	1	1						1	1	1				1	1		1
CMPn3 36	Elective4 Software Engineering	1	1	1	1	1	1	1	1	1	1	1	1		1						1
CMPn3 26	Logic Design -2.	1	1	1	1	1	1			1	1	1	1	1		1	1	1	1	1	1
CMPn3 60	Industrial Training -2	1					1		1		1	1			1	1	1		1	1	1
CMPn4 21	Distributed Computer Systems	1		1	1	1		1	1	1	1				1	1					1
CMPn4 31	Elective 5 Advanced Computer Systems										1	1		1	1	1	1	1	1		
CMPn3 32	Elective5 Digital Image processing	1	1	1	1	1	1	1	1	1	1	1	1					1	1		
CMPn3 34	Elective5 Multimedia	1	1	1	1	1						1	1	1				1	1		1

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Courses		Program Competences																			
Code	Title	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
CMPn4 23	Languages and Compilers	1	1	1								1				1					
CMPn4 60	Project -2a (First Stage)					1	1	1	1	1	1	1			1	1	1				
ENGn3 12	Engineering Laws and Professional ethics		1	1	1	1	1	1	1	1	1										
GENn4 53	Elective2 Marketing	1	1					1	1	1	1										
GENn4 51	Elective2 Environmental Effects of Electromagnetic Waves.		1	1	1	1	1	1	1	1	1										
GENn4 52	Elective2 Civilization and heritage	1		1		1		1	1	1	1			1	1	1					
CMPn4 22	Artificial Intelligence	1	1	1	1							1	1	1	1		1	1	1	1	
CMPn4 24	Computer Modeling and Simulation	1	1	1	1	1						1	1	1				1	1		1
CMPn4 37	Elective6 Computer Interfacing	1	1	1	1	1						1	1	1				1	1		1
CMPn4 35	Elective6 Computer systems Technology	1	1	1	1	1	1			1	1	1	1	1		1	1				1
CMPn4 36	Elective6 Fault tolerant computing	1	1	1	1	1						1	1	1				1	1		1
CMPn4 38	Elective6 Pattern Recognition and Neural Networks	1	1	1	1	1						1	1	1				1	1		1
ELCn4 25	Elective7 Digital Signal Processing		1			1		1	1		1	1	1		1	1	1				
CMPn4 34	Elective7 Computer	1	1		1							1	1		1	1		1	1		1

Courses		Program Competences																			
Code	Title	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	Performance																				
CMPn4 32	Elective7 Advanced Database Systems				1					1			1		1	1	1	1	1		
CMPn4 61	Project-2-b	1	1	1	1			1	1		1		1						1	1	1
Number of Contributing Courses		61	53	50	46	58	25	47	57	52	58	39	38	29	27	24	18	28	24	10	22
Percentage of Contributing Courses		77 %	67 %	63 %	58 %	73 %	32 %	59 %	72 %	66 %	73 %	49 %	48 %	37 %	34 %	30 %	24 %	35 %	29 %	13 %	28 %

The contribution of the individual courses to the program competences 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.

2.7. COURSES SPECIFICATIONS

The detailed program courses specifications are given in **Appendix 1**. These courses specifications were revised and approved **on August 2020**. The contribution of each course to the program **competencies** were considered during this revision.

3. Program Admission Requirements

- Admission is fully organized by the admission office of the Ministry of Higher Education.
- Secondary School Certificate Graduates of other countries are eligible to join this program if they met the minimum grades set by Admission Office of the Ministry of Higher Education.
- The study begins with the first year for all students before specialization in different disciplines. Students' departmental allocation is in accordance with the student's desire and 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 2**.

5. Teaching and Learning Methods

The BSc Program of Computer Engineering and Information Technologies integrates various methods for teaching and learning to assure the highest quality of the educational program and prepare the students to the job market.

Among these teaching methods are:

- Lectures
- Presentations and Movies
- Discussions & Seminars
- Tutorials and Exercises
- Problem Solving
- Laboratory and Experimental Practice

Among the learning methods are:

- Research, Reports & Assignment
- Modeling and simulation
- Self-Learning
- Discovering & Cooperative learning

The program has also applied modern methods of teaching and learning by integrating E-Learning and Distant Learning concepts since the beginning of the COVID-19 pandemic in April 2020. The integration of an online learning platform (Moodle) has been applied to all subjects, in addition to sharing all course materials and recorded lectures with students. Furthermore, the use of video conferencing platforms has assisted the communication with and follow-up of the students during the whole educational process.

6. Student Assessment

To monitor and assess the taught courses and the aimed competencies perceived by the students, various methods of assessments are applied depending on the taught course.

Among these assessment methods are:

- Written Exam
- Tutorials and Assignments
- Quizzes and Reports
- Oral Exams
- Practical Exams
- Research & Presentations
- Mini-Project Report

7. Accordance of the Program Teaching, Learning, and Assessment Methods with the Program Competencies:

Program Competencies	Teaching Methods							Learning Methods					Assessment Method					
	Lecture	Tutorials	Lab. Experiments	Projects	Problem Solving	Brain storming	Sketches	Modeling & Simulation	Research & Reports	Discovering	Cooperative	Self-learning	Written Exam	Practical Exam	Quizzes	Term Papers	Research & Presentations	Assignments
C1	1	1	1		1		1		1	1	1		1	1	1			1
C2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		1	1
C3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
C4	1	1	1	1	1	1	1	1	1	1	1		1	1	1		1	1
C5		1	1	1	1	1			1	1	1	1		1		1	1	1
C6			1	1	1	1	1		1	1	1	1		1		1	1	
C7		1	1	1	1	1	1	1	1	1	1	1		1		1	1	1
C8	1	1	1	1	1	1	1	1	1	1	1			1		1	1	
C9	1	1	1	1	1	1			1	1	1	1		1		1	1	
C10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
C11	1		1	1	1	1	1		1	1	1			1			1	
C12	1	1	1	1	1				1	1	1		1	1	1			
C13	1	1	1	1				1	1	1	1	1	1	1	1	1	1	1
C14	1	1	1	1	1	1		1	1	1	1		1	1	1		1	1
C15	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1
C16	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1
C17	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1
C18	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1
C19	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
C20	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1

8. Evaluation of Quality of Teaching and Learning

Students' feedback about their experience in each course is collected at the end of each semester. All feedbacks are saved in the database, analyzed, and used to assess the educational process and continuously apply improvements to the individual courses and the program. Feedbacks are collected electronically and treated anonymously using questionnaires on the E-Learning Platform.

Evaluator	Tool
1- Senior students	Questionnaires
2- Alumni	Questionnaires
3- Stakeholders	Questionnaires
4- External Evaluator(s) (External Examiner (s))	Reports
5- Other societal parties	Questionnaires

The courses of the Computer Engineering and Information Technology BSc Program are given in Table A1-1, Followed by the course's description.

Appendix 1

Courses Specifications

Table A1-1 Computer Engineering and Information Technology BSc Program Courses

SN	Course Code	Course Title	Note
1.	CMPn010	Program Design and Computer Languages.	
2.	GENn041	Contemporary Social Issues	
3.	MNFn001	Engineering Graphics-1	
4.	GENn043	History of Engineering and Technology	
5.	MECn001	Mechanics -1.	
6.	MTHn001	Mathematics -1 (Algebra and Calculus)	
7.	PHYn001	Physics -1	
8.	CHEn001	Chemistry.	
9.	MNFn002	Engineering Graphics-2	
10.	GENn042	English Language.	
11.	MECn002	Mechanics-2	
12.	MTHn002	Mathematics -2(Integration and Analytic Geometry)	
13.	PHYn002	Physics-2.	
14.	ELCn060	Summer Training-1	Oral P/F
15.	CMPn111	Logic Circuits Design-1.	
16.	ELCn111	Electrical Circuit Analysis-1	
17.	ELCn114	Modern Theory of Solids	
18.	GENn141	Presentation Skills.	
19.	MTHn103	Mathematics -3 (Differential Equations and Transforms).	
20.	ENGn311b	Engineering Economy	
21.	CMPn110	Data Structures and Algorithms.	
22.	ELCn112	Electrical Circuit Analysis-2	
23.	ELCn113	Electrical Measurements.	
24.	ELCn115	Semiconductors for Microelectronics	
25.	ENGn312	Engineering Laws and Professional ethics	
26.	ENGn213a	Advanced Computer Systems Implementation	
27.	MTHn104	Mathematics -4(Advanced Calculus)	
28.	CMPn160	Summer Training-2	Oral P/F
29.	CMPn210	Engineering Computer Applications	
30.	CMPn325	Information Systems.	
31.	ELCn211	Signal Analysis	
32.	ELCn212	Microelectronic Circuits-1	
33.	GENn341B	Project Management.	
34.	MTHn107	Mathematics -7 (Introduction to Probability. and Statistics).	

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35.	CMPn261	Seminar	Oral
36.	CMPn321	Computer Architecture	
37.	ELCn210	Control-1 (Principles of Automatic Control).	
38.	ELCn214	Electronic Measurements	
39.	GENn142	Technical Report writing	
40.	MTHn208	Mathematics -8(Complex Analysis and P.D.E)	
41.	CMPn260	Industrial Training -1	Oral P/F
42.	ELCn215	Communications -1	
43.	CMPn323	Data Base Management.	
44.	GENn353	Elective1 Industrial Psychology	Only One course
45.	GENn352	Elective1 Risk Management	
46.	GENn351	Elective1 Technical English.	
47.	ELCn18	Electrical Power Engineering	
48.	CMPn30	Microprocessor Based Systems.	
49.	CMPn361	Project -1	Oral
50.	CMPn322	Computer Graphics and Man Machine Interface	
51.	CMPn324	Data Transmission and Computer Networks.	
52.	CMPn433	Elective3 Computer organization	Only One course
53.	CMPn333	Elective3 Embedded Systems	
54.	CMPn335	Elective3 Operating Systems	
55.	CMPn439	Elective4 Real Time Computing	Only One course
56.	CMPn331	Elective4 Computer Peripherals	
57.	CMPn336	Elective4 Software Engineering	
58.	CMPn326	Logic Design -2.	
59.	CMPn360	Industrial Training -2	Oral
60.	CMPn421	Distributed Computer Systems	
61.	CMPn431	Elective 5 Advanced Computer Systems	Only One course
62.	CMPn332	Elective5 Digital Image processing	
63.	CMPn334	Elective5 Multimedia	
64.	CMPn423	Languages and Compilers	
65.	CMPn460	Project -2a (First Stage)	Oral
66.	ENGn312	Engineering Laws and Professional ethics	
67.	GENn453	Elective2 Marketing	Only One course
68.	GENn451	Elective2 Environmental Effects of Electromagnetic Waves.	
69.	GENn452	Elective2 Civilization and heritage	
70.	CMPn422	Artificial Intelligence.	
71.	CMPn424	Computer Modeling and Simulation	
72.	CMPn437	Elective6 Computer Interfacing	Only One course
73.	CMPn435	Elective6 Computer systems Technology	
74.	CMPn436	Elective6 Fault tolerant computing	
75.	CMPn438	Elective6 Pattern Recognition and Neural Networks	
76.	ELCn425	Elective7 Digital Signal Processing	Only One course
77.	CMPn434	Elective7 Computer Performance	
78.	CMPn432	Elective7 Advanced Database Systems	
79.	CMPn461	Project-2-b	Oral

Level Zero Semester 1

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Course Specification

CMPN010: Program Design and Computer Languages

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
Civil Engineering and Building Technology BSc program

Department offering the program:

Manufacturing Engineering and Production Technology Department
Electronic Engineering and Communication Technology Department
Computer Engineering and Information Technology Department
Architecture Engineering and Building Technology Department
Civil Engineering and Building Technology BSc program

Department offering the course:

Computer Engineering and Information Technology Department.

Date of specifications approval:

August, 2020

B - Basic Information

Title: Program Design and Computer Languages

Code:
CMPN010

Level: Freshman / Fall

Credit Hours: 4

Lectures: 2 **Tutorial/Exercise:** 3
Practical: 2

Pre-requisite: None

C - Professional information

1 – Course Learning Objectives:

By the end of this course, the students should have gained the planned competences related to the construction and operation 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). also takes up various programming techniques such as design, implementation, testing, troubleshooting and documentation.

2 – Competencies

- c1. use programming methodologies to design and implement programs. (C1, C2, C3)
- c2. Utilize codes of practice and contemporary technologies of programming(C4)
- c3. explain fundamental concepts such as classes, information hiding, constructors, methods and other related, object-oriented concepts (C9, C10),
- c4. Practice research to updates new algorithms and method of programming(C5)
- c5. understand dynamic and static memory management(C3)
- c6. Plan, supervise and carry out testing and troubleshooting (C6)
- c7 explain how to compile and run programs (C2, C3).
- c8 Acquire and apply new application programs; and practice self-learning (C10)

This course contributes in the following program competencies: (C1, C2, C3, C4, C5, C6, C9&C10)

3. Contents

Weeks	Topic	Lecture hours	Tutorial hours	Practical hours
1.	Steps for solving programs by computer programs	2	3	2
2.	Program documentation and flow charts	2	3	2
3.	Program structure in C++	2	3	2
4.	Data types and declaration in C++	2	3	2
5.	Input/output in C++ and I/O stream class, I/O	2	3	2
6.	Operators and precedence in C++, Decision (Selection) Constructs in C++	2	3	2
7.	Assessment (M.T)	2	3	2
8.	Loops (Iterations) in C++	2	3	2
9.	Arrays, Pointers, References, and dynamic	2	3	2
10.	Functions in C++, calling functions (by value, by reference)	2	3	2
11.	Structures, Unions, Enumeration, and user-defined data types	2	3	2
12.	Abstract data types (ADT), Concepts and Terminologies of Object-Oriented Programming (OOP)	2	3	2
13.	Classes and objects	2	3	2
14.	Constructors, destructors, friend functions	2	3	2
15.	Polymorphism, encapsulation, inheritance,	2	3	2
Total hours		30	45	30

4. Course content/Course Competencies mapping matrix:

Topics	c1	c2	c3	c4	c5	c6	c7	c8
Steps for solving programs by computer programs	1						1	1
Program documentation and flow charts	1							1
Program structure in C++	1			1				
Data types and declaration in C++		1						
Input/output in C++ and I/O stream class, I/O manipulation				1		1	1	
Operators and precedence in C++, Decision (Selection) Constructs in C++		1		1				

Assessment (M.T)	1		1			1	1	
Loops (Iterations) in C++								
Arrays, Pointers, References, and dynamic allocation				1	1			
Functions in C++, calling functions (by value, by reference)			1	1		1	1	
Structures, Unions, Enumeration, and user-defined data types			1					
Abstract data types (ADT), Concepts and Terminologies of Object-Oriented Programming (OOP)		1	1	1	1			1
Classes and objects, Constructors, destructors, friend functions		1	1	1		1		
, Polymorphism, encapsulation, inheritance,		1	1	1				
carry out testing and troubleshooting						1		1
Total	4	5	6	8	2	5	4	4

5 - Teaching and Learning and Assessment methods:

Course Competences	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Researches, Reports & Assignments	Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report
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	1		1
c6	1			1	1	1	1	1		1		1	1		1
c7	1			1	1	1	1	1		1		1	1		1
c8	1			1			1	1							
Σ	8			8	7	7	4	4	-	7	-	7	7	-	7

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Semester Work	Quizzes	3 Quizzes (one each 4 weeks)	6
	Reports/Research	Two reports per semester	4
	Tutorials	3 Assignments per semester	6
	Mini project	Once per semester	4
Practical Exam		Fifteenth week	20
Written Exam		Sixteenth week	40
Total			100

7- List of references:

7-1 Course notes:

- Lecture notes and handouts

7-2 Required books:

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

7-3 Recommended books:

- C++ Essentials, Sharam Hekmat, (2005) Programming Soft Corporation, www.pragsoft.com,

7-4 Periodicals, Web sites, etc.:

- <http://www.cplusplus.com/>.

7-5 Facilities required for teaching and learning:

- Computer Lab.
- Lecture and Exercise rooms equipped with projection and sound systems.
- High speed internet and communication facilities for distance learning.

Course coordinator:

Dr. Ehab El-Shimy

Head of the Department:

Dr. Abdel-Moneam Foda

Date:

August 2020

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for Engineering and Technology in Maadi



Course Specification

GENn041: Contemporary Social Issues

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
Civil Engineering and Building Technology BSc program

Department offering the program:

Manufacturing Engineering and Production Technology Department
Electronic Engineering and Communication Technology Department
Computer Engineering and Information Technology Department
Architecture Engineering and Building Technology Department
Civil Engineering and Building Technology Department

Department offering the course:

Basic Sciences department

Date of specifications approval:

August 2020

B - Basic information

Title Contemporary Social Issues:

Code: GENn041

Level: ZREO

Credit Hours: 2

Lectures: 2

Tutorial/Exercise: -

Practical: -

Pre-requisite: non

C - Professional information

1 – Course Learning Objectives:

في نهاية هذا المقرر يكون الطالب قد استوعب وحل وطبق المعلومات والمعرفة بالاتي العلوم الانسانية واهميه دراستها وأصول المجتمع وبناء الأسرة و تكوينها والمكونات الاجتماعية والاقتصادية للمجتمع وأساليب القيادة وكيفية إعداد القادة وكذلك أساليب التفاوض وصفات الشخصية المفاوضة وكذلك مهارات العمل الجماعي وأهمية الفارق بين العمل الجماعي والفردى. كذلك التعرف على بعض المشكلات الاجتماعية التي تظهر في الحياة العملية. وكذلك يدرك معني الانتماء، أهميته - أصول المجتمع - العادات والتقاليد المرعية - المواطنة - العوامل المحفزة لحب الوطن (الحرية - احترام الرأي الآخر - عدم التمييز العنصري - الديمقراطية). وكذلك التخطيط والسكان والصحة الإنجابية .

2 – Competencies

c1- (C7,C8,C9) يدرس مفهوم العلوم الانسانية واهميه دراستها وانواعها -

c2 (C7, C8 ,C9) يتعرف علي بناء الأسرة و تكوينها وتعريف التنشئة الاجتماعية والعوامل المؤثرة فيها-

c3 (C8, C9) يتعرف علي مفهوم القيادة والفرق بين القيادة والرئاسة وانواع القيادة -

c4 (C8,C9,C10) يتعرف علي معني التفاوض وصفات الشخصية المفاوضة والمفاهيم التي تتداخل مع مفهوم التفاوض-

c5 (C8,C9) يكون الطالب قادر علي معرفة معني الراي العام واهمية وسائل الاعلام والوسائل المستخدمة لقياس هذا المفهوم-

c6 (C8,C9,C10) يتعرف علي مفهوم النفاق والكذب والفرق بينهم وتأثير هذه الصفة علي المجتمع -

c7 (C5,C9,C10) يمارس مهارات العمل الجماعي و الفردي خلال الدراسة -

c8 (C4, C8) يدرس منهجيات حل المشاكل الهندسية ، وجمع البيانات وتفسيرها -

c9 (C5,C9) يبحث الطالب علي المعلومات من خلال شبكة المعلومات والمراجع -

c10 (C7,C8,C10). تدريب الطالب على التفكير و ايجاد التصميمات اللازمة لخلق كل ما هو جديد.

c11- (C7,C8) يكتسب الطالب الخبرة في ايجاد حلول عملية تخدم برامج خارج تخصصه

(C10,C2,C3) يكتسب الطالب كيفية وضع المعايير اللازمة لتكوين فريق بحثي متكامل-c12

This course contributes in the following program competencies:C2,C3, C4,C5,C7, C8, C9, C10,

3 – Contents

week	Topic	Lecture hours	Tutorial hours	Practical hours
1	تعريف العلوم الانسانية واهمية دراستها وانواعها	2	-	-
2	تعريف التنشئة الاجتماعية والعوامل المؤثرة في هذه عملية التنشئة الاجتماعية	2	-	--
3	تعريف التنشئة الاجتماعية والعوامل المؤثرة في هذه عملية التنشئة الاجتماعية	2	-	-
4	تعريف القيادة والفرق بين القيادة والرئاسة	2	-	-
5	السمات الشخصية للقائد ووظائفه واساليب القيادة ومفهوم القيادة والمواقف	2	-	-
6	المفهوم اللغوي والاصطلاحي للتفاوض واهمية التفكير واللغة لاتمام عملية التفاوض وخصائص الشخصية المفاوضة	2	-	-
7	امتحان منتصف الفصل	2	-	-
8	وسائل الاعلام والسلوك الاجتماعي ومفهوم الراي العام ووسائل قياس الراي العام	2	-	-
9	تعريف القيادة والفرق بين القيادة والرئاسة والسمات الشخصية للقائد ووظائفه واساليب القيادة ومفهوم القيادة والمواقف	2	-	-
10	المنافق والسلوك الاجتماعي ومفهوم النفاق والفرق بين النفاق والكذب ودور المنافقين في العلاقات الاجتماعية	2	-	-
11	المنافق والسلوك الاجتماعي ومفهوم النفاق والفرق بين النفاق والكذب ودور المنافقين في العلاقات الاجتماعية	2	-	-
12	اللغة وعلاقتها بالبعد الاجتماعي	2	-	-
13	القيم وطرق التعرف على القيم وتأثيرها على المجتمع	2	-	-
14	مناقشة ابحاث على الموضوعات السابقة	2	-	-
15	مراجعة واجراء امتحان	2	-	-
Total hours		30	-	-

4. Course content/Course Competencies mapping matrix

Topic	Knowledge				Skills						Attitude	
	c1	c2	c3	c4	c5	c6	c7	c8	c9	c10	c11	c12
تعريف العلوم الانسانية واهمية دراستها وانواعها	1							1	1	1	1	1
تعريف التنشئة الاجتماعية والعوامل المؤثرة في هذه عملية التنشئة الاجتماعية		1						1	1	1	1	1
تعريف القيادة والفرق بين القيادة والرئاسة والسمات الشخصية للقائد ووظائفه واساليب القيادة ومفهوم القيادة والمواقف			1			1	1	1	1	1	1	1
المفهوم اللغوي والاصطلاحي للتفاوض واهمية التفكير واللغة لاتمام عملية التفاوض وخصائص الشخصية المفاوضة				1				1	1	1	1	1
وسائل الاعلام والسلوك الاجتماعي ومفهوم الراي العام ووسائل قياس الراي العام					1			1	1	1	1	1
المنافق والسلوك الاجتماعي ومفهوم النفاق والفرق بين النفاق والكذب ودور المنافقين في العلاقات الاجتماعية						1		1	1	1	1	1
اللغة وعلاقتها بالبعد الاجتماعي	1			1								

القيم وطرق التعرف علي القيم وتأثيرها علي المجتمع	1			1		1						1	1
Topics Covering Competences	3	1	1	3	1	3	1	6	6	6	6	7	7

5 - Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods						Learning Methods			Assessment Method					
	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Researched Reports &	Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report
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	1	
c5	1	1	1				1	1		1			1	1	
c6	1	1	1				1	1		1			1		
c7	1	1	1				1	1		1			1	1	
c8	1	1											1	1	
c9	1	1						1		1			1	1	
c10	1		1				1	1						1	
c11	1		1				1	1					1	1	
c12	1		1				1	1					1	1	
Σ	12	8	10	0	0	0	10	11	0	8			11	12	

6- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Assignments	Bi-Weekly	20
Quizzes	13 th and 14 th	20
Mid-Term Exam	7 th Week	20
Written Exam	Sixteenth week	40
Total		100

7- List of references:

7-1 Course notes :

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

7-2 Required books

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

7-3 Recommended books:

None

7-4 Periodicals, Web sites, etc.:

www.bvsci.com

mawdoo3.com

www.aspdkw.com

8- Facilities required for teaching and learning:

- Computer,
- Data show
- Computer programs
- High speed internet and communication facilities for distance learning

Course coordinator: Dr. Shimaa Nabih Ebrahim Esmail

Head of the Department: Prof. Dr. Ashraf Taha

Date: August 2020

Modern Academy

for Engineering and Technology in Maadi



Course Specification MNFn001: Engineering Graphics 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
Civil Engineering and Building Technology BSc program

Department offering the program:

Manufacturing Engineering and Production Technology Department
Electronic Engineering and Communication Technology Department
Computer Engineering and Information Technology Department
Architecture Engineering and Building Technology Department
Civil Engineering and Building Technology Department

Department offering the course:

Manufacturing Engineering and Production Technology Department.

Date of specifications approval:

August 2020

B - Basic Information

Title: Engineering Graphics

Code: MNFn001

Level: Freshman, first semester

Credit Hours: 2

Lectures: 1

Tutorial/Exercise: 3

Practical: -

Pre-requisite: None

C - Professional information

1 – Course Learning Objectives:

By the end of the course, students should know to read and draw components in different drawing kinds, namely orthogonal, perspective and/or isometric drawings. The students will be able to apply the dimensioning principles on the drawings.

2 – Competencies:

- c1. Solve and communicate problems in orthographic views and isometric and oblique drawings (C2, C3, C7, C8, C9).
- c3. Consider the benefits of solving problems of developments and intersections and draw different problems in sectional views. (C3, C4, C8, C9)
- c5. Select the proper section for each component and draw dimensions for components from production point of view. (C1, C4, C5, C8)
- c7. Produce orthographic views from 3D models. (C6, C9, C10)
- c8. Read and understand orthographic drawing and prepare and interpret engineering drawing. (C1, C8, C14)
- c10. Read orthographic drawing with multi views and make necessary views using multi view and isometric. (C3, C5, C6, C9, C10)
- c12. Use the graphic language and communicate effectively with other discipline using the graphical language (C1, C5)
- c14. Expand their creative talents and to communicate their ideas in a meaningful manner. (C8, C9, C10)
- c15. Search for information and engage in life – long self learning discipline. (C8, C10)
- c16. Use graphically effectively. (C8, C9)
- c17. Refer to relevant literature. (C9, C10)
- c18. Search for information's in references and in internet and practice self-learning and continuous learning (C5, C8, C9, C10)

This course contributes to the following program competencies: C1, C2, C3, C4, C5, C6, C7, C8, C9 & C10

3 – Contents:

Week	Topics	Lecture hours	Tutorial hours	Practical hours
1	Drawing instruments, draw sheets; Scales; Folding, Lettering.	1	3	-
2	Geometric Construction.	1	3	-
3	Alphabet of lines.	1	3	-
4	Theory of orthographic projection: Projection of point; line and plane Projection of geometric solids.	1	3	-
5	Multi view drawing (of Vertical and Horizontal Surfaces).	1	3	-
6	Multi view drawing (of inclined Surfaces).	1	3	-
7	Assessment (Mid-Term Exam)	1	1	-
8	Multi view drawing (of cylindrical Surfaces).	1	3	-
9	Practices of multi view in all cases.	1	3	-
10	Pictorial drawing (isometric), Pictorial drawing (oblique).	1	3	-
11	Isometric drawing (of Vertical, Horizontal).	1	3	-
12	Isometric drawing (of inclined Surfaces).	1	3	-
13	Isometric drawing (of cylindrical Surfaces).	1	3	-
14	Practices of Isometric drawing in all cases.	1	3	-
15	Conventional practice in ED.	1	3	-
Total hours		15	43	-

4 – Course content/Course Competencies mapping matrix:

Topics	Course Competencies											
	c1	c2	c3	c4	c5	c6	c7	c8	c9	c10	c11	c12
1- Drawing instruments, draw sheets; Scales; Folding, Lettering.	1			1		1						
2- Geometrical constrictions	1				1	1	1			1	1	
3- Alphabet of lines.		1			1	1	1	1	1	1	1	1
4- Theory of orthographic projection: Projection of point; line and plane Projection of geometric solids.	1	1			1	1	1	1	1	1	1	1
5- Multi view drawing (of Vertical and Horizontal Surfaces).	1	1			1	1	1					
6- Multi view drawing (of inclined Surfaces).		1	1			1	1			1	1	1
7- Multi view drawing (of cylindrical Surfaces).		1	1			1				1	1	1
8- Practices of multi view in all cases.	1		1			1		1	1			
9- Pictorial drawing (isometric), Pictorial drawing (oblique).		1	1			1	1	1	1	1	1	1

10- Isometric drawing (of Vertical, Horizontal).		1	1		1	1	1			1	1	1
11- Isometric drawing (of inclined Surfaces).		1	1			1	1	1	1	1	1	1
12- Isometric drawing (of cylindrical Surfaces).				1	1	1	1			1		
13- Practices of Isometric drawing in all cases.				1	1	1	1			1		
14- Conventional practice in ED.				1	1	1	1			1		
Topics Covering Competencies	5	8	6	4	8	14	11	5	5	11	8	7

5 – Teaching, Learning, and Assessment Methods:

Course Competencies	Teaching Methods						Learning Methods			Assessment Method					
	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Research, Reports & Assignments	Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report
c1	1			1	1		1	1		1	1		1		
c2	1		1	1	1	1	1	1	1	1	1	1	1	1	
c3	1			1	1	1			1	1	1	1	1	1	
c4	1	1	1				1		1	1	1				
c5	1	1		1	1		1	1	1	1	1		1	1	1
c6			1		1	1	1		1			1			
c7						1	1		1			1			
c8	1	1	1					1					1	1	1
c9	1	1	1					1							
c10		1	1					1							
c11	1	1	1					1						1	1
c12	1										1		1	1	
Σ	9	6	7	4	5	4	6	7	6	5	6	4	6	6	3

6 – Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Semester Work	Quizzes	3 Quizzes per semester	20
	Tutorials	3 Assignments per semester	20
Written Exam		16th Week	40
Total			100

7 – List of references:

7-1 Course notes:

- Engineering Graphics by Prof. Nabil Gadallah.

7-2 Required books

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

7-3 Recommended books

- None

7-4 Recommended Web Site

- None

8 – Facilities required for teaching and learning:

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

Course coordinator: Dr. Metwally Abd Elghaffar

Head of the Department: Dr. Metwally Abd Elghaffar

Date: August 2020

Modern Academy

for Engineering and Technology in Maadi



Course Specification

GENn043: History of Engineering & Technology

A- Affiliation

Relevant program:

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

Department offering the program:

E Manufacturing Engineering and Production Technology Department
Electronic Engineering and Communication Technology Department
Computer Engineering and Information Technology Department
Architecture Engineering and Building Technology Department
Civil Engineering and Building Technology Department

Department offering the course:

Basic Sciencee Department

Date of specifications approval:

August 2020

B - Basic information

Title: History of Sciencee and Technology Code: GENn043 Level: Zero

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

C – Professional information

1 – Course Learning Objectives:

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

2 – Competencies

c1- يتعرف علي مفهوم العلم و الهندسة و التكنولوجيا و علاقتهم ببعضهم البعض و كيفية ابتكار معدات و منظومات تحقق (C7,C9) احتياجات المجتمع طبقا لتلك المفاهيم

c2- (C7,C8,C9) يدرس المعلومات التاريخية عن مهنة الهندسة و التكنولوجيا وكذا العلاقة بين مسمى المعهد او الكلية و بين ما يتم دراسته

c3- يدرس مفهوم التعليم الهندسى و مجالات العمل للمهندسين و كيفية القيد و التسجيل بنقابة المهندسين و كذا حقوق و واجبات (C7,C8,C9) المهندس

c4- (C7,C8,C9) يتعرف علي تطور اوجه النشاط الهندسى و التكنولوجى و ايضا التعرف على الطرق المختلفة لنقل التكنولوجيا

c5- (C7,C8,C9) يكتسب الطالب مهارات توظيف النظريات و المعارف و البيانات و الافكار لابتكار معدات و منظومات متطورة

c6- (C7,C8,C10) يستخدم الطالب المنهج العلمى فى التفكير وصولا لتصميم و تركيب الفروض

c7- (C7,C9) يستطيع الطالب التفكير فى حل مشكلة ما من خلال تفهمه لموضوعات الهندسة العكسية

c8- يستطيع الطالب اتخاذ القرار السليم و اختيار انسب الحلول من خلال دراسته لنماذج و امثلة من المشاكل الهندسية و (C7,C8,C9,C10) عرض الحلول الممكنة لها

c9- (C10) يتعرف الطالب بمعايير الجودة و نظم الامان فى استخدام المنظومات الهندسية

c10- (C7,C8,C10) تدريب الطالب على التفكير و ايجاد التصميمات اللازمة لخلق كل ما هو جديد

c11- (C7,C10) يكتسب الطالب الخبرة فى ايجاد حلول عملية تخدم برامج خارج تخصصه

(C10) يكتسب الطالب كيفية وضع المعايير اللازمة لتكوين فريف بحثى متكامل-c12

This course contributes in the following program competencies: C7, C8, C9,C10

3 – Contents

week	Topic	Lecture hours	Tutorial hours	Practical hours
1	العلم و الهندسة والتكنولوجيا	2		
2	الهندسة و البحث العلمى – منظومة البحث العلمى	2		
3	عناصر و متطلبات البحث العلمى	2		
4	الهندسة وخريطة البحث العلمى – مراحل البحث العلمى	2		
5	تاريخ الهندسة و التكنولوجيا فى مختلف العصور	4		
6	نقل التكنولوجيا	2		
7	امتحان منتصف الفصل	2		
8	نشاطات العمل الهندسى و مسؤوليات المهندس	2		
9	التعليم الهندسى	2		
10,11	نقابة المهندسين المصرية – جمعية المهندسين المصرية	4		
12,13	تطور اوجه النشاط الهندسى و التكنولوجيا	4		
14,15	اشهر علماء الهندسة و التكنولوجيا	2		
Total hours		30		

4. Course content/Course Competencies mapping matrix

Topic	Knowledge				Skills				Attitude			
	c1	c2	c3	c4	c5	c6	c7	c8	c9	c10	c11	c12
العلم و الهندسة والتكنولوجيا	1							1	1	1	1	1
الهندسة و البحث العلمى – منظومة البحث العلمى						1		1	1	1	1	1
عناصر و متطلبات البحث العلمى				1				1	1	1	1	1
الهندسة وخريطة البحث العلمى – مراحل البحث العلمى		1	1			1		1	1	1	1	1
تاريخ الهندسة و التكنولوجيا فى مختلف العصور		1			1			1	1	1	1	1
نقل التكنولوجيا						1		1	1	1	1	1
نشاطات العمل الهندسى و مسؤوليات المهندس								1	1	1	1	1
التعليم الهندسى	1			1				1	1	1	1	1
نقابة المهندسين المصرية – جمعية المهندسين المصرية		1				1	1	1	1	1	1	1
تطور اوجه النشاط الهندسى و التكنولوجيا		1		1			1	1	1	1	1	1
اشهر علماء الهندسة و التكنولوجيا	1		1		1			1	1	1	1	1
Topics Covering Competences	3	4	2	3	2	4	2	11	11	11	11	11

5 - Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods						Learning Methods			Assessment Method					
	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Research, Reports & Assignments	Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report
c1	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
c4	1	1	1				1	1		1			1	1	1
c5	1	1	1				1	1		1			1	1	1
c6	1	1	1				1	1		1			1		1
c7	1	1	1				1	1		1			1	1	1
c8	1	1											1	1	
c9	1	1						1		1			1	1	1
c10	1		1				1	1						1	
c11	1		1				1	1					1	1	
c12	1		1				1	1					1	1	
Σ	12	8	10	0	0	0	10	11	0	8			11	12	7

6- Assessment Timing and Grading:

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

7- List of references:

7-1 Course notes: -

Ghada Maher, History of Engineering and Technology, Lecture note, Modern Academy Press, 2019.

7-2 Required books: None

7-3 Recommended books

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

7-4 Periodicals, Web sites, etc.

مواقع الانترنت الخاصة بنقابه المهندسين المصرية

8- Facilities required for teaching and learning:

- Computer, Data show and projector.
- High speed internet and communication facilities for distance learning

Course coordinator: Dr. Marwa Mohamed Fouad

Head of the Department: Prof. Dr. Ashraf Taha

Date: August 2020

Modern Academy

for Engineering and Technology in Maadi



Course Specification MECn001: Mechanics-1

A- Affiliation

Relevant program:

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

Department offering the program:

Manufacturing Engineering and Production Technology Department
Electronic Engineering and Communication Technology Department
Computer Engineering and Information Technology Department
Architecture Engineering and Building Technology Department
Civil Engineering and Building Technology Department

Department offering the course:

Basic Science Department

Date of specifications approval:

August 2020

B - Basic Information

Title: Mechanics-1

Code: MECn001

Level: Zero

Credit Hours: 2

Lectures: 1

Tutorial/Exercise:3

Practical: ---

Pre-requisite: None

C - Professional information

1 – Course Learning Objectives:

By the end of this course, the students should have gained the planned competencies (knowledge, skills, and attitudes) related to the basic concepts of statics in plane and space: (force resultant equilibrium analysis of structures).

2 – Competencies

c1-Identify of the basic of statics in plane and space (C1,C5).

c2- Identify the difference between the moment of force in plane and space (C1, C5).

c3- Classification the support reaction in plane and in space (C1, C5).

c4- Understand the structural analysis in plane (C1, C5).

c5- Analyze and classify between equilibrium in plane and equilibrium in space (C1, C5, C9).

c6- Classify and compare the different between equilibrium of a single rigid body and all forces involved were external to the rigid body (C1, C5, C9) .

c7- Solve the equations of equilibrium to get three unknowns (C1, C9).

c8- Solve the trusses to get the value of the forces in the structural by joints and by section methods (C1, C9).

c9- Work in a team to solve problem as a search (C7, C8).

c10- Search for information in references and in internet (C9, C7, C10)

This course contributes in the following program competencies: C1, C5, C7, C8, C9, C10

3 – Contents

week	Topic	Lecture hours	Tutorial hours	Practical hours
1	➤ Basic Concepts of statics.	1	1	—
2	➤ Resultant of concurrent forces in plane	1	1	—
3	➤ Resultant of concurrent forces in space	1	3	—
4	➤ Equilibrium of a particle (in plane and in space)	1	1	—
5	➤ Different types of support in plane	1	2	—
6	➤ Distributed loads	1	2	—
7	➤ Mid term	1	2	—
8	➤ Equilibrium of rigid body in plane	1	2	—
9	➤ Different types of supports in space	1	3	—
10	➤ Equilibrium of rigid body in space	2	4	—
11	➤ Special cases of two, three and four force members	1	3	—
12	➤ Analysis of Trusses by the method of joints	1	3	—
13,14	➤ Analysis of Trusses by the method of section	1	2	—
15	➤ Final revision	1	1	—
Total hours		15	30	—

4. Course content/Course Competencies mapping matrix

Topic	Knowledge				Skills				Attitude	
	c1	c2	c3	c4	c5	c6	c7	c8	c9	c10
Basic Concepts of statics.	1	1								1
Resultant of concurrent forces in plane		1							1	1
Resultant of concurrent forces in space		1							1	1
Equilibrium of a particle (in plane and in space)			1				1		1	1
Different types of support in plane			1				1		1	1
Distributed loads			1				1		1	1
Equilibrium of rigid body in plane			1		1		1		1	1
Different types of supports in space			1		1		1		1	1
Equilibrium of rigid body in space			1		1		1		1	1
Special cases of two, three and four force members				1		1	1		1	1

Analysis of Trusses by the method of joints				1		1	1	1	1	1
Analysis of Trusses by the method of section				1		1	1	1	1	1
Final revision	1	1	1	1	1	1	1	1	1	1
Topics Covering Competences	2	4	7	4	4	4	10	3	12	13

5 - Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods				Learning Methods	Assessment Method			
	Lecture	Discussions and seminars	Tutorials	Problem solving	Research and Reports	Written Exam	Quizzes	Term papers	Assignments
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	1
c4	1	1	1	1	1	1	1	1	1
c5	1	1	1			1	1		1
c6	1	1	1	1		1	1	1	1
c7	1	1	1	1		1	1	1	1
c8	1	1	1			1	1	1	1
c9				1	1			1	
c10					1			1	
Σ	8	5	8	7	5	8	8	9	8

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Semester Work	Quizzes	Bi-Weekly	40
	Reports/Research		
	Assignments		
Written Exam		Sixteenth week	40
Total			100

7- List of references:

7-1 Course notes:

Shimaa Lotfy and Moamen Wafaie, Engineering Mechanics (Statics), Lecture Notes, Modern Academy Press.

7-2 Required books:

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

7-3 Recommended books:

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

7-4 Periodicals, Web sites, etc.

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

8- Facilities required for teaching and learning:

- Library.
- Internet.
- High speed internet and communication facilities for distance learning.

Course coordinator: Dr. Moamen Wafaie

Head of the Department: Associate Professor / Ashraf Taha EL-Sayed

Date: August 2020

Modern Academy

for Engineering and Technology in Maadi



Course Specification

MTHn001: Mathematics -1(Algebra and Calculus)

A- Affiliation

Relevant program:

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

Department offering the program:

Manufacturing Engineering and Production Technology Department
Electronic Engineering and Communication Technology Department
Computer Engineering and Information Technology Department
Architecture Engineering and Building Technology Department
Civil Engineering and Building Technology Department

Department offering the course:

Basic Science Department

Date of specifications approval:

August 2020

B - Basic Information

Title: Mathematics -1(Algebra and Calculus)

Code: MTHn001

Level: Zero

Credit Hours: 3

Lectures: 2

Tutorial/Exercise:3

Practical: ---

Pre-requisite: None

C - Professional information

1 – Course Learning Objectives:

By the end of this course, students will master basic differential calculus, linear algebra, Taylor expansion and binomial expansion and polar coordinates and their applications.

Students will be able to use the above concepts to solve physics and geometry problems.

Students will understand the usage of mathematical notation in relation to the above topics.

2 – Competencies

c1- Identify rules of limits and continuity of functions of one variable. (C1)

c2- Apply concepts of differentiation. (C1)

c3- Identify rules of applications of differential calculus used engineering. (C1)

c4- Explain basic concepts of Taylor expansion and Binomial expansion. (C1)

c5-Apply basic concepts matrices and matrices algebra. (C1, C5, C9)

c6-Identify solutions of systems of linear equations. (C1, C5)

c7- Explain basic concepts of vectors, vector spaces and vector algebra. (C1)

c8- Solve problems on limits, continuity and differentiate all continuous function. (C1, C9)

c9- Use differential calculus to solve applied Engineering Models. (C1, C7, C9)

c10- Apply infinite series, power series, Taylor and Maclaurin series to applications. (C1, C9)

c11- Apply basic concepts of different methods to discuss solutions of linear systems. (C1, C5, C9)

c12- Solve problems on vectors, vector spaces and vector algebra. (C1, C9)

c13- Apply differential calculus in mechanics and electronics. (C1, C9)

c14- Apply concepts of matrices and vectors to solve engineering problems. (C1, C9)

c15- Write technical reports. (C7)

c16- Communicate effectively in written form. (C8)

c17- Expand students' awareness by urging them to search permanently in references and specialized websites.
(C9, C7, C10)

This course contributes in the following program competencies: C1, C5, C7, C8, C9, C10

3 – Contents

week	Topic	Lecture hours	Tutorial hours	Practical hours
1	➤ Functions	3	4	—
2	➤ Differentiation	3	6	—
3,4	➤ Trigonometric and inverse trigonometric functions	4	6	—
5	➤ Exponential and logarithmic functions	2	4	—
6	➤ Hyperbolic and inverse hyperbolic functions	2	4	—
7	➤ Mid term	2	3	
8	➤ Taylor and binomial expansions	2	3	—
9,10,11	➤ Matrices with applications	6	6	—
12	➤ Vectors in the Euclidean space	2	3	—
13	➤ Real vector spaces	2	3	—
14,15	➤ Polar coordinates	2	3	—
Total hours		30	45	—

4. Course content/Course Competencies mapping matrix

Topic	Knowledge							Skills							Attitude		
	c1	c2	c3	c4	c5	c6	c7	c8	c9	c10	c11	c12	c13	c14	c15	c16	c17
Functions	1							1							1		1
Differentiation		1	1					1	1				1		1	1	1
Trigonometric and inverse trigonometric functions		1	1					1	1				1		1	1	1
Exponential and logarithmic functions		1	1					1	1				1		1	1	1
Hyperbolic and inverse hyperbolic functions		1	1					1	1				1		1	1	1

Taylor and binomial expansions				1						1					1	1	1
Matrices with applications					1	1					1				1	1	1
Vectors in the Euclidean space							1					1			1	1	1
Real vector spaces							1					1			1		1
Polar coordinates							1					1			1		1
Topics Covering Competences	1	4	4	1	1	1	3	5	4	1	1	3	4	4	10	7	10

5 - Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods				Learning Methods	Assessment Method		
	Lecture	Discussions and seminars	Tutorials	Problem solving	Research and Reports	Written Exam	Quizzes	Assignments
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
c7	1	1	1	1	1	1		1
c8	1		1	1		1	1	1
c9	1				1	1		
c10	1	1		1	1	1		
c11	1		1	1	1	1	1	1
c12			1	1		1	1	1
c13	1	1						
c14	1	1						
c15		1		1	1			1
c16		1	1	1	1			1
c17	1				1			1
Σ	14	7	11	12	13	12	8	13

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Semester Work	Quizzes	Bi-Weekly	40
	Reports/Research		
	Assignments		
Written Exam		Sixteenth week	40
Total			100

7- List of references:

7-1 Course notes:

Osama Elgayar and Sabry Abd El-Aziz Algebra and Calculus, Lecture Notes, Modern Academy Press.

7-2 Required books:

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

Stewart, J. (2012) Callus early transcendental, 7ed, Canada: brooks/cole.

7-4 Recommended books:

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

7-4 Periodicals, Web sites, etc.

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

8- Facilities required for teaching and learning:

- Library.
- Internet.
- High speed internet and communication facilities for distance learning

Course coordinator:

Dr. Sabry Abd El-Aziz

Head of the Department:

Associate Professor / Ashraf Taha EL-Sayed

Date:

August 2020

Course Specification
PHYn001: Physics I

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

Date of specifications approval: August 2020

B - Basic Information

Title: Physics I	Code: PHYn001	Level: Zero	
Credit Hours: 3	Lectures: 2	Tutorial/Exercise: 1	Practical: 2
	Pre-requisite: None		

C - Professional information

1 – Course Learning Objectives:

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

2 – Competencies

- c1- Explain the basic principles of rotational motion, application of rotational motion. (C1, C8)
- c2- Study laws of planetary motion derived from the law of gravity and deriving a general expression for gravitational potential energy. (C1, C3)
- c3 – Deduce mathematical relations describing the objects deform under load condition and defining of several elastic constants for different types of deformation. (C1, C2)
- c4 – Apply a theoretical model with certain simplifying assumptions to describe the wave motion and fluid motion. (C1, C2)
- c5 – Analyze, thermal phenomena through important terms, temperature, heat & internal energy. (C1)
- c6 - Use experimental facilities to explain the concept of internal energy and the process by which energy is transferred. (C2, C6, C8)
- c7- Apply the first law of thermodynamic on different systems and its applications (C1, C2)
- c8 - Understanding the kinetic theory of gas, entropy, and engine efficiency. (C3, C4)
- c9 - Work in a team and involve in group discussion and seminars. (C2, C3, C7)
- c10 - 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. (C5, C10)
- c11 - Differentiate and compare the different types of heat transfer in different walls. (C8, C9)
- c12 - Search for information's in references and in internet. (C5, C9)
- c13 - Communicate and interact effectively with other people and in a small group. (C5, C8)
- c14 - Practice self-learning and communicate effectively orally and in written form. (C7, C8)

This course contributes in the following program competencies: C1, C2, C3, C4, C5, C6, C7, C8, C9, C10

4. Course content/Course Competencies mapping matrix

3 – Contents

week	Topic	Lecture hours	Tutorial hours	Practical hours											
1	➤ Rotational motion, angular displacement, velocity, acceleration	2													
2	• Relation between linear and angular quantities.	1	1												
3	• Applications on rotational motion	2	1	4											
4	➤ Universal gravitational law	1	1	3											
5	• Kepler’s laws	2	1												
6	• Gravitational energy	1													
7	Mid term	2	1	1											
8	• Escape speed and orbital energy	1	1												
9	➤ Elasticity: Linear, shear and Bulk deformation	3	2	4											
10	➤ Characteristics of fluids and streamlines	1	1	4											
11	• Fundamental laws of fluid	2	1												
12	• Applications on Bernoulli’s equation	2	1	2											
13	• Viscosity and Poiseuille’s law	1	1	2											
14	➤ Heat transfer by convection and conduction	2	1	2											
14	➤ Work and heat in thermodynamic system	1													
14	• First law of thermodynamic	1		4											
15	• Isothermal expansion of gases and Molar specific heat	2	1												
15	➤ Mathematical representation of transverse waves	1													
15	• The principle of superposition	1													
15	• Standing waves and Sound waves	1	1	4											
		30	15	30											
Topic		Knowledge							Skills				Attitude		
		c1	c2	c3	c4	c5	c6	c7	C8	C9	c10	c11	c12	c13	c14
Rotational motion, angular displacement, velocity, acceleration		1	1		1					1			1		1
Relation between linear and angular quantities.		1	1		1					1			1		1
Applications on rotational motion		1	1		1					1			1		1
Universal gravitational law		1	1		1					1			1		1
Kepler’s laws		1	1		1					1	1		1	1	1
Gravitational energy		1	1		1					1	1		1	1	1

Escape speed and orbital energy	1	1		1					1	1		1	1	1
Elasticity: Linear, shear and Bulk deformation			1						1	1		1	1	1
Characteristics of fluids and streamlines				1					1	1		1	1	1
Fundamental laws of fluid				1					1	1		1	1	1
Applications on Bernoulli’s equation				1					1	1		1	1	1
Viscosity and Poiseuille’s law				1					1	1		1	1	1
Heat transfer by convection and conduction					1	1	1	1	1	1	1	1	1	1
Work and heat in thermodynamic system					1	1	1	1	1	1	1	1	1	1
First law of thermodynamic					1	1	1	1	1	1	1	1	1	1
Isothermal expansion of gases and Molar specific heat					1	1	1	1	1	1	1	1	1	1
Mathematical representation of transverse waves				1					1	1		1	1	1
The principle of superposition				1					1	1		1	1	1
Standing waves and Sound waves									1	1		1	1	1
Topics Covering Competences	7	7	1	13	4	4	4	4	19	14	4	19	15	19
%Topics Covering Competences	37	37	5	68	21	21	21	21	100	74	21	100	79	100

5 - Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods				Learning Methods	Assessment Method		
	Lecture	Discussions and seminars	Tutorials	Problem solving	Research and Reports	Written Exam	Quizzes	Assignments
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
c7	1	1	1	1	1	1	1	1
c8	1	1	1	1	1	1	1	1
c9	1	1	1		1			
c10	1	1	1	1	1	1	1	1
c11	1	1	1	1	1	1	1	1
c12		1	1		1			
c13	1	1	1	1	1			
c14	1	1	1	1	1			
\sum	13	14	14	12	14	10	10	10
%	93	100	100	86	100	71	71	71

6- Assessment Timing and Grading:

Computer Engineering and Information Technology BSc. Program Specifications By law 2020

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Semester Work	Quizzes	Bi-Weekly	20
	Reports/Research		
	Assignments		
Practical Exam		Fifteenth week	20
Written Exam		Sixteenth week	40
Total			100

7- List of references:

7-1 Course notes:

Physics I, PHYn001. Dr. El-Tawab Kamal, Dr. Abo el Yazeed B. Abo el Yazeed, Dr. Marwa Y. Shoeib and

Dr. Nagat A. Elmahdy. Modern Academy Press.

Physics Lab (1) Note

7-2 Required books:

Serway (2003) Physics for Scientists & Engineering, USA: Sundress College Pub.

Griffith Thomas (2008) The Physics of Everyday Phenomena, USA: Mc-Graw hill.

7-5 Recommended books:

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

7-4 Periodicals, Web sites, etc.

<http://www.saunderscollege.cpm/physics>

<http://www.physicsclassroom.com/calcpad/circgrav/>

<http://physicsworld.com/>

<http://www.britannica.com/Science/wave-motion>

<http://physics.info/>

8- Facilities required for teaching and learning:

- Laboratories.
- Library.
- Internet.

Course coordinator:

Dr. Marwa Shoeib

Head of the Department:

Associate Professor / Ashraf Taha EL-Sayed

Date:

August 2020

Level Zero Semister2

Modern Academy

for Engineering and Technology in Maadi



Course Specification

CHEn001: Chemistry

A- Affiliation

Relevant program:

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

Department offering the program:

Manufacturing Engineering and Production Technology Department
Electronic Engineering and Communication Technology Department
Computer Engineering and Information Technology Department
Architecture Engineering and Building Technology Department
Civil Engineering and Building Technology Department

Department offering the course:

Basic Science Department

Date of specifications approval:

August 2020

B - Basic Information

Title: Chemistry

Code: CHEn001

Level: ZERO

Credit Hours: 3

Lectures: 2

Tutorial/Exercise:1

Practical: 2

Pre-requisite: non

C - Professional information

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 liqudation, 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 – Competencies

- c1- Identify and formulate key facts, concepts, principles and techniques of Gas and Liquid states of Matter. (C1,C2)
- c2- Identify theories relevant to Electrochemistry, solutions and thermo chemistry. (C1,C2,C3)
- c3- Apply some chemical industries in different fields such as Eng. practices and regulatory farm works in chem. Eng. Industry. (C1,C3)
- c4- Identify technology Supporting water treatments and Desalination Techniques and Scientific principles of petroleum extraction and refining. (C1,C2,C4)
- c5- Identify basic principles for fuel classification and knowing its optimum characteristics, also identify advantage and disadvantage of them. (C1,C2)
- c6-Apply chem. Principles and analytical thinking to problems of Gases, Liquids and electrochemistry and determine its effective solutions. (C3,C4,C5)
- c7- Select and develop appropriate Some petrochemical Technologies. (C4)
- c8- Overlap different scientific subjects to reach a new scientific system with a better quality. (C5,C6,C7)
- c9- Select appropriate solutions for corrosion problems based on analytical thinking. (C5,C6,C7)
- c10- Apply knowledge of scientific equipment and instrumentation competently to determine known concentration and solve its problem. (C1,C2,C3,C6)

- c11- 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,C4,C5,C9)
- c12- Improve plan and execute project work including the preparation of descriptive and interpretative technical reports. (C8,C9,C10)
- c13- Apply experimental facilities to investigate the system performance. (pH and water hardness degree).(C8,C9,C10)
- c14- Prepare and present technical materials. (Soaps, detergents, and some polymeric samples).(C2,C3,C5)
- c15- Observe, record and analyze data in lab. As well as in Field. (Lab Fresh water and underground water).(C3,C4)
- c16- Use appropriate tools to measure system performance. (C3,C4)
- c17- Improving own learning and performance, personal skills, working with others. (C9,C10)
- c18- work both in written and oral form and search for information from references, journals and internet. (C8,C9,C10)

This course contributes in the following program competencies: C1, C2, C3,C4, C5, C6, C7, C8, C9, C10

3 – Contents

week	Topic	Lecture hours	Tutorial hours	Practical hours
1	Gas law and gas liquefaction.	4	2	-
2	Acid - base titration	-	-	4
2	Liquid state, Refrigeration & heat pump.	4	1	-
3	Electrochemistry	2	1	2
3	Acid - base titration	-	-	6
4	Metallic corrosion.	2	1	
5	Solution & Antifreezes	2	1	-
6	Thermo chemistry & solar heat, Rocket.	2	1	2
7	Assessment (M.T)	2	1	-
8	Water treatment and destitution	2	1	10
9	Polymer and Industry	2	1	-
10	Fuels and combustion	2	1	-
11	Chemistry and tech. of petroleum new trends in energy resource	2	1	-
12	Chemistry and tech. of petroleum new trends in energy resource	-	1	-
13	Industrial detergents chemistry such cement, lubricants, soap	2	1	2

14	Industrial detergents chemistry such cement, lubricants, soap	-	-	2
15	Revision and sheets	2	1	2
Total hours		30	15	30

4. Course content/Course Competencies mapping matrix

Topic	Knowledge						Skills								Attitude			
	c1	c2	c3	c4	c5	c6	c7	c8	c9	c10	c11	c12	c13	c14	c15	c16	c17	c18
Gas law and gas liquefaction.	1					1											1	
Liquid state, Refrigeration & heat pump.						1											1	
Electrochemistry & Metallic corrosion.		1				1			1								1	
Solution & Antifreezes		1															1	
Thermo chemistry & solar heat, Rocket.		1																
Pollution																		1
Water treatment and destitution				1						1	1		1		1	1		
Polymer and Industry												1						
Fuels and combustion					1													
Chemistry and tech. of petroleum new trends in energy resource							1	1										1
Industrial detergents chemistry such cement, lubricants, soap			1					1		1				1			1	
Acid - base titration										1						1	1	
Topics Covering Competences	1	3	1	1	1	3	1	2	1	3	3	1	1	1	1	1	6	2

5 - Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods						Learning Methods			Assessment Method					
	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Researched, Reports &	Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report
c1	1			1	1		1			1	1		1		
c2	1	1		1	1			1		1	1	1	1		
c3	1	1	1			1	1			1				1	
c4	1	1	1	1	1	1		1		1	1	1	1		
c5	1	1		1				1					1	1	

c6	1	1	1	1	1					1	1		1		
c7	1	1	1					1		1	1		1	1	
c8	1	1			1	1	1						1	1	
c9	1	1					1	1	1	1	1		1	1	
c10	1			1	1	1				1	1		1		
c11	1		1			1	1	1		1	1		1		
c12	1			1		1	1	1						1	
c13	1	1	1				1		1					1	
c14	1		1			1	1	1				1		1	
c15						1	1	1				1		1	
c16						1	1	1						1	
c17	1		1			1	1	1							
c18	1		1					1						1	
Σ	17	9	9	7	6	10	11	12	2	9	8	4	10	11	0

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Semester Work	Quizzes	2 Quizzes (one each 4 weeks)	10
	Assignments	3 assignments per semester	5
	report	One report per semester	5
Practical Exam		Fifteenth week	20
Written Exam		Sixteenth week	40
Total			100

7- List of references:

7-1 Course notes:

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

7-2 Required books

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

Recommended books: None

7-4 Periodicals, Web sites, etc.

- www.seciensedaily.com
- www.encyclopedia.com
- www.nasa.com

- www.Sciencee.com

8- Facilities required for teaching and learning:

- Chemistry lab.
- Computer, Data show.
- Computer programs.
- High speed internet and communication facilities for distance learning

Course coordinator:	Dr Shaaban Ragab Goda
Head of the Department:	Prof. Dr. Ashraf Taha
Date:	August 2020

Modern Academy

for Engineering and Technology in Maadi



Course Specification MNFn002: Engineering Graphics 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
Civil Engineering and Building Technology BSc program

Department offering the program:

Manufacturing Engineering and Production Technology Department
Electronic Engineering and Communication Technology Department
Computer Engineering and Information Technology Department
Architecture Engineering and Building Technology Department
Civil Engineering and Building Technology Department

Department offering the course:

Manufacturing Engineering and Production Technology Department.

Date of specifications approval:

August 2020

B - Basic Information

Title: Engineering Graphics

Code: MNFn002

Level: Freshman, first semester

Credit Hours: 2

Lectures: 1

Tutorial/Exercise: 3

Practical: -

Pre-requisite: MNFn001

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 isometric drawings & missing views and sectional views as well as steel constructions. The students will be able to apply the dimensioning principles on the drawings.

2 – Competencies:

- c1. Solve and communicate problems in orthographic views and isometric and oblique drawings (C2, C3, C7, C8, C9).
- c3. Consider the benefits of solving problems of developments and intersections and draw different problems in sectional views. (C3, C4, C8, C9)
- c5. Select the proper section for each component and draw dimensions for components from production point of view. (C1, C4, C5, C8)
- c7. Produce orthographic views from 3D models. (C6, C9, C10)
- c8. Read and understand orthographic drawing and prepare and interpret engineering drawing. (C1, C8, C14)
- c10. Read orthographic drawing with multi views and make necessary views using multi view and isometric. (C3, C5, C6, C9, C10)
- c12. Use the graphic language and communicate effectively with other discipline using the graphical language (C1, C5)
- c14. Expand their creative talents and to communicate their ideas in a meaningful manner. (C8, C9, C10)
- c15. Search for information and engage in life – long self learning discipline. (C8, C10)
- c16. Use graphically effectively. (C8, C9)
- c17. Refer to relevant literature. (C9, C10)
- c18. Search for information's in references and in internet and practice self-learning and continuous learning (C5, C8, C9, C10)

This course contributes to the following program competencies: C1, C2, C3, C4, C5, C6, C7, C8, C9 & C10

3 – Contents:

Weeks	Topics	Lecture hours	Tutorial hours	Practical hours
1	Revision of theory of orthographic projection: Projection of point; line and plane Projection of geometric solids.	1	3	0
2	Missing view drawing (of Vertical and Horizontal Surfaces).	1	3	0
3	Missing view drawing (of inclined Surfaces).	1	3	0
4	Missing view drawing (of cylindrical Surfaces).	1	3	0
5	Practices of multi view in all cases.	1	3	0
6	Pictorial drawing (isometric), Pictorial drawing (oblique).	1	3	0
7	Assessment (Mid-Term Exam)	1	1	0
8	Isometric drawing (of Vertical, Horizontal & inclined Surfaces and cylindrical Surfaces).	1	3	0
9	Sectional views	1	3	0
10	Sectional views: Basic types of sections: Full sections: longitudinal, cross – section.	1	3	0
11	Offset; Aligned sections; Half-section; Partial S.; Revolved & Auxiliary sections.	1	3	0
12	Steel constructions: Basic types of steel structures.	1	3	
13	Steel constructions: Projection of steel sectional.	1	3	0
14	Steel constructions: practices of constructions steel sectional.	1	3	0
15	Dimensioning – Arrangements of dimensions – Rules for dimensions of circles; radii ; angles ; plain holes.	1	3	0
Total hours		15	43	0

4 – Course content/Course Competencies mapping matrix:

Topics	Course Competencies											
	c1	c2	c3	c4	c5	c6	c7	c8	c9	c10	c11	c12
1- Revision of theory of orthographic projection: Projection of point; line and plane Projection of geometric solids.	1			1								
2- Missing view drawing (of Vertical and Horizontal Surfaces).	1			1								
3- Missing view drawing (of inclined Surfaces).		1			1							
4- Missing view drawing (of cylindrical Surfaces).		1			1							
5- Practices of multi view in all cases.		1	1									
6- Pictorial drawing (isometric), Pictorial drawing (oblique).		1	1		1							
7- Isometric drawing (of Vertical, Horizontal & inclined Surfaces and cylindrical Surfaces).					1							
8- Sectional views			1									

9- Sectional views: Basic types of sections: Full sections: longitudinal, cross – section.				1	1									
10- Offset; Aligned sections; Half-section; Partial S.; Revolved & Auxiliary sections.				1	1									
11- Steel constructions: Basic types of steel structures.					1									
12- Steel constructions: Projection of steel sectional.			1	1										
13- Steel constructions: practices of constructions steel sectional.			1	1										
14- Dimensioning – Arrangements of dimensions – Rules for dimensions of circles; radii; angles; plain holes.	1													
Topics Covering Competencies	3	4	5	6	7	0	0	0	0	0	0	0	0	0

5 – Teaching, Learning, and Assessment Methods:

Course Competencies	Teaching Methods						Learning Methods			Assessment Method					
	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Research, Reports & Assignments	Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report
c1	1			1	1		1	1		1	1		1		
c2	1		1	1	1	1	1	1	1	1	1	1	1		
c3	1			1	1	1			1	1	1	1	1	1	
c4	1	1	1	1	1		1	1	1	1	1		1	1	1
c5	1			1	1	1	1		1	1	1	1	1	1	
c6						1	1		1			1			
c7						1	1		1						
c8	1	1	1					1						1	1
c9	1	1	1					1							
c10		1	1					1							
c11	1	1	1					1						1	
c12	1										1		1	1	
Σ	9	5	6	5	5	5	6	7	6	5	6	4	6	6	2

6 – Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Semester Work	Quizzes	3 Quizzes (one each 4 Weeks)	20
	Tutorials	3 Assignments per semester	20
Written Exam		16th Week	40
Total			100

7 – List of references:

7-1 Course notes:

- Engineering Graphics by Prof. Nabil Gadallah.

7-2 Required books

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

7-3 Recommended books

- None

7-5 Recommended Web Site

- None

8 – Facilities required for teaching and learning:

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

Course coordinator:

Dr. Metwally Abd Elghaffar

Head of the Department:

Dr. Metwally Abd Elghaffar

Date:

August 2020

Modern Academy

for Engineering and Technology in Maadi



Course Specification GENn042: 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
Civil Engineering and Building Technology BSc program

Department offering the program:

Manufacturing Engineering and Production Technology Department
Electronic Engineering and Communication Technology Department
Computer Engineering and Information Technology Department
Architecture Engineering and Building Technology Department
Civil Engineering and Building Technology Department

Department offering the course:

Basic Sciences Department

Date of specifications approval:

August 2020

B - Basic information

Title: English Language

Credit Hours: 2

Code: GENn042

Level: ZERO

Lectures:2

Tutorial:

Practical:

Pre-requisite: - None

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 - Competencies

- c1- Identify the most frequent words, phrases and grammar rules in everyday conversation. (C5)
- c2- Communicate effectively, even at the very beginning levels. (C8)
- c3- Differentiate between tenses in conversation. (C10)
- c4-Enhance class interaction in terms of speaking, reading, listening and writing. (C10)
- c5-Personalize the learning experience by offering students interesting topics relevant to their interests and experiences. (C10)
- c6-Employ tasks which encourage students to take an active role in learning and using new vocabulary. (C9)
- c 7-Write paragraphs and peer edit them using error detection. (C8)
- c 8- Interact with each other and with the professor. (C8)
- c9- Work in a team and involve in group discussion. (C8)
- c10- Communicate effectively and present data and results orally and in written form. (C8, C10)
- c11- Search for information in references and in internet. (C10)
- c12- Practice self-learning. (C10)

This course contributes in the following program competencies:C5, C8, C9, C10

3 – Contents

week	Topic	Lecture hours	Tutorial hours	Practical hours
1	Computer Hackers	2		
2	At the Doctor's Reviewing tenses Reading	2		
3	At the Doctor's (to be continued) Grammar: perfect tenses& prefixes	2		
4	Global Warming Reading Speaking : English communication skills Suffixes & adj.&adv.	2		
5	Computer Addiction Reading: 53-55 Seaking: discussing the topic Grammar: adjectives	2		
6	Earthquake Reading: 59-61 Grammar: Suffixes	2		
7	MID TEARM	2		
8	Words and their Stories Reading Grammar: wh-questions and negatives	2		
9	Revision 7 th week Exam	2		
10	Describing People & Things Reading : Grammar:adj.& adv	2		
11	Describing People & Things (to be contiued) Reading : Grammar : relative clauses	2		
12	Qualities and Flaws Speak: dicussing qualities and flaws of each one (pair work Grammar: Possession Pronouns+ Adjectives	2		
13	Qualities and Flaws (to be continued) List. & Speak:dicussing the topic	2		
14	People Idioms Grammar:gerund "& to infinitive & adjectives with prepositions	2		
15	English proverbs Grammar: problem verbs	2		
Total hours		30	-	-

4. Course content/Course Competencies mapping matrix

Topic	Knowledge			Skills					Attitude			
	c1	c2	c3	c4	c5	c6	c7	c8	c9	c10	c11	c12
Computer Hackers	1	1	1	1	1	1	1	1	1	1	1	1
At the Doctor's Reviewing tenses Reading	1	1	1	1	1	1	1		1	1		1
Global Warming Reading Speaking : English communication skills Suffixes & adj.&adv.	1	1	1	1	1	1	1		1	1	1	1
Computer Addiction Reading: 53-55 Seaking: discussing the topic Grammar: adjectives	1	1	1		1	1	1		1	1		1
Earthquake Reading: 59-61 Grammar: Suffixes	1	1	1	1	1		1		1	1	1	
Words and their Stories Reading Grammar: wh-questions and negatives	1	1	1	1	1	1	1		1	1		1
Revision 7th week Exam						1	1			2		1
Describing People & Things Reading : Grammar:adj.& adv	1	1	1	1	1		1	1		1	1	1
Describing People & Things (to be contiued) Reading : Grammar : relative clauses	1	1	1		1	1	1	1		1	1	
Qualities and Flaws Speak: dicussing qualities and flaws of each one (pair work Grammar: Possession Pronouns+ Adjectives	1	1	1		1	1		1		1		1
Qualities and Flaws (to be continued) List. & Speak:dicussing the topic	1	1	1	1	1	1		1		1	1	
People Idioms Grammar:gerund "& to infinitive & adjectives with prepositions	1	1	1	1	1		1		1	1	1	1
Revision and sheets	1	1	1	1	1	1		1	1	1	1	1
Topics Covering Competences	12	12	12	9	12	10	10	6	9	12	8	8
% Topics Covering Competences	100	100	100	75	100	83	83	50	75	100	66	66

5- Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods						Learning Methods			Assessment Method					
	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Researched, Reports &	Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizes	Research & Presentations	Mini Project Report
c1	1		1				1			1			1		1
c2	1							1							
c3	1						1			1			1	1	1
c4	1		1					1							
c5	1							1						1	1
c6	1														
c7	1		1					1		1			1	1	1
c8	1						1							1	1
c9	1						1	1						1	
c10	1		1											1	1
c11	1		1				1	1							
c12	1						1	1						1	
Σ	12		5				6	7		3			3	7	6

6- Assessment Timing and Grading:

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

7- List of references:

7-1 Course notes:

The English Language Book by Dr Neveen Samir , 2015

7-2 Required books

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

7-3 Recommended books: Non

7-4 Periodicals, Web sites, etc.:

- <http://www.bbc.co.uk/learningenglish>
- <http://www.rong-chang.com/>

- <http://legacy.australianetwork.com/studyenglish/>

8- Facilities required for teaching and learning:

Library

High speed internet and communication facilities for distance learning

Course coordinator: Dr. Neveen Samir

Head of the Department: Prof. Dr. Ashraf Taha

Date: August 2020

Modern Academy

for Engineering and Technology in Maadi



Course Specification MECn002: 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
Civil Engineering and Building Technology BSc program

Department offering the program:

Manufacturing Engineering and Production Technology Department
Electronic Engineering and Communication Technology Department
Computer Engineering and Information Technology Department
Architecture Engineering and Building Technology Department
Civil Engineering and Building Technology Department

Department offering the course:

Basic Science Department

Date of specifications approval:

August 2020

B - Basic Information

Title: Mechanics-2

Code: MECn002

Level: Zero

Credit Hours: 2

Lectures: 1

Tutorial/Exercise:3

Practical: ---

Pre-requisite: MECn001

C - Professional information

1 – Course Learning Objectives:

By the end of this course, the students should have gained the planned competencies (knowledge, skills, and attitudes) related to the basic concepts of 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 – Competencies

c1- Identify basic of dynamics like velocity, acceleration, total distance, average velocity and average speed. (C1, C5).

c2- Identify of differentiation and integration (C1)

c3- Classification the particle's motion in straight line and in curved path and it's applications (C1, C5)

c4- Understand the dynamics system and the effect of forces on the system in different coordinates (C1).

c5- Classify of two methods of kinetics, namely, the method of work and energy and method of impulse and momentum. (C1, C5, C9)

c6- 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 (C1, C5, C9)

c7- Classify and compare the different between the average velocity and average speed (C1, C5, C9).

c8- Solve the equation of motion to get velocity, acceleration and total distance traveled at any time. (C1, C5, C9)

c9- Calculate the time of flight of projectile to get a target. (C1, C5, C9).

c10- Solve the equation of motion graphically. (C1, C5, C9)

c11- Work in a team to solve problem as a search. (C7, C8)

c12- Search for information in references and in internet (C7, C9, C10)

This course contributes in the following program competencies: C1, C5, C7, C8, C9, C10

3 – Contents

week	Topic	Lecture hours	Tutorial hours	Practical hours
1	➤ Rectilinear Motion of particles.	1	3	—
2	➤ Determination of the motion of a particle.	1	3	—
3	➤ Graphical Solution of Rectilinear Motion.	1	1	—
4	➤ Curvilinear Motion of particle, Free Flight Motion.	2	3	—
5	➤ Normal and Tangential.	1	3	—
6	➤ Plane Curvilinear Motion.	1	3	—
7	➤ Mid term	1	1	—
8	➤ Polar Coordinates.	1	1	—
9,10	➤ Kinetics of Particles, Force and acceleration.	2	3	—
11,12	➤ Kinetics of Particles Energy and Momentum Methods	2	3	—
13	➤ Motion under a conservative central force.	1	3	—
14,15	➤ Principle of Impulse and Momentum for particle.	1	3	—
Total hours		15	30	—

4. Course content/Course Competencies mapping matrix

Topic	Knowledge					Skills					Attitude	
	c1	c2	c3	c4	c5	c6	c7	c8	c9	c10	c11	c12
Rectilinear Motion of particles.	1											1
Determination of the motion of a particle.	1	1	1								1	1
Graphical Solution of Rectilinear Motion.	1		1								1	1
Curvilinear Motion of particle, Free Flight Motion.		1									1	1
Normal and Tangential.		1	1								1	1
Plane Curvilinear Motion.				1							1	1
Polar Coordinates.			1	1							1	1
Kinetics of Particles, Force and acceleration.					1	1	1				1	1
Kinetics of Particles Energy and Momentum Methods				1	1	1	1				1	1
Motion under a conservative central force.				1	1		1	1		1	1	1

Principle of Impulse and Momentum for particle.					1			1	1	1	1	1
Topics Covering Competences	3	3	4	4	4	2	3	2	1	2	10	11

5 - Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods				Learning Methods	Assessment Method			
	Lecture	Discussions and seminars	Tutorials	Problem solving	Research and Reports	Written Exam	Quizzes	Term papers	Assignments
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	1
c4	1	1	1	1	1	1	1	1	1
c5	1	1	1			1	1	1	1
c6	1	1	1			1	1		1
c7	1	1	1	1		1	1	1	1
c8	1	1	1	1		1	1	1	1
c9	1		1			1	1	1	1
c10	1		1	1				1	1
c11				1	1			1	
c12					1			1	
Σ	10	5	10	8	5	9	9	12	10

6- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Mid-Term Exam	7 th Week	20
Semester Work	Quizzes Reports/Research Assignments	Bi-Weekly 40
Written Exam	Sixteenth week	40
Total		100

7- List of references:

7-1 Course notes:

Moamen Wafaie, Engineering Mechanics (Dynamics), Lecture Notes, Modern Academy Press.

7-2 Required books:

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

R.C. Hibbeler Engineering mechanics, Dynamics.

7-6 Recommended books:

None

7-4 Periodicals, Web sites, etc.

Basic of mechanical engineering, engineering mechanics statics and dynamics, statics and dynamics hobbler 12th edition and there is teams link uploaded by videos concerning the course.

8- Facilities required for teaching and learning:

- Library.
- Internet.
- High speed internet and communication facilities for distance learning

Course coordinator:

Dr. Shimaa Lotfy

Head of the Department:

Associat Professor / Ashraf Taha EL-Sayed

Date:

August 2020

Modern Academy

for Engineering and Technology in Maadi



Course Specification

MTHn002: 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
Civil Engineering and Building Technology BSc program

Department offering the program:

Manufacturing Engineering and Production Technology Department
Electronic Engineering and Communication Technology Department
Computer Engineering and Information Technology Department
Architecture Engineering and Building Technology Department
Civil Engineering and Building Technology Department

Department offering the course:

Basic Science Department

Date of specifications approval:

August 2020

B - Basic Information

Title: Mathematics-2(Integration and Analytic Geometry)

Code: MTHn002

Level: Zero

Credit Hours: 3

Lectures: 2

Tutorial/Exercise:3

Practical: ---

Pre-requisite: MTHn001

C - Professional information

1 – Course Learning Objectives:

By the end of this course:

Students will master basic calculus concepts, including integration techniques, convergence of integrals and infinite series, and analytic geometry with their applications.

Knowledge of the above concepts will be exhibited algebraically and geometrically.

Students will be able to use the above concepts to solve physics and geometry problems.

Students will understand the usage of mathematical notation in relation to the above topics.

2 – Competencies

- c1. Identify definition of anti-derivative, indefinite integral, definite integrals. (C1, C5)
- c2. Identify methods of integration (integration by parts, substitution). (C1, C5)
- c3. Explain Integration rules of trigonometric functions, integration of rational functions, improper integrals. (C1, C5)
- c4. Identify basic concepts of convergence of infinite sequences and series. (C1, C5)
- c5. Develop equations of lines, planes, and conic sections. (C1, C5)
- c6. Investigate the geometric interpretation of the integration. (C1, C5, C9)
- c7. Develop techniques for using basic integration formulas to obtain indefinite integrals of complicated functions. (C1, C5, C9)
- c8. 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. (C1, C5, C9)
- c9. Develop several tests to determine whether a series is convergent or divergent without explicitly finding its sum. (C1, C5, C9)
- c10. Estimate of the sum of the convergent series and the error using various methods. (C1, C2)

- c11. Derive the equation and main geometric properties of lines, planes and conic sections. (C1, C5, C9)
 c12. Explain the use of integration to estimate the area between curves, the volume of solids with known cross sections, and the arc length. (C1, C2, C5, C9)
 c13. Encourage teamwork and participate in group discussions and seminars (C7).
 c14. Communicate effectively and present data and results orally and in written form (C8).
 c15. Expand students' awareness by urging them to search permanently in references and specialized websites. (C9, C7, C10).

This course contributes in the following program competencies: C1, C2, C5, C7, C8, C9, C10

3 – Contents

week	Topic	Lecture hours	Tutorial hours	Practical hours
1	➤ Anti-derivative, indefinite integral	2	2	—
2	➤ Definite integrals and the fundamental theorem of calculus	2	3	—
3,4	➤ Methods of integration (integration by parts, substitution)	4	6	—
5	➤ Integration of trigonometric functions	2	4	—
6	➤ Trigonometric Substitutions	2	3	—
7	➤ Mid term	2	2	
8	➤ Integration of rational functions	2	4	—
9	➤ Miscellaneous Substitutions, improper integrals	2	4	—
10,11	➤ Application of definite integral(area, volume, arc length, surface area)	3	4	—
12,13	➤ Sequences, series	4	6	—
14	➤ Equations of lines, planes and circles	3	4	—
15	➤ Conic sections (parabola, ellipse, hyperbola)	2	3	—
Total hours		30	45	—

4. Course content/Course Competencies mapping matrix

Topic	Knowledge					Skills								Attitude		
	c1	c2	c3	c4	c5	c6	c7	c8	c9	c10	c11	c12	c13	c14	c15	
Anti-derivative, indefinite integral	1												1		1	
Definite integrals and the fundamental theorem of calculus	1					1						1	1	1	1	

Methods of integration (integration by parts, substitution)		1				1	1					1	1	1	1
Integration of trigonometric functions			1			1	1					1	1	1	1
Trigonometric Substitutions			1			1	1					1	1	1	1
Integration of rational functions			1			1	1					1	1	1	1
Miscellaneous Substitutions, improper integrals			1			1						1	1	1	1
Application of definite integral(area, volume, arc length, surface area)				1			1	1				1	1	1	1
Sequences, series				1					1	1			1		1
Equations of lines, planes and circles					1						1		1		1
Conic sections (parabola, ellipse, hyperbola)					1						1	1	1	1	1
Topics Covering Competences	2	1	4	2	2	6	5	1	1	1	2	8	11	8	11

5 - Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods				Learning Methods	Assessment Method		
	Lecture	Discussions and seminars	Tutorials	Problem solving	Research and Reports	Written Exam	Quizzes	Assignments
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
c5	1		1	1	1	1	1	1
c6	1		1	1		1	1	1
c7	1		1	1		1	1	1
c8	1	1	1	1	1	1		1
c9	1		1	1		1		1
c10	1		1	1		1		1
c11	1	1	1	1	1	1		1
c12	1	1	1	1	1	1		1
c13		1		1	1			
c14		1			1			
c15		1			1			
Σ	12	8	12	12	9	12	7	12

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Semester Work	Quizzes	Bi-Weekly	40

	Reports/Research		
	Assignments		
Written Exam		Sixteenth week	40
Total			100

7- List of references:

7-1 Course notes:

S. Shenawy and S. Abd-elaziz, Integration and Analytic Geometry, Lecture Notes, 2013

7-2 Required books:

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

E. W. Swokoski, Algebra & trigonometry with analytic geometry, 10ed, brooks cole, U.S.A., 2002.

7-7 Recommended books:

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

7-4 Periodicals, Web sites, etc.

www.sosmath.com.

8- Facilities required for teaching and learning:

- Library.
- Data show
- Required Computer programs
- High speed internet and communication facilities for distance learning

Course coordinator:

Dr. Sabry Abd El-Aziz

Head of the Department:

Associated Professor / Ashraf Taha EL-Sayed

Date:

August 2020

Course Specification
PHYn002: Physics II

A- Affiliation

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

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

Department offering the course: Basic Science

Date of specifications approval: August 2020

B - Basic Information

Title: Physics 2 **Code:** PHYn002 **Level:** Zero, Spring
Credit Hours: 3 **Lectures:** 2 **Tutorial/Exercise:** 1 **Practical:** 2
Pre-requisite: PHYn001

C - Professional information

1 – Course Learning Objectives:

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

2 – Competencies

- c1- Explain the fundamental and basic law of applications in electricity, magnetism, and electromagnetism. (C1, C16)
- c2- Study Gauss's law in electricity for different type of charged bodies. (C1)
- c3 - Deduce mathematical relations describing laws of electric capacitors and effect of dielectric. (C2)
- c4 - Understanding direct current, resistance and solution of simple electric circuits and Kirchhoff's laws. (C1, C2)
- c5 - Analogy between magnetic field and electric field, and application of Ampere's law, Gauss's law in magnetism. (C1)
- c6 - Use experimental facilities to explain the Magnetic properties of matter. (C4)
- c7- Explain fundamental theories of Electro-magnetic waves and main physical phenomena of physical optics (interference, diffraction, and polarization) (C1, C2)
- c8 - Investigate electric force and electric field (using Gauss's law) and select the proper manner to solve problem. (C3, C4)
- c9 - Work in a team and involve in group discussion and seminars. (C2, C3, C7)
- c10 - Study of capacitors and dielectric effect, uses of capacitors, and use Kirchhoff's laws to solve simple electric circuits. (C5, C10)
- c11 - Investigate and compare electric field, magnetic field, and magnetic force using Gauss law in magnetism and Ampere's law; studying the nature of each and identify magnetic properties and studying electromagnetic wave. (C8, C9)
- c12 - Search for information's in references and in internet. (C5, C9)
- c13 - Communicate and interact effectively with other people and in a small group. (C5, C8)
- c14 - Practice self-learning and communicate effectively orally and in written form. (C7, C8)

This course contributes in the following program competencies: C1, C2, C3, C4, C5, C7, C8, C9, C10

3 – Contents

week	Topic	Lecture hours	Tutorial hours	Practical hours
1,2	Charge and Matter, The Electric Field, Gauss' law	2	1	2
3	Gauss's law applications	2	1	2
4	Electric Potential	2		2
5	Capacitors and Dielectric	2	1	2
6	Capacitors and Dielectric	2	1	2
7	Mid term			
8,9	The Magnetic Field, Ampere's Law	2	1	2
10,11	Ampere's law, Inductance	2	1	2
12	Magnetic Properties of matter	2	1	2
12	Magnetic Properties of matter, Electromagnetic Waves	2	1	2
13	Electromagnetic Waves	2	1	2
13	Electromagnetic Waves, Physical Optics, Polarization of light	2	1	2
14	Polarization of light	2	1	2
14	Interference of light	2	1	2
15	Interference of light, Diffraction of light	2	1	1
15	Diffraction of light, Some applications	2	1	1
		30	15	30

4. Course content/Course Competencies mapping matrix

Topic	Knowledge								Skills			Attitude		
	c1	c2	c3	c4	c5	c6	c7	C8	C9	c10	c11	c12	c13	c14
Charge and Matter, The Electric Field, Gauss' law	1	1	1	1	1		1	1	1		1	1		1
Gauss's law, Electric Potential	1	1	1	1	1		1	1	1		1	1		1
Gauss's law applications	1	1	1	1	1		1	1	1		1	1		1
Capacitors and Dielectric	1	1	1	1	1		1		1	1	1	1		1
Capacitors and Dielectric	1	1	1	1	1		1		1	1	1	1	1	1
The Magnetic Field, Ampere's Law	1		1	1	1	1	1		1	1	1	1	1	1
Ampere's law, Inductance	1		1	1	1	1	1		1	1	1	1	1	1
Magnetic Properties of matter	1			1	1	1	1		1	1	1	1	1	1
Magnetic Properties of matter, Electromagnetic Waves	1			1	1	1	1		1	1	1	1	1	1
Electromagnetic Waves	1				1	1	1		1	1	1	1	1	1
Electromagnetic Waves, Physical Optics, Polarization of light	1				1	1	1		1		1	1	1	1
Polarization of light					1	1	1		1		1	1	1	1
Interference of light						1	1	1	1		1	1	1	1
Interference of light, Diffraction of light						1	1	1	1		1	1	1	1

Diffraction of light, Some applications						1	1	1	1		1	1	1	1
Topics Covering Competences	11	5	7	9	12	10	15	6	15	7	15	15	11	15

5 - Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods				Learning Methods	Assessment Method		
	Lecture	Discussions and seminars	Tutorials	Problem solving	Research and Reports	Written Exam	Quizzes	Assignments
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
c7	1	1	1	1	1	1	1	1
c8	1	1	1	1	1	1	1	1
c9		1	1		1			
c10	1	1	1	1	1	1	1	1
c11	1	1	1	1	1	1	1	1
c12		1	1		1			
c13	1	1	1	1	1			
c14	1	1	1	1	1			
Σ	12	14	14	12	14	10	10	10

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Semester Work	Quizzes	Bi-Weekly	20
	Reports/Research		
	Assignments		
Practical Exam		Fifteenth week	20
Written Exam		Sixteenth week	40
Total			100

7- List of references:

7-2 Course notes:

PHYn002, Physics II.
Physics Lab (2) Note

7-2 Required books:

M. El- Tawab Kamal and Abo- Elyzeed B. Abo- Elyzeed, Marwa Shoeb, Nagat Elmahdy.
Electricity, Magnetism and Optics Physics
Serway (2003) Physics for Scientists & Engineering, USA: Sundress College Pub.

Griffith Thomas (2008) The Physics of Everyday Phenomena, USA: Mc-Graw hill.

7-8 Recommended books:

David Halliday, Robert Resnick, Jearl Walker, Fundamentals of Physics, John Wiley, New York, 1993.

Raymond A. Serway, Physics for Scientists and Engineers with Modern Physics, 3rd ed. Wiley, New York, 1990.

7-4 Periodicals, Web sites, etc.

<http://www.saunderscollege.com/physics>

<http://www.physicsclassroom.com/calcpad/circgrav/>

<http://physicsworld.com/>

<http://www.britannica.com/Science/wave-motion>

<http://physics.info/>

8- Facilities required for teaching and learning:

- Laboratories.
- Library.
- Internet.

Course coordinator:

Head of the Department:

Date:

Dr. Nagat A. Elmahdy

associated Professor / Ashraf Taha EL-Sayed

August 2020

Summer

Modern Academy

for Engineering and Technology in Maddi



Course Specification

ELCn060: Summer Training-1

A- Affiliation

Relevant program:

Computer Engineering and Information Technology BSc Program
Electronic Engineering and Communication Technology BSc Program

Department offering the program:

Computer Engineering and Information Technology Department
Electronic Engineering and Communication Technology Department

Department offering the course:

Computer Engineering and Information Technology Department
Electronic Engineering and Communication Technology Department

Date of specifications approval:

August, 2020

B - Basic information

Title: Summer Training-1

Code:

ELCn060

Year/level: Senior 1, First Summer

Credit Hours: -

Lectures: -

Tutorial: none

Practical: 10 Days

Pre-requisite: none

C - Professional information

1 – Course Learning Objectives:

The summer training focus on developing different technological skills for the students concerned with electrical engineering including basics of electric/electronics, software/hardware and information technologies. Moreover, the training aims to develop the technological and practical experiences both electrical and computer skills

2 – Competencies

- c1. Understand the basic electronic and electrical elements (resistor, capacitor, inductor, BJT, MosFET). (C3,C8)
- c2. Introduce basic electrical concept (Ohm's Law, Kirchhoff's circuit law, Series and parallel resistor circuit, voltage and current divider). (C1,C3).
- c3. Understand the characteristic of basic electrical & electronic elements. (C1,C3).
- c4. Implement circuit which introduce basic electrical concept (Ohm's Law, Kirchhoff's circuit law, Series and parallel resistor circuit, voltage and current divider). (C3, C4)
- c5. Understanding the operation of digital logic gates (AND, OR, NOR, NAND, XOR). (C1, C3)
- c6. Identify and accept knowledge of Architectural hardware components of microcomputer systems (C1,C5)
- c7. Explain basic concepts of computer-based information systems (C1,C3)
- c8. Utilize basic concepts of contemporary technologies to handle Computer Networking technology (C2,C4)

This course contributes in the following program competencies: **C1,C2, C3, C4, C5, C8**

3- Contents:

Topics	Lecture hours	Tutorial hours	Practical Day
Basic electronic and electrical elements.	-	-	1
Introduce basic electrical concept.	-	-	1
Operation of digital logic gates.	-	-	1
Implement the different electronic circuit.	-	-	2
Understand basic concepts of computer-based information systems			1
Identify Architectural hardware components of microcomputer systems			1
Clarify basic concepts and structure of HTML, CSS, and JS for web design			1
Understand basic concepts Computer Networking technology			1
Mini project seminar analysis and design utilizing overall concepts of training cores capabilities			1
Total Days	-	-	10

4. Course content/Course Competencies mapping matrix

Topic	c1	c2	c3	c4	c5	c6	c7	c8
Basic electronic and electrical elements.	1	1	1	1				
Introduce basic electrical concept.	1	1	1	1			1	1
Operation of digital logic gates.					1	1		1
Implement the different electronic circuit.			1	1	1	1	1	1
Understand basic concepts of computer-based information systems	1		1	1				1
Identify Architectural hardware components of microcomputer systems	1	1		1			1	
Clarify basic concepts and structure of HTML, CSS, and JS for web design	1	1		1				1
Understand basic concepts Computer Networking technology	1		1		1	1	1	1
Mini project seminar analysis and design utilizing overall concepts of training course capabilities	1	1	1	1	1	1	1	1
Topics Covering Competences	5	3	3	4	2	2	3	4

5 – Course Competencies/Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods						Learning Methods			Assessment Method					
	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Researched Reports & Assignments	Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report
c1	1					1									
c2		1				1									
c3	1					1		1							
c4						1									
c5		1			1	1		1							
c6						1			1						
c7	1					1		1							
c8					1	1			1						
Σ	3	2		-	2	8		3	2						

6- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Practical Exam	10 days	Pass or Fail
Total		Pass Or Fail

7- List of references:

7-1 Course notes:

Summer Training Level 0 “*Theoretical part*”

7-2 Required books

7-3 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/>

8. Facilities required for teaching and learning

- Computer Lab. equipped with Data show and Computer package
 - Lecture and Exercise rooms equipped with Data show projection and sound systems.
- High speed internet and communication facilities for distance learning.

Course coordinator:

Training office

Head of the Department:

Prof. Dr. Shouman Elshahat

Date:

August, 2020

Level 1 first semester

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for Engineering and Technology in Maddi



Course Specification CMPn111: Logic Design-1

A- Affiliation

Relevant program:	Computer Engineering and Information Technology BSc Program Electronic Engineering and Communication Technology BSc Program
Department offering the program:	Computer Engineering and Information Technology Department Electronic Engineering and Communication Technology Department
Department offering the course:	Computer Engineering and Information Technology Department

Date of specifications approval: August 2020

B - Basic Information

Title: Logic Design-1	Code: CMPn111	Level: Sophomore, First Semester
Credit Hours: 4	Lectures: 3	Tutorial: 2
		Practical: 1
		Total: 6

Pre-requisite: MTHn001

C - Professional information

1 – Course Learning Objectives:

Digital word today is composed of digital systems. any digital system is based on logic circuits by the end of this course the students should demonstrate the knowledge and understanding of the main concepts of digital circuit construction and the different approaches to achieve the highest speed and the lowest cost of these circuits. The laws of Boolean algebra to simplify a complicated logic expression. Also, the construction of the truth table for a special given problem. Booth combinational and sequential logic elements and circuits are investigated.

2- competencies

- c1. Identify the different features, Basic concepts and deferent items combinational logic circuits. (C1, C5)
- c2. Explain, formulate, and use theoretical background to solve complex logic problems utilizing the laws of Boolean algebra to simplify a complicated logic expression (C1, C3)
- c3. Illustrate different principles of Expressing a logic function in the S.O.P and P.O.S algebraic forms and Karnaugh map representation (C1, C3)
- c4- take knowledge of Minimization of logic functions using K.M and Quine – Mc – Clusky's tabular method and realization using NAND and NOR gates only (C11)
- c5. Explain the basics of Combinational modules used in digital systems like adders, de-multiplexers, multiplexers, decoder, encoder, parity checker and comparator circuits unique and methods of investigation as an inherent part of learning to solve different physical problems via simulation techniques (C5)
- c6. Clarify basics of sequential circuit elementary Flip-Flop circuits, Sequential logic modules like registers, shift registers, and counters (C2, C4)
- c7. Analyze the realization approaches using gate and modular designs and determine the measures for selection of any of them to Manipulate Memory modules like combinational ROM and RAM sequential modules (C12, C13)

c8. Use a wide range of analytical tools, and techniques, pertaining to the discipline and develop design a binary counter counting in an arbitrary input random sequence using any type of Flip-Flops. As well as design the associated circuits for fault detection in counter operation and presetting to a given initial state (C11, C13).

c9. Investigate on a mini project for Innovating solutions based on non-traditional thinking and the use of latest technologies to Construct of a different types of logic circuit using available logic gates satisfying minimum cost (C10)

for Electronic Engineering and Communication Technology BSc Programs

c4- take knowledge of Minimization of logic functions using K.M and Quine – Mc – Clusky's tabular method and realization using NAND and NOR gates only (C13)

c7-Analyze the realization approaches using gate and modular designs and determine the measures for selection of any of them to Manipulate Memory modules like combinational ROM and RAM sequential modules (C14, C15)

c8. Use a wide range of analytical tools, and techniques, pertaining to the discipline and develop design a binary counter counting in an arbitrary input random sequence using any type of Flip-Flops. As well as design the associated circuits for fault detection in counter operation and presetting to a given initial state (C13, C15).

This course contributes in the following program competencies for **Computer Engineering and Information Technology BSc Program**

: C1, C2, C3, C4, C5, C10, C11, C12, & C13

This course contributes in the following program competencies for **Electronic Engineering and Communication Technology BSc Programs**

C1, C2, C3, C4, C5, C10, C13, C14, & C15

3 – Contents

SN	Topic	Lecture hours	Tutorial hours	Practical hours
1	Introduction to numbering systems, and basics of logic: - logic fundamentals and their terminologies	3	2	1
2	Logic Functions Representation & Realization -Method of representation of logic functions truth table, S.O.P and P.O.S).	3	2	1
3	Logic Functions Representation & Realization -Realization of logic functions using AND-OR_NOT, NAND only and NOR only gate systems -matching logic functions with gate systems.	3	2	1
4	Logic function minimization Using basic laws of Boolean Using K-map minimization	3	2	1
5	Logic function minimization -Using Quine-Mc Clusky's Methods -Minimization of multiple-output Logic Functions.	3	2	1
6	Combinational logic modules	3	2	1

	half and full adders, Parallel adder connection, look ahead carry			
7	Assessment (Midterm exam)	3	2	1
8	Encoder- Decoders and multiplexer and de-multiplexers	3	2	1
9	Parity checker, ROM, and binary comparator.	3	2	1
10	Sequential logic circuit elements	3	2	1
11	Asynchronous and synchronous sequential elements -S-R Flip-Flop, and J-K Flip Flop. <u>-D type F.F, T-type FF, and master-slave FF</u>	3	2	1
12	Sequential logic circuit modules Registers and shift register	3	2	1
13	Sequential logic circuit modules Asynchronous and synchronous counters	3	2	1
14	Sequential logic circuit modules counter using shift-registers (Johnson and ring counters) Random access memories (basic cell, addressing and read-write operations)	3	2	1
15	1. Mini project seminar analysis and design utilizing overall concepts of logic circuits capabilities	3	2	1
Total hours		45	30	15

4. Course content/Course Competencies mapping matrix

Topic	c1	c2	c3	c4	c5	c6	c7	c8	c9
Introduction to numbering systems , and basics of logics	1							1	1
Logic Functions Representation & Realization	1	1				1			
Logic function minimization	1			1			1		1
Combinational logic modules			1		1	1			1
Encoder- Decoders and multiplexer and de-multiplexers		1	1		1		1		1
Parity checker, ROM, and binary comparator		1	1		1	1			1
Sequential logic circuit elements		1	1			1			1
Asynchronous and synchronous sequential elements		1	1				1		
Sequential logic circuit modules		1	1	1	1				
Mini project seminar analysis and design utilizing overall concepts of logic circuits capabilities	1	1	1	1	1	1	1	1	1
Topics Covering Competences	4	7	7	3	5	5	4	2	7

5 - Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods						Learning Methods			Assessment Method					
	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Researched, Reports &	Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report
	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		1
	c4	1	1		1			1		1	1				1
	c5	1	1		1	1		1	1	1	1		1	1	1
	c6	1	1	1	1	1				1	1		1		1
	c7	1	1	1	1			1	1	1	1	1		1	1
	c8	1	1	1	1			1	1	1	1	1			1
c9	1	1	1		1		1	1	1					1	1
Σ	9	9	4	8	5		4	6	3	8	8		5	4	9

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Practical exam		12 th Week	
Semester Work	Quizzes	3 Quizzes (one each 4 weeks)	15
	Reports/Research	Two reports per semester	5
	Tutorials	3 Assignments per semester	5
	Mini project	Once per semester	15
Written Exam		Sixteenth week	40
Total			100

7- List of references:

7-1 Course notes:

Lecture notes and handouts

Abd elmoneim fouda, Digital logic circuit (Theoretical + Practical).Cairo :MAM Press

7-2 Required books

Sanjay (2012) Analog and Digital Electronics

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

7-3 Recommended books:

none

7-4 Periodicals, Web sites, etc.

<http://www.mathwork.com/>.

<http://www.talkthecold.com/bizgoogle/>.

<http://www.scrius.com/>.

<http://www.Vlab.co.in/>.

<http://opencourses.emu.edu.tr/>

<http://www.GenLib.org/>.

<http://www.SCI-hub.org/>.

<http://www.Merlot.org/>.

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

8- Facilities required for teaching and learning:

- Computer Lab. equipped with Data show and Computer package
- Lecture and Exercise rooms equipped with Data show projection and sound systems.

- High speed internet and communication facilities for distance learning.

Course coordinator: Dr. Abd Elmoneim FoudA

Head of the Department: Dr. Abd Elmoneim FoudA

Date: August 2020

Modern Academy

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Course Specification ELCn111: 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: Computer Engineering and Information Technology Department
Electronic Engineering and Communications Technology Department
Department offering the course: Electronic Engineering & Communication Technology Department.
Date of specifications approval: August, 2020

B - Basic Information

Title: Electrical Circuit Analysis-1 **Code:** ELCn111 **Level:** 1st Spring
Credit Hours: 3 **Lectures:** 2 **Tutorial/Exercise:** 1 **Practical:** 2
Pre-requisite: MTHn002, ELCn060

C - Professional information

1 – Course Learning Objectives:

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

2 – Competencies

- c1- Understand Basic concepts, ideas and laws of electrical circuit analysis. (C1)
- c2- Implement Voltage, current, and power calculation for simple resistive circuits. (C1, C2)
- c3- Analyze Applications of Ohm's and Kirchhoff's Laws. (C1, C2)
- c4- Realize Series, parallel, and delta-star connections principles. (C1, C14)
- c5- Discriminate Different techniques of circuit analysis. (C1, C14)
- c6- Realize Operational-amplifier characteristics and applications. (C1, C14)
- c7- Understand Characteristics of a sinusoidal current and voltage. (C2, C6)
- c8- Understand Basic concepts of RL and RC circuits. (C6, C14)
- c9- Apply the Ohm's and K's laws. (C2, C14, C18)
- c10-Apply the powerful techniques of circuit analysis. (C2, C9, C14, C18)
- c11-Use the operational-amplifier in different applications. (C2, C6, C14, C18)
- c12-Apply Thevenin's theorem. (C2, C9, C14, C18)
- c13-Use different types of basic hand tools and different types of switches to construct a circuit. (C14, C16)
- c14-Identify all types of electrical lamps and primary cells (Batteries) that are used in numerous circuits applications. (C16, C18)
- c15-Read and determine the value of the resistance and capacitance using color code. (C4, C14)
- c16-Use different symbols of circuits. (C16, C18)
- c17-Use and read the measured values shown by oscilloscopes, and laws principles. (C2, C6, C14)
- c18-Construct simple circuits applying the learned laws and principles given in lectures. (C9, C18)
- c19-Communicate effectively through reports and e-mails. (C8, C9)
- c20-Effectively manage tasks, time, and resources. (C8, C9)
- c21-Search for information and engage in life-long self-learning discipline. (C4, C5)

This course contributes in the following program competencies: C1, C2, C4, C5, C7, C6, C8, C9, C14, C16 & C18

3 – Contents

Week	Topic	Lecture hours	Tutorial hours	Practical hours
1	Units Dimensions and Standards.	2	1	2
2	Circuit Variables and elements.	2	1	2
3	Simple Resistive Circuit.	3	2	3
4	Node Voltage Method.	2	1	2
5	Mesh Current method	2	1	2
6	Source Transformation and Supper Position Principle.	3	1	4
7	Assessment (Mid- Term)	-	-	-
8	Thevenin's Theorem.	3	2	3
9	Operational Amplifiers.	2	1	2
10		2	1	2
11	Inductance, Capacitance and Mutual Impedances.	2	1	2
12	Response of RL and RLC Circuits.	2	1	2
13		2	1	2
14	Revision	1		
15		1	1	
Total hours		30	15	30

4. Course content/Course Competencies mapping matrix

Topic	Course Competences																				
	c1	c2	c3	c4	c5	c6	c7	c8	c9	c10	c11	c12	c13	c14	c15	c16	c17	c18	c19	c20	c21
Units Dimensions and Standards.	1	1	1																		
Circuit Variables and elements.	1	1					1				1					1				1	1
Simple Resistive Circuit.			1	1		1		1		1				1	1			1			
Node Voltage Method.			1	1	1	1		1	1	1		1			1	1					
Mesh Current method		1			1			1	1	1		1	1		1		1		1		
Source Transformation and Supper Position Principle.		1						1	1			1	1		1	1					1
Thevenin's Theorem.		1	1									1									
Operational Amplifiers.								1	1		1			1							
Inductance, Capacitance and Mutual Impedances.						1		1		1		1	1			1					
Response of RL and RLC Circuits.						1		1	1	1			1	1		1				1	1
Topics Covering Competencies	2	5	3	2	2	4	1	7	5	5	2	5	4	3	4	5	1	1	1	2	3

5 – Course Competencies/Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods						Learning Methods			Assessment Method					
	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Researched, Reports &	Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report
c1	1		1	1		1		1		1	1	1	1		
c2	1					1		1		1	1	1		1	1
c3	1			1						1	1	1	1		
c4	1			1						1	1	1			
c5	1			1				1		1	1	1	1		
c6		1	1	1	1					1	1	1	1		
c7	1	1	1			1				1	1	1	1		
c8	1		1	1		1	1			1	1	1	1		1
c9		1	1				1	1	1	1	1	1	1		1
c10	1			1	1							1	1		
c11						1		1				1	1		
c12	1					1	1	1							1
c13		1	1				1		1					1	1
c14					1		1							1	
c15						1		1				1		1	
c16						1						1			
c17		1		1			1								1
c18								1						1	
c19															
c20															
c21			1					1						1	
Σ	9	5	7	8	3	8	6	9	2	9	9	3	9	6	6

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Semester Work	Quizzes	3 Quizzes (one each 4 weeks)	6
	Reports/Research	Two reports per semester	4
	Tutorials	3 Assignments per semester	6
	Mini project	Once per semester	4
Practical Exam		Fifteenth week	20
Written Exam		Sixteenth week	40
Total			100

6- List of references:

6-1 Course notes:

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

6-2 Required books

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

6-3 Recommended books:

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

6-4 Periodicals, Web sites, etc.

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

7- Facilities required for teaching and learning:

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

Course coordinator: Dr. Haytham Gamal.

Dr. Mohamed Ismail

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

Date: August, 2020

Modern Academy

for Engineering and Technology in Maddi



Course Specification

ELCn114: Modern Theory of solids

A- Affiliation

Relevant program:

Electronic Engineering and Communication Technology BSc Program

Department offering the program:

Computer Engineering and Information Technology BSc Program
Electronic Engineering and Communication Technology Department

Department offering the course:

Computer Engineering and Information Technology Department

Date of specifications approval:

Basic Science Department
August 2020

B - Basic Information

Title: Modern Theory of solids

Code: ELCn114 **Level:** 1st Fall

Credit Hours: 3

Lectures: 2

Tutorial/Exercise: 1

Practical: 2

Pre-requisite: PHYn002

C - Professional information

1 – Course Learning Objectives:

By the end of this course the students should demonstrate the knowledge and understanding the weak points in classical theory of physics and how it can be explained by modern theory of physics. They can understand 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. The students can understand the difference between general and special theory of relativity then they can study in some details Einstein concepts and the special theory of relativity

2 – Competencies

- c1- Describe the Electromagnetic spectrum and explain the effect of temperature Blackbody Radiation. (C1, C16)
 - c2- Study classical mechanics of the black body radiation. (C1, C17)
 - c3 - Explain the theoretical background of photoelectric effect and Compton scattering. (C2, C16)
 - c4 - Deduce mathematical relations describing the energy of photon and electron. (C1, C2)
 - c5 - Analyze, mathematically, the effect of the collision between photons. (C1, C17)
 - c6 - Use experimental facilities to explain Particle wave duality nature. (C15, C17)
 - c7- Apply the Wave Mechanics to calculate the energy, wave function and probability density of particles. (C1, C2)
 - c8 - Deduce mathematical relations describing penetration and the effective parameters on Tunneling. (C1, C2)
 - c9 - Classify and compare the different ways of the conductivity elements. (C3, C15)
 - c10 - Explain the theoretical background Bohr Model and THE Quantum Mechanical Model of H-Atom. (C1, C2)
 - c11 – Study the Einstein concepts and some details of theory of relativity. (C3, C4, C14)
 - c12 - Work in a team and involve in group discussion and seminars. (C2, C3, C7)
 - c13 - Differentiate between the classical and special relativity. (C5, C10)
 - c14 - Communicate effectively and present data and results orally and in written form. (C5, C8, C14)
 - c15 - Search for information's in references and in internet. (C5, C9)
 - c16 - Use ICT facilities in presentations. (C8, C9, C14)
 - c17 - Practice self-learning and communicate effectively orally and in written form. (C7, C8)
- This course contributes in the following program competencies: C1, C2, C3, C4, C5, C7, C8, C9, C10, C14, C15, C16, C17

3 – Contents

week	Topic	Lecture hours	Tutorial hours	Practical hours
1	➤ Introduction to quantum physics -Classical and modern theory of light	2		2
2	• Plank's explanation for black body radiation	2	1	2
3	• Photo electric effect -Compton scattering	2	1	2
	➤ Particles behaving as a wave and particle wave complementarity			
4	• Introduction to wave mechanics	2	1	2
5	• The uncertainty principle	2	1	2
6	• Wave function for free particle and probability	2	1	2
7	➤ Midterm exam	2		
8	• The simple harmonic oscillator • Scanning tunneling microscopy	2	1	2
	• Introduction to atomic physics			
9	➤ The concepts of quantum physics	2	1	2
10	• Boher concepts, quantum theory and quantum numbers	2	1	2

11	• Introduction to relativity- classical relativity – frame of reference	2	1	2
12,13	➤ Galilean transformations - Special relativity – Lorentz transformation	4	2	
14,15	• Time Dilation - Length contraction - Addition of Velocities- Relativity of Mass - Forces, Work, and Energy in Relativity	4	2	
	• Total hours	30	13	20

4. Course content/Course Competencies mapping matrix

Topic	Knowledge										Skills					Attitude	
	c1	c2	c3	c4	c5	c6	c7	c8	c9	c10	c11	c12	c13	c14	c15	c16	c17
Introduction to relativity- classical relativity – frame of reference		1											1	1	1	1	1
Galilean transformations - Special relativity – Lorentz transformation													1	1	1		1
Time Dilation - Length contraction - Addition of Velocities- Relativity of Mass - Forces, Work, and Energy in Relativity													1	1	1	1	1
Introduction to quantum physics -Classical and modern theory of light	1	1	1	1							1		1	1	1	1	1
Plank's explanation for black body radiation	1		1								1		1	1	1		1
Photo electric effect -Compton scattering	1	1	1		1	1			1		1		1	1		1	1
Particles behaving as a wave and particle wave complementarity				1	1	1	1				1		1	1	1		1
Introduction to wave mechanics							1	1				1	1	1	1		1
The uncertainty principle						1		1					1	1	1		1
Wave function for free particle				1		1	1	1					1	1	1		1
Applications of wave mechanics							1	1				1	1	1	1	1	1
The simple harmonic oscillator					1						1	1		1	1	1	1
Scanning tunneling microscopy											1	1	1	1	1	1	1
Introduction to atomic physics				1					1	1	1	1		1	1	1	1
Bonding mechanisms										1		1		1	1	1	1
Classical free electron model of metals										1		1	1	1	1	1	1
Topics Covering Competences	3	3	3	3	3	4	4	4	2	3	7	7	13	16	16	10	16

5 - Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods				Learning Methods	Assessment Method		
	Lecture	Discussions and seminars	Tutorials	Problem solving	Research and Reports	Written Exam	Quizzes	Assignments
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
c7	1	1	1	1	1	1	1	1
c8	1	1	1	1	1	1	1	1
c9	1	1	1	1	1	1	1	1
c10	1	1	1	1	1	1	1	1
c11	1	1	1	1	1	1	1	1
c12	1	1	1	1	1			1
c13	1	1	1	1	1	1	1	1
c14	1	1			1	1	1	1
c15		1						
c16		1						
c17		1						
Σ	14	17	13	13	14	13	13	14

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Semester Work	Quizzes	Bi-Weekly	20
	Reports/Research		
	Assignments		
Practical Exam		Fifteenth week	20
Written Exam		Sixteenth week	40
Total			100

7- List of references:

7-3 Course notes:

A. H. Serag, S. A. Eladly (2020), Modern Theory of Solids, Lectures notes, Modern Academy.

7-2 Required books:

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

7-9 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 Sciencee, Business Media, LLC, New York, 2008.

7-4 Periodicals, Web sites, etc.

[www. Physics.exchange.com](http://www.Physics.exchange.com)

www.iop.org.com

8- Facilities required for teaching and learning:

- [Modern theory Lab.](#)
- [Library.](#)
- [Internet.](#)

Course coordinator:

[Dr. Sally El-Adly](#)

Head of the Department:

[Associat Professor / Ashraf Taha EL-Sayed](#)

Date:

[August 2020](#)

Modern Academy
for Engineering and Technology in Maddi



Course Specification GENn141: Presentation skills

A- Affiliation

Relevant program: Electronic Engineering and Communication Technology BSc Program
Manufacturing Engineering and Production Technology BSc Program
Computer Engineering and Information Technology BSc Program
Architecture Engineering and Building Technology BSc Program
Department offering the program: Electronic Engineering and Communication Technology Department
Department offering the course: Basic Science Department.
Date of specifications approval: March 2021

B - Basic Information

Title: Presentation skills **Code:** GENn141 **Level:** 2nd Fall
Credit Hours: 2 **Lectures:** 2 **Tutorial/Exercise:** **Practical:** -

Pre-requisite: --

C - Professional information

1 - Course Learning Objectives:

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

2 – Competencies

- c1. Practice research, select relevant topics, and allocate relevant references. (C5, C10)
- c2. Summarize and write a report about the selected topic (C7, C8)
- c3. Prepare a presentation, give a speak, and involve in discussion about the selected topic. (C8).

This course contributes in the following program competencies: **C5, C7, C8, & C10.**

3- Course Contents:

Week	Topics	Lecture hours	Tutorial hours	Practical hours
1	Introduction	2		
2	technical report writing + biography	2		

3	C.V Writing: Preparation of an attractive C.V. containing personal data qualifications, posts, and publications. - Interview Preparations + Interview skills	2		
4	Presentation skills (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)	2		
5	Presentation skills / communications skills	2		
6	To improve the student communications skills / Seminar training / Joharry's window & 7 C's	2		
7	Mid Term Exam	-	-	-
8	To develop the student acquiring power of leadership	2		
8	Training on active listening and negotiation.	2		
10	To understand and practice what's body language / Arts	2		
11	Speeches vs. presentation	2		
12	Suggested topic by the students.	2		
13	Revision / group presentation	2		
14	Revision / group presentation	2		
15	Revision / group presentation			
Total hours		28		

4 - Course content/Course Competencies mapping matrix.

Course Topics	Course Competencies												
	c1	c2	c3	-	-	-	-	-	-	-	-	-	-
Topics are selected by each, or group of students	1	1	1	-	-	-	-	-	-	-	-	-	-
Topics Covering Competencies	1	1	1	-	-	-	-	-	-	-	-	-	-

5 – Course Competencies/Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods					Learning Methods			Assessment Method					
	Lecture	Tutorials	Problem solving	Laboratory & Experiments	Discussions & seminars	Self - Learning	Research & Report	Assignments	Discussions & seminars	Oral Exam	Quizzes	Assignments	Research & Report	Mini - Project
c1	1	-			1	1	1		1				1	
c2	1	-			1	1	1		1				1	
c3	1	-			1	1	1		1				1	
Σ	3	-	-	-	3	3	3	-	3	-	-	-	3	-

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Semester Work	Quizzes	-	-
	Reports/Research/biography	A group of students make a report every week	20
	Presentation	A group of students presents every week	12
	Other (CV)	Each student make a his CV once	8
Practical Exam		-	-
Written Exam		Sixteenth week	40
Total			100

7- List of references:

7-1 Course notes

Presentation and Communication Skills “*Theoretical part*”

7-2 Required books

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

7-3 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.

8 - Facilities required for teaching and learning:

- Computer, and Data show

Course coordinator:	Dr. Lubna Fekry
Head of the Department:	Prof. Dr. Shouman S.E.I.
Date:	August, 2020

Modern Academy

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Course Specification

MTHn103: Mathematics -3(Differential Equations and Transforms)

A- Affiliation

Relevant program:

Manufacturing Engineering and Production Technology BSc Program
Electronic Engineering and Communication Technology BSc Program
Computer Engineering and Information Technology BSc Program
Civil Engineering and Building Technology BSc program

Department offering the program:

Manufacturing Engineering and Production Technology Department
Electronic Engineering and Communication Technology Department
Computer Engineering and Information Technology Department
Civil Engineering and Building Technology Department

Department offering the course:

Basic Science Department

Date of specifications approval:

August 2020

B - Basic Information

Title: Differential Equations and Transforms

Code: MTHn103

Level: 1st (Fall-Spring)

Credit Hours: 3

Lectures: 2

Tutorial/Exercise: 3

Practical: ---

Pre-requisite: MTHn002

C - Professional information

1 – Course Learning Objectives:

By the end of this course, the students should have gained the planned competencies (knowledge, skills, and attitudes) related to 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 – Competencies

- c1- Identify classification of O.D.E. (C1)
- c2- Explain solution of the O.D.E using suitable methods. (C1, C5)
- c3- Identify rules of Laplace transform. (C1, C5)
- c4- Explain rules of inverse Laplace transform. (C1, C5)
- c5-Apply Fourier series and its applications in applied engineering problems. (C1, C5)
- c6- Identify basic concepts of Legendre function. (C1, C5)
- c7- Identify basic concepts of Bessel function. (C1, C5)
- c8- Choose the suitable methods for solving O.D.E. (C1, C7, C9)
- c9- Apply rules of Laplace transform and its inverse to Solve O.D.E and integral equations. (C1, C5, C7, C9)
- c10- Make analysis for electrical problem using Fourier series. (C1, C2)
- c11- Solving problems on Legendre and Bessel functions. (C1, C9)
- c12- Apply O.D.E in electrical, mechanical and civil problems. (C1, C7, C9)
- c13- Apply Laplace transform in electrical, mechanical and civil problems. (C1, C7, C9)
- c14- Apply Fourier series in electrical, mechanical and civil problems. (C1, C7, C9)

c15- Communicate effectively. (C8)

c16- Search for information. (C9, C10)

This course contributes in the following program competencies: C1, C2, C5, C7, C8, C9, C10

3 – Contents

week	Topic	Lecture hours	Tutorial hours	Practical hours
1	➤ Definitions, order, degree.	1	1	—
2,3,4	➤ 1st order differential equations, 2nd order and n th order differential equations with constant coefficients.	6	10	—
5,6	➤ Nonhomogeneous D.E., undetermined coefficient method.	6	10	—
7	➤ Mid term	2	2	
8	➤ Variation of parameters, Euler equations, practical D.E.	3	4	—
9,10	➤ Laplace transform, 1st and 2nd shifting theorem.	4	6	—
11,12	➤ Laplace transforms of derivative and integrals, inverse Laplace transforms, convolution, applications.	4	6	—
13,14,15	➤ Fourier series, half rang expansion, Legendre and Bessel functions.	4	6	—
Total hours		30	45	—

4. Course content/Course Competencies mapping matrix

Topic	Knowledge							Skills							Attitude	
	c1	c2	c3	c4	c5	c6	c7	c8	c9	c10	c11	c12	c13	c14	c15	c16
Definitions, order, degree.	1															1
1st order differential equations, 2nd order and n th order differential equations with constant coefficients.		1						1				1				1
Nonhomogeneous D.E., undetermined coefficient method		1						1				1				1
Variation of parameters, Euler equations, practical D.E.		1						1				1				1
Laplace transform, 1st and 2nd shifting theorem			1						1				1		1	1

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Laplace transforms of derivative and integrals, inverse Laplace transforms, convolution, applications.			1	1					1				1		1	1
Fourier series, half rang expansion, Legendre and Bessel functions.					1	1	1			1	1			1	1	1
Topics Covering Competences	1	3	2	1	1	1	1	3	2	1	1	3	2	1	3	7

5 - Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods				Learning Methods	Assessment Method		
	Lecture	Discussions and seminars	Tutorials	Problem solving	Research and Reports	Written Exam	Quizzes	Assignments
c1	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
c5	1		1	1		1	1	1
c6	1	1	1	1		1	1	1
c7	1	1	1	1		1	1	1
c8	1	1		1		1	1	1
c9	1		1	1		1	1	1
c10	1	1	1	1	1	1	1	1
c11	1			1	1	1	1	1
c12	1	1			1			
c13	1	1			1			
c14	1	1		1	1			
c15		1	1		1			1
c16	1			1	1			1
Σ	15	11	10	13	10	10	10	13

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Semester Work	Quizzes	Bi-Weekly	40
	Reports/Research		
	Assignments		

Written Exam	Sixteenth week	40
Total		100

7- List of references:

7-1 Course notes:

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

7-2 Required books:

Bronson, R. and Costa, G. (2012) Schaumas easy out lines diffrential equations. McGraw-Hill, U.S.A.

7-10 Recommended books:

Kreyszig, E. (2010) Advanced Engineering Mathematics. John Wiley, New York.

7-4 Periodicals, Web sites, etc.

www.mathwords.com.

www.khanacademy.org/math/differential-equations

www.sosmath.com/diffeq/diffeq.html

8- Facilities required for teaching and learning:

- Library.
- Internet.
- High speed internet and communication facilities for distance learning

Course coordinator: associated Professor / Ashraf Taha EL-Sayed

Head of the Department: associated Professor / Ashraf Taha EL-Sayed

Date: August 2020

Modern Academy

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Course Specification ENGn311b: Engineering Economy

A- Affiliation

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

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

Department offering the course: Manufacturing Engineering & Production Technology Department.

Date of specifications approval: August 2020

B - Basic Information

Title: Engineering Economy **Code:** **Level:** 2nd /Fall
ENGn311b

Credit Hours: 2 **Lectures:** 2 **Tutorial/Exercise:** 1 **Practical:** -
Pre-requisite: None

C - Professional information

1 – Course Learning Objectives:

A study of this course will enable the student to:

- Evaluate the present and future money investment that devoted to the mechanics of time-value.
- Calculate and compare between alternatives based on their equivalent annual worthy, present worth, and rate of return.
- Account the effects of depreciation and taxes on economic evaluations in extensively treatment.

2 – Competencies

- c1- Apply mathematics, economics, and engineering principles to to identify, formulate, analyze, and solve engineering economic problems (C1, C4).
- c2- Use the basics to the mechanics of time-value calculations and comparisons of alternatives based on their equivalent annual worthy, present worth, and rate of return. (C1, C10)
- c3- Estimate and calculate the effects of both depreciation and taxes as well on economic evaluations (C2)
- c4- Develop an understanding of managerial accounting and economic principles. (C3)
- c5- Use appropriate techniques, skills, and tools to identify, formulate, analyze, and solve engineering economic problems. (C1, C9)
- c6- Communicate effectively – graphically, verbally and in writing – the results of the modeling process to solve engineering economy problems with specialist users of engineering analyses. (C8)
- c7- Adopt creative, innovative and flexible thinking for modeling solution process for economic problems. (C14)
- c8- Use modern computer tools, such as spreadsheets, in financial realities from the business world including both opportunities and restrictions- that influence economic decisions. (C9, C10, C14)
- c9- Use graphics effectively for justifying solutions to engineering economics problems. (C11)
- c10- Search for information in references and internet. (C10, C12)
- c11- Practice self-learning (C5, C10).
- c12- Work in a team and involve in group discussion and seminars. (C7)

This course contributes in the following program competencies:

C1, C2, C3, C4, C5, C7, C8, C9, C10, C11, C12, C14

3 – Contents

Week	Topic	Lecture hours	Tutorial hours	Practical hours
1	• Cash Flow: Cash flow table, Cash flow diagram,	1	1	
1	➤ Equivalence and time Value of Money,	1		
2	• Interest: Simple & compound interest	2		
3	➤ Forms of payments: Single payment, Uniform payment.	2	1	
4	➤ Arithmetic series payment, Geometric series payment	2	1	
5	➤ Nominal & effective Interest rate	2		
6	• Economic Analysis of Engineering Problems: ➤ : Present worth method,	2	1	
7	Assessment (Mid Term Exam)	2	1	
8	➤ Equivalent uniform annual method	2	1	
9	➤ Rate of return method	2	1	
10	• Depreciation ➤ Straight- line method	2	2	
11	➤ Sum – of- years digits method,	2	1	
12	➤ Double- declining balance method	2	1	
13	• Tax Effects ➤ Types of taxes	1		
13	➤ Tax credit	1	1	
14	➤ Marginal taxes.	1	1	
15	➤ Effect of taxes on economic decision.	3	2	
Total hours		30	15	

4. Course content/Course Competencies mapping matrix

Topic	Course Competencies											
	c1	c2	c3	c4	c5	c6	c7	c8	c9	c10	c11	c12
Cash Flow: Cash flow table, Cash flow diagram,	1			1	1							1
Equivalence and time Value of Money,	1			1	1							1
Interest: Simple & compound interest	1			1	1		1	1	1			1
Forms of payments: Single payment, Uniform payment.				1	1		1	1	1			1
Arithmetic series payment, Geometric series payment				1	1		1	1	1			1
Nominal & effective Interest rate				1	1		1	1				1

• Economic Analysis of Engineering Problems:	1	1			1	1		1	1			1
Present worth method,												
Equivalent uniform annual method	1	1			1	1		1	1			1
Rate of return method	1	1			1	1		1	1			1
• Depreciation	1		1		1	1			1	1		1
Straight- line method												
Sum – of- years digits method,	1		1		1	1			1	1		1
Double- declining balance method	1		1		1	1			1	1		1
• Tax Effects			1		1						1	
Types of taxes												
Tax credit			1		1					1	1	
Marginal taxes.			1		1					1	1	
Effect of taxes on economic decision.	1		1		1	1			1			1
Topics Covering Competences	10	3	7	6	16	7	4	7	10	5	3	13

5 – Course Competencies/Teaching, Learning and Assessment methods:

Course Competencies	Teaching Methods						Learning Methods			Assessment Method					
	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Research, Reports & Assignments	Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report
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	
c5	1	1	1	1	1		1		1	1	1		1	1	
c6		1	1				1	1						1	1
c7	1	1	1	1	1		1	1	1	1	1		1	1	1
c8	1	1	1	1	1		1			1	1		1	1	
c9	1	1	1	1	1		1			1	1		1	1	
c10		1	1				1	1						1	1
c11		1	1				1	1						1	1
c12	1	1	1	1	1		1		1		1				
Σ	8	9	9	8	8		11	5	3	7	8		7	8	4

6- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: <ul style="list-style-type: none">➤ Assignments,➤ Quizzes➤ Reports	Bi-Weekly 4 Quizzes per semester 1 Report per semester	10 20 10
Mid-Term Exam	6-th Week	20
Final Written Exam	Sixteenth week	40
Total		100

7- List of references:

7.1 Course notes

Lecture notes and handouts.

7.2 Required books

- Matcolm H., "Engineering Economy Principle", USA, McGraw-Hill, 1982

7.3 Recommended books

- Sullivan W. G., Wicks E. M., and Luxhoj J. t., "Engineering Economy", 12th ed., Prentice Hall, 2003

- Barish N. B., "Economic Analysis for Engineering and Managerial Decision Making", McGraw-Hill, 1982

7.4 Periodical, Web sites, etc.:

- <http://www.isr.umd.edu/~austin/ence202.d/economics.html>
- <http://mysite.du.edu/~jcalvert/econ/enecon.htm>
- <http://www.slideshare.net/ngduyquang1001/basics-of-engineering-economy>

8- Facilities required for teaching and learning:

- Modern Academy Library
- Lecture and Exercise rooms equipped with projector and sound systems.
- Computer, Data show and Computer programs.
- High speed internet and communication facilities for distance learning.

Course coordinator: Dr. Abdelmagid A. Abdalla

Head of the Dr Metwally Abdelghaffar

Department: August 2020

Date:

Fourth Semester (Level one):

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for Engineering and Technology in Maddi



Course Specification Course Specification CMPn110: Data Structures and Algorithms

A- Affiliation

Relevant program:	Electronic Engineering and Communication Technology BSc Program. Computer Engineering and Information Technology BSc Program.
Department offering the program:	Computer Engineering and Information Technology Department Electronic Engineering and Communications Technology Department
Department offering the course:	Computer Engineering and Information Technology Department
Date of specifications approval:	August 2020

B - Basic information

Title: Data Structures and Algorithms	Code: CMPn110	Level: Sophomore, Second Semester
Credit Hours: 3	Lectures: 2	Tutorial/Exercise: 2 Practical: 2 Total: 4
Pre-requisite: CMPn010		

C - Professional information

1 – Course Learning Objectives:

By the end of this course the students should have gained the planned competencies (based on the knowledge, skills and personnel attitudes) related to construction and operations of the different data structures, their storage in computer memory and their implementation. They should compete on the design, implementation and execute of different algorithms like manipulation of data structures, searching and sorting.

2 – Competencies

- c1- Classify and compare different methods of data representation (C1, C2, C3)
- c2- design complex programs using algorithms and programming concepts (C1,C2,C3)
- c3- practice Storage of data in computer memory like one and two-D arrays, records, and spare matrices (C2, C11)
- c4- Apply Operations associated with stacks, and queues (C1, C2, C3).
- c5- Design of representation of different models of linked lists in memory (C1, C2, C3).
- c6- Apply Traversing, searching, insertion, and deletion algorithms for linked lists (C1, C2, C3, C11).
- c7- Use different representations of trees in computer memory (C1, C2, C3, C11).
- c8- Apply and use traversal algorithms of trees data structures such as pre-order, in-order and post-order traversas (C1, C2, C3, C11).
- c9- Apply Huffman's algorithm and deduce weighted Path length of trees (C1, C2, C3, C11).
- c10- Design, use and implement linear and binary searching algorithms, and associated binary search tree (B.S.T) with searching, deletion, and insertion into B.S.T (C1, C2, C3, C11, C12).

c11- Practice sorting algorithms using selection, exchange, insertion, bubble, quick, and heap sort algorithms and deducing the algorithms complexity (C1, C2, C3, C11, C12).

c12 -Deduce the proper data structures and algorithms for problems arising in the engineering field (C1,C2)

c13- Communicate effectively through written reports (C8).

This course contributes in the following program competencies

for [Electronic Engineering and Communication Technology BSc Programs](#)

c6- Apply Traversing, searching, insertion, and deletion algorithms for linked lists (C1, C2, C3, C13).

c7- Use different representations of trees in computer memory (C1, C2, C3, C13).

c8- Apply and use traversal algorithms of trees data structures such as pre-order, in-order and post-order traversas (C1, C2, C3, C11).

c9- Apply Huffinan's algorithm and deduce weighted Path length of trees (C1, C2, C3, C13).

c10- Design, use and implement linear and binary searching algorithms, and associated binary search tree (B.S.T) with searching, deletion, and insertion into B.S.T (C1, C2, C3, C13, C14).

c11- Practice sorting algorithms using selection, exchange, insertion, bubble, quick, and heap sort algorithms and deducing the algorithms complexity (C1, C2, C3, C13, C14).

This course contributes in the following program competencies for [Computer Engineering and Information Technology BSc Program](#)

: : (C1, C2, C3,, C8, C11, C12)

This course contributes in the following program competencies for [Electronic Engineering and Communication Technology BSc Programs](#)

: (C1, C2, C3,, C8, C13, C14)

3 – Contents

Week	Topic	Lecture hours	Tutorial hours	Practical hours
1	➤ Introduction <ul style="list-style-type: none">• Basic Definitions and basic operation.• Data representation and storage, fixed point and floating-point formats.• Applications of data structure.	2	2	-
2,3	➤ Arrays <ul style="list-style-type: none">• 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.	4	4	-
4,5	➤ Linear lists <ul style="list-style-type: none">• Definitions and properties.• Stacks, definition, push, pop operation.• Queues, definition, insertion, and deletion from circular queues.• De-queues, definition, and basic operations.	4	4	-
➤ 6	➤ Linked Lists: Basic structures and representation	2	2	

➤ 7	➤ MT (assessment)	2	2	
➤ 8	➤ Linked Lists <ul style="list-style-type: none"> • Traversing and searching linked lists • Insertion and deletion algorithms. • Two-way lists. • Circular header linked lists and applications 	2	2	-
➤ 9,10,11	➤ Trees <ul style="list-style-type: none"> • Basic definitions and structure. • Representation of binary trees in memory. • Linked representation. • String array representation. • Terminating binary sequence (TBS) representation. • Transformation of a general tree into binary tree. • Transferring tree and transversal algorithms using stacks (Preorder, in order, and post order threading) • Path length and Huffman's tree achieving using Huffman's algorithms. 	5	5	-
➤ 11, 12	➤ Searching	3	3	-
	• 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			
➤ 13, 14	➤ Sorting	4	4	-
	• Introduction.			
	• Sorting algorithms using selection, exchange, insertion			
	• Complexity of algorithms.			
	• Bubble sort algorithms as an example for exchange			
	• Binary sort (quick sort) algorithm.			
	• Heap sort algorithms.			
15	• Revision and class projects demonstration	2	2	
Total hours		30	30	-

4. Course contents / course Competencies mapping matrix

Topic	Course Competencies												
	c1	2c	c3	4c	5c	c6	c7	c8	c9	c10	c11	c12	c13
➤ Introduction <ul style="list-style-type: none"> • Basic Definitions and basic operation. • Data representation and storage, fixed point and floating-point formats. • Applications of data structure. 	1							1					
➤ Arrays <ul style="list-style-type: none"> • Storage of one- and two-dimensional arrays in memory. 		1	1									1	1
Pointer arrays, parallel array storage of records		1	1									1	1
Operations on matrices and associated algorithms		1	1									1	1
Storage of sparse matrices		1	1									1	1
➤ Linear lists Definitions and properties.			1	1								1	1
<ul style="list-style-type: none"> • Stacks, definition, push, pop operation 			1	1								1	1
<ul style="list-style-type: none"> • Queues, definition, insertion, and deletion from circular queues. 			1	1								1	1
➤ Linked Lists: Basic structures and representation					1							1	1
➤ Linked Lists: Traversing and searching linked lists					1							1	1
<ul style="list-style-type: none"> • Insertion and deletion algorithms. 					1							1	1
<ul style="list-style-type: none"> • Two-way lists. And Circular header linked lists and applications 					1							1	1
➤ Trees <ul style="list-style-type: none"> • Basic definitions and structure. 						1						1	1
<ul style="list-style-type: none"> • Representation of binary trees in memory. 				1		1						1	1
<ul style="list-style-type: none"> • Linked representation. 				1	1	1						1	1

• String array representation.				1		1						1	1
• Terminating binary sequence (TBS) representation.						1	1	1	1			1	1
• Transformation of a general tree into binary tree.						1	1	1	1			1	1
• Transferring tree and transversal algorithms using stacks (Preorder, in order, and post order)						1	1	1	1			1	1
Path length and Huffman's tree achieving using Huffman's algorithms						1	1	1	1			1	1
Linear and binary searching										1		1	1
BST						1	1	1	1	1		1	1
Linear Sorting Algorithms											1	1	1
Heap Sort							1	1	1	1	1	1	1
Topics Covering Competences	1	4	7	6	5	9	6	7	6	3	2	23	23

4 - Teaching and Learning and Assessment methods:

Course Competencies	Teaching Methods						Learning Methods		Assessment Method				
	Lecture	Presentations and Discussions	Mini-projects	Tutorials	Problem solving	Computer Programming	Researches and Reports	Modeling and Simulation	Written Exam	Practical Exam	Quizzes	Term papers	Assignments
c1	1			1	1				1		1		1
c2	1					1			1		1		1
c3	1			1	1	1			1		1		1
c4	1		1	1	1		1		1		1		
c5	1	1		1	1				1		1		1
c6	1			1	1	1			1		1		
c7	1	1	1		1				1		1		1
c8	1		1	1	1				1		1		1
c9	1			1	1		1		1		1		1
c10	1	1		1	1				1		1		

c11	1		1		1				1		1		1
c12							1					1	
c13							1					1	
sum	11	3	4	8	10	3	4	0	11	0	11	2	8

5- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Semester Work	Quizzes	3 Quizzes (one each 4 weeks)	12
	Reports/Research	Two reports per semester	8
	Tutorials	3 Assignments per semester	4
	Mini project	Once per semester	16
Written Exam		Sixteenth week	40
Total			100

6- List of references:

6-1 Course notes:

- Data structures theory & Algorithms. (Dr. Khaled Ahmed Morsy)

6-2 Required books

Micheal Main and Water Savitch, (1995), Data Structure and other Objects, Benjamine/Cummings, CA
Adam Drozdek, (2012.), Data Structure and Algorithms in C++, Cengage Learning , 4th edition

6-3 Recommended books:

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

6-4 Periodicals, Web sites, etc.

None

7. Facilities required for teaching and learning:

None.

Course coordinator: Dr. Khaled Morsy
Head of the Department: Dr. Abd Elmoneim Fouda
Date: August 2020

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Course Specification

ELCn112: 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: Computer Engineering and Information Technology Department
Electronic Engineering and Communications Technology Department

Department offering the course: Electronic Engineering & Communication Technology Department.

Date of specifications approval: August, 2020

B - Basic Information

Title: Electrical Circuit Analysis-2 **Code:** ELCn112 **Level:** 2nd Fall
Credit Hours: 3 **Lectures:** 2 **Tutorial/Exercise:** 3 **Total:** 5
Pre-requisite: ELCn111

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 – Competencies

- a1- Understand Basic concepts of power calculations in sinusoidal steady state. (C1, C5)
- a2- Understand Basic concepts of the balanced three-phase circuits. (C5, C9)
- a3- Analyze Principles of mutual inductance. (C7, C9)
- a4- Realize Principles of series and parallel resonance. (C1, C7)
- a5- Implement Laplace transforms theory. (C5, C9)
- a6- Analyze Transfer function. (C1, C5, C7, C9)
- a7- Implement Principles of the two-port circuits. (C5, C9)
- a8- Use the principles of the balanced three-phase circuits. (C1, C5)
- a9- Apply the principles of series and parallel resonance. (C10, C14)
- a10- Apply the Laplace transformation technique to circuit analysis. (C5, C14, C17)
- a11- Use the transfer function. (C1, C5)
- a12- Apply the principles of two-port circuits in circuit's analysis. (C1, C5)
- a13- Estimate the cost of the electricity bill. (C1, C5)
- a14- Improve the power factor for companies and industrial factors. (C9, C14)
- a15- Implement the achieved knowledge to recognize 3-phase balanced circuits and its analysis. (C9, C14)
- a16- Analyze the given realized circuits excited by other than sinusoidal sources. (C1, C5, C9)
- a17- Design the frequency- selective circuit. (C1, C13)
- a18- Implement the techniques of two- port terminated network and analyze it to obtain its characteristics. (C13, C14).
- a19- Communicate effectively through reports and e- mails. (C5, C9, C10)
- a20- Effectively manage tasks, time, and resources. (C9, C10)
- a21- Search for information and engage in life-long self-learning discipline. (C9, C10)

This course contributes in the following program competencies: C1, C5, C7, C9, C10, C13, C14, C17.

3 – Contents

Week	Topic	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	2	6	-
4	Balanced three- phase circuit.	2	6	-
5		2		
5	Introduction to Laplace- Transform.	2	3	-
6	Laplace- Transform circuit analysis.	3	6	-
7	Assessment (Mid- Term)	-	-	-
8	Techniques of circuit analysis using Laplace- Transform.	3	6	-
9		1		
10	Frequency selective circuits.	4	3	-
11		1		
12	Two- ports networks.	1	3	-
13		1		
14	Revision	2		
15		1	1	
		30	45	-

4. Course content/Course Competencies mapping matrix

Topic	Course Competencies																				
	c1	c2	c3	c4	c5	c6	c7	c8	c9	c10	c11	c12	c13	c14	c15	c16	c17	c18	c19	c20	c21
Sinusoidal steady- state analysis.	1	1																			
Techniques of circuit analysis in AC.	1	1			1		1				1					1				1	1
Sinusoidal steady- state power calculation	1	1				1		1		1				1	1			1			
Balanced three- phase circuit.		1			1	1		1	1	1		1			1	1					
Introduction to Laplace- Transform.					1					1		1	1		1		1		1		
Laplace- Transform circuit analysis.					1					1		1	1		1	1					1
Techniques of circuit analysis using Laplace- Transform.					1					1		1									
Frequency selective									1		1			1			1				

circuits.																				
Two- ports networks.																	1	1	1	1
Topics Covering Competencies	3	4	3	2	5	2	1	2	2	5	2	4	2	2	4	3	2	2	2	3

5 – Course Competencies/Teaching, Learning and Assessment methods:

Course Competencies	Teaching Methods						Learning Methods			Assessment Method					
	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Researched, Reports & Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project	Report
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				
c5	1			1	1			1		1	1		1	1	1
c6	1		1	1	1					1	1		1		
c7	1	1		1						1	1		1		
c8	1			1			1			1	1		1		1
c9	1	1	1	1			1	1	1	1	1		1		1
c10	1			1	1					1	1		1		1
c11	1			1	1			1		1	1		1		1
c12	1			1			1	1		1	1				1
c13	1	1	1	1	1		1		1	1	1			1	1
c14	1			1	1		1	1		1	1			1	
c15	1			1				1		1	1		1	1	
c16	1			1						1	1				
c17	1			1	1		1			1	1				1
c18	1							1						1	
c19	1														

Course Competencies	Teaching Methods						Learning Methods			Assessment Method					
	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Researched, Reports & Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project	Report
c20															
c21			1	1			1						1		
Σ	19	3	5	17	9	-	7	10	2	17	17	-	10	8	9

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Semester Work	Quizzes	3 Quizzes (one each 4 weeks)	12
	Reports/Research	Two reports per semester	8
	Tutorials	3 Assignments per semester	12
	Mini project	Once per semester	8
Written Exam		Sixteenth week	40
Total			100

7- List of references:

7-1 Course notes:

- Electrical Circuit Analysis-2 "Theoretical part".

7-2 Required books

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

7-3 Recommended books:

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

7-4 Periodicals, Web sites, etc.

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

8- 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:

Dr. Haytham Gamal.
Dr. Mohamed Ismail

Head of the Department:

Prof. Dr. Shouman S.E.I.

Date:

August, 2020

Course Specification
ELCn113: 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:	August, 2020

B - Basic Information

Title: Electrical Measurements	Code: ELCn113	Level: 1 st Spring	
Credit Hours: 3	Lectures: 2	Tutorial/Exercise: 1	Practical: 2
	Pre-requisite: ELCn111		

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 - Competencies

- c1 Classify and compare the different system of units, analyze the measurement errors, accuracy classes and standards of measuring instruments (C1).
- c2 Investigate the construction of analog measuring instruments (C12, C13).
- c3 Explain the principles of operation and evaluate the performance of analog measuring instruments (C14, C15).
- c4 Deduce the principles of design, properties, procedures, and error analysis of different methods used for measuring electrical quantities (such as power, resistors, and storage elements) (C4).
- c5 Select and analyze the most appropriate electrical measuring circuit and instruments for a given electric measurement (V, I, P, R, or Z) (C2, C6).
- c6 Deduce the torque equation of the electrical measuring instruments (C1, C2).
- c7 Evaluate the properties of the electrical measuring instruments (C3, C9).
- C8 Investigate the effect of the measuring instruments on the accuracy of electrical measurements (C5, C7).
- C9 Analyze the resulting error of the electrical measurements (C10).
- c10 Design, assemble, and operate the most suitable electrical measuring circuit diagram from the measuring errors point of view (C3).

c11 Calculate, and analyze the resulting systematic errors (C2, C14).

c12 Use relevant electrical laboratory equipment and analyze the results correctly (C13).

C13 Present data and results orally and in written form (C6, C10).

C14 Prepare and present technical reports (C5, C9).

This course contributes in the following program competencies: **C1, C2, C3, C4, C5, C6, C7, C9, C10, C12, C13 & C14**

3 – Contents

Week	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-dynamic Instruments.	2	-	2
➤	Galvanometers, and DC Multi-Range Voltmeters, and Ammeters.	4	2	4
➤	AC Rectifier Type Voltmeters and Ammeters.	2	-	2
➤	Assessment (Mid- Term)	-	-	-
➤	Series and Multi-Range Ohmmeters.	2	1	2
➤	DC and AC Electro-dynamic Voltmeters, Ammeters, and Wattmeter's.	4	2	4
➤	DC and AC Power Measurements.	-	1	2
➤	Accurate measurements of very low, low, High, and very High Resistances.	4	2	4
➤	Capacitance and Inductance Measurements Using AC Bridges.	4	2	2
➤	Impedance measurements using resonance method.	2	1	2
➤	Revision	1	1	1
➤	Revision	1	-	1
Total hours		30	15	30

4. Course content/Course Competencies mapping matrix

Topic	Course Competencies													
	c1	c2	c3	c4	c5	c6	c7	c8	c9	c10	c11	c12	c13	c14
1. Units, Dimensions, and Standards.	1													1
2. Types and Analysis of Errors in Electrical Measurements.	1							1	1	1	1			
3. Fundamentals of Analogue Electrical Measuring Instruments.		1				1	1			1				
4. Deflection Type Permanent Magnet Moving Coil and Electro-dynamic Instruments.		1				1	1	1						
5. Galvanometers, and DC Multi-Range Voltmeters, and Ammeters.	1	1	1					1						
6. AC Rectifier Type Voltmeters and Ammeters.			1			1								
7. Series and Multi-Range Ohmmeters.			1									1		
8. DC and AC Electro-dynamic Voltmeters, Ammeters, and Wattmeters.		1	1									1		
9. DC and AC Power Measurements.					1				1					
10. Accurate measurements of very low, low, High, and very High Resistances.				1	1				1				1	
11. Capacitance and Inductance Measurements Using AC Bridges.				1	1				1	1			1	
12. Impedance measurements using resonance method.				1	1				1					
Topics Covering Competencies	3	4	4	3	4	3	2	3	5	3	1	2	2	1

5 – Course Competencies/Teaching and Learning and Assessment methods:

Course Competencies	Teaching Methods					Learning Methods			Assessment Method				
	Lecture	Tutorials	Problem solving	Laboratory & Experiments	Discussions & seminars	Self - Learning	Research & Report	Assignments	Written Exam	Practical Exam	Quizzes	Assignments	Research & Report
c1	1	1	1	1		1		1	1	1			1
c2	1	1	1			1						1	
c3	1	1					1		1				
c4	1	1	1	1	1		1	1	1	1			1
c5	1		1	1	1		1		1	1			
c6	1	1	1			1	1	1			1	1	
c7	1	1	1					1	1	1		1	
c8	1	1		1					1	1		1	

c9		1		1					1	1		1	
c10			1	1				1	1	1	1		
c11			1	1				1	1	1		1	
c12				1						1			1
c13													
C14		1		1		1		1		1	1		
Σ	8	9	8	10	2	4	4	7	9	9	3	7	3

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Semester Work	Quizzes	3 rd and 4 th Weeks	10
	Reports	Two reports per semester	Bonus 2 deg.per report
	Assignments	2 Assignments per semester	10
Practical Exam		Fifteenth week	20
Written Exam		Sixteenth week	40
Total			100

7- List of references:

7-1 Course notes:

- Shouman, S. E.I., (2019) ELCN 113, *Electrical Measurements*, Cairo, Egypt.
- Shouman, S.E.I., (2019) ELCN 113: *Electrical Measurements (Lab.)*, Cairo, Egypt.

7-2 Required books: Non.

7-3 Recommended books:

- Morris, S.A. and Langari, R., (2016) *Measurement and Instrumentation Theory and Application*, Academic Press, London Wall, UK.
- Hefrick, A.D. and Cooper, W.D., (2012) *Modern Electronic Instrumentation and Measurement Techniques*, PHI Learning, New Delhi, India.

7-4 Periodicals, Web sites, etc.

- IEEE Transactions on Instrumentation and Measurement, Last accessed November 15, 2020.
- <http://folk.uio.no/trulsn/images/Electrical-measurements.pdf>, Last accessed November 20, 2020.
- https://lecturenotes.in/materials/14532-electrical-measurements-and-measuring-instruments?utm_source=subjectpage&utm_medium=web&utm_campaign=materi alpae, last visited January 2021.

Course coordinator: Prof. Dr. Shouman S.E.I.

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

Date: August 2020

8- Facilities required for teaching and learning:

- Electrical and Electronic Lab.
- Computer, and data show.

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Course Specification

ELCn115: Semiconductors 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 Communication Technology Department
Computer Engineering and Information Technology Department

Department offering the course:

Basic Science Department

Date of specifications approval:

August 2020

B - Basic Information

Title: Semiconductors for Microelectronics

Code: ELCn115

Level: 1st Spring

Credit Hours: 2

Lectures: 1

Tutorial/Exercise: 2

Practical: 1

Pre-requisite: ELCn114

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 semiconductor materials. Also the operation of and applications of PN junction (diode). They must study the characteristics (forward and revers bias) of rectifier zone and tunnel diodes, Ohmic contact, heterojunction, bipolar junction transistor (BJT), junction field effect transistor (JFET), metal oxide semiconductor transistor (MOSFT). They have to study physical structure, basic configuration, I-V characteristic and applications of semiconductors.

2 – Competencies

- c1- Explain the theoretical background of semiconductor materials. (C1, C14)
- c2- Study crystal structure and band structure of semiconductors. (C1, C14)
- c3 - Classify and compare the difference between intrinsic and doped semiconductor and carrier transport. (C2, C14)
- c4 - Deduce mathematical relations describing the conductivity of intrinsic and extrinsic semiconductors. (C1, C2)
- c5 - Analyze, the structures, characteristics, principle of operation and applications of PN junction. (C1, C14)
- c6 - Use experimental facilities to explain the characteristics (forward and revers bias) of diodes. (C13, C14)
- c7- Apply the theoretical background and experimental tools to understand operation of transistor. (C1, C2)
- c8 - Use experimental facilities to design, operate test, and maintain different types of diodes. (C3, C4, C14)
- c9 - Work in a team and involve in group discussion and seminars. (C2, C3, C7)
- c10 - Design amplifiers and transformers. (C5, C10)
- c11 - Communicate effectively and present data and results orally and in written form. (C5, C8, C14)
- c12 - Search for information's in references and in internet. (C5, C9)
- c13 - Use ICT facilities in presentations. (C8, C9, C14)

c14 - Practice self-learning and communicate effectively orally and in written form. (C7, C8)

This course contributes in the following program competencies: **C1, C2, C3, C4, C5, C6, C7, C8, C9, C10, C11, C12, , C13, C14.**

3 – Contents

week	Topic	Lecture hours	Tutorial hours	Practical hours
	➤ Introduction to semiconductors			
1	<ul style="list-style-type: none"> Classify different types of semiconductors Crystal structure and band structure of semiconductor 	2	1	2
2	<ul style="list-style-type: none"> Conduction in different types of semiconductors 	2	1	2
	➤ P-N junction			
3	<ul style="list-style-type: none"> Forward biased Revers biased and breakdown 	2	1	2
	➤ Diodes			
4	<ul style="list-style-type: none"> Rectifier's diode 	2	1	2
5	<ul style="list-style-type: none"> Zener diode 	2	1	2
6	<ul style="list-style-type: none"> Solar cell 	2	1	2
7	Midterm exam	2		
8	<ul style="list-style-type: none"> Tunnel diode 	2	1	
9	➤ Transistors	2		
10	➤ Bipolar junction transistor (BJT)	2	1	2
11	<ul style="list-style-type: none"> Junction field effect transistor (JFET) 	2	1	2
12,13	<ul style="list-style-type: none"> Metal oxide semiconductor transistor (MOSFT) 	4	2	2
14,15	<ul style="list-style-type: none"> Physical structure, basic configuration and I-V characteristics and some semiconductor applications 	4	2	2
•	• Total hours	30	13	20

4. Course content/Course Competencies mapping matrix

Topic	Course Competencies													
	c1	c2	c3	c4	c5	c6	c7	c8	C9	c10	c11	c12	c13	c14
Introduction to semiconductors	1	1		1						1	1	1		1
Classify different types of semiconductors	1	1	1	1						1	1	1		1
Crystal structure and band structure of semiconductor	1	1	1	1						1	1	1		1
Conduction in different types of semiconductors	1	1	1	1						1	1	1		1
P-N junction	1	1	1	1	1	1		1	1	1	1	1	1	1
Forward and revers biased and breakdown	1	1	1		1	1	1	1	1	1	1	1	1	1

Rectifiers diode	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Zener diode	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Tunnel diode	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Solar cell	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Application of diodes	1	1	1		1	1	1		1	1	1	1	1	1
Schottky diode	1	1	1		1	1	1		1	1	1	1	1	1
Tunnel diode	1	1	1		1	1	1		1	1	1	1	1	1
Transistor	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Bipolar junction transistor (BJT)	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Junction field effect transistor (JFET)	1	1	1		1	1	1	1	1	1	1	1	1	1
Metal oxide semiconductor transistor (MOSFT)	1	1	1		1	1	1	1	1	1	1	1	1	1
Physical structure, basic configuration and I-V characteristics	1	1	1		1	1	1	1	1	1	1	1	1	1
Topics Covering Competences	18	18	17	11	14	14	13	11	14	18	18	18	14	18

5 – Course Competencies/Teaching, Learning and Assessment methods:

Course Competences	Teaching Methods				Learning Methods	Assessment Method		
	Lecture	Discussions and seminars	Tutorials	Problem solving	Research and Reports	Written Exam	Quizzes	Assignments
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
c7	1	1	1	1	1	1	1	1
c8	1	1	1	1	1	1	1	1
c9	1	1	1	1	1	1	1	1
c10	1	1	1	1	1	1	1	1
c11	1	1	1	1	1	1	1	1
c12	1	1	1		1			
c13	1	1	1		1			
c14	1	1	1		1			
Σ	14	14	14	11	14	11	11	11

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Semester Work	Quizzes	Bi-Weekly	20
	Reports/Research		
	Assignments		
Practical Exam		Fifteenth week	20
Written Exam		Sixteenth week	40
Total			100

7- List of references:

7-4 Course notes:

A. H. Serag, S. A. Eladly (2020), Semiconductors for Microelectronics, Lectures notes, Modern Academy.

7-2 Required books:

Sze, S. (2012) Semiconductor Devices Physics & Technology, USA: John Wiley & Sons.

Joachim Piprek (2013) Semiconductor Optoelectronic Devices, India: Academic Press.

7-11 Recommended books:

Jaspri 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.

7-4 Periodicals, Web sites, etc.

[www. Physics.exchange.com](http://www.Physics.exchange.com)

www.iop.org.com

8- Facilities required for teaching and learning:

- Semiconductors Lab.
- Library.
- Internet.

Course coordinator:

Dr. Abeer Serag E'-Deen

Head of the Department:

Associat Professor / Ashraf Taha

EL-Sayed

Date:

August 2020

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Course Specification

ENGN213a : Advanced Computer Systems Implementation.

A- Affiliation

Relevant program:	Computer Engineering and Information Technology BSc Program Electronic Engineering and Communication Technology BSc Program Manufacturing Engineering and Production Technology BSc Program
Department offering the program:	Computer Engineering and Information Technology Department Electronic Engineering and Communication Technology Department Manufacturing Engineering and Production Technology Department
Department offering the course:	Computer Engineering and Information Technology Department
Date of specifications approval:	August 2020

B - Basic Information

Title: Advanced Computer Systems Implementation	Code ENGN213a	Level: 2 rd 3 rd Fall, spring
Credit Hours: 3	Lectures: 2	Tutorial/Exercise: -
	Pre-requisite: CMPn010	Practical: -2

C - Professional information

1 – Course Learning Objectives:

By the end of this course, the students should have gained the planned competences related to the construction and operation of the computer technology from various aspects. The course provides overview of Desktop and Laptop PC Hardware, software and programming tools, as well as networking concepts. Installation and configuration of Windows, and Other operating Systems: Linux, Android shall also discuss. The course enables the student to establish internal and external networking and how to protect them from various types of attacks. We also offer an overview of artificial intelligence and Machine learning

2 - Competencies

- c1. Recognize and identify PC hardware specifications that suit the required applications according to various disciplines (C6,C13)
- c2. Recognize and identify different platforms of system software that suite the hardware and the required application software (C2,C3)
- c3 Investigate the effect of different types of memory and the methods used to store data according to the different architecture of modern computers (C7)
- c4. Concepts of Different platforms (Windows, Linux, and Android) (C13)
- c5. recognize and identify the structure of computer architecture, network structure and evaluate the performance of the system (C11)
- c6. Use a wide range of analytical tools, techniques, and software packages pertaining for programming the computer and security attacks and protection tools (C5)
- c7. Collaborate effectively with different uses of artificial intelligence, Machine Learning, and how to include it in all disciplines(C6,C13)
- c8. Communicate effectively and present data and results orally and in written form. Use ICT facilities in presentations, and manage resources efficiently(C8)
- c9. Practice self-learning, Search for information's in references, journals and in internet (C7,C10)
- c10. Use experimental facilities to Practice research techniques and methods of investigation as an inherent part of learning (C5)

for Electronic Engineering and Communication Technology and manufacturing engineering and production technology BSc Programs

- c1. Recognize and identify PC hardware specifications that suit the required applications according to various disciplines (C6,C15)
- c4. Concepts of Different platforms (Windows, Linux, and Android) (C15)
- c5. recognize and identify the structure of computer architecture, network structure and Evaluate the performance of the system (C13)
- c7. Collaborate effectively with different uses of artificial intelligence, Machine Learning, and how to include it in all disciplines(C6,C15)

This course contributes in the following program competencies for **Computer Engineering and Information Technology BSc Program**

: C2, C3, C5, C6, C7, C8, C10, C11, C13, &C14

This course contributes in the following program competencies for **Electronic Engineering and Communication Technology and manufacturing engineering and production technology BSc Programs**
C2, C3, C5, C6, C7, C8, C10, C13, &C15

SN	Topic	Lecture hours	Practical hours
1	Introduction to the numbering systems. Introduction to basic personnel computer hardware components.	2	2
2	Personnel Computer peripherals equipment hardware (screens, printers, hard disks,) Different types of PC software and programming tools	2	2
3	Different platforms (Windows, Linux, and Android) Overview of Windows, Linux, and Android Operating systems	2	2
4	Introduction to PC internal and external Memory	2	2
5	How data is being stored and organized in PC computer's memory	2	2
6	PC networking. (Definitions, types, end to end and network components, protocols, vendors, courses, simple labs)	2	2
7	Assessment (Midterm exam)	2	
8	PC security attacks and protection tools	2	2
9	Gentle introduction to PC: hardware, Software, and network architecture	2	2
10	Choosing and running a pilot project	2	2
11	Data base (définitions, types, vendrons, courses, simple implementation)	2	2
12	Choosing and running a pilot project	2	2
13	AI, Machine learning,	2	2
14	Data Science.	2	2
15	Choosing and running a pilot project	2	2
Total hours		30	30

4. Course content/Course Competencies mapping matrix

Topic	c1	c2	c3	c4	c5	c6	c7	c8	c9	c10
Introduction to the numbering systems. Introduction to basic personnel computer hardware components.	1	1	1							

Personnel Computer peripherals equipment hardware (screens, printers, hard disks,)	1			1	1	1	1			
Different types of PC software and programming tools										
Different platforms (Windows, Linux, and Android)		1		1		1		1	1	1
Overview of Windows, Linux, and Android Operating systems										
Introduction to PC internal and external Memory	1		1		1	1	1			
How data is being stored and organized in PC computer's memory	1	1		1			1			
PC networking. (Definitions, types, end to end and network components, protocols, vendors, courses, simple labs)	1				1			1	1	1
PC security attacks and protection tools		1		1	1			1	1	1
Assessment (Midterm exam)	1	1	1	1	1					
Gentle introduction to PC: hardware, Software, and network architecture	1	1			1					
Choosing and running a pilot project			1	1				1	1	1
Data base (definitions, types, vendors, courses, simple implementation)		1	1			1		1	1	1
Choosing and running a pilot project			1	1		1		1	1	1
AI, Machine learning, Data Science.						1	1	1	1	1
Choosing and running a pilot project			1	1		1	1	1	1	1
Topics Covering Competences	7	7	7	8	6	7	5	8	8	8

5 - Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods						Learning Methods			Assessment Method					
	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Researched, Reports &	Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report
c1	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
c4	1	1		1	1	1			1	1	1	1		1	1
c5	1	1		1	1	1			1	1	1	1		1	
c6	1	1		1		1			1	1	1	1		1	1
c7	1	1		1	1	1			1	1	1	1		1	1
c8		1	1			1		1	1		1	1			1
c9	1	1		1		1			1	1	1	1		1	1
c10	1	1		1		1			1	1	1	1		1	1
c11		1	1			1		1			1				1
Σ	9	11	2	9	5	10	0	2	9	9	10	10	0	9	8

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Semester Work	Quizzes	3 Quizzes (one each 4 weeks)	6
	Reports/Research	Two reports per semester	4
	Tutorials	3 Assignments per semester	6
	Mini project	Once per semester	4
Practical Exam		Fifteenth week	20
Written Exam		Sixteenth week	40
Total			100

7- List of references:

7-1 Course notes:

non

7-2 Required books

- 1.W. Stallings, Computer organization and architecture: designing for performance, Tenth edition. Boston: Pearson-Prentice Hall, 2016.
- 2.R. D. Necaie, Data structures and algorithms using Python. Hoboken, N.J: Wiley, 2011.
- 3.R. Elmasri and S. Navathe, Fundamentals of database systems, Seventh edition. Hoboken, NJ: Pearson, 2016.
- 4.E. Matthes, Python crash course: a hands-on, project-based introduction to programming. San Francisco: No Starch Press, 2016.

7-3 Recommended books: None

7-4 Periodicals, Web sites, etc.

<https://www.eecs.berkeley.edu/Courses/Data/188.html>
<http://www.GenLib.org/> .
<http://www.talkthecold.com/bizgoogle/> .<http://www.SCI-hub.org/> .
<http://www.scrius.com/>
<https://logic.ly/demo>
<https://www.netacad.com/>
<https://www.geeksforgeeks.org/>
<https://www.coursera.org/>
<https://www.udacity.com/>
<https://www.udemy.com/>

8- Facilities required for teaching and learning:

- Computer Lab.
- Computer, Data show and Computer package.
- Internet and communication facility.

Course coordinator: Dr. Seham Ebrahim
Head of the Department: Dr. Abd Elmoneim FoudA
Date: August 2020

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Course Specification

MTHn104: Mathematics -4(Advanced Calculus)

A- Affiliation

Relevant program:	Electronic Engineering and Communication Technology BSc Program Computer Engineering and Information Technology BSc Program
Department offering the program:	Electronic Engineering and Communication Technology Department Computer Engineering and Information Technology Department
Department offering the course:	Basic Science Department
Date of specifications approval:	August 2020

B - Basic Information

Title: Advanced Calculus	Code: MTHn104	Level: 1 st	
Credit Hours: 3	Lectures: 2	Tutorial/Exercise:3	Practical: ---
	Pre-requisite: MTHn001		

C - Professional information

1 – Course Learning Objectives:

By the end of this course, the students should have gained the planned competencies (knowledge, skills, and attitudes) related to 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 triple integrals to integrate the function of several variables in different coordinates.

2 – Competencies

- c1- Identify applications of partial derivatives to physical and Engineering problems. (C1, C5)
- c2- Explain rule of double integral. (C1, C5)
- c3- Identify rule of triple integral. (C1, C5)
- c4- Explain basic concepts of cylindrical coordinates. (C1, C5)
- c5- Explain basic concepts of spherical coordinates. (C1, C5)
- c6- Uses of vector calculus analysis in applications. (C1)
- c7- Apply applications of partial derivatives to Engineering problems. (C1, C9)
- c8- Choose the right decision by choosing the best kind of multiple Integration in applications. (C1, C9, C10)
- c9- Use vector analysis to evaluate line integrals and surface integrals for a vector function. (C1, C9)
- c10- Apply multiple Integration in electronics. (C7, C9)
- c11- Apply vector analysis to find the work done by the force field in electrical problem. (C7, C9)
- c12- Communicate effectively. (C8)
- c13- Search for information. (C9, C10)

This course contributes in the following program competencies: C1, C5, C7, C8, C9, C10

3 – Contents

week	Topic	Lecture hours	Tutorial hours	Practical hours
	➤ Functions of several variables; partial derivatives, Directional derivatives, Taylor polynomials, Lagrange multiplier max, and min. of functions			
1	• Functions of several variables	2	3	—
2	• partial derivatives	3	4	—
3	• Directional derivatives	2	3	—
4	• Taylor polynomials	2	3	—
5	• Lagrange multiplier max, and min. of functions	3	4	—
	➤ Multiple integrals (double, triple integrals)			
6	• Double integrals	4	6	—
7	• Mid term	2	3	—
8,9	• Triple integrals	4	6	—
	➤ Polar coordinates, cylindrical coordinates and spherical coordinates			
10	• Polar coordinates, cylindrical coordinates	2	3	—
11	• spherical coordinates	2	3	—
	➤ Green's theorem, Gauss's and Stocks theorems.			
12,13	• Vector Calculus	3	6	—
14,15	• Green's theorem, Gauss's and Stocks theorems.	1	1	—
Total hours		30	45	—

4. Course content/Course Competencies mapping matrix

Topic	Knowledge						Skills					Attitude	
	c1	c2	c3	c4	c5	c6	c7	c8	c9	c10	c11	c12	c13
Functions of several variables	1												1
Partial derivatives	1						1						1
Directional derivatives	1						1						1
Taylor polynomials	1						1						1
Lagrange multiplier max, and min. of functions	1						1					1	1
Double integrals		1				1		1		1	1	1	1
Triple integrals			1			1		1		1	1	1	1
Polar coordinates, cylindrical coordinates				1		1		1		1	1	1	1
Spherical coordinates					1	1		1		1	1	1	1
Vector Calculus		1				1			1		1		1
Green's theorem, Gauss's and Stocks theorems.		1	1	1	1	1			1		1	1	1
Topics Covering Competences	5	3	2	2	2	6	4	4	2	4	6	6	11

5 - Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods				Learning Methods	Assessment Method		
	Lecture	Discussions and seminars	Tutorials	Problem solving	Research and Reports	Written Exam	Quizzes	Assignments
c1	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
c5	1		1	1		1	1	1
c6	1	1	1	1		1	1	1
c7	1	1		1		1	1	1
c8	1	1	1	1		1	1	1
c9	1	1	1	1	1	1	1	1
c10	1	1			1			
c11	1	1			1			
c12		1	1		1			1
c13	1			1	1			1
Σ	12	10	9	10	8	8	8	11

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Semester Work	Quizzes	Bi-Weekly	40
	Reports/Research		
	Assignments		
Written Exam		Sixteenth week	40
Total			100

7- List of references:

7-1 Course notes:

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

7-2 Required books:

Friedman, A. (2009) Advanced Calculus. Dover Publications

7-4 Recommended books:

Kreyszig, E. (2010) Advanced Engineering Mathematics. John Wiley, New York.

7-4 Periodicals, Web sites, etc.

www.mathwords.com.

www.khanacademy.org/math

www.sosmath.com

8- Facilities required for teaching and learning:

- Library.

- High speed internet and communication facilities for distance learning

Course coordinator: associated Professor / Ashraf Taha EL-Sayed

Head of the Department: associated Professor / Ashraf Taha EL-Sayed

Date: August 2020

Summer Training

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Course Specification

CMPn160: Summer Training Level 1

A- Affiliation

Relevant program/s:	Computer Engineering and Information Technology BSc Program
Department offering the program:	Computer Engineering and Information Technology Department
Department offering the course:	Computer Engineering and Information Technology Department
Date of specifications approval:	August 2020

B - Basic Information

Title: Summer Training Level 1 **Code:** CMPn160 **Level:** (2), Second Summer

Credit Hours: -

Pre-requisite: ELCn060

Contact Hours: **Lectures:** **Tutorial:** none **Laboratory:** **Total:** 10 days

C - Professional Information

1 – Course Learning Objectives:

The training aims to develop the software skills in such a way to handle friendly object-oriented programming OOP tools with its 4 concepts (Abstraction, Encapsulation, Inheritance and Polymorphism). Also, the student capable of handling firmware for embedded microcontrollers.

2 - Competencies

- c1 - Identify and accept knowledge of operational practice, engineering codes and design techniques relevant to the computer subjects. (C1, C5)
- c2- Explain basic concepts and characteristics of OOP language (C1, C3)
- c3- Utilize basic concepts of contemporary technologies to handle friendly OOP tools with its 4 concepts (Abstraction, Encapsulation, Inheritance and Polymorphism). (C2, C4)
- c4. Use a wide range of analytical tools, techniques, and software packages pertaining to the discipline and develop required computer programs (C17)
- c5- Investigate on a mini project for Innovating solutions based on non-traditional thinking and the use of latest technologies to investigate a physical problem, then perform basic concepts and structure of generic and modern OOP computing language e.g., java, JS, Python...etc.(C20)
- c6- Design different mini project based on the different learned skills modern OOP computing language e.g., java, JS, Python...etc. (C11)

- c7- Develop and enhance thinking methods of modern OOP computing language (C11, C12)
- c8- Manipulate different mini project based on the different learned skills modern OOP computing language to estimate and measure the performance of the different learned topics, and evaluate its suitability for a specific application (C12, C13)
- c9- Confirm the different programming concepts if effective way via mini-project by practical cases to estimate and measure the performance of the different learned topics, and evaluate its suitability for a specific application (C12, C13)
- This course contributes in the following program competencies: C1, C2, C3, C4, C5, C11, C12, C13, C17& C20

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical days
• Object Oriented Programming Principles. Getting started with OOP language Science, scientific computing with tools and workflow creating and manipulating numerical data, and plotting		-	2
• Control statements (conditional and loop statements)		-	1
• Arrays, Functions and Classes		-	2
• Handling data and files, debugging and optimizing codes.		-	2
• Dealing with string class and GUI classes		-	1
• Mini project utilizing (basic concepts and GUI, figure handling and plotting capabilities),		-	2
•		-	
Total days		-	10

4. Course content/Course Competencies mapping matrix

Topic	c1	c2	c3	c4	c5	c6	c7	c8	c9
Object Oriented Programming Principles. Getting started with OOP language Science, scientific computing with tools and workflow creating and manipulating numerical data, and plotting	1		1	1				1	1
Control statements (conditional and loop statements)	1	1		1			1		
Arrays, Functions and Classes	1	1		1				1	1
Handling data and files, debugging and optimizing codes. Dealing with string class and GUI classes	1		1		1	1	1	1	1

Mini project seminar analysis and design utilizing overall concepts of training course capabilities	1	1	1	1	1	1	1	1	1
Topics Covering Competences	5	3	3	4	2	2	3	4	4

5 - Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods						Learning Methods			Assessment Method					
	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Researched, Reports &	Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report
c1		1		1		1					1				1
c2		1		1	1	1		1			1				1
c3		1		1	1	1					1				1
c4		1		1		1		1			1				1
c5		1		1	1	1	1	1			1			1	1
c6		1	1	1	1	1					1				1
c7		1	1	1		1	1	1	1		1			1	1
c8		1	1	1		1	1	1	1		1			1	1
c9		1	1		1		1	1	1					1	1
Σ	9	9	4	8	5	8	4	6	3		8			4	9

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Practical Exam	10 days	Pass or Fail
Total		Pass or Fail

6- List of references:

6-1 Course notes: Summer Training Level 1

6-2 Required books

- EuroScipy tutorial team Python Scientific lecture notes 2013.

6-3 Recommended books:

- Y. Daniel Liang, Introduction to Java Programming, Eighth Edition, 2011
- Jan Erik Solem ,Programming Computer Vision with Python, cc creative common,2012

- Dung Nguyen, Stephen Wong Principles of Object-Oriented Programming, - Rice University , 2008

7- Facilities required for teaching and learning:

- Computer lab equipped with computers with software installed and data show facility.

Course coordinator:	Training office
Head of the Department:	Dr. Abdelmoneim Fouda
Date:	August 2020

Fifth Semester (Level two)

Modern Academy

for Engineering and Technology in Maddi



Course Specification

CMPn210: Engineering Computer Applications.

A- Affiliation

Relevant program:

Computer Engineering and Information Technology BSc Program
Electronic Engineering and Communication Technology BSc Program

Department offering the program:

Computer Engineering and Information Technology Department
Electronic Engineering and Communication Technology Department

Department offering the course:

Computer Engineering and Information Technology Department

Date of specifications approval:

August 2020

B - Basic Information

Title: Engineering Computer Applications

Code: CMPn210

Level: 2nd 3rd Fall, spring

Credit Hours: 3

Lectures: 2

Tutorial/Exercise: 1

Practical: 2

Pre-requisite: CMPn010

C - Professional information

1 – Course Learning Objectives:

MATLAB is a high-level language and interactive environment that enables you to perform computationally intensive tasks and computer applications faster than with traditional programming languages such as C, C++, and Fortran.

By the end of this course, the students should have gained the planned competences (knowledge, skills and attitudes) related to the construction and operation of MATLAB software package and its different toolbox. The students should compete on handling and utilizing the different features, concepts and operations of such package in many applications. Moreover, guided with this interactive environment software package the students should be able to handle, develop and enhance modules and programs in many applications. Different scientific applications will be demonstrated and solved including: - basic science problems (math, and physics), electrical/electronic circuit analysis, and some digital control applications. Moreover; Mathematical implementation and solving problem is an easy way to be performed via MATLAB. Different numerical methods will be investigated including: methods of Least square curve fitting, methods of numerical interpolation using Newton and Lagrange methods, methods of numerical Integration, and methods of numerical solution of linear and non-linear equation. The students should have gained the planned competences (knowledge, skills and attitudes) related to the construction and operation of MATLAB software package and its related mathematical toolbox and built-in function to implement different numerical algorithms

2 - Competencies

- c1. Identify the different features, basic operations, and deferent items of MATLAB desktop environments. (C1,C5)
- c2. Explain, formulate, and solve complex engineering problems utilizing High-level language for technical computations (Mathematical, logical, Array Operations, Vectors and Matrix Operations in MATLAB) (C1,C3)
- c3. Utilize contemporary technologies, codes of practice and standards to develop environment for managing code, files, and data (MATLAB programming features via script M-files, function files, and Simulink models)) (C2,C4)
- c4. Communicate effectively – graphically, in writing suitable code using contemporary tools (handling MATLAB plotting and Graphing capabilities, 2-D and 3-D graphics functions for visualizing data) (C8)
- c5. Investigate on a MATLAB program in similar way to other computer programming, to build specific functions for integrating MATLAB based algorithms with external applications and languages (such as C++, Fortran, and Microsoft Excel) (C3)
- c6. Design and implement: elements, modules, sub-systems or systems in electrical/electronic/digital engineering using technological and professional tools (MATLAB applications in the field of circuit theory including DC analysis, transient analysis, AC Analysis and network functions of an electrical circuit). (C11)
- c7. Manipulate SIMULINK models to estimate and measure the performance of an electrical/electronic/digital system and circuit under specific input excitation, and evaluate its suitability for a specific application (C12, C13)
- c8. Use a wide range of analytical tools, techniques, and software packages pertaining to the discipline and develop required computer programs to solve mathematical functions for linear algebra, statistics, Fourier analysis, filtering, optimization, and numerical integration (C11, C13).)
- c9. Investigate on a mini project for Innovating solutions based on non-traditional thinking and the use of latest technologies to investigate a physical problem, deduce its mathematical model, then perform the MATLAB program to solve (C10)

for Electronic Engineering and Communication Technology and BSc Programs

- c6. Design and implement: elements, modules, sub-systems or systems in electrical/electronic/digital engineering using technological and professional tools (MATLAB applications in the field of circuit theory including DC analysis, transient analysis, AC Analysis and network functions of an electrical circuit). (C11)
- c7. Manipulate SIMULINK models to estimate and measure the performance of an electrical/electronic/digital system and circuit under specific input excitation, and evaluate its suitability for a specific application (C12, C13)
- c8. Use a wide range of analytical tools, techniques, and software packages pertaining to the discipline and develop required computer programs to solve mathematical functions for linear algebra, statistics, Fourier analysis, filtering, optimization, and numerical integration (C11, C13).)

This course contributes in the following program competencies for [Computer Engineering and Information Technology BSc Program](#)

: C1, C2, C3, C4, C5, C8,C10, C11, C12, & C13

This course contributes in the following program competencies for [Electronic Engineering and Communication Technology BSc Programs](#)

: C1, C2, C3, C4, C5, C8, C10, C13, C14, & C15

3 – Contents

SN	Topic	Lecture hours	Tutorial hours	Practical hours
1	Introduction to MATLAB, MATLAB basic features and performing fundamental operations including: data types, variables, Matrix Operations, Array Operations Vectors and data analysis	1	1	2
2	Handling different plotting Commands, logarithmic plots. Adding plots to an existing graph, controlling the axes	2	1	2
3	Control Statements M – script files, and function files, data and file handling including input/output/saving data files. Handling audio and video files	3	2	3
4	Utilizing MATLAB in the field of electric and electronic circuits Applications including DC /AC circuits	2	2	2
5	transient Analysis, frequency response analysis using MATLAB	2	2	2
6	MATLAB Special topics investigations including: - Fourier analysis, Semiconductor physics, Operational Amplifier	2		2
7	Assessment (midterm exam)	2	1	2
8	Handling MATLAB toolbox and use symbols in MATLAB, utilize it to solve polynomials, linear and non-linear equation and Gauss-Seidel method using MATLAB.	2	1	2
9	Computer Application using MATLAB-Mathematical Models to handle polynomial interpolation and error estimation in the interpolation formula Lagrange interpolation.	2		2
10	Computer Application using MATLAB to handle Least square curve fitting and linear Approximation of a function	2		2
11	Computer Application using MATLAB to solve Newton – interpolation, and Hermite interpolation methods using MATLAB	2	1	4
12	application of numerical Integration, Newton-Cotes formula, composite Newton-cotes formula, and Romberg – stifflé integration methods using MATLAB	2	1	
13	Introduction to Simulink	2	1	2
14	Developing Simulink models for different digital systems, also; solving different mathematical and numerical problems	2	1	2
15	Mini project seminar analysis and design utilizing overall concepts of MATLAB capabilities in different fields	2	2	2
Total hours		30	16	30

4. Course content/Course Competencies mapping matrix

Topic	c1	c2	c3	c4	c5	c6	c7	c8	c9
Introduction to MATLAB, MATLAB basic features and performing fundamental operations including: data types, variables, Matrix Operations, Array Operations Vectors and data analysis	1							1	1
Handling different plotting Commands, logarithmic plots. Adding plots to an existing graph, controlling the axes	1	1							
Control Statements M – script files, and function files, data and file handling including input/output/saving data files. Handling audio and video files	1			1					1
Utilizing MATLAB in the field of electric and electronic circuits Applications including DC /AC circuits			1		1	1			1
transient Analysis, frequency response analysis using MATLAB		1	1		1				1
MATLAB Special topics investigations including: - Fourier analysis, Semiconductor physics, Operational Amplifier		1	1			1			1
Handling MATLAB toolbox and use symbols in MATLAB, utilize it to solve polynomials, linear and non-linear equation and Gauss-Seidel method using MATLAB.		1	1				1		
Computer Application using MATLAB- Mathematical Models to handle polynomial interpolation and error estimation in the interpolation formula Lagrange interpolation.		1	1		1				
Computer Application using MATLAB to handle Least square curve fitting and linear Approximation of a function	1		1			1	1		
MATLAB application of numerical Integration, Newton-Cotes formula, composite Newton-cotes formula, and Romberg – stifflé integration methods			1			1	1	1	1
Introduction to Simulink	1	1	1	1	1	1	1	1	1
Topics Covering Competences	5	6	8	2	4	5	4	3	7

5 - Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods						Learning Methods			Assessment Method					
	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Researched, Reports &	Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report
c1	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
c4	1	1		1		1		1		1	1	1			1
c5	1	1		1	1	1	1	1		1	1	1	1	1	1
c6	1	1	1	1	1	1				1	1	1	1		1
c7	1	1	1	1		1	1	1	1	1	1	1	1	1	1
c8	1	1	1	1		1	1	1	1	1	1	1		1	1
c9	1	1	1		1		1	1	1					1	1
Σ	9	9	4	8	5	8	4	6	3	8	8	8	5	4	9

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Practical exam		12 th Week	20
Semester Work	Quizzes	3 Quizzes (one each 4 weeks)	6
	Reports/Research	Two reports per semester	4
	Tutorials	3 Assignments per semester	3
	Mini project	Once per semester	7
Written Exam		Sixteenth week	40
Total			100

7- List of references:

7-1 Course notes:

Lecture notes and handouts

Abd elmoneim fouda, **Engineering Computer Applications**.Cairo :MAM Press

Laboratory work printed notes

Abd elmoneim fouda, **Engineering Computer Applications**.practical part.Cairo :MAM Press

7-2 Required books

Munther (2013), Matlab by example programming basic.

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

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

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

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

7-3 Recommended books:

D. Hanselman and B. Littlefield (2005), Mastering MATLAB7, Prentice Hall,

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

7-4 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/> .

8- Facilities required for teaching and learning:

- Computer Lab. equipped with Data show and Computer package
- Lecture and Exercise rooms equipped with Data show projection and sound systems.
- High speed internet and communication facilities for distance learning.

Course coordinator: Dr. Abd Elmoneim FoudA

Head of the Department: Dr. Abd Elmoneim FoudA

Date: August 2020

Modern Academy

for Engineering and Technology in Maddi



Course Specification CMPn325: Information Systems

A- Affiliation

Relevant program: Computer Engineering and Information Technology BSc Program
Department offering the program: Computer Engineering and Information Technology Department
Department offering the course: Computer Engineering and Information Technology Department
Date of specifications approval: August 2020

B - Basic information

Title: Information Systems **Code:** CMPn325 **Level:** Senior1, First Semester
Credit Hours: 3 **Lectures:** 2 **Tutorial/Exercise:** 2 **Practical:** -
Pre-requisite: CMPn110

C - Professional information

1 – Course Learning Objectives:

By the end of this course the students should demonstrate the knowledge and understanding of the main concepts of systems, data, information, information systems, the importance of information systems and information requirements in modern organizations and businesses, and the different types of information systems including internet-based Information Systems. They should be able to explore the systems development life cycle (analysis, design, and implementation) of any organization's information system.

2 – Competencies

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

- c1- Investigate on the different approaches in Information Systems (C1,C3,C18).
- c2- Create a systematic approaches of IS analysis and design (C2,C11, C16, C17, C18,C19)
- c3- Analyze different Aspects of system's feasibility study (C2,C11, C16, C17, C18,C19)
- c4- Manipulate different procedures of system development life cycle SDLC (C2,C11, C12,C16, C17, C18,C19)
- c5- Investigate on the different techniques for Internet-based Information systems (C1, C2,, C11,C14,C15)
- c6- Apply knowledge of Science, and IT to deal with Information Systems (C1,C15)
- c7- Apply the life cycle and system approach techniques to analyse and design IS (C2,C11,C15,C18,C19)
- c8- Use of analytical tools, techniques, and software packages for analysis and design of a real- world information system (C2,C11,,C14,C15,, C16,C17,C18)
- c9- Use computational facilities and techniques for implementing real-world information system for some enterprise or organization (C2,C11,,C14,C15,, C16,C17,C18,C19)
- c10- Work in a team and involve in group project (C8,C20).
- c11- Communicate effectively through written reports (C8,C20).

This course contributes in the following program competencies: (C1, C2, C3,, C8, C11, C12,C14 C15, C16, C17, C18, C19).

3 – Contents

Computer Engineering and Information Technology BSc. Program Specifications By law 2020

Week	Topic	Lecture hours	Tutorial hours	Practical hours
1	➤ Information systems concepts	2	2	
2	➤ System Approach of solving Business problems	2	2	
3	➤ System development Life Cycle: System Analysis and design	2	2	
4	• Data flow Diagrams	2	2	
5	• System implementation and prototyping	2	2	
6	➤ Database's systems	2	2	
7	➤ MT assessment	2	2	
8	➤ Information System for Business Operations	2	2	
9	• Marketing Information Systems	1	1	
	• Manufacturing Information Systems	1	1	
10	• Human Resources Management Systems	2	2	
	• Accounting Information Systems	2	2	
11	• Financial Information Systems	2	2	
	• Management Information Systems	2	2	
12, 13	➤ ERP Systems	4	4	
14	➤ Hardware, Software, and Network Resources	2	2	
15	➤ Class Project Discussions and review	2	2	
	Total hours	30	30	

4. Course contents / course Competencies mapping matrix

Topic	c1	c2	c3	c4	c5	c6	c7	c8	c9	c10	c11
• Information systems concepts	1							1			
• System Approach of solving Business problems	1	1					1				
System development Life Cycle: System Analysis and design		1	1	1			1				
Data flow Diagrams		1	1				1				
System implementation and prototyping		1	1				1				
Databases systems			1	1		1		1	1		
MT assessment			1	1							
• Information System for Business Operations	1					1		1	1		
Marketing Information Systems	1					1		1	1		
Manufacturing Information Systems											
Human Resources Management Systems	1					1		1	1		
Accounting Information Systems											

Financial Systems Management Systems	Information Information Systems	1					1		1	1		
ERP Systems		1				1	1		1	1		
Hardware, Software, and Network Resources.							1		1	1		
Class Project Discussions and review		1	1	1	1	1	1	1	1	1	1	1

5 - Teaching and Learning and Assessment methods:

		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		
Competencies	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		1		
	c5	1	1	1	1					1			1		1		1		
	c6	1	1	1	1					1			1		1		1		
	c7	1	1	1	1	1				1			1		1		1		
	c8	1	1		1						1				1		1		
	c9	1	1										1		1		1		
	c10			1	1					1							1		
	c11			1	1					1							1		

5- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7-th Week	20
Semester Work	Quizzes	3 Quizzes (every 4 weeks)	15
	Reports	Class Project	15
	Assignments	Bi-Weekly	10
Written Exam		Sixteenth week	40
Total			100

6- List of references:

6-1 Course notes:, “Information Systems”- Lecture Notes”

6-2 Required books

- James A.O' Brine ,(1994) ,Introduction to Information Systems, 7th ed. Irwin,
- Malaga, (2004) Information System Technology, Prentice Hall.,

6-3 Recommended books:

- Steven R. Gordon,(2004).Information Systems Management Approach, wiley

6-4 Periodicals, Web sites, etc.

- <http://www.britannica.com/topic/information-system>
- <http://www.britannica.com/topic/information-system>
- <http://www.journals.elsevier.com/information-systems/>

7- Facilities required for teaching and learning:

- Computer, Data show and Computer programs

Course coordinator:

Dr. Khaled Morsy

Head of the Department:

Dr.Abdelmenam Fouda

Date:

August 2020

Modern Academy

for Engineering and Technology in Maadi



Course Specification ELCn211: 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 Communication Technology Department Computer Engineering and Information Technology Department
Department offering the course:	Electronic Engineering and Communication Technology Department
Academic level:	Junior, Fifth Semester
Date of specifications approval:	August, 2020

B - Basic Information

Title: Signal Analysis	Code: ELCn211	Level: Junior, Fifth Semester
Credit Hours: 3	Lectures: 2	Tutorial/Exercise: 2
	Pre-requisite: MTHn103	Practical: -

C - Professional information

1 – Course Learning Objectives:

The objective of this course is to introduce main principles of electrical signals based and its properties:

- Understand the basic of main principles of electrical signals and its properties.
- Understand some important operations on signals such as convolution, power and energy calculations.
- Understand Fourier operations (series and transform) for time and frequency domains representation of signals.
- Understand the concept of random process including random variable and random process transmission.

2 - Competencies

- c1. Classify and explain the advantage and disadvantage of the conventional electromechanical PMMC measuring devices. (C1, C2)
- c2. Utilize analog electronic circuits to improve the performance and accuracy of the conventional electromechanical PMMC measuring devices. (C4, C12)
- c3. Select and integrate digital electronic circuits to replace the PMMC-based analog electronic measuring devices. (C3, C13)
- c4. Explain the construction, operation, and specification of the basic parts of the analog CRT oscilloscope (C1, C2)
- c5. Select and integrate digital electronic circuits to provide additional functions and to improve the useability of the analog CRT oscilloscope. (C3, C13)
- c6. Demonstrate the performance of the analog and digital-storage CRT oscilloscopes of measuring and analyzing electrical signal waveforms in time domain. (C2, C14)
- c7. Explain the construction, operation, and specification of the basic parts of the analog spectrum analyzer (C1, C2)
- c8. Select and integrate digital electronic modules to provide additional functions and to improve useability of the analog spectrum analyzer. (C3, C13)
- c9. Demonstrate the performance the analog and digital spectrum analyzers of measuring and analyzing electrical signal waveforms in frequency domain. (C2, C14)
- c10. Explain the construction, operation, and specification of the basic parts of data acquisition systems (C1, C2)
- c11. Design and analyze the performance of analog-to-digital and digital -to- analog converters. (C3, C13)

c12. Practice self-learning and communicate effectively orally and in written form (C8, C10)

c13. Collaborate effectively within multidisciplinary team. (C7, C9)

This course contributes in the following program competencies: **C1, C2, C3, C4, C7, C8, C9, C10, C12, C13, & C14**

3-Contents

Week	Topics	Lecture hours	Tutorial hours	Practical hours
1	Introduction to Signals, Classification of signals and Signal Operators.	2	2	-
2	Classification of signals and Signal Operators.	2	2	-
3	Calculate Energy and power signal	2	2	-
4	Signal Representation by orthogonal signal set – Fourier series	2	2	-
5	A periodic Signal representation by Fourier Integral	2	2	-
6	A periodic Signal representation by Fourier Integral Transforms of some useful function and properties of Fourier Transform.	4	4	-
7	Assessment (Mid-Term)	-	-	-
8	Transforms of some useful function and properties of Fourier Transform.	2	2	-
9	Introduction and properties of system	2	2	-
10	Analysis Linear Time Invariant system (LTI)	2	2	-
11	Analysis Linear Time Invariant system (LTI)	2	2	-
12	Probability – Random variables – Statistical averages.	2	2	-
13	Probability – Random variables – Statistical averages.	2	2	-
14	Cumulative Distribution function with different distribution	2	2	-
15	Cumulative Distribution function with different distribution	2	2	-
Total hours		30	30	-

4. Course content/Course Competencies mapping matrix.

Topic	c1	c2	c3	c4	c5	c6	c7	c8	c9	c10	c11	c12	c13
Introduction to Signals, Classification of signals and Signal Operators.	1	1			1								
Calculate Energy and power signal	1	1		1				1		1			
Signal Representation by orthogonal signal set – Fourier series	1	1	1		1		1						
A periodic Signal representation by Fourier Integral	1	1		1		1				1	1		
Transforms of some useful function and properties of Fourier Transform.	1	1		1			1		1				
Introduction and properties of system		1	1									1	1
Analysis Linear Time Invariant system (LTI)	1		1			1				1	1		1
Probability – Random variables – Statistical averages.	1	1	1	1		1	1	1			1		1

Cumulative Distribution function with different distribution	1	1	1	1		1			1	1		1	
Topic Covering Competencies	8	8	5	5	2	4	3	2	2	4	3	2	3

5- Teaching, Learning and Assessment methods

Course Competences	Teaching Methods					Learning Methods			Assessment Method					
	Lecture	Tutorials	Problem solving	Laboratory & Experiments	Discussions & seminars	Self - Learning	Research & Report	Assignments	Written Exam	Practical Exam	Quizzes	Assignments	Research & Report	Mini Project
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			
c5	1	1	1	1						1	1			
c6	1	1							1	1		1		
c7	1	1							1	1	1			
c8	1	1	1	1					1			1		
c9	1	1		1					1	1		1		
c10		1	1	1					1	1	1			
c11		1	1					1	1			1	1	
c12				1									1	
c13				1										1
Σ	8	8	7	8	1	1	1	2	8	6	5	6	3	2

6- Assessment Timing and Grading

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Semester Work:	Assignments	2 Assignments per semester	10
	Quizzes	2 Quizzes per semester	10
	Mini-Project/Report	Once per semester	5 (Bonus)
Written Exam		Sixteenth week	40
Total			100

7- List of references

7-1 Course notes:

- Hany Tawfik and Shouman S.E.I. (2018) Electronic Measurements “Theoretical Part”, Cairo, Egypt.
- Hany Tawfik and Shouman S.E.I. (2018) Electronic Measurements “Practical Part”, Cairo, Egypt.

7-2 Required books:

- B. Lathi, *Modern Digital and Analog communication systems*, oxford press 1998
- *Electronic Communication systems*,: kendeys, Davis Mc Graw-Hill Book

7-3 Recommended books:

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

8- Facilities required for teaching and learning:

- Lectures room equipped with OHP and data show facility.

Course Coordinator Dr. Mohamed El-Hawary
Head of the Department: Prof.: Shouman S.E.I.
Date: August, 2020

Course Specification
ELCn212: Microelectronic 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 Communication Technology Department Computer Engineering and Information Technology Department
Department offering the course:	Electronic Engineering and Communication Technology Department
Date of specifications approval:	August, 2020

B - Basic Information

Title: Microelectronics 1	Code: ELCn212	Level: 2 nd Fall	
Credit Hours: 3	Lectures: 2	Tutorial/Exercise: 1	Practical: 2
Pre-requisite: ELCn115,CMPn160			

C - Professional information

1 – Course Learning Objectives:

By the end of this course, the students should have gained the planned competences (knowledge, skills and attitudes) related to

- They should compete on the design, calculate, operate, maintain and analyze the performance of electronic circuit and their basic components.
- The construction and operation of semiconductor elements, basic electronic element, and operation of electronic circuit.

2 - Competencies

- c1. Identify the behavior of operational amplifier. (C1,C7)
- c2. Deduced mathematical equation of operational amplifier. (C1,C7).
- c3. Explain the theoretical background needed to calculate and analyze the characteristics of the operational amplifier and their manufacturing. (C2,C3,C12).
- c4. . Explain and design a different Op-Amp application. (C3,C7,C12)
- c5. Deduced mathematical the equation of Op-Amp application. (C3, C12)
- c6. Introduce the basic structure of semiconductor element. (C1, C3).
- C7. Explain the Dc characteristic and different model of diode element.(C2,C5)
- C8. Explain and design different types of rectifier circuit, power supply, and voltage regulator. (C3,C5, C12)
- C9. Deduced mathematical the ripple factor of Dc power supply circuit. (C1, C3, C12)
- c10. Explain the construction of different semiconductor elements like Bipolar junction transistor (BJT) and Junction Field effect Transistor (JFET). (C1, C2,C10).
- c11. Explain different types of DC biasing circuit in BJT , JFET. (C2,C3)
- c12. Analyze the small signal model of JFET. (C2, C3,C10)
- c13. Explain the construction and characteristics of MOsFET. (C1, C3, C10,C12)
- c14. Use computer software; Spice, mutism and other available programs to design, calculate, and simulate semiconductor circuit.
- c15. Use experimental facilities to visualize and investigate the different electronic circuit and evaluate the characteristics of different semiconductor element. (C2).
- c16. Collaborate effectively within multidisciplinary team (C5,C7, C9).

c17. Practice self-learning and communicate effectively orally and in written form (C8,C10).

This course contributes in the following program competencies: C1, C2, C3, C5, C7, C8, C9, C10, & C12

3 – Contents

Week	Topic	Lecture hours	Tutorial hours	Practical hours
1	Introduce basic definition of operational amplifier	2	1	2
	Deduced mathematical equation of operational amplifier.			
2	analyze the characteristics of the operational amplifier and their manufacturing	2	1	2
3	Operation of different Comparator circuit. Operation of summing amplifier, integrator, Differentiator.	2	1	2
4	Construction, analyze the I-V characteristic curve of Diode.	2	1	
5	Explain half wave rectifier circuit. Explain full wave rectifier circuit.	2	1	2
6	Explain the following application circuit diode limiter, clipping and clamping circuit's	2	1	2
7	Assessment (Mid-Term)	-	-	-
8	Design of power supply circuit	2	1	2
	Construction of Bipolar Junction Transistor (BJT).			
9	Dc biasing circuit of BJT	2	1	2
10	Construction of Junction Field effect Transistor (JFET)	2	1	2
11	Dc biasing circuit of (JFET)	2	1	2
12	Small signal model of JFET	2	1	2
13	Voltage Biasing configuration	2	1	2
14	JFET Source-Follower (Common-Drain) Configuration	2	1	2
15	Enhancement-Type MOSFET Discuss min project & revision	4	2	4
Total hours		30	15	30

4. Course content/Course Competencies mapping matrix

Topic	Course Competencies																
	c1	c2	c3	c4	c5	c6	c7	c8	c9	c10	c11	c12	c13	c14	c15	c16	c17
Introduce basic definition of operational amplifier.	1	1	1														
Deduced mathematical equation of operational amplifier.	1	1	1														1
analyze the characteristics of the operational amplifier and their manufacturing	1	1	1											1	1		

Operation of different Comparator circuit.				1	1									1	1		
Operation of summing amplifier, integrator, differentiator.				1	1									1	1		1
Construction, analyze the I-V characteristic curve of Diode.						1	1			1				1	1		1
Explain half wave rectifier circuit.								1	1					1	1		1
Explain full wave rectifier circuit.								1	1					1	1		
Design of power supply circuit								1	1		1			1	1		1
Construction of Bipolar Junction Transistor (BJT) & Junction Field effect transistor (JFET).						1				1						1	
Dc biasing circuit of BJT							1				1	1			1		
Dc biasing circuit of (JFET)							1					1		1			
Small signal model of JFET												1		1		1	
Voltage Biasing configuration												1		1			
JFET Source-Follower (Common-Drain) Configuration												1		1			
Enhancement-Type MOSFET						1				1					1	1	1
Mini project					1		1	1	1					1	1	1	1
Topics Covering Competences	3	3	3	2	3	3	4	4	4	4	2	5	4	12	10	4	7

5 - Course Competencies/Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods						Learning Methods			Assessment Method						
	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory &	Researched, Reports &	Self-Learning	Modeling and	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project	Report
c1	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			
c5	1		1	1				1		1	1	1	1			
c6	1			1	1	1				1	1		1			
c7	1	1		1		1				1	1	1	1			
c8	1	1		1		1	1		1	1	1	1	1	1	1	1
c9	1	1		1			1	1	1	1	1		1	1	1	1
c10	1	1		1	1					1	1	1	1			
c11	1	1		1		1				1	1		1			
c12	1	1	1	1	1	1	1			1	1	1				1

c13	1	1		1	1	1		1						1	
c14					1	1									
c15						1									
c16	1														
c17											1	1			
Σ	14	9	2	12	5	11	3	4	2	12	11	9	8	3	3

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Semester Work	Quizzes	1 Quizzes	5
	Tutorials	2 Assignments per semester	10
	Mini project	Once per semester	5
Practical Exam		Fifteenth week	20
Written Exam		Sixteenth week	40
Total			100

7- List of references:

7-1 Course notes:

- 1- Microelectronics Circuits-1 “Theoretical part”
- 2- Microelectronics Circuits-1 “Practical part”

7-2 Required books

Sedra-Smith,(1998), *Microelectronics Circuits*, Oxford University Press,

7-5 Recommended books:

Malvino. A., Bates D., (2016) *Electronic Principles*, Macmillan Mc Graw Hill Inc, ISBN - 978-0-07-337388-1.

7-4 Periodicals, Web sites, etc.

<https://www.allaboutcircuits.com/textbook/semiconductors/chpt-3/rectifier-circuits/> ,(Last accessed Feburary, 2021)

<https://www.electronics-tutorials.ws/amplifier/transistor-biasing.html>, (Last accessed Feburary, 2021)

<https://resources.system-analysis.cadence.com/blog/msa2020-realizing-the-small-signal-model-using-jfet-parameters-for-circuit-behavioral-studies>, (Last accessed Feburary, 2021)

- YouTube

Microelectronic lab: <https://www.youtube.com/watch?v=dGtcqiCWx-w>

8- Facilities required for teaching and learning:

- Microelectronic Lab.
- Lecture and Exercise rooms equipped with projection and sound systems.
- Computer, Data show and Computer programs; ps-pice, multisim.
- High speed internet and communication facilities for distance learning.

Course coordinator: Dr. Sara Fouad

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

Date: August, 2020

Modern Academy

for Engineering and Technology in Maddi



Course Specification GENn341b : Project 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:

B - Basic Information

Title: Project Management **Code:** GENn341b **Level:** 3rd Fall, spring
Credit Hours: 2 **Lectures:** 2 **Tutorial/Exercise:** 2 **Practical:** 0
Pre-requisite:

C - Professional information

1 – Course Learning Objectives:

By the end of this course, the students should have gained the planned competences (knowledge, skills and attitudes) related to the construction and operation of the basic principles required for the project control, while considering its different goals and constraints. It also enables them to utilize various computer algorithms and analysis techniques for time, cost, quality, risk, and resources management, in addition to evaluating the efficiency of the management system.

2 - Competencies

- c1. Explain the project management aims and processes (C1)
- c2. Analyze, planning levels and rules (C11,C14)
- c3 Fundamentals of project management (C4,C13)
- c4. Concepts of time constrained schedule (C1,C10)
- c5. Recognize and identify the quality and risk management (C14,C18)
- c6. Use a wide range of analytical tools and techniques for modern project managements tools (C15)
- c7. Utilize computational facilities and techniques, to understand different project management control systems (C9)
- c8. Communicate effectively and present data and results orally and in written form. (C8)
- c9. Practice self-learning, Search for different project management control systems in references, journals and in internet (C10)

This course contributes in the following program competencies: C1, C4, C6, C8, C9, C10, C11, C13, C14, C15 & C18

3 – Contents

Weak #	Topic	Lecture hours	Tutorial hours	Practical hours
1	introduction to project management	2		
2	Body of Knowledge and skills required for the project manager	2		
3	Planning the Project	3		
4	Planning Levels, Rules and Steps	2		
5	Developing the Project's Vision, Mission, and Objectives	2		
6	Business model, chart and critical path analysis and determination for implementing projects	2		
7	Mid Term			
8	Time-Constrained Schedule	2		
9	Controlling the Project	2		
10	Project Process Review			
11	Managing the Project Team	2		
12	Quality Management	2		
13	Risk Management	2		
14	Analyze, planning levels and rules	2		
15	Seminar	3		
Total hours		30	0	0

4. Course content/Course Competencies mapping matrix

Topic	c1	c2	c3	c4	c5	c6	c7	c8	c9
I introduction to project management	1		1					1	
Knowledge and skills	1	1	1						
Planning the Project		1							
Planning Levels, Rules and Steps		1							
Developing the Project's Vision, Mission, and Objectives	1						1		
Business model, giant chart and critical path analysis and determination for implementing projects	1					1			
Time-Constrained Schedule			1	1					
Controlling the Project			1	1			1		1
Project Process	1						1	1	
Managing the Project Team						1			
Quality Management					1	1			1
Risk Management						1	1		1
Analyze, planning levels			1			1	1	1	1
Seminars	1	1	1	1	1	1	1	1	1
Topics Covering Competences	6	4	6	3	2	6	6	4	5

5 - Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods						Learning Methods			Assessment Method					
	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Researched, Reports & Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report	
c1	1	1	1				1		1			1			
c2	1	1	1				1		1						
c3	1	1	1						1			1			
c4	1	1	1				1		1				1		
c5	1	1	1		1		1	1	1			1			
c6	1	1	1		1				1			1			
c7	1	1	1				1		1		1	1			
c8	1	1	1				1		1		1		1	1	
c9	1	1	1		1		1	1	1		1		1	1	
Σ	9	9	9		3		4	5	1	9		3	5	3	2

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Semester Work	Mid-Term Exam	7 th Week	20
	Quizzes	3 Quizzes (one each 4 weeks)	12
	Reports/Research	Two reports per semester	8
	Tutorials	3 Assignments per semester	4
	Mini project	Once per semester	16
Written Exam		Sixteenth week	40
Total			100

7- List of references:

1. JOSEPH HEAGNEY, Fundamentals of project management, ISBN-13: 978-0-8144-1748-5, 2011

7-1 Course notes: Lecture notes and handouts

7-2 Required books

7-6 Recommended books: None

7-4 Periodicals, Web sites, etc.

None

8- Facilities required for teaching and learning:

- Computer, Data show and Computer package..

Course coordinator:

Dr. Essam Zaki

Head of the Department:

Dr. Abd ElmoneimFoudA

Date:

August 2020

Modern Academy

for Engineering and Technology in Maadi



Course Specification

MTHn107: Mathematics -7(Introduction to Probability and Statistics)

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
Civil Engineering and Building Technology BSc program

Department offering the program:

Manufacturing Engineering and Production Technology Department
Electronic Engineering and Communication Technology Department
Computer Engineering and Information Technology Department
Architecture Engineering and Building Technology Department
Civil Engineering and Building Technology Department

Department offering the course:

Basic Science Department

Date of specifications approval:

August 2020

B - Basic Information

Title: Mathematics-7(Introduction to Probability

and Statistics)

Code: MTHn107

Level: (1st Spring) and (2nd Fall & Spring)

Credit Hours: 3

Lectures: 2

Tutorial/Exercise:2

Practical: ---

Pre-requisite: MTHn002

C - Professional information

1 – Course Learning Objectives:

By the end of this course, the students should have gained the planned competencies (knowledge, skills, and attitudes) related 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 – Competencies

- c1- Develop the rules and notions of functions and set theory. (C1, C5)
- c2- List the basics and different rules of probability theory. (C1, C2, C5)
- c3- Apply discrete and continuous probability distributions and rules of their expectation and their standard deviation (C1, C2, C5).
- c4- Explain main notions of descriptive statistics, probability concepts, binomial, and normal distributions, as well as the notions of conditional probability and counting techniques. (C1, C2, C5)
- c5- Investigate many principles of sampling and the central limit theorem, estimation, and regression. (C1, C2, C5)
- c6- Explain basic concepts of statistics, measures of location and measures dispersion. (C1, C2)
- c7- Describe discrete data graphically and compute measures of centrality and dispersion. (C1, C2)
- c8- Compute probabilities by applying different probability rules and theorems of probability. (C1, C2, C9)
- c9- Construct the probability distribution of a random variable, based on a real-world situation, and use it to compute expectation and variance. (C1, C2, C9)

- c10- Apply basic concepts of probability functions, Mathematical expectation, variables, discrete distribution, binomial distribution, continuous distribution, and normal distribution to applications. (C1, C2)
- c11- Evaluate and analyze basic concepts of statistics, sampling, the central limit theorem, estimation, correlation, and regression. (C1, C2, C5, C9)
- c12- Apply probability and statistics methods to engineering problems (C1, C2, C5, C9)
- c13- Write technical reports and E-mails. (C7, C8).
- c14- Do related research on internet (C7, C9, C10).

This course contributes in the following program competencies: C1, C2, C5, C7, C8, C9, C10

3. Contents

Topic		Lecture hours	Tutorial hours	Practical hours
1	Functions, curve equation relationship, Set theory	2	2	
2	Experiments, Sample space, Random events, and Counting Techniques	2	2	
3	Basic Probability Rules	2	2	
4	Mathematical expectation, conditional probability, and independent events	2	2	
5	Random variables and Discrete Distributions	2	2	
6	Binomial distribution, Poisson distribution.	2	2	
7	MT Exam	2	2	
8	Continuous Distribution.	2	2	
9	Normal Distribution.	2	2	
10	Data types, population, sample, and Data presentation.	2	2	
11	Measures of central tendency (all types of data)	2	2	
12	Measures of deviation (all types of data)	2	2	
13	Sampling and the central limit theorem	2	2	
14	Estimation, hypothesis testing.	2	2	
15	Regression and correlation.	2	2	
Total hours		60	60	

4. Course content/Course Competencies mapping matrix

Topic	Knowledge						Skills						Attitude		
	c1	c2	c3	c4	c5	c6	c7	c8	c9	c10	c11	c12	c13	c14	
Functions, curve equation relationship.	1						1						1		
Set theory, Random events, and probability functions.	1							1	1	1		1	1	1	
Mathematical expectation, conditional probability.		1	1	1				1	1	1		1	1	1	
Binomial distribution, normal distribution.		1	1	1				1	1	1		1	1	1	
Sampling and the central limit theorem.					1						1	1	1	1	
Estimation, hypothesis testing.					1						1	1	1	1	
Regression and correlation.					1						1	1	1	1	
Chi-square analysis and analysis of variance.						1					1	1	1	1	
Topics Covering Competences	2	2	2	2	3	1	1	3	3	3	4	7	8	7	

5 - Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods				Learning Methods		Assessment Method		
	Lecture	Discussions and seminars	Tutorials	Problem solving	Research and Reports	Modeling and Simulation	Written Exam	Quizzes	Assignments
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	1	1
c5	1	1	1	1	1	1	1	1	1
c6	1	1	1	1	1	1	1	1	1

c7	1		1	1			1	1	1
c8	1				1	1	1		
c9	1	1		1	1		1		
c10	1		1	1	1		1	1	1
c11	1		1		1		1		
c12	1	1			1	1	1		
c13		1		1	1				1
c14	1	1	1	1	1				1
Σ	14	8	10	11	14	5	12	8	11

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Semester Work	Quizzes	Bi-Weekly	40
	Reports/Research		
	Assignments		
Written Exam		Sixteenth week	40
Total			100

7- List of references:

7-1 Course notes:

Sameh Shenawy, Introduction to Probability and Statistics, Lecture Notes, Modern Academy, Egypt, 2019.

7-2 Required books:

Douglas C. Montgomery and George C. Runger, Applied Statistics and Probability for Engineers, 6th ed., John Wiley & Sons, Inc., 2014

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

7-7 Recommended books:

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

7-4 Periodicals, Web sites, etc.

www.mathworlds.com, www.sosmath.com

8- Facilities required for teaching and learning:

- Library.
- High speed internet and communication facilities for distance learning

Course coordinator:

Associate Prof. Sameh Shenawy

Head of the Department:

Associat Professor / Ashraf Taha EL-Sayed

Date:

August 2020

Sixth Semester (Level two)

Modern Academy

for Engineering and Technology in Maddi



Course Specification CMPn261: Seminar

A- Affiliation

Relevant program: Computer Engineering and Information Technology BSc Program
Department offering the program: Computer Engineering and Information Technology Department
Department offering the course: Computer Engineering and Information Technology Department
Date of specifications approval:

B - Basic Information

Title: Seminar **Code:** CMPn261 **Level:** 3rd Fall, spring
Credit Hours: 1 **Lectures:-** **Tutorial/Exercise:** 2 **Practical:** 0
Pre-requisite: +66 Credits

C - Professional information

1 – Course Learning Objectives:

By the end of this course, the students should have gained the planned competences (knowledge, skills and attitudes) related to the construction and operation of various modern topics related to different variable subjects serve more than one material. 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 Science and must be approved by the instructor in advance.

2 - Competencies

- c1. Explain the modern topics of IOT and A.I (C1,C11,C14)
- c2. Explain different topics related to different courses (C1,C11,C14)
- c3 Capability of integrating projects running on different system configurations, Practice research techniques and methods of investigation as an inherent part of learning (C15,C5)
- c4 Function and communicate effectively in Team work(C7,C8)

This course contributes in the following program competencies: C1, C5, C7, C8, C11, C14 & C15

3 – Contents

SN	Topic	Lecture hours	Tutorial hours	Practical hours
1	introduction to different new fields of industry		2	-
2	dividing student to different groups according to their wish		2	
3	The students propose their project idea		2	
4	Planning and scheduling the project activities.		2	
5	Survey about the proposed Idea		2	
6	survey about similar implemented Project		2	
7	Presenting the work to other teams		2	
8	Designing of subunits and/or subprograms.		2	
9	Implementation of subunits and/or subprograms.		2	
10	Presenting the work to other teams		2	
11	Testing of subunits and/or subprograms.		2	

12	Collection among subunits and/or subprograms to perform application system project.		2	
13	Testing the whole project functions.		2	
14	Make final technical report documentation.		2	
15	Preparing for project presentation.		2	
Total hours			30	-

4. Course content/Course Competencies mapping matrix

weeks	Topic	c1	c2	c3	c4
1	introduction to different new fields of industry	1	1	1	
2	dividing student to different groups according to their wish	1	1	1	1
3	The students propose their project idea				1
4	Planning and scheduling the project activities.	1	1	1	
5	survey about the proposed Idea	1	1	1	
6	survey about similar implemented Project				1
7	Presenting the work to other teams	1	1	1	
8	Designing of subunits and/or subprograms.	1	1	1	
9	Implementation of subunits and/or subprograms.	1	1	1	
10	Presenting the work to other teams				1
11	Testing of subunits and/or subprograms.	1	1	1	
12	Collection among subunits and/or subprograms to perform application system project.	1	1	1	
13	Testing the whole project functions.	1	1	1	
14	Make final technical report documentation.	1	1	1	
15	Preparing for project presentation.				1
Topics Covering Competences		11	11	11	5

5 - Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods						Learning Methods		Assessment Method					
	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Researched Reports & Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report
c1	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
c4	1										1		1	
Σ	2	2	2	2	0	0	2	2	0	0	2	0	0	0

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Semester Work	Mid-Term Exam		
	Quizzes		
	Reports/Research	Two reports per semester	30

	Tutorials	3 Assignments per semester	
	Mini project	Once per semester	30
	Oral Exam	Sixteenth week	40
Total			100

7- List of references:

None

7-1 Course notes: Lecture notes and handouts

7-2 Required books

7-8 Recommended books: None

7-4 Periodicals, Web sites, etc.

None

8- Facilities required for teaching and learning:

- Computer, Data show and Computer package..
- High speed internet and communication facilities for distance learning

Course coordinator: Dr. Essam Zaki

Head of the Department: Dr. Abd ElmoneimFoudA

Date: August 2020

Modern Academy

for Engineering and Technology in Maddi



Course Specification CMPn321: Computer Architecture

A- Affiliation

Relevant program: Computer Engineering and Information Technology BSc Program
Electronic Engineering and Communication Technology BSc Program
Department offering the program: Computer Engineering and Information Technology Department
Electronic Engineering and Communication Technology Department
Department offering the course: Computer Engineering and Information Technology Department

Date of specifications approval: August 2020

B - Basic Information

Title: Computer Architecture **Code:** CMPn321 **Level:** 2nd 3rd Fall, spring
Credit Hours: 3 **Lectures:** 2 **Tutorial/Exercise:** 2 **Practical:** -
Pre-requisite: CMPn111

C - Professional information

1 – Course Learning Objectives:

By the end of this course, the students should have gained the planned competences related to the construction and operation 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 - Competencies

- c1. Explain the Basic Structure of computers and Foundations of Computer Architecture (C11)
 - c2. Analyze, mathematically, the effect of the ALU, Memory, Cache memory on the system performance (C1,C12)
 - c3 Fundamentals of Arithmetic and logic units, Different types of Addressing Modes, Different classifications of parallel and pipeline processors, Architecture and organization of Memory unit (C7)
 - c4. Concepts of Operating system support and Basic of assembly Programming(C13)
 - c5. recognize and identify the structure of computer architecture, Evaluate the performance of A.L.U and parallel processor (C11)
 - c6. Use a wide range of analytical tools, techniques, and software packages pertaining for programming the computer(C11)
 - c7. Utilize computational facilities and techniques, to design different architectures of parallel processors and pipeline system(C9)
 - c8. Communicate effectively and present data and results orally and in written form. Use ICT facilities in presentations, and manage resources efficiently(C8)
 - c9. Practice self-learning, Search for information's in references, journals and in internet (C10)
- for Electronic Engineering and Communication Technology and BSc Programs**
- c1. Explain the Basic Structure of computers and Foundations of Computer Architecture (C13)
 - c2. Analyze, mathematically, the effect of the ALU, Memory, Cache memory on the system performance (C1, C14)
 - c4. Concepts of Operating system support and Basic of assembly Programming(C15)

- c5. recognize and identify the structure of computer architecture, Evaluate the performance of A.L.U and parallel processor (C13)
- c6. Use a wide range of analytical tools, techniques, and software packages pertaining for programming the computer(C13)

This course contributes in the following program competencies for **Computer Engineering and Information Technology BSc Program**

: C1, C7, C8, C9, C10, C11, C12,& C13

This course contributes in the following program competencies for **Electronic Engineering and Communication Technology BSc Programs**

C1, C7, C8, C9, C10, C13, C14,& C15

3 – Contents

weeks	Topic	Lecture hours	Tutorial hours	Practical hours
1	Basic Structure of computers	2	2	-
2	Instruction cycle and Interrupts	2	2	-
3	Bus system and improving computer Performance	2	2	-
4	performance evaluation and techniques can be used by hardware designers to improve performance	2	2	-
5	Types of computer organizations and addressing format	2	2	--
6	Programming using different addressing modes	2	2	-
7	Assessment (Midterm exam)	2	2	
8	Arithmetic and logic units design	2	2	--
9	Memory types	2	2	
10	Design of cache memory	2	2	-
11	Performance measuring of cache	2	2	-
12	Operating system support	2	2	-
13	Pipeline system	2	2	
14	parallel processors	2	2	
15	Seminars	2	2	
Total hours		30	30	-

4. Course content/Course Competencies mapping matrix

Topic	c1	c2	c3	c4	c5	c6	c7	c8	c9
Basic Structure of computers	1		1				1		1
Instruction cycle and Interrupts	1		1						
Bus system and improving computer Performance	1		1				1		1
performance evaluation and techniques can be used by hardware designers to improve performance			1	1		1			1

Types of computer organizations and addressing format	1	1	1		1				
Programming using different addressing modes	1			1			1		1
Assessment (Midterm exam)	1	1	1						1
Arithmetic and logic units design		1	1						
Memory types		1							1
Design of cache memory		1	1						1
Performance measuring of cache		1				1			
Operating system support		1	1	1	1				
Pipeline system	1			1		1			
parallel processors	1	1	1		1	1	1		1
Seminars								1	1
Topics Covering Competences	8	8	10	4	3	4	4	1	9

5 - Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods						Learning Methods			Assessment Method					
	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Researched, Reports &	Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report
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				
c5	1	1		1				1		1	1		1		
c6	1	1		1	1					1	1		1		
c7	1	1		1				1		1	1		1		
c8	1	1	1				1							1	1
c9	1	1	1	1			1	1			1			1	1
Σ	9	9	2	8	1	0	2	5	0	7	8	0	5	2	2

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Semester Work	Quizzes	3 Quizzes (one each 4 weeks)	12
	Reports/Research	Two reports per semester	8
	Tutorials	3 Assignments per semester	4
	Mini project	Once per semester	16
Written Exam		Sixteenth week	40
Total			100

7- List of references:

7-1 Course notes:

7-2 Required books

William Stallings, (2010) Computer Organization and Architecture Designing For PERFORMANCE, 8th edition, Prentice Hall.

Rachard(1996),advanced computer architecture system approach, Prentice Hall.
M.Mano, (1996), Computer System Architecture, Prentice Hall.

7-9 Recommended books: None

7-4 Periodicals, Web sites, etc.

<https://www.eecs.berkeley.edu/Courses/Data/188.html>

<http://www.GenLib.org/> .

8- Facilities required for teaching and learning:

- Computer Lab.
- Computer, Data show and Computer package.
- High speed internet and communication facilities for distance learning
-

Course coordinator:	Dr. Seham Ebrahim
Head of the Department:	Dr. Abd Elmoneim FoudA
Date:	August 2020

Modern Academy

for Engineering and Technology in Maddi



Course Specification

ELCn210: Control-2(Digital and PLC Control)

A- Affiliation

Relevant program:	Computer Engineering and Information Technology BSc Program Electronic Engineering and Communication Technology BSc Program
Department offering the program:	Computer Engineering and Information Technology Department Electronic Engineering and Communication Technology Department
Department offering the course:	Electronic Engineering and Communication Technology Department
Date of specifications approval:	August, 2020

B - Basic Information

Title: Control-2(Digital and PLC Control)	Code: ELCn210	Level: 3 rd Spring
Credit Hours: 4	Lectures: 3	Tutorial/Exercise: 1
	Practical: 2	Pre-requisite: MTHn103

C - Professional information

1 – Course Learning Objectives:

By the end of this course, the students should have gained the planned competences (knowledge, skills and attitudes) related to the analysis and design of discrete time / digital control systems and their basic elements. They should compete on the analysis, calculate, design, maintain and analyze the performance of discrete time/digital systems and their basic components.

2 – Competencies

- c1. Ability to apply knowledge of basic Science and engineering fundamentals (C1, C3).
- c2. Explain the construction, operation and specification of the basic discrete time control systems (C2,C12).
- c3. Explain the theoretical background needed to calculate and analyze the discrete system characteristics (C17).
- c4. Perform z-transform for a digital control system and interpret the fundamentals of z-transform (C1).
- c5. Explain the theoretical background needed to map between s-plane and z-plane and the bilinear transformation (C9).
- c6. Derive transfer function for a digital control system and analyze its stability and steady state error property (C12).
- c7. Deduce mathematical relations describing the steady state performance of discrete time systems (C1).
- c8. Apply fundamental state-space-techniques in the analysis and design of linear feedback control systems, as they arise in a variety of contexts (C13).
- c9. Use state-space methods to model a digital control system and analyze its properties such as controllability and observability (C15).
- c10. Formulate and solve problems for digital control systems by using manual and computerized methods (C17).
- c11. Use computer software tools to simulate, analyze, and design feedback controller and observers of automatic control systems in Matrix form (C17, C18).
- c12. Design appropriate digital state observers to meet certain performance specifications (C16).

- c13. Explain the construction, operation and specification of the Programmable Logic Controllers (PLC) (C15,C16).
- c14. Use PLC computer software tools to design and control PLC scienrios for different industrial processes (C16, C17).
- c15. Ability to undertake problem identification, formulation and solution (C5).
- c16. Ability to communicate effectively, with the engineering team and with the community at large teams, with the capacity to be a leader or manager as well as an effective team member (C8,C7).
- c17. Consider the impact of designs on the environmental protection (C3).
- c18. Practice self-learning and communicate effectively orally and in written form (C8,C10).

This course contributes in the following program competencies: C1, C2, C3, C5, C7, C8, C9, C10, C11, C12 , C13, C15, C16, C17, C18

3 – Contents

Week	Topic	Lecture hours	Tutorial hours	Practical hours
1	Introduction to digital control systems	3	1	2
	Digital control system components, and applications			
2	The z transforms and z-plane theory and properties. Z transform method for solving difference equations.	3	1	2
3	Discrete time control systems signals, classifications. Mathematical representation of sampling process and zero order hold functionality.	3	1	2
4	z-Plane analysis of discrete time control systems Mapping between the S Plane and the Z Plane	3	1	2
	The pulse transfer function.			
5	Stability analysis of closed loop system in z-plane. Stability analysis by using bilinear transformation and Routh stability.	3	1	2
6	Steady-state error analysis of discrete-time systems Transient response specifications	3	1	2
7	Assessment (Mid- Term)	-	-	-
8	Design of Discrete-time control systems Solving discrete time state space systems.	3	1	2
9	State Space representation to transfer function State Space model properties	3	1	2
10	Controllability and observability analysis. Similarity transformation.	3	1	2
11	State Feedback control design techniques. State Feedback observers design techniques			
12	Introduction to Programmable Logic controller (PLC)	3	1	2
13	PLC I/O interfacing, programming Applications	3	1	2
14	Mini project; design and analysis of a digital control system for an industrial application. Analysis of the possible operational problems...	3	1	2
15	Revision	6	2	4
Total hours		45	15	30

4. Course content/Course Competencies mapping matrix

Topic	Course Competencies																	
	c1	c2	c3	c4	c5	c6	c7	c8	c9	c10	c11	c12	c13	c14	c15	c16	c17	c18
Introduction to digital control systems	1																	
Digital control system components, and applications	1	1														1		
Discrete time control systems signals, classifications.	1	1	1															
Z transform method for solving difference equations	1			1												1		
Discrete time control systems signals, classifications.	1																	
Mathematical representation of sampling process and zero order hold functionality.	1	1	1													1		
z-Plane analysis of discrete time control systems and Mapping between the S Plane and the Z Plane	1			1	1	1												
The pulse transfer function.	1															1		
Stability analysis of closed loop system in z-plane and Bilinear Transformation	1				1	1	1											
Steady-state error analysis of discrete-time systems						1										1	1	
Transient response specifications	1															1		
Design of Discrete-time control systems and solving discrete time state space systems.								1	1							1		
State Space representation to transfer function									1	1								
Controllability and observability analysis, similarity transformation									1	1	1	1				1		1
State Feedback control and observers design techniques											1	1				1		1
Introduction to Programmable Logic controller (PLC)	1												1	1	1	1		
PLC I/O interfacing, programming, and applications												1	1		1	1		1
Mini project						1	1	1	1		1	1	1	1		1	1	1
Topics Covering Competencies	12	3	2	2	3	4	4	2	4	2	4	4	3	2	4	12	2	4

5 – Course Competencies/Teaching and Learning and Assessment methods:

Course Competencies	Teaching Methods						Learning Methods			Assessment Method					
	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory &	Researched, Reports &	Self-Learning	Modeling and	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report
c1	1	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		
c4	1	1		1						1	1				
c5	1	1		1				1		1	1		1		
c6	1	1		1	1					1	1		1		
c7	1	1		1		1				1	1		1		
c8	1	1	1	1		1	1			1	1		1	1	1
c9	1	1		1			1	1	1	1	1	1	1	1	1
c10	1	1		1	1					1	1		1	1	
c11	1	1		1		1		1		1	1	1	1		
c12	1			1		1	1	1		1	1				1
c13	1	1		1			1		1	1	1		1	1	1
c14		1		1	1		1	1		1	1	1		1	1
c15						1		1						1	
c16						1						1			
c17		1		1			1								1
c18			1					1				1		1	1
Σ	13	13	2	14	3	8	6	9	2	14	14	5	10	8	8

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Semester Work	Quizzes	3 Quizzes (one each 4 weeks)	6
	Reports/Research	Two reports per semester	4
	Tutorials	3 Assignments per semester	6
	Mini project	Once per semester	4
Practical Exam		Fourteenth week	20
Written Exam		Fifteenth week	40
Total			100

7- List of references:

7-1 Course notes: Digital Control & PLC

7-2 Required books

Katsuhiko Ogata. (1995) Discrete-time Control Systems, Prentice Hall International inc.

7-10 Recommended books:

M. Sami Fadali, Antonio Vislioli (2013) Digital Control Engineering Analysis and Design, 2nd edition, Academic Press.

7-4 Periodicals, Web sites, etc.

- <https://www.controleng.com/magazine/> /,(Last accessed March 2021)
- <https://www.journals.elsevier.com/control-engineering-practice>, (Last accessed March 2021)
- <https://www.journals.elsevier.com/automatica>, (Last accessed March 2021)
- <https://ieeexplore.ieee.org/xpl/RecentIssue.jsp?punumber=9>,(Last accessed March 2021)

8- Facilities required for teaching and learning:

- Control Lab.
- Lecture and Exercise rooms equipped with projection and sound systems.
- Software Computer lab, Data show.
- High speed internet and communication facilities for distance learning.

Course coordinator: Dr. Mohmmmed Alhawary
Head of the Department: Prof. Shouman Alshahat
Date: August, 2020

Modern Academy

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Course Specification

ELCn214: Electronic Measurements

A- Affiliation

Relevant program:	Computer Engineering and Information Technology BSc Program Electronic Engineering and Communication Technology BSc Program
Department offering the program:	Computer Engineering and Information Technology Department Electronic Engineering and Communication Technology Department
Department offering the course:	Electronic Engineering and Communication Technology Department
Date of specifications approval:	August, 2020

B - Basic Information

Title: Electronic Measurements	Code: ELCn214	Level: 2 nd Fall	
Credit Hours: 3	Lectures: 2	Tutorial/Exercise: 1	Practical: 2
	Pre-requisite: ELCn113		

C - Professional information

1 – Course Learning Objectives:

The objective of this course is to provide the students the relevant competences (knowledge, skills, and attitudes) needed to understand, handle, and develop conventional measuring instruments. They should compete on the theory and practice related to different methodologies and techniques for improving performance and accuracy of measuring instrumentations including voltmeters, ammeters, ohmmeters, frequency meters, oscilloscopes, spectrum analysers, and data acquisition systems.

2 - Competencies

- c1. Classify and explain the advantage and disadvantage of the conventional electromechanical PMMC measuring devices. (C1, C2)
- c2. Utilize analog electronic circuits to improve the performance and accuracy of the conventional electromechanical PMMC measuring devices. (C4, C12)
- c3. Select and integrate digital electronic circuits to replace the PMMC-based analog electronic measuring devices. (C3, C13)
- c4. Explain the construction, operation, and specification of the basic parts of the analog CRT oscilloscope (C1, C2)
- c5. Select and integrate digital electronic circuits to provide additional functions and to improve the useability of the analog CRT oscilloscope. (C3, C13)
- c6. Demonstrate the performance of the analog and digital-storage CRT oscilloscopes of measuring and analyzing electrical signal waveforms in time domain. (C2, C14)
- c7. Explain the construction, operation, and specification of the basic parts of the analog spectrum analyzer (C1, C2)

- c8. Select and integrate digital electronic modules to provide additional functions and to improve useability of the analog spectrum analyzer. (C3, C13)
- c9. Demonstrate the performance the analog and digital spectrum analyzers of measuring and analyzing electrical signal waveforms in frequency domain. (C2, C14)
- c10. Explain the construction, operation, and specification of the basic parts of data acquisition systems (C1, C2)
- c11. Design and analyze the performance of analog-to-digital and digital -to- analog converters. (C3, C13)
- c12. Practice self-learning and communicate effectively orally and in written form (C8, C10)
- c13. Collaborate effectively within multidisciplinary team. (C7, C9)

This course contributes in the following program competencies: **C1, C2, C3, C4, C7, C8, C9, C10, C12, C13, & C14**

3-Contents

Week	Course Topics	Lecture hours	Tutorial hours	Practical hours
1.	Analog Electronic Multi-meters: Emitter Follower Voltmeters classification, operation, and comparison	2	1	2
2.	Difference Amplifier Voltmeter operation and analysis Operational Amplifier Voltmeter Circuits design and analysis	2	1	2
3.	AC Electronic Voltmeters classification, operation, and comparison Ohm and Current Measurements Circuits design and analysis	4	2	4
4.	Digital Voltmeters and Frequency Meters: Digital Voltmeters DVMs Circuits design and analysis (Mini-Project) Digital Frequency Meters operation and performance	2	1	2
5.	Analog CRT Oscilloscope: CRT Oscilloscope construction, operation, and performance Deflection Amplifiers Circuit design and analysis	2	1	2
6.	Sweep Generator Circuit design and analysis. Automatic Time Base components, operation, and integration	4	2	4
7.	Assessment (Mid- Term)	-	-	-
8.	Dual Trace Oscilloscope classification, operation, and comparison Waveforms' parameters display, measurement, and analysis	2	1	2
9.	Digital-Storage Oscilloscopes (DSO): Digital Storage Oscilloscope construction and modes of operations.	4	2	4

	Digital Storage Oscilloscope Circuits design and analysis			
10.	Waveform Analysis Instruments: Analog Spectrum Analyzer operation, display, and performance Digital Spectrum Analyzer operation, display, and performance	2	1	2
11.	Data Acquisition Systems Data acquisition systems construction, operation, and specification (Report)	2	1	2
12.	Digital to Analog Converters (D/A) Circuits design and analysis Analog to Digital Converters (A/D) Circuits design and analysis	2	1	2
13.	Revision	1		1
14.	Revision		1	
15.	Revision	1		1
Total hours		30	15	30

4. Course content/Course Competencies mapping matrix.

Course Topics	Course Competencies												
	c1	c2	c3	c4	c5	c6	c7	c8	c9	c10	c11	c12	c13
1. Emitter Follower Voltmeters classification, operation, and comparison	1	1											
2. Difference Amplifier Voltmeter operation and analysis	1	1											
3. Operational Amplifier Voltmeter Circuits design and analysis	1	1											
4. AC Electronic Voltmeters classification, operation, and comparison	1	1											
5. Ohm and Current Measurements Circuits design and analysis	1	1											
6. Digital Voltmeters DVMs Circuits design and analysis (Mini-Project)			1									1	1
7. Digital Frequency Meters operation and performance			1										
8. Analog CRT Oscilloscope construction, operation, and performance				1									

9. Deflection Amplifiers Circuit design and analysis				1										
10. Sweep Generator Circuit design and analysis.				1										
11. Automatic Time Base components, operation, and integration				1										
12. Dual Trace Oscilloscope classification, operation, and comparison				1										
13. Waveforms' parameters display, measurement, and analysis						1								
14. Digital Storage Oscilloscope construction, and modes of operations.					1									
15. Digital Storage Oscilloscope Circuits design and analysis					1									
16. Analog Spectrum Analyzer operation, display, and performance							1		1					
17. Digital Spectrum Analyzer operation, display, and performance								1		1				
18. Data acquisition systems construction, operation, and specification (Report)											1		1	
19. Digital to Analog Converters (D/A) Circuits design and analysis												1		
20. Analog to Digital Converters (A/D) Circuits design and analysis												1		
Topics Covering Competencies	5	5	2	5	2	1	1	1	2	1	2	2	2	1

5- Course Competencies/Teaching and Learning and Assessment methods:

Course Competencies	Teaching Methods					Learning Methods			Assessment Method					
	Lecture	Tutorials	Problem solving	Laboratory & Experiments	Discussions & seminars	Self - Learning	Research & Report	Assignments	Written Exam	Practical Exam	Quizzes	Assignments	Research & Report	Mini - Project
c1					1	1		1				1	1	
c2	1	1	1						1		1			
c3	1	1	1	1			1		1			1		1

c4	1	1	1	1					1	1	1			
c5	1	1	1	1					1	1	1			
c6	1	1		1					1	1		1		
c7	1	1		1					1	1	1			
c8	1	1	1	1					1			1		
c9	1	1		1					1	1		1		
c10	1	1	1	1					1	1	1			
c11	1	1	1					1	1			1	1	
c12				1									1	
c13				1										1
Σ	10	10	7	10	1	1	1	2	10	6	5	6	3	2

7- Assessment Timing and Grading

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Semester Work:	Assignments	2 Assignments per semester	10
	Quizzes	2 Quizzes per semester	10
	Mini-Project/Report	Once per semester	5 (Bonus)
Practical Exam		Fifteenth week	20
Written Exam		Sixteenth week	40
Total			100

7- List of references

7-1 Course notes:

- Hany Tawfik and Shouman S.E.I. (2018) Electronic Measurements “Theoretical Part”, Cairo, Egypt.
- Hany Tawfik and Shouman S.E.I. (2018) Electronic Measurements “Practical Part”, Cairo, Egypt.

7-2 Required books:

- Hefrick, A.D. and Cooper, W.D., (2009) *Modern Electronic Instrumentation and Measurement Techniques*, Prentice- Hall International, Inc., London UK.
- Witte, R.A., (2014) *Electronic Test Instruments: Analog and Digital Measurements*, Dorling Kindsley Pearson Education, USA.

7-3 Recommended books:

- Bell, D.A. (2013) *Electronic Instrumentation and Measurements*, OXFORD UNIVERSITY PRESS, 3rd edition, UK.
- Jones, D.L, and Chin F.A., (1991) *Electronic Instruments and Measurements*, Prentice- Hall International, Inc., London UK.

7-4 Recommended Web Sites

MIT Open courseware

<https://ocw.mit.edu/courses/electrical-engineering-and-computer-Sciencee/6-071j-introduction-to-electronics-signals-and-measurement-spring-2006/> (Last accessed January 2021)

8- Facilities required for teaching and learning:

Lectures room equipped with OHP and data show facility.

Complete Lab for Electronic Measurements.

Course Coordinator Prof. Dr. Shouman S.E.I.

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

Date: August, 2021

Modern Academy

for Engineering and Technology in Maadi



Course Specification

GENn142: 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:	Manufacturing Engineering and Production Technology Department Electronic Engineering and Communication Technology Department Computer Engineering and Information Technology Department
Department offering the course:	Basic Science Department
Date of specifications approval:	August 2020

B - Basic information

Title: Technical Report Writing	Code: GENn142	Level: 1 st -2 nd (Spring)	
Credit Hours: 2	Lectures: 2	Tutorial/Exercise:	Practical: -
	Pre-requisite: None		

C - Professional information

1 – Course Learning Objectives:

The main objective of this course is to enable students to introduce the basic concepts of writing technical reports, resume's, CVs and research papers.

2 – Competencies

- c1- Study rhetorical models of writing. (C5)
- c2- Write paragraphs and peer edit them using error detection. (C8)
- c3- Identify different types of technical reports. (C5)
- c4- Enhance methodology of analyzing the engineering data. (C5)
- c5- Develop clear understanding of the effects of word choice, sentence structure, organization and document design. (C6)
- c6- Recognize the elements of technical reports and implement the methodology of technical writing. (C8)
- c7- Use the correct expressions and analytical reading. (C8)

- c8- Practice using the conventional style of using visuals equations, tables and figures, (C8)
- c9- Interact professionally with other writers and their writings. (C8)
- c10- Utilize knowledge and scientific findings with other people and Perform report and manual writing. (C5)
- c11- Present findings of scientific research in seminars and workshops. (C5)
- c12- Collaborate effectively with the group work and publishing strategies. (C5)

This course contributes in the following program competencies: C5, C6, C8

3 – Contents

week	Topic	Lecture hours	Tutorial hours	Practical hours
1	• Introduction: Paragraph writing	2		-
2	• Steps to a Successful Writing Assignment	2		-
3	• The Writing Process	2		-
4	• Elements of technical reports	4		-
5	• Research Papers and Reports	2		-
6	• Lab Reports	4		-
7	• Mid term	2		
8	• Resumes and Cover Letters	2		-
9	• Using Words Correctly	2		-
10	• Report and Thesis Layout	2		-
11	• Technical Writing Ethics	2		-
12	• A Structured Approach to Presenting Postgraduate Research Theses	2		-
13	• Publishing from the thesis	2		-
14,15	• Writing a research paper	2		-
Total Hours		30		-

4 - Course content/Course Competencies mapping matrix

Topic	Knowledge			Skills					Attitude			
	c1	c2	c3	c4	c5	c6	c7	c8	c9	c10	c11	c12
Introduction: Paragraph writing	1	1	1	1	1	1	1	1	1	1	1	1
Steps to a Successful Writing Assignment	1	1	1	1	1	1	1	1	1	1	1	1
The Writing Process	1	1	1	1	1	1	1	1	1		1	1
Elements of technical reports	1	1	1		1	1	1	1	1			1
Research Papers and Reports	1	1		1		1	1	1		1	1	1
Lab Reports	1	1	1	1	1	1	1	1		1		1
Revision 7th week Exam	1		1		1	1		1				
Resumes and Cover Letters	1	1	1	1		1		1	1	1	1	1
Using Words Correctly	1	1	1		1	1		1		1	1	1
Report and Thesis Layout	1	1	1		1			1	1		1	
Technical Writing Ethics	1	1	1	1	1		1	1		1		1
A Structured Approach to Presenting Postgraduate Research Theses		1	1	1		1	1	1	1	1	1	
Writing a research paper	1	1	1	1	1		1	1	1	1	1	1
Topics Covering Competences	12	12	12	9	10	10	9	12	8	9	9	10

5-Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods						Learning Methods			Assessment Method					
	Lecture	Presentations & Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Researched, Reports & Assignments	Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report	
c1	1		1				1			1			1		1
c2	1							1							
c3	1						1			1			1	1	1
c4	1		1					1							
c5	1							1					1		1
c6	1														
c7	1		1					1		1			1	1	1
c8	1						1						1		1
c9	1						1	1					1		
c10	1		1										1		1
c11	1		1				1	1							
c12	1						1	1					1		
Σ	12		6				6	7		3			3	7	6

6- Assessment Timing and Grading:

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

7- List of references:

7-1 Course notes:

The Report Writing Book by Dr Neveen Samir , 2015

7-2 Required books

- Shelton, James, Handbook for technical writing, NTC publishing Group, Illinois, USA, 1998.
- Deborah, C.A. & Margaret D. Bickle (2001) **Technical Writing, Principles and Forms**, 2nd Ed., MacMillan Publishing.

7-3 Recommended books: Douglas Godfrey, **ASLE Author's Guide**, Jan. ,1997

7-4 Periodicals, Web sites, etc.:

www.technical-writing.com

8- Facilities required for teaching and learning:

Internet educational lab, Computer and Data show

High speed internet and communication facilities for distance learning

Course coordinator:

Dr. Neveen Samir

Head of the Department:

Prof. Dr. Ashraf Taha

August 2020

Modern Academy

for Engineering and Technology in Maadi



Course Specification

MTHn208: Mathematics -8(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 Communication Technology Department
Computer Engineering and Information Technology Department
Department offering the course: Basic Science Department
Date of specifications approval: August 2020

B - Basic Information

Title: Mathematics-8(Complex Analysis and Partial Differential Equations) **Code:** MTHn208 **Level:** 2nd Spring
Credit Hours: 2 **Lectures:** 2 **Tutorial/Exercise:** 1 **Practical:** ---
Pre-requisite: MTHn002

C - Professional information

1 – Course Learning Objectives:

By the end of this course, the students should have gained the planned competencies (knowledge, skills, and attitudes) related to 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 – Competences

- c1. Identify complex numbers, D'Moiver theorem, complex and analytic functions. (C1, C5)
- c2. Explain conformal mappings and bilinear transformation. (C1, C5)
- c3. Explain power series and integration by integration by methods of residues. (C1, C5)
- c4. Identify basic concepts, classification, and canonical form of PDEs. (C1, C5)
- c5. Investigate method of separation of variables for heat, wave, and Laplace equations. (C1, C5, C9)
- c6. Solution of PDEs using Laplace transform. (C1, C5, C9)
- c7. Investigate D'Moiver theorem, complex and analytic functions. (C1, C5, C9)
- c8. Explore and recognize conformal mappings and bilinear transformation. (C1, C5, C9)
- c9. Expand and integrate complex functions using different methods. (C1, C5, C9)
- c10. Develop several methods for solving PDEs. (C1, C5, C9)
- c11. Apply the method of separation of variables to solve heat, wave, and Laplace equations. (C1, C5, C9)
- c12. Solve PDEs using Laplace transform and solve partial differential equations describing real systems. (C1, C5, C9)

This course contributes in the following program competencies: C1, C5, C7, C8, C9, C10

3 – Contents

week	Topic	Lecture hours	Tutorial hours	Practical hours
1	➤ Complex numbers, arithmetic operations, polar forms	2	1	—
2	➤ D'Moiver theorem, complex functions. Analytic function	2	1	—
3	➤ Elementary functions of complex variables	2	1	—
4	➤ Mapping, and conformal mapping.	2	1	—
5	➤ Bilinear transformation, complex integrals.	2	1	—
6	➤ Power series (Taylor and Laurent series).	2	1	—
7	➤ Mid term	2		
8	➤ Integration by method of residues.	2	1	—
9	➤ Introduction to PDEs, Basic concepts of PDEs	3	1	—
10	➤ Classifications and conical forms of 2 nd order linear PDEs.	3	1	—
11	➤ Method of separation of variables for heat equation.	3	2	—
12	➤ Wave and Laplace equations. D'Alembert solution of wave equation.	3	2	—
13,14,15	➤ Solution of PDEs using Laplace transforms.	2	1	—
Total hours		30	15	—

4. Course content/Course Competencies mapping matrix

Topic	Knowledge					Skills				Attitude		
	c1	c2	c3	c4	c5	c6	c7	c8	c9	c10	c11	c12
Complex numbers, arithmetic operations, polar forms	1						1					
D'Moiver theorem, complex functions. Analytic function	1						1					
Elementary functions of complex variables	1						1					
Mapping, and conformal mapping.		1						1				
Bilinear transformation, complex integrals.		1						1				
Power series (Taylor and Laurent series).			1						1			
Integration by method of residues.			1						1			
Introduction to PDEs, Basic concepts of PDEs				1						1		
Classifications and conical forms of 2 nd order linear PDEs.				1						1		
Method of separation of variables for heat equation.					1					1	1	

Wave and Laplace equations. D'Alembert solution of wave equation.					1						1	
Solution of PDEs using Laplace transforms.						1						1
Topics Covering Competences	3	2	2	2	3	1	3	2	2	3	2	1

5 - Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods				Learning Methods	Assessment Method			
	Lecture	Discussions and seminars	Tutorials	Problem solving	Research and Reports	Written Exam	Quizzes	Term papers	Assignments
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	1	1	1
c5	1		1	1	1	1	1	1	1
c6	1				1	1	1		1
c7	1		1	1		1	1		1
c8	1		1	1		1	1	1	1
c9	1	1	1	1	1	1		1	1
c10	1		1	1		1			1
c11	1		1	1		1		1	1
c12	1	1	1	1	1	1		1	1
Σ	12	3	11	10	6	12	8	7	12

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Semester Work	Quizzes	Bi-Weekly	40
	Reports/Research		
	Assignments		
Written Exam		Sixteenth week	40
Total			100

7- List of references:

7-1 Course notes:

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

7-2 Required books:

E. Kreyszig, Advanced Engineering Mathematics, 10th ed, John Willey & Sons, Inc., 2001

7-11 Recommended books:

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

7-4 Periodicals, Web sites, etc.

www.sosmath.com

8- Facilities required for teaching and learning:

- Library and required references.
- High speed internet and communication facilities for distance learning..

Course coordinator:

Dr. Ghada Salem

Head of the Department:

associate Professor / Ashraf Taha EL-Sayed

Date:

August 2020

Summer Training

Modern Academy

for Engineering and Technology in Maddi



Course Specification Course Specification

CMPn260: Industrial Training -1

A- Affiliation

Relevant program:

Computer Engineering and Information Technology BSc Program

Department offering the program: Computer Engineering and Information Technology Department

Department offering the course: Computer Engineering and Information Technology Department

Date of specifications approval: August 2020

B - Basic information

Title: Industrial Training -1

Code: CMPn260

Level: Senior-2 9th Semester

Credit Hours: 0

Lectures: -

Tutorial/Exercise: -

Credit Hours: -

Lectures: -

Pre-requisite: 65 credits+CMPn160

C - Professional information

1 – Course Learning Objectives:

By the end of this course, the students should have gained the planned competences related to the construction and operation of 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 - Competencies:

- c1- Enrich their practical learning experience. Enrich their ability to work within defined constraints (C6, C10)
- c2- Communicate with others; work in a team and involvement in group discussion (C8)
- c3- Present data and results orally and in written form. (C8, C18)
- c4- Use ICT facilities in presentations. Identify the practical up to date techniques and technologies (C1, C11, C14)
- c5- Use creative, innovative and flexible thinking in ordinary courses by practical cases (C15, C19, C20)
- c6-Identify the hardware/software production cycles (C15, C16)

This course contributes in the following program competencies: C1, C6, C8,C10, C11, C14,C15,C16, C18, C19 & C20

3 – Contents

SN	Topic	Lecture hours	Tutorial hours	Practical hours
1	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: <ul style="list-style-type: none"> • Profile of the industry • Organization structure • Machine, equipment, devices • Personal welfare scheme • Details of the training undergo Project undertaken during the training			
Total hours				60

4. Course content/Course Competencies mapping matrix

Topic	c1	c2	c3	c4	c5	c6
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: <ul style="list-style-type: none"> • Profile of the industry • Organization structure • Machine, equipment, devices • Personal welfare scheme • Details of the training undergo Project undertaken during the training	1	1	1	1	1	1
Topics Covering Competences	1	1	1	1	1	1

5 - Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods						Learning Methods			Assessment Method					
	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Research, Reports & Assignments	Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report
c1		1				1	1								1
c2		1				1	1								1
c3		1				1	1								1
c4		1				1	1								1
c5		1				1	1								1
c6		1				1	1								1
Σ		6				6	6								6

6- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Training and course Project	At the end of the training period	60
oral Exam	At the end of semester	40
Total		100

7- List of references:

1. None

7-1 Course notes: None

7-2 Required books

none.

7-12 Recommended books: None

Periodicals, Web sites, etc.

www.mcit.gov.eg/Ar/Training/Affiliate/12

www.cisco.com/web/ME/ar/learn_events/

[http://www-](http://www-304.ibm.com/services/learning/ites.wss/eg/en?pageType=page&c=V087174W21666K25)

[304.ibm.com/services/learning/ites.wss/eg/en?pageType=page&c=V087174W21666K25](http://www-304.ibm.com/services/learning/ites.wss/eg/en?pageType=page&c=V087174W21666K25)

8- Facilities required for teaching and learning:

- The tools applied by the training company (software courses or hardware practicing)
- [High speed internet and communication facilities for distance learning.](#)

Course coordinator: Members committee of accreditation company

Head of the Department: Dr. Abd Elmoneim FoudA

Date: August 2020

Seventh Semester (Level three)

Modern Academy

for Engineering and Technology in Maddi



Course Specification

ELCn215: Communications- 1

A- Affiliation

Relevant program: Electronic Engineering & Communication Technology BSc Program

Department offering the program: Electronic Engineering & Communication Technology Department

Department offering the course: Electronic Engineering & Communication Technology Department.

Date of specifications approval: August, 2020

B - Basic Information

Title: Communications -1

Code: ELCn215

Level: 2nd Spring

Credit Hours: 3

Lectures: 2

Tutorial/Exercise: 1

Practical: 2

Pre-requisite: ELCn211

C - Professional information

1 – Course Learning Objectives:

The objective of this course is to make overview on basic communication system stages and focus especially on analog communications systems. Also, channel problems and classifications are displayed at the beginning of this course before discussion of different techniques for analog continuous wave modulation process.

2 – Competencies

- c1. Demonstrate principles of communications system and its stages. (C1, C3)
- c2. Classify electrical signals, communication channels and media (C3, C8).
- c3. Demonstrate concept of information theory (C1, C8).
- c4. Analyze Amplitude modulation process AM (C17).
- c5. Analyze Frequency modulation process FM (C17)
- c6. Analyze Phase modulation process FM (C17)
- c7. Investigate suitable solution for communication channel problem (C1).
- c8. Discriminate between different techniques of analog continuous wave modulation techniques (C9, C10)
- c9. Estimate waveform, spectrum and bandwidth at the output of each stage in analog communication system (C9, C10)
- c10. Connect electronic module simulating various stages in communication circuits filters, oscillators and modulators (C11, C12)
- c11. Observe and record input and output signals obtained by each communication system module using oscilloscopes then comment on results (C11, C12, C18).
- c12. Take measurements for signal voltages and frequency obtained at the output of various types of filters and oscillators (C12, C14, C18)
- c13. Examine simple communication system using various forms of analog modulation/demodulation modules: DSB-SS, SSB, FM, and PM (C11, C12, C14).
- c14. Communicate with others; work in a team and involvement in group discussion and seminars (C8).
- c15. Present data and results orally and in written form (C10).
- c16. Search for information's in references and in internet (C5).
- c17. Practice self-learning (C10)

This course contributes in the following program competencies: **C1, C3, C5, C8, C9, C10, C11, C12, C14, C17 & C18**

3. Contents

Week	Topics	Lecture hours	Tutorial hours	Practical hours
1	Introduction to basic principles of communication systems.	2	2	0
2	Basics of signaling and various sources of information signals.	2	1	4
3	Different forms of communication channels and media.	2	1	4
4	Communication channels; types, problems and proposed solution.	2	2	2
5	Main concept of information theory.	2	0	2
6	Modulation process – comparison between analog and digital modulation – C.W. modulation techniques.	2	2	2
7	Assessment (Mid- Term)	-	-	-
8	Baseband and band pass modulation.	2	0	4
9	Amplitude modulation and its different forms: AM, DSB-SC, SSB – Amplitude demodulation.	6	2	6
10	Television communication system (transmission and reception) using VSB technique.	2	0	0
11	Frequency modulation and demodulation.	3	2	3
12	Phase modulation and demodulation.	3	2	2
13	Revision	1	-	-
14	Revision	1	-	1
15	Revision	-	1	-
Total hours		30	15	30

4. Course content/Course Competencies mapping matrix:

Topics	Course Competencies																
	c1	c2	c3	c4	c5	c6	c7	c8	c9	c10	c11	c12	c13	c14	c15	c16	c17
1- Introduction to basic principles of communication systems.	1	1															
2- Basics of signaling and various sources of information signals.	1	1					1	1	1								
3- Different forms of communication channels and media.		1					1		1								

Topics	Course Competencies																
	c1	c2	c3	c4	c5	c6	c7	c8	c9	c10	c11	c12	c13	c14	c15	c16	c17
4- Communication channels; types, problems and proposed solution.	1	1					1		1								
5- Main concept of information theory.			1						1								
6- Modulation process – comparison between analog and digital modulation – C.W. modulation techniques.				1				1		1	1	1			1		
7- Baseband and band pass modulation.				1				1		1	1	1			1		
8- Amplitude modulation and its different forms: AM, DSB-SC, SSB – Amplitude demodulation.				1				1		1	1	1	1	1	1	1	1
9- Television communication system (transmission and reception) using VSB technique.				1				1	1								
10- Frequency modulation and demodulation.					1	1	1			1	1	1	1	1	1	1	1
11- Phase modulation and demodulation.						1	1			1	1	1	1		1	1	1
Topics Covering Competencies	3	4	1	4	1	2	5	5	5	5	5	5	3	3	5	3	3

5 – Course Competencies/Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods						Learning Methods			Assessment Method					
	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Researched, Reports & Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project	Report
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	1		1		
c4	1			1	1	1			1	1	1	1	1		
c5	1			1	1	1			1	1	1	1	1		
c6	1			1	1	1			1	1	1	1	1	1	
c7	1	1	1				1		1	1	1				
c8	1	1		1	1		1	1	1		1		1	1	1
c9	1			1	1				1	1	1		1	1	
c10						1	1		1			1			
c11						1	1		1			1			
c12						1	1		1			1			
c13						1	1		1						
c14		1	1					1						1	1
c15		1	1					1							
c16		1	1					1							
c17		1	1					1						1	
Σ	9	7	6	8	7	7	9	8	9	8	9	6	8	5	2

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Semester Work	Mid-Term Exam	7 th Week	20
	Quizzes	3 Quizzes (one each 4 weeks)	10
	Tutorials	3 Assignments per semester	10
Practical Exam		Fifteenth week	20
Written Exam		Sixteenth week	40
Total			100

7- List of references:

7-1 Course notes:

- Communications (I) “Theoretical part”
- Communications (I) “Practical part”

7-2 Required books

- B. Lathi, *Modern Digital and Analog communication systems*, Oxford press 1998.
- kendey,Davis *Electronic Communication systems*, Mc Graw-Hill Book

7-3 Recommended books:

- S. Haykin, *Communication systems*, 4th edition J. W. 2001.
- Yadav, *Analog Communication system*, 1st edition University Sciencee Press, 2008.

7-4 Periodicals, Web sites, etc.

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

<https://www.docsity.com/en/introduction-to-analog-communication/539207/>)

8- Facilities required for teaching and learning:

- Analog Communication Lab.
- Lecture and Exercise rooms equipped with projection and sound systems.
- High speed internet and communication facilities for distance learning.

Course coordinator: Dr. Nelly Muhammad Hussain

Head of the Department: Prof. Dr. Shouman S. El.

Date: August, 2020

Modern Academy

for Engineering and Technology in Maddi



Course Specification CMPn323: Database Management

A- Affiliation

Relevant program: Computer Engineering and Information Technology BSc Program
Department offering the program: Computer Engineering and Information Technology Department
Department offering the course: Computer Engineering and Information Technology Department
Date of specifications approval: August 2020

B - Basic information

Title: Database Management **Code:** CMPn323 **Level:** Senior 1, 8th Semester
Credit Hours: 4 **Lectures:** 3 **Tutorial/Exercise:** 2 **Practical:** 1 **Total:** 6
Pre-requisite: CMPn110

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 - Competencies

- c1- analyze user's data requirements (C2, C3)
- c2- Investigate functional dependency among data attributes (C7, C8, C9)
- c3- Eliminate unneeded redundancy (C15)
- c4- Determine attribute data types (C12, C17)
- c5- Apply normalization form on the data model (C1)
- c6- Design database schema (C4)
- c7- Build proper SQL statements (C10).
- c8- Exchanging views among team members (C1, C3)
- c9- Present query results to team members C4)
- c10- Search for knowledge and using ICT in search and presentation (C7, C9).

This course contributes in the following program competencies: C1, C2, C3, C4, C7, C8, C9, C10, C12, C15, C17)

3 – Contents

WEEK	Topic	Lecture hours	Tutorial hours	Practical hours
1	Database concepts, terminology, and fundamentals	3	2	1
2	Data analysis	3	2	1
3	Building data models	3	2	1

4	Data model normalization forms	3	2	1
5	Analyzing functional dependency in the data model	3	2	1
6	Converting data model into schema design.	3	2	1
7	Structured Query Language	3	2	1
8	Security in databases	3	2	1
9	Entity relationship diagram	3	2	1
10	Schema topology	3	2	1
11	Database types	3	2	1
12	Introduction to data Science	3	2	1
13	Data warehouse	3	2	1
14	Data mining	3	2	1
15	Big Data concept	3	2	1
	Total hours	45	30	15

4- Course content/Course Competencies mapping matrix

Topic	c1	c2	c3	c4	c5	c6	c7	c8	c9	C10
Database concepts, terminology, and fundamentals	1		1				1		1	1
Data analysis	1		1							
Building data models	1		1				1		1	1
Data model normalization forms			1	1		1			1	
Analyzing functional dependency in the data model	1	1	1		1					
Converting data model into schema design.	1			1			1		1	
Structured Query Language	1	1	1						1	
Security in databases		1	1							
Entity relationship diagram		1							1	1
Schema topology		1	1						1	
Database types		1				1				
Introduction to data Science		1	1	1	1					
Data warehouse	1			1		1				
Data mining	1	1	1		1	1	1		1	

Big Data concept	1							1	1	
Topics	9	7	10	4	3	3	3	2	8	2

5 - Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods						Learning Methods			Assessment Method					
	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Researched, Reports & Assignments	Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report
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	
c4			1	1	1	1	1			1	1	1	1	1	
c5	1		1	1	1	1	1			1	1	1	1	1	
c6	1	1	1	1	1	1	1		1	1	1	1	1	1	
c7	1		1	1	1	1	1			1	1	1	1	1	
c8						1						1			1
c9						1					1	1			1
c10		1	1				1						1	1	
Σ	5	5	9	6	5	9	9	0	1	7	8	9	10	10	3

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Semester Work	Mid-Term Exam	7 th Week	20
	Quizzes	3 Quizzes (one each 4 weeks)	6
	Reports/Research	Two reports per semester	4
	Tutorials	3 Assignments per semester	6
	Mini project	Once per semester	4
Practical Exam		Fifteenth week	20
Written Exam		Sixteenth week	40
Total			100

7- List of references:

Remez Elmasri, Shamkant Navath, (2000) Fundamentals of database systems, 3RD, Addison Wesley.
 C.J. Date, (2000) An introduction to database systems, seventh edition, Addison Wesley Longman Inc.
 Yadav, P.K. (2013) Introduction database management system. India: Katson.

7-1 Course notes: available

7-2 Required books:

Carlos Coronel, Steven Morris and Peter Rob, (2012) Database Systems: Design, Implementation, and Management, Cengage Learning.

7-3 Recommended books: None

7-4 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/>

8- Facilities required for teaching and learning:

- **Data show**
- **White board**

Course coordinator:	Dr. Sabry Abdel Meety
Head of the Department:	Dr. Abd Elmoneim FoudA
Date:	August 2020

Modern Academy

for Engineering and Technology in Maddi



Course Specification CMPn310: 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:	Computer Engineering and Information Technology Department Electronic Engineering and Communication Technology Department
Department offering the course:	Computer Engineering and Information Technology Department
Date of specifications approval:	Aug 2020

B - Basic Information

Title: Microprocessor Based Systems	Code: CMPn310	Level: 3 rd Fall & Spring
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Credit Hours: 3	Lectures: 2	Tutorial/Exercise: 1	Practical: 2
	Pre-requisite: CMPn111		

C - Professional information

1 – Course Learning Objectives:

By the end of this course, the students should have gained the planned competencies (based on the knowledge, skills and personal attitudes) related to constructions and operations of microprocessors (like X-86 intel family) and microcontrollers (like MCS-51 and AVR). 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 – Competencies

On successful completion of this course, the students must be able to:

- c1. Identify the internal architecture, basic features of the selected microprocessors. (C1)
- c2. Identify the memory types, the addressing modes and the basic interfaces of the selected microprocessor (C1, C3)
- c3. Explain and formulate engineering problems using assembly language and embedded high-level language. (C2, C4)
- c4. Design and implement: modules, subsystems or systems in electrical/electronic/digital engineering using professional tools (likes MikroC tools). (C11, C5)
- c5. Manipulate the instruction set of the microprocessor to convert the assembly language to its machine code that will be burned into the program memory of the system. (C12, C13)
- c6. Recognize the UpToDate modules and kits those can be interfaced with the microcontrollers like GPS, GSM, GPRS and IMU (C5).
- c7. Investigate and find solutions based on unconventional thinking and use the latest technology to investigate physical problems (C5).
- c8. Communicate effectively through using the contemporary tools for performing small projects besides researching the required reports (C5, C8)
- c9. Solve limited electromechanical tasks through control different motors (like servo motors, dc motors and stepper motors) based on programming the selected microcontroller (C3)

This course contributes in the following program competencies [for Electronic Engineering and Communication Technology BSc Programs](#)

- c4. Design and implement: modules, subsystems or systems in electrical/electronic/digital engineering using professional tools (likes MikroC tools). (C13, C5)
- c5. Manipulate the instruction set of the microprocessor to convert the assembly language to its machine code that will be burned into the program memory of the system. (C14, C15)

This course contributes in the following program competencies for Computer Engineering and Information Technology BSc Program: [C1, C2, C3, C4, C5, C8, C11, C12& C13](#)

This course contributes in the following program competencies for [Electronic Engineering and Communication Technology BSc Programs](#)
[C1, C2, C3, C4, C5, C8, C13, C14& C15](#)

3 – Contents

SN	Topic	Lecture hours	Tutorial hours	Practical hours
1	The internal architectures of the considered microprocessors	1	1	2
2	The memories types and their addressing modes besides the basic interface of the considered microprocessors.	2	1	2
3	The machine cycles, delay times of the considered microprocessors.	3	2	3
4	The assembly (data transfer, logical, arithmetic, branching) instructions	2	2	5
5	The timers and counters that used by the microprocessors	3	2	3
6	The serial interfacing with the considered microprocessors	3	1	3
7	Midterm	2	1	--
8	The concept of the interrupt for the considered microprocessors	3	1	3
9	Interfacing between microcontroller and modules like GPS	3	1	
10	Controlling the stepper and servo motors using the microcontroller	2	1	3
11	Explaining the MikroC program to interface with different modules like LCD.	3	2	3
12	Recognizing the UpToDate microprocessors like i9	1	-	-
13	Solving and designing some real applications based on microcontroller	2	-	3
Total hours		30	15	30

4. Course content/Course Competencies mapping matrix

Topic	c1	c2	c3	c4	c5	c6	c7	c8	c9
The internal architectures of the considered microprocessors	1				1				
The memories types and their addressing modes besides the basic interface of the considered microprocessors.	1	1			1				
The machine cycles, delay times of the considered microprocessors.	1				1		1		
The assembly (data transfer, logical, arithmetic, branching) instructions	1		1	1	1	1	1		1
The timers and counters that used by the microprocessors	1			1			1		

The serial interfacing with the considered microprocessors			1	1		1	1		
The concept of the interrupt for the considered microprocessors				1	1	1	1		
Interfacing between microcontroller and modules like GPS			1	1	1	1	1	1	
Controlling the stepper and servo motors using the microcontroller			1	1	1	1	1		1
Explaining the MikroC program to interface with different modules like LCD.			1	1		1	1		1
Recognizing the UpToDate microprocessors like i9	1	1						1	
Solving and designing some real applications based on microcontroller	1	1	1	1	1	1	1	1	1
Topics Covering Competences	7	3	6	8	8	7	9	3	4

5 - Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods						Learning Methods			Assessment Method					
	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Researched Reports &	Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report
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	1	1		
c4	1	1		1	1	1			1	1	1	1		1	
c5	1	1		1	1	1				1	1	1	1	1	
c6	1	1	1	1		1	1		1	1	1	1	1		
c7	1	1	1				1	1		1	1		1	1	
c8	1	1	1				1	1					1	1	
c9	1	1	1		1		1	1	1					1	
Σ	9	9	4	6	5	6	4	3	4	7	7	6	6	5	

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Practical exam		12 th Week	20
Semester Work	Quizzes	1 Quiz	20
	Reports/Research	1 report per semester	
	Tutorials	1 Assignment	
Written Exam		Sixteenth week	40
Total			100

7- List of references:

7-1 Course notes:

Lecture notes and handouts

- Assem B, (2018) The Microprocessor Based Systems: lecture note, Modern academy Laboratory work printed notes
- Assem B, (2018) The Microprocessor Based Systems: Laboratory note, Modern academy

7-2 Required books

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

7-3 Recommended books:

- Valvano, (2012) Embedded microcomputer system real time interfacing: Cengage Learning.
- Sampath k. venkatesh, (2013) 8051 microcontroller & embedded systems: katson.

7-4 Periodicals, Web sites, etc.

<http://www.intel.com>

<http://www.emu8086.com/>

<http://www.keil.com/>

<http://www.cpu-world.com>

<http://www.8052.com>

<http://www.mikroe.com/>

8- Facilities required for teaching and learning:

- Computer Lab. equipped with Data show and Computer package
- Lecture and Exercise rooms equipped with Data show projection and sound systems.
- High speed internet and communication facilities for distance learning.

Course coordinator:

Dr. Assem Badr

Head of the Department:

Dr. Abd Elmoneim Fouda

Date:

Aug. 2020

Modern Academy for Engineering
and Technology in Maadi



Course Specification
ELCn218: Electrical Machines and Power

A- Affiliation

Relevant program:	Electronic Engineering and Communication Technology BSc Program. Computer Engineering and Information Technology BSc Program.
Department offering the program:	Electronic Engineering and Communication Technology Department. Computer Engineering and Information Technology Department.
Department offering the course:	Electronic Engineering and Communication Technology Department.
Date of specifications approval:	August, 2020

B - Basic information

Title: Electrical Machines and Power	Code: ELCn218	Level: Level 2 (Junior), Seventh Semester
Credit Hours: 3	Lectures: 2	Tutorial/Exercise: 2 Practical: 1
	Pre-requisite: ELCn112	

C - Professional information

1 – Course Learning Objectives:

A study of this course will enable the student to be familiar with all kinds of machines and transformers, and the application theory of their operations.

2 – Intended Learning Outcomes (ILOS)

- c1- Understand electrical power sources. (C1, C2)
- c2- Construct electrical transformer. (C2, C4)
- c3- Analyze theory of operation and applications of electrical transformer. (C3, C9)
- c4- Construct direct current machines; motors and generators. (C2, C4)
- c5- Evaluate power losses and efficiency of direct current machines. (C1, C3, C9)
- c6- Realize three phase induction machine construction, theory of operation, torque speed characteristics, speed control, equivalent circuit, and efficiency. (C1, C2, C9)
- c7- Understand Synchronous machine operation, equivalent circuit, and voltage regulation. (C4, C9)
- c8- Analyze Transmission line system. (C2)
- c9- Compare between direct current transmission system and alternating current transmission system. (C4)
- c10- Model transmission line. (C3, C6)
- c11- Implement electrical power distribution for direct current system and alternating current system. (C3, C4)
- c12- Realize High voltage transmission lines and underground cables. (C2, C4)
- c13- Understand the principles of power converter operations. (C6, C9)
- c14- Find the equivalent circuits of transformer and machines. (C11)
- c15- Allocate any fault and know its reason. (C3, C14)
- c16- Calculate the suitable machine parameters necessary for specific load. (C11)
- c17- Choose the suitable operating torque-speed point for best machine performance. (C12)
- c18- Calculate transformer and machines efficiency. (C11)

This course contributes in the following program competencies: C1, C2, C3, C4, C5, C6, C7, C8, C9, C11,

C12, C13, & C14.

3 – Contents

Week	Topic	Lecture hours	Tutorial hours	Practical hours
1	Circuit analysis of transformers.	2	1	-
2	Transformer construction.	2	-	2
3	Equivalent circuit of a transformer.	2	1	4
4	Transformer test.	2	2	4
5	Construction of DC machine.	2	-	1
6	Classification of DC machine.	2	1	4
7	Assessment (Mid- Term)	-	-	-
8	Circuit equations of DC machine.	2	2	2
9	DC machine efficiency.	2	1	2
10	Construction of induction motors.	2	-	1
11	Torque-speed characteristics.	2	1	3
	Efficiency of induction motor.	1	1	2
12	Construction of synchronous machine.	2	-	1
	Circuit equations of synchronous machine.	1	2	-
13	Operation synchronous machine.	2	1	2
14	Transmission line system and modeling	1	-	-
	Comparison between direct current transmission system and alternating current transmission system	1	1	-
15	Types of power converters.	1	-	-
	Application and operation of power converters.	1	1	2
Total hours		30	15	30

4- Course content/Course Competencies mapping matrix

Topic	Course Competencies																	
	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18
Circuit analysis of transformers.			1						1									
Transformer construction.		1		1														
Equivalent circuit of a transformer.			1					1	1									

Topic	Course Competencies																	
	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18
Transformer test.			1		1													
Construction of DC machine.		1		1														
Classification of DC machine.		1		1														
Circuit equations of DC machine.											1							
DC machine efficiency.	1		1						1									
Construction of induction motors.	1	1							1									
Torque-speed characteristics.			1									1	1					
Efficiency of induction motor.			1					1			1		1					
Construction of synchronous machine.				1					1									
Circuit equations of synchronous machine.				1					1									
Operation synchronous machine.				1					1									
Transmission line system and modelling		1	1				1											
Comparison between direct current transmission system and alternating current transmission system		1	1	1														
Types of power converters.													1	1				
Application and operation of power converters.						1			1									
Topics Covering Competences	2	6	8	7	1	1	1	2	8	0	2	1	3	1	0	0	0	0

5 – Course Competencies/Teaching, Learning and Assessment methods:

Course Competencies	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
c1	1					1			1	1	1	1	1
c2	1	1				1	1		1		1	1	1
c3	1			1	1				1			1	1
c4	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
c7	1	1		1	1								
c8	1	1					1						
c9	1			1	1								
c10	1			1	1								
c11	1				1								
c12	1				1								
c13	1			1	1								
c14	1			1					1	1	1	1	1
c15	1					1			1	1	1	1	1
c16	1			1					1			1	1
c17				1		1			1			1	1
c18	1			1		1			1		1	1	1

6- Assessment Timing and Grading:

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

7- List of references:

7-1 Course notes:

- H. Gamal, **Electrical Machines and Power**, Cairo.
- H. Gamal, **Electrical Machines and Power**, Practical Part, Cairo, 2008.

7.2 Required books

- Stephan J. Chapman, **Electrical Machinery Fundamentals**, 4th edition, Mc Graw-Hill, 2005.

7.3 Recommended books:

- A. E. Fitzgerald, C. Kingsley, and S.D.U. man, **Electrical Machinery**, 6th edition, 2003.

7-4 Periodicals, Web sites, etc.

- Educational CD.
- <http://www.slideshare.net/jayleong111/electrical-machines-drives-and-power-systems>.
- <http://www.amazon.com/Electrical-Machines-Drives-Systems-Edition/dp/0131776916>.

8- Facilities required for teaching and learning:

- Electrical Machines Lab.
- Data Show.

Course coordinator:	Dr. Haytham Gamal Mohamed.
Head of the Department:	Prof. Dr. Shouman S.E.I.
Date:	August, 2020

Modern Academy

for Engineering and Technology in Maddi



Course Specification

CMPn 361: Project-1

A- Affiliation

Relevant program/s:

Computer Engineering and Information Technology BSc Program

Department offering the program:

Computer Engineering and Information Technology Department

Department offering the course:

Computer Engineering and Information Technology Department

Date of specifications approval:

August 2020

B - Basic information

Title: Project-1

Code: CMPn **Level:** Senior-1 7th semester
361

Credit Hours: 2

Lectures: -	Tutorial/Exercise: 2	Practical: 2	Total: 4
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Pre-requisite: +66 Credits

C - Professional Information

1 – Course Learning Objectives:

Computer engineers must be suited for both: software and hardware skills. The first phase of the project aims to develop those previously studied skills. The proposed project must complement the other courses in the electric and electronic engineering. Each student must understand the assigned project contribution and know his task. By the end of this project the students should be 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 - Competencies

c1 – Identify, formulate, and assign engineering problems to be solved by applying engineering

fundamentals, basic Science and mathematics. (C1)

c2- Identify and accept knowledge of operational practice, engineering codes and design techniques relevant to the project. (C1, C5)

c3- Explain basic idea, concepts and characteristics of the proposed project (C1, C3)

c4- Making a plan to distribute their tasks along the available duration time taking into consideration other trades requirements. (C2, C6).

c5- Utilize basic concepts of contemporary technologies to handle friendly different tools (C2, C4)

c6. Use a wide range of analytical tools, techniques, and software packages pertaining to the discipline and develop required project throughout the phases of the life cycle of system development SDLC. (C16, C17)

c7- Investigate on a proposed project for Innovating solutions based on non-traditional thinking and the use of latest technologies to investigate on the project problem solutions, (C20)

c8- Design the project based on the different learned skills. (C11)

c9- Manipulate the project based on the different learned skills to estimate and measure the performance of the different learned topics, and evaluate its suitability for a specific application (C12, C13)

This course contributes in the following program competencies: C1, C2, C3, C4, C5, C6, C11, C12, C13, C16, C17& C20

3 – Contents

Weeks	Topic	Lecture hours	Tutorial hours	Practical hours
1	literature survey about different electric/electronic hardware skills		2	2
2	literature survey about different embedded systems		2	2
3	literature survey about different web design skills		2	2
4	literature survey about different web developer skills		2	2
5	literature survey about different network skills		2	2
6	literature survey about different database skills		2	2
8	Studying the idea of the assigned project		2	2
9	Planning and scheduling the project activities.		2	2
10,11	Designing the project circuit.		2	2
11,12	Implementation the project circuit.		4	4
13,14	Testing the project circuit.		4	4
15	Make final technical report documentation		2	2
	Total hours		30	30

4. Course content/Course Competencies mapping matrix

Topic	c1	c2	c3	c4	c5	c6	c7	c8	c9
Studying the idea of the assigned project.	1		1	1				1	1
Planning and scheduling the project activities.	1	1		1			1		
Designing the project circuit.	1	1		1				1	1
Implementation the project circuit.	1		1		1	1	1	1	1

Testing the project circuit. Then Make final technical report documentation	1	1	1	1	1	1	1	1	1
Topics Covering Competences	5	3	3	4	2	2	3	4	4

5 - Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods						Learning Methods			Assessment Method					
	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Researched, Reports & Self-Learning	Modeling and Simulation		Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report
c1	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
c4	1	1		1		1		1		1	1	1			1
c5	1	1		1	1	1	1	1		1	1	1	1	1	1
c6	1	1	1	1	1	1				1	1	1	1		1
c7	1	1	1	1		1	1	1	1	1	1	1	1	1	1
c8	1	1	1	1		1	1	1	1	1	1	1		1	1
c9	1	1	1		1		1	1	1					1	1
Σ	9	9	4	8	5	8	4	6	3	8	8	8	5	4	9

6- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Assignment and year work	By the semester	60
Assignment and year work Evaluation of oral and final report of seminars	By the end of the seminar periods	40
Total		100

7- List of references:

7-1 Course notes:

7-2 Required books: None

7-3 Recommended books: None

7-4 Periodicals, Web sites, etc.

<http://www.electronicshub.org/top-electrical-mini-projects/>
<http://www.circuitstoday.com/simple-electronics-projects-and-circuits>
<http://www.examsadda.com/2011/05/mini-projects-for-electronics.html>
<http://www.projecttitles4free.com/>
<http://www.gobookee.org/electrical-engineering-students-small-project/>
http://www.realworldengineering.org/library_search.html
<http://www.stackoverflow.com>.
<http://www.GenLib.org/>

8- Facilities required for teaching and learning:

- Computer lab equipped with computers with software installed and data show facility.

Course coordinator: Dr. Abdelmoneim Fouda

Head of the Department: Dr. Abdelmoneim Fouda

Date: August 2020

Modern Academy
for Engineering and Technology in Maddi



Course Specification
GENn351b: Technical English

A- Affiliation

Relevant program: Computer Engineering and Information Technology BSc Program
Department offering the program: Computer Engineering and Information Technology BSc Program
Department offering the course: Basic Sciences Department
Date of specifications approval: August 2020

B - Basic information

Title: English Language **Code:** **Level:** 3th
GENn351b
Credit Hours: 2 **Lectures:**2 **Tutorial:** **Practical:**
Pre-requisite: - GENn042

C - Professional information

1 – Course Learning Objectives:

This course is designed to help students to concentrate on grammatical structures especially those used in scientific language. Students will be introduced to vocabulary of scientific English and develop their understanding and application of it. The exercises used aim at teaching and understanding concepts, using lexical and cohesive devices, deducing contextual meaning of lexical items, and skimming and/or scanning to locate specific information.

2 – Competencies

- c1- Develop the vocabulary of students in their field of specialization. (C5)
- c2- Develop understanding and application of reading skills. (C8)
- c3- Enable students to practice the language functions commonly used in English. (C10)
- c4- Develop students' mastery of such essential reading skills as using reference locating information, distinguishing major and minor points, and finding main theme of a text . (C10)
- c5- Develop students' ability to communicate information with their peers. (C10)
- c6-Employ tasks which encourage students to take an active role in learning and using new vocabulary. (C9)
- c7- Understand terminology related to the engineering fields. (C8)
- c 8- Enhance class interaction in terms of speaking, reading, and writing. (C8)
- c 9- Use English in an engineering environment. (C8)
- c 10- Describe technical functions and applications. (C8)
- c 11- Personalize the learning experience by offering students interesting topics relevant to their interests and experiences. (C8)
- c12- Work in a team and involve in group discussion. (C8)
- c13- Communicate effectively and present data and results orally and in written form. (C8, C10)
- c14- Improve specialist language knowledge of engineers. (C8)
- c15- Search for information in references and in internet. (C10)

c16- Employ tasks which encourage students to take an active role in learning new vocabulary, related to their field of specialization. (C10)

This course contributes in the following program competencies:C5, C8, C9, C10

3 – Contents

week	Topic	Lecture hours	Tutorial hours	Practical hours
1	Technology in use	2		
2	Describing technical functions	2		
3	Describing technical applications	2		
4	Materials technology Describing specific materials.	2		
5	Components and assemblies Describing component shapes and features explaining and assessing manufacturing techniques.	2		
6	Engineering design Working with drawings discussing dimensions and precision.	2		
6	Breaking point Describing types of technical problem.	2		
7	Revision 7th week Exam	2		
8	Procedures and precautions. Describing health and safety precautions.	2		
9	Technical development Discussing technical requirements suggesting ideas and solutions.	2		
10	Monitoring and control Describing automated systems.	2		
11	Theory and practice Explaining tests and experiments. Exchanging views on predictions and theories.	2		
12	Pushing the boundaries Discussing performance and suitability. Describing physical forces.	2		
13,14,15	Revision and sheets	2		
Total hours		30		

4. Course content/Course Competencies mapping matrix

Topic	Knowledge							Skills				Attitude				
	c1	c2	c3	c4	c5	c6	c7	c8	c9	c10	c11	c12	c13	c14	c15	c16
Technology in use	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Describing technical functions and applications	1	1	1	1	1	1	1		1	1	1		1	1	1	1
Materials technology Describing specific materials	1	1	1	1	1	1	1		1	1	1		1	1	1	1
Components and assemblies Describing component shapes and features explaining and assessing manufacturing techniques	1	1	1		1	1	1		1	1	1		1		1	1
Engineering design Working with drawings discussing dimensions and precision	1	1	1	1	1		1		1	1		1		1	1	
Breaking point Describing types of technical problem	1	1	1	1	1	1	1		1	1		1	1		1	
Revision 7 th week Exam	1		1			1	1			1						1
Technical development Discussing technical requirements suggesting ideas and solutions	1	1	1	1	1		1	1		1	1	1	1	1	1	
Procedures and precautions. Describing health and safety precautions	1	1	1		1	1	1	1		1		1		1	1	
Monitoring and control Describing automated systems	1	1	1		1	1		1		1	1		1	1		1
Theory and practice Explaining tests and experiments. Exchanging views on predictions and theories	1	1	1	1	1	1		1		1		1			1	
Pushing the boundaries Discussing performance and suitability. Describing physical forces	1	1	1	1	1		1		1	1	1	1	1	1		1
Revision and sheets	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1
Topics Covering Competences	13	12	13	9	12	10	10	6	9	13	8	8	9	9	10	8

5- Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods						Learning Methods			Assessment Method					
	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Researched Reports &	Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report
c1	1		1				1			1			1		1
c2	1							1							
c3	1						1			1			1	1	1
c4	1		1					1							
c5	1							1						1	1
c6	1														
c7	1		1					1		1			1	1	1
c8	1						1							1	1
c9	1						1	1						1	
c10	1		1											1	1
c11	1		1				1	1							
c12	1						1	1						1	
c13	1		1				1							1	
c14	1		1				1	1						1	
c15	1						1	1						1	
c16	1						1	1						1	
Σ	16		7				10	10		3			3	11	6

6- Assessment Timing and Grading:

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

7- List of references:

7-1 Course notes:

Technical English Book by Dr Neveen Samir , 2021

7-2 Required books

Shelton, James, Handbook for Technical English, NTC publishing Group, Illinois, USA, 1998.

Raymond MurPHY, (2012), "English Grammar in Use. Cambridge", Cambridge University Press.

7-3 Recommended books: Non

7-4 Periodicals, Web sites, etc.:

- <http://www.bbc.co.uk/learningenglish>
- <http://www.rong-chang.com/>
- <http://legacy.australiannetwork.com/studyenglish/>

8- Facilities required for teaching and learning:

Library and Internet

Course coordinator:

Dr. Neveen Samir

Head of the Department:

Prof. Dr. Ashraf Taha

Date

August 2020

Modern Academy

for Engineering and Technology in Maadi



Course Specification GENn352: Risk Management

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
Civil Engineering and Building Technology BSc program

Department offering the program:

Manufacturing Engineering and Production Technology Department
Electronic Engineering and Communication Technology Department
Computer Engineering and Information Technology Department
Architecture Engineering and Building Technology Department
Civil Engineering and Building Technology Department

Department offering the course:

Basic Science Department

Date of specifications approval:

August 2020

B - Basic Information

Title: Risk Management

Code: GENn352

Level: 3rd, Fall

Credit Hours: 2

Lectures: 2

Tutorial/Exercise: -

Practical: -

Pre-requisite: None

C - Professional information

1 – Course Learning Objectives:

On successful completion of the course, the student will be able to synthesize and respond to the complexity of legal issues within their risk management practice and demonstrate the ability to operate effectively in complex and unpredictable situations within professional contexts.

2 – Competencies

c1- Understand the basic concepts of risk assessment. (C4, C8)

c2- Explain the basic concepts of hazards and risk factors. (C9, C10)

c3 - Explain principles of rating the extent of potential harm and evaluating the likelihood that harm will occur.
(C4)

c4 - Classify and compare the principles of controlling the risks. (C10)

c5 - Analyze, strategies for managing the risks and Deciding priorities for action . (C2, C3)

c6 - Apply Principles of strategic approaches for dealing with risks. (C2, C3)

c7 - Compare and analyze different risk situations and risk environments. (C2, C4)

c8 - Select and use appropriate Strategies, methods and techniques for identifying, diagnosing and dealing with risks. (C3, C6, C7)

c9 - Develop problem solving approaches and controlling the risk. (C2, C6, C7, C9)

c10 - Enhance the ability to critically reflect on own and others' practice to improve own/others' actions. (C2, C3, C7)

c11 - Search for information and engage in life-long self-learning discipline. (C5, C9)

c12 - Practice self-learning and communicate effectively orally and in written form. (C7, C8)

This course contributes in the following program competencies: C2, C3, C4, C5, C6, C7, C8, C9, C10

3- contents

week	Topic	Lecture hours	Tutorial hours	Practical hours
1	➤ Identify risk assessment, hazards, and risk factors	2	-	-
2,3	➤ Evaluating the hazards and risks.	4	-	-
4,5	➤ Rating the extent of potential harm, and the likelihood that harm will occur.	4	-	-
6	➤ Controlling the risks, Control measures.	4	-	-
7	➤ Mid term	2		
8	➤ Systems of control, Deciding priorities for action.	2	-	-
9,10	➤ Case study 1: health services, Case study 2: call centers.	4	-	-
11	➤ Case study 3: food production and processing, Case study 4: engineering and manufacture.	3	-	-
12	➤ Strategies for managing the risks, Planning, Range of strategic approaches for dealing with risks.	3	-	-
13,14,15	➤ Stakeholders and spreading the risks, and Policies.	2	-	-
		30		

4. Course content/Course Competencies mapping matrix

Topic	Knowledge				Skills					Attitude		
	c1	c2	c3	c4	c5	c6	c7	c8	c9	c10	c11	c12
Identify risk assessment, hazards, and risk factors	1	1	1	1				1			1	1
Evaluating the hazards and risks.	1	1	1	1	1	1	1	1	1		1	1
Rating the extent of potential harm, and the likelihood that harm will occur.	1	1	1	1	1	1	1	1	1		1	1
Controlling the risks, Control measures.	1	1	1	1	1	1	1	1	1		1	1
Systems of control, Deciding priorities for action.	1	1	1	1	1	1	1	1	1	1	1	1
Case study 1: health services, Case study 2: call centers.	1	1	1	1	1	1	1	1	1	1	1	1
Case study 3: food production and processing, Case study 4: engineering and manufacture.	1	1	1	1	1	1	1	1	1	1	1	1
Strategies for managing the risks, Planning, Range of strategic approaches for dealing with risks.	1	1	1	1	1	1	1	1	1	1	1	1
Stakeholders and spreading the risks, and Policies.	1	1	1	1	1	1	1	1	1		1	1
Topics Covering Competences	9	9	9	9	8	8	8	9	8	4	9	9

5 - Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods				Learning Methods	Assessment Method		
	Lecture	Discussions and seminars	Tutorials	Problem solving	Research and Reports	Written Exam	Quizzes	Assignments
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	1
c5	1	1			1	1	1	1
c6	1	1			1	1	1	1
c7	1	1			1	1	1	1
c8	1	1			1			
c9	1	1			1			
c10	1	1			1			
c11		1			1			
c12	1	1			1	1	1	1

Σ	11	12			12	8	8	8
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6- Assessment Timing and Grading:

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

7- List of references:

7-5 Course notes:

Risk Management.

7-13 Required books:

J. Jeyras (2002), "Risk management principles", planta Tree, UK

7-14 Recommended books:

E. J. Vaughan, T. Vaugan (2007), 9th Edition, "Fundamentals of risk and insurance", John Wiley,

M. Keegan (2004): The orange book of risk management- Principles and concepts", HM treasury concepts, London, UK

E. Baranoff (2012)" Enterprise and individual risk management", Harvard Business Review US

7-4 Periodicals, Web sites, etc.

<https://www.investopedia.com/terms/r/riskmanagement.asp>

<http://www.freebookcentre.net/>

8- Facilities required for teaching and learning:

- Lectures room equipped with OHP and data show facility.
- Library.
- High speed internet and communication facilities for distance learning

Course coordinator:

Dr. Nagat A. Elmahdy

Head of the Department:

Associat Professor / Ashraf Taha EL-Sayed

Date:

August 2020

Modern Academy
for Engineering and Technology in Maddi



Course Specification
GENn353a Industrial Psychology

A- Affiliation

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

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

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

Date of specifications approval: August 2020

B - Basic Information

Title: Industrial Psychology **Code:** GENn353a **Level:** Seventh Semester (Level three)

Credit Hours: 2 **Lectures: 2** **Tutorial/Exercise: 0** **Practical: 0**

Pre-requisite: None

C - Professional information

1 – Course Learning Objectives:

By the end of this course, the students should have gained the planned competences (knowledge, skills and attitudes) related to improve the performance of the whole work system as well to reduce the stress imposed on the working human being in industry.

2 - Competencies

- c1. Identify the role of the role of industrial engineer (C4).
- c2. Learn the structural system of human work (C4, C6).
- c3. Learn the physical environmental impacts on human beings which can be assessed quantitatively (C4, C6)
- c4. Use appropriate techniques on basics of ergonomics to instrument display, machine, control and lay out of workplace (C4, C5, C6)
- c5. Consider effect of all environmental changes on equipment (C3)
- c6. Diminishing the effects of physical environmental impacts on human beings (C3, C4)
- c7. Utilize and make the best use of human abilities (C10)
- c8. Acquire and apply new knowledge to new product design adapted to the customer. (C5, C6)
- c9. Practice using ergonomic factors in domestic and industrial products (C4, C5, C6)
- c10. Collaborate effectively within multidisciplinary team (C5, C7, C9).
- c11. Practice self-learning and communicate effectively orally and in written form (C8, C10).

This course contributes in the following program competencies: C3, C4, C5, C7, C8, C9, C10

3 – Contents

Week	Topic	Lecture hours	Tutorial hours	Practical hours
1	Industrial Design - Design concepts	2		
2	Ergonomics	2		
3	Application of ergonomics - Instruments - Controls - Work place.	2		
4	Aesthetic and ergonomics coordination	2		
5	Working condition and Environment	2		
6	Heating and Ventilation	2		
7	Assessment (Mid)Term)			
8	Assessment (Mid Term Exam)	2		
9	Local Ventilation - Industrial Ventilation	2		
10	Air condition systems - CFC'S - Ozone	2		
11	Depletion and Global Warning	2		
	Noise - Exposure to noise - Noise control	2		
12	Technique - Vibration	2		
13	Lighting - Level of luminance - Factors	2		
14	Affecting the quality of lighting	2		
15	Human effectiveness	1		
	Revision	1		
Total hours		30		

4. Course content/Course Competencies mapping matrix

Topic	Course Competencies										
	c1	c2	c3	c4	c5	c6	c7	c8	c9	c10	c11
Industrial Design - Design concepts	1								1		1
Ergonomics	1			1		1			1	1	1
Application of ergonomics - Instruments - Controls - Work place.	1	1		1		1			1		
Aesthetic and ergonomics coordination		1		1		1		1			
Working condition and Environment		1	1	1	1	1					1
Heating and Ventilation			1	1	1	1					
Local Ventilation - Industrial Ventilation			1	1		1		1			
Air condition systems - CFC'S - Ozone			1	1	1	1					
Depletion and Global Warning			1	1		1					
Noise - Expo sure to noise - Noise control			1	1		1		1			
Technique - Vibration			1	1		1					
Lighting - Level of luminance - Factors			1	1		1					
Affecting the quality of lighting			1	1		1		1			
Human effectiveness		1	1			1	1			1	1
Topics Covering Competencies	3	4	10	12	3	13	1	4	3	2	4

5 – Course Competencies/Teaching, Learning and Assessment methods:

Course Competences	Teaching Methods						Learning Methods			Assessment Method				
	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Research, Reports & Assignments	Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations
c1	1	1	1							1			1	
c2	1	1	1							1			1	
c3	1		1							1			1	
c4	1	1								1			1	
c5	1									1			1	
c6	1									1			1	
c7	1									1			1	
c8	1									1			1	
c9	1									1			1	
c10			1					1						
c11			1					1						
Σ	9	3	5					2		9			9	

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Semester Work	Quizzes	2 Quizzes per semester	10
	Reports	4 reports per semester	20
Mini-project case study research		Fifteenth week	10
Written Exam		Sixteenth week	40
Total			100

7- List of references:

7-1 Course notes:

Risk Management.

7-2 Required books:

J. Jeyras (2002), "Risk management principles", planta Tree, UK

7-3 Recommended books:

E. J. Vaughan, T. Vaugan (2007), 9th Edition, "Fundamentals of risk and insurance", John Wiley,

M. Keegan (2004): The orange book of risk management- Principles and concepts", HM treasury concepts, London, UK

E. Baranoff (2012)" Enterprise and individual risk management", Harvard Business Review US

7-4 Periodicals, Web sites, etc.

<https://www.investopedia.com/terms/r/riskmanagement.asp>

<http://www.freebookcentre.net/>

8- Facilities required for teaching and learning:

- Lectures room equipped with OHP and data show facility.
- Library.
- Internet.

Course coordinator: Dr. Nagat A. Elmahdy
Head of the Department: Dr Metwally Abdelgaffar
Date: August 2020

Eighth Semester (Level three)

Modern Academy

for Engineering and Technology in Maddi



Course Specification

CMPn322: Computer Graphics and Man-Machine Interface

A- Affiliation

Relevant program:

Computer Engineering and Information Technology BSc Program

Department offering the program:

Computer Engineering and Information Technology Department

Department offering the course:

Computer Engineering and Information Technology Department

Date of specifications approval:

August 2020

B - Basic information

Title: Computer Graphics and Man-Machine Interface

Code: CMPn322

Year/level: Senior 1, first Semester

Credit Hours: 3

Prerequisites: CMPn110 and CMPn321

Contact Hours:

Lectures: **Tutorial:**1 **Practical:** 2 **Total:**5
2

C - Professional information

1 – Course Learning Objectives:

By the end of this course, the students should have gained the planned competences related to the construction and operation 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 picture. Using the contentment and clipping techniques. Introducing a wide range of software Buckets used in graphics and apply one of them on a mini-Project.

2 - Competencies

- c1. Utilize contemporary technologies, codes of practice and standards, quality guidelines of graphics system(C4)
- c2. Practice research techniques and methods of investigation as an inherent part of learning graphics projects using different software (C5)
- c3. Develop and conduct appropriate experimentation and/or simulation, using application program (C2)
- c4. Acquire and apply new knowledge; and practice self, lifelong and other learning strategies during mini project with OpenGL and unity (C10)
- c5. Capability of integrating graphics objects running on different system configurations (C15)
- c6. Function efficiently as an individual and as a member of team project (C7)
- c7. Acquire and apply the basic concept of computer graphics on a wire rang of software systems (C16,C15)
- c8. Building a mini Project based on used software using non-traditional thinking(C15,C20)

This course contributes in the following program competencies: [C2, C4, C5,C7, C10, C15,C16&C20](#)

3 – Contents

weeks	Topic	Lecture hours	Tutorial hours	Practical hours
1	Computer generated Pictures and Raster Images.	2	1	2
2	Elements of computer-Generated Pictures	2	1	2
3	Drawing a Polylines and polygons.	2	1	2
4	Drawing a general function	2	1	2
5	Filling a region:	2	1	2
6	Rows based filling; Column based filling	2	1	2
7	Assessment (Midterm exam)	2	1	2
8	Other filling algorithms	2	1	2
9	2D transformations, Composite transformations, Inverse transformés	2	1	2
10	3D transformations, Composite transformations, Inverse transformés	2	1	2
11	Projection, Parallel Projection	2	1	2
12	Perspective Projection	2	1	2
13	Lightening based on local reflection model.	2	1	2
14	Containment and clipping.	2	1	2
15	Game project using programming software and cross-platform game engine	2	1	2
Total hours		30	15	30

4. Course content/Course Competencies mapping matrix

Topic	c1	c2	c3	c4	c5	c6	c7	c8
Computer generated Pictures and Raster Images.	1				1			
Elements of computer-Generated Pictures	1				1			
Drawing a Polylines and polygons.	1	1					1	
Drawing a general function	1	1	1				1	1
Filling a region:		1	1				1	1
Rows based filling; Column based filling		1	1				1	1
Assessment (Midterm exam)	1	1	1				1	
Other filling algorithms		1	1				1	1
2D transformations, Composite transformations, Inverse transformés		1	1	1			1	1
3D transformations, Composite transformations, Inverse transformés		1	1	1			1	1
Projection, Parallel Projection		1	1	1			1	1

Perspective Projection		1	1				1	1
Lightening based on local reflection model.	1	1	1	1			1	1
Containment and clipping.		1					1	1
Game project using programming software and cross-platform game engine	1		1	1	1	1	1	1
Topics Covering Competences	7	12	11	5	3	1	13	11

5 - Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods						Learning Methods			Assessment Method					
	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Researched, Reports & Assignments	Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report
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		1	1
c5	1	1		1		1				1	1		1	1	1
c6								1				1			1
c7	1	1		1		1		1				1		1	
c8					1	1		1				1		1	1
Σ	5	6	0	5	4	7	0	5	0	3	4	6	4	5	5

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Semester Work	Quizzes	3 Quizzes (one each 4 weeks)	6
	Reports/Research	Two reports per semester	4
	Tutorials	3 Assignments per semester	6
	Mini project	Once per semester	4
Practical Exam		Fifteenth week	20
Written Exam		Sixteenth week	40
Total			100

7- List of references:

7-1 Course notes

Lectures Notes of Computer Graphics and Man-Machine Interface

7-2 Required books

- David biythe,(2013),advanced graphics programming using open GL,,Elsevier.

7-3 Recommended books

- Tony white,(2006),animation for pencils to pixels, focal press

7-4 Periodicals, Web sites, etc.

IEEE transactions on computer Graphics.

8- Facilities required for teaching and learning:

- Computer Labs Equipped with OPENGL software.
- Data show
- [High speed internet and communication facilities for distance learning.](#)

Course coordinator: Dr. Seham Ebrahim
Head of the Department: Dr. Abd Elmoneim FoudA
Date: [August 2020](#)

Modern Academy
for Engineering and Technology in Maddi



Course Specification
CMPn324: 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: August 2020

B - Basic information

Title: Data Transmission and Computer Networks **Code:** CMPn324 **level:** Senoir2/ 1st semester
Credit Hours: 4
Pre-requisite: CMPn321
Contact Hours: 6 **Lectures:** 3 **Tutorial:** 2 **Practical:** 1 **Total:** 6

C - Professional information

By the end of this course, the students should have gained the planned competences related to the construction and operation 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. network troubleshooting using simulation packets as Packet tracer and GSM.

2 - Competencies

c1 - Connect and Install networks components (C1, C14)
c2- Explain Data and network distribution for data processing (C7)
c3- Evaluate telephone modems compared to ISDN, DSL, and cable modems (C15)
c4 - Setup of common protocols (C16)
c5- Share the folder, files and Connect peer to peer and server based. (C8)
c6- Acquire and apply new knowledge of different computer network design (C10)
c7- Use creative, innovative and flexible thinking and acquire entrepreneurial and leadership skills to build business LANs (C9)
c8- solving network Problems using non-traditional thinking and the use of latest technologies (C19, C20,)
c9- using simulation Packets to build analyze and troubleshooting different types of networks (C18,,C17,C16)
This course contributes in the following program competencies: C1, C7, C8, C9, C10, C14, C15 C16, C17, C18, C19, &C20

3 – Contents

weeks	Topic	Lecture hours	Tutorial hours	Practical hours
1	Introduction. Computer networks subsystems.	3	2	1
2	Fundamental of data transmission and digital communications	3	2	1
3	Fundamentals of computer networks.	3	2	1

4	Media of network	3	2	1
5	Topology of networks. -protocols of networks.	3	2	1
6	OSI Model: communication and network layers overview.	3	2	1
7	Assessment (Midterm exam)	3	2	1
8	Types of networking devices.	3	2	1
9	TCP/IP Protocols of network and Ethernet technology	3	2	1
10	IP v5 and IPv6	3	2	1
11	Address classes and Subnetting	3	2	1
12	TCP/IP, Transport layer	3	2	1
13	TCP/IP application layer	3	2	1
14	Networks Security techniques	3	2	1
15	Mini project of enterprise network	3	2	1
Total hours		45	30	15

. Course content/Course Competencies mapping matrix

Topic	c1	c2	c3	c4	c5	c6	c7	c8	c9
Introduction. Computer networks subsystems.		1							
Fundamental of data transmission and digital communications		1	1						
Fundamentals of computer networks.		1	1				1		
Media of network				1			1		
Topology of networks. -protocols of networks.	1	1		1		1	1	1	1
OSI Model: communication and network layers overview.	1	1		1	1				
Assessment (Midterm exam)									
Types of networking devices.	1				1				
TCP/IP Protocols of network and Ethernet technology	1			1					
IP v5 and IPv6	1			1	1				
Address classes and Subnetting	1			1	1	1	1	1	1
TCP/IP Transport layer	1	1		1		1			
TCP/IP application layer	1	1		1	1		1		
Networks Security techniques							1	1	1
Mini project of enterprise network	1				1		1	1	1
Topics Covering Competences	9	7	2	8	6	3	7	4	4

5 - Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods						Learning Methods			Assessment Method					
	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Researched, Reports &	Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report
c1	1	1	1	1		1		1	1		1	1			1
c2	1	1	1	1	1	1	1	1	1	1		1	1		1
c3	1			1			1			1					
c4	1	1	1	1	1	1		1	1	1		1	1		1
c5	1	1			1	1		1				1	1		1
c6	1					1						1			1
c7	1					1						1			1
c8	1			1	1		1		1	1		1			1
c9	1			1	1	1	1		1			1			1
Σ	9	4	3	6	5	7	4	4	5	4	1	8	3	0	8

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Semester Work	Mid-Term Exam	7 th Week	20
	Quizzes	3 Quizzes (one each 4 weeks)	6
	Reports/Research	Two reports per semester	4
	Tutorials	3 Assignments per semester	6
	Mini project	Once per semester	4
Practical Exam		Fifteenth week	20
Written Exam		Sixteenth week	40
Total			100

7- List of references:

7-1 Course notes:

Wafae Boghdady: Data Transmission and Computer Network, Cairo: Modern Academy Press, 2017

7-2 Required books

Vikas Chaudhary (2017) Cryptography and network security, S.K. Kataria & Sons

Sanjay Shama (2013) A course in computer network, S.K. Kataria & Sons

Marial (2012) Computer Communications, S.K. Kataria & Sons

Mattord (2009) Firewalls and network security, S.K. Kataria & Sons

7-3 Recommended books:

William Stallings, (2014) Computer Networks, 5th edition Prentice Hall

Behrouz A Forouzan, (2003) Data Communications and Networking, Mc Graw Hill,

Raymond and R. Panko, (2012) Business Data Networks and Telecommunications, Prentice Hall, 9th edition

7-4 Periodicals, Web sites, etc.:

<http://www.prenhall.com/panko/index.html> .

<http://www.netacad.com>

8- Facilities required for teaching and learning:

Lecture and Exercise rooms equipped with projection and sound systems.

Computer, Data show and Computer programs(packet tracer)

High speed internet and communication facilities for distance learning.

Course coordinator: Ass. Prof. Dr. Wafaa Boghdady
Head of the Department: Dr. Abd Elmoneim FoudA
Date: [August 2020](#)



3 – Contents

weeks	Topic	Lecture hours	Tutorial hours	Practical hours
1	History of the development of the digital computer Information theory and digital representations of data	2	2	-
2	Computer system organization. Instruction set architecture (ISA), Instruction types, registers, addressing modes, and load/store architectures	2	2	-
3	Instruction sequencing, conditional branches, and subroutines, Procedure linkage, activation records, stacks, and low-level support for recursion	2	2	-
4	Structure of assembly language programs	2	2	-
5	Architectural support for high-level languages, From high-level to machine language	2	2	--
6	Roles of compilers, assemblers, linkers and loaders	2	2	-
7	Assessment (med term)	2	2	
8	Processing bits using transistors. Combinational digital logic. Digital arithmetic circuits, adders, barrel-shifters, multipliers, and floating point	2	2	--
9	Digital storage, memory, latches, and flip-flops	2	2	
10	Clocked sequential digital logic, state machine implementation, Design and organization of a one-instruction-per-clock computer	2	2	-
11	Improving memory performance with caches, Virtualizing and sharing computers Memory management, virtual memory			
12	Time-sharing and process management. Motivate the need for an operating system,			
13	Pipelining and interleaving. Pipe lining's impact on the ISA and system architecture,	2	2	-
14	Pipeline hazards, interlocks, and branch delay slots	2	2	-
15	Multi-core and parallel processing	2	2	
Total hours		30	30	-

4. Course content/Course Competencies mapping matrix

Topic	c1	c2	c3	c4	c5	c6	c7	c8	c9
History of the development of the digital computer Information theory and digital representations of data	1		1				1		1
Computer system organization. Instruction set architecture (ISA), Instruction types, registers, addressing modes, and load/store architectures	1		1						
Instruction sequencing, conditional branches, and subroutines, Procedure linkage, activation records, stacks, and low-level support for recursion	1		1				1		1

Topic	c1	c2	c3	c4	c5	c6	c7	c8	c9
Structure of assembly language programs			1	1		1			1
Architectural support for high-level languages, From high-level to machine language	1	1	1		1				
Roles of compilers, assemblers, linkers and loaders	1			1			1		1
	1	1	1						1
Processing bits using transistors. Combinational digital logic. Digital arithmetic circuits, adders, barrel-shifters, multipliers, and floating point		1	1						
Digital storage, memory, latches, and flip-flops		1							1
Clocked sequential digital logic, state machine implementation, Design and organization of a one-instruction-per-clock computer		1	1						1
Improving memory performance with caches, Virtualizing and sharing computers		1				1			
Memory management, virtual memory									
Time-sharing and process management. Motivate the need for an operating system,		1	1	1	1				
Pipelining and interleaving. Pipe lining's impact on the ISA and system architecture,	1			1		1			
Pipeline hazards, interlocks, and branch delay slots	1	1	1		1	1	1		1
Multi-core and parallel processing								1	1
Topics Covering Competences	8	8	10	4	3	4	4	1	9

5 - Teaching and Learning and Assessment methods:

Course Competences	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Researched, Reports & Assignments	Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report
c1	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	
c5	1			1		1				1			1		
c6	1			1	1	1				1			1	1	
c7	1			1		1				1			1		
c8	1			1	1	1				1			1	1	
c9	1	1	1	1		1	1			1		1		1	

Course Competences	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Research, Reports & Assignments	Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report
c10	1	1		1		1	1			1		1	1	1	
c11	1	1	1	1		1	1			1		1	1	1	
c12	1			1		1				1		1	1	1	
c13	1			1		1				1		1	1	1	
c14	1	1	1	1	1	1	1			1		1	1	1	
c15			1		1		1					1		1	
c16		1	1				1		1			1		1	
c17	1	1					1					1		1	
c18	1	1	1				1					1			
c19							1		1			1		1	
Σ	16	9	7	14	5	14	11	0	2	14	0	11	12	15	

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Semester Work	Quizzes	(Each Topic)	28
	Reports/Research	Two reports per semester	8
	Tutorials	3 Assignments per semester	4
Written Exam		Sixteenth week	40
Total			100

7- List of references:

7-1 Course notes: Lecture notes and handouts

Seham Ebrahim, Computer Architecture. Cairo :MAM Press

7-2 Required books

William Stallings, (2010) Computer Organization And Architecture Designing For PERFORMANCE, 8th edition, Prentice Hall.

Rachard(1996), advanced computer architecture system approach, Prentice Hall.

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

7-4 Recommended books: None

7-4 Periodicals, Web sites, etc.

<https://www.eecs.berkeley.edu/Courses/Data/188.html>

<http://www.GenLib.org/> .

8- Facilities required for teaching and learning:

- Computer Lab.
- Computer, Data show and Computer package..

Course coordinator:

Dr. Seham Ebrahim

Head of the Department:

Dr. Abd Elmoneim FoudA

Date:

August 2020

Modern Academy

for Engineering and Technology in Maddi



Course Specification CMPn333: Embedded Systems

A- Affiliation

Relevant program: Computer Engineering and Information Technology BSc Program
Department offering the program: Computer Engineering and Information Technology Department
Department offering the course: Computer Engineering and Information Technology Department
Date of specifications approval: Aug. 2020

B - Basic Information

Title: Embedded Systems **Code:** **Level:** 3rd Fall & Spring
CMPn333
Credit Hours: 3 **Lectures:** 2 **Tutorial/Exercise:** 1 **Practical:** 2
Pre-requisite: CMPn310

C - Professional information

1 – Course Learning Objectives:

By the end of this course, the students should have gained the planned competencies (based on the knowledge, skills and personal attitudes) related to constructions and operations of designing the microcomputer and embedded systems. They can construct digital applications contains many up-to-date techniques and communication modules (like GSM, GPRS, GPS, IMU, Bluetooth). Also control the rotations and motions of many parts using several electrical motors (like servo, stepper, and dc motors). They can program their systems using the MikroC, assembly language besides the VHDL. Moreover, interfacing with many software programs (like data bases, mobile and web application).

2 – Competencies

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

- c1. Compose, collect and interface the selected microcontroller with communication modules (such as GSM, GPRS, GPS, IMU, Bluetooth) via serial ports and Serial Peripheral Interface (SPI) (C1, C13, C15).
- c2. Design and evaluate the minimum cost of circuit realization (C1, C2, C3, C4, C11, C12, C16, C17, C18).
- c3. Create, design and analyze the parallel processing in embedded systems using the FPGA and VHDL (C1, C2, C3, C4, C11, C12, C15, C16, C17, C18).
- c4. Control, rotate, move many mechanical parts by interfacing with many electrical motors (such as servo, stepper, AC and DC motors) (C1, C2, C6, C20).
- c5. Utilize the VHDL to design the Intellectual Property Solution (IP) ALUs, CPUs for the embedded system applications (C1, C2, C3, C6, C20).
- c6. Solving the designing of the up-to-date advanced computer systems (like artificial neural network) (C1, C5, C9, C10, C19, C20).
- c7. Verify and test the overall design using proper and reliable Instruments and simulators (C1, C3, C15, C16, C18).
- c8. Integrate the embedded systems with many sensors and detectors (C1, C2, C5, C12, C15).
- c9. Communicate effectively through using the contemporary tools for searching the required reports of up-to-date modern techniques (C5, C8).

This course contributes in the following program competencies: [C1, C2, C3, C4, C5, C6, C9, C10, C11, C12, C13, C15, C16, C17, C18,19 & C20](#)

3 – Contents

	Topic	Lecture hours	Tutorial hours	Practical hours
1	Introduction	8	4	8
	Aims realized through the topics of this subjects.			
2	Embedded system designing processes			
	Introducing assembly & MikroC editors software program			
3	Designing embedded system based on Real time interfacing of a microcontroller with UART or SPI serial modules (like GSM, GPS, Bluetooth, etc.).	6	3	6
4	Designing embedded system of a microcontroller with sensors, keypads and detectors (like IR detector).			
5	Designing embedded system of a microcontroller with sensors, keypads and detectors (like IR detector).	2	1	--
6	Designing embedded system of a microcontroller to control several electrical motors.			
7	Midterm	7	5	10
8	Designing embedded system for interfacing a microcontroller with LCD and GLCD modules.			
9	Building embedded systems using the state diagram techniques			
10	Building embedded systems using the ASM chart techniques			
	Analysis embedded systems	7	2	4
11	Design and realizing of arithmetic logic unit (ALU) by VHDL.			
12	Building embedded systems using the FSM techniques			
13	Designing parallel processing Embedded system based on VHDL and FPGA			
14	Designing IP smart core for the Embedded systems based on VHDL and FPGA	30	15	30
15	Designing and realizing embedded system using arrays and matrices configuration (such as ANN, Encryption systems).			
Total hours				

4. Course content/Course Competencies mapping matrix

Topic	c1	c2	c3	c4	c5	c6	c7	c8	c9
Embedded system designing processes	1	1	1				1		
Introducing assembly & MikroC editors software program	1	1	1	1			1		
Designing embedded system based on Real time interfacing of a microcontroller with UART or SPI serial modules (like GSM, GPS, Bluetooth, etc.).		1	1		1	1	1		
Building embedded systems using the state diagram techniques. Building embedded systems using the ASM chart techniques. Analysis embedded systems	1	1	1	1	1	1	1	1	
Design and realizing of arithmetic logic unit (ALU) by VHDL.	1	1	1	1	1	1	1	1	

Topic	c1	c2	c3	c4	c5	c6	c7	c8	c9
Building embedded systems using the FSM techniques			1	1		1	1		
Designing parallel processing Embedded system based on VHDL and FPGA					1	1		1	1
Designing IP smart core for the Embedded systems based on VHDL and FPGA	1	1	1	1	1	1	1	1	1
Designing and realizing embedded system using arrays and matrices configuration (such as ANN, Encryption systems).	1	1		1		1	1		
Topics Covering Competences	6	7	7	6	5	7	8	4	2

5 – Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods						Learning Methods			Assessment Method					
	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Researched, Reports & Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project	Report
c1	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	1			
c4	1	1		1	1	1		1	1	1	1		1		
c5	1	1		1	1	1		1	1	1	1	1	1		
c6	1	1	1	1		1	1	1	1	1	1	1			
c7	1	1	1				1	1	1	1	1		1		
c8	1	1	1				1	1	1		1		1		
c9			1		1		1						1		
Σ	8	8	4	6	5	6	4	2	3	7	7	8	4	5	

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Practical exam		12 th Week	20
Semester Work	Quizzes	1 Quiz	20
	Reports/Research	1 report per semester	
	Tutorials	1 Assignment per semester	
Written Exam		Sixteenth week	40
Total			100

7- List of references:

7-1 Course notes:

Assem B, (2018) The Logic Circuits Design2., Modern academy Laboratory work printed notes

7-2 Required books

- none

7-3 Recommended books:

- Valvano, (2012) Embedded microcomputer system real time interfacing: Cengage Learning.
- Sampath k. venkatesh, (2013) 8051 microcontroller & embedded systems: katson.
- Patranabis,(2013), Sensors & transducers: Asoke

7-4 Periodicals, Web sites, etc.

- https://www.tutorialspoint.com/embedded_systems/es_overview.htm
- <https://internetofthingsagenda.techtarget.com/definition/embedded-system>
-

8- Facilities required for teaching and learning:

- Computer Lab. equipped with Data show and Computer package (like Xilinx-ISE, HDL-designer, ModelSim)
- Lecture and Exercise rooms equipped with Data show projection and sound systems.
- High speed internet and communication facilities for online learning.

Course coordinator: Dr. Assem Badr
Head of the Department: Dr. Abd Elmoneim Fouda
Date: Aug. 2020

Modern Academy

for Engineering and Technology in Maddi



Course Specifications CMPn335: Operating Systems

A- Affiliation

Relevant program: Computer Engineering and Information Technology BSc Program
Department offering the program: Computer Engineering and Information Technology Department
Department offering the course: Computer Engineering and Information Technology Department
Date of specifications approval: August 2020

B - Basic information

Title: Operating Systems **Code:** CMPn335 **Level:** Semester 9 ,Senior 2
Credit Hours: 3 **Lectures:**2 **Tutorial::**2 **Practical: 1** **Total:5**
Pre-requisite: CMPn321

C - Professional information

1 – Course Learning Objectives:

By the end of this course the students should have gained the planned competencies (based on the knowledge, skills and personnel attitudes) related to construction and operations of the different operating system concepts and their implementation. They should compete on the design, implementation and execute of different algorithms like management of processes and memory as well as I/O secondary storage, and other system resources.

2- Competencies

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

- c1 – Identify the basic concepts of different operating systems. (C1, C15)
- c2- Trace and analyses process execution inside main memory and inside the CPU (C1,C2, C6,C12)
- c3- Identify the reasons of blocking the process during execution (C1, C12, C15)
- c4- Compare the performance of different scheduling algorithms (C12)
- c5- Analyze the solution of multiprogramming problems (C1, C12, C15, C16)
- c6- Implement the OS techniques and algorithms to enforce multiprogramming environment (C1, C3,C12, C15, C16).
- c7- Solve problems of concurrent execution and time-sharing (C1, C12, C15, C16,C20).
- c8- **Use of and developing open source applications in Linux and Android environment. (C3,C7,C10,C20)**
- c9- Present problems arising due to multiprogramming (C1, C12, C15, C16, C18).
- c10- Prepare analysis reports about performance of various algorithms (C1, C12, C15, C16,C20)
- c11- Demonstrating results of implementing algorithms (C2, C7,, C8,C11,C15, C16, C17, C20).

This course contributes in the following program competencies: (C1, C2, C3,, C8, C11, C12, C15, C16, C17, C18, C20).

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
➤ Operating system concepts	2	2	1
➤ -Process Concepts	2	2	1

Topic	Lecture hours	Tutorial hours	Practical hours
➤ -CPU scheduling.	4	4	2
➤ Deadlocks	4	4	2
MT assessment	2	2	-
➤ Threads , Inter-process Communication	4	4	2
➤ Memory Management	4	4	1
➤ File Management	4	4	2
➤ Input-Output and interrupts	2	2	1
➤ Multi-Processing systems and Parallel computing	2	2	2
Total hours	30	30	15

4. Course contents / course Competencies mapping matrix

Topic	c1	c2	c3	c4	c5	c6	c7	c8	c9	c10	c11
Operating system concepts	1										
-Process Concepts	1	1	1	1	1	1	1	1	1		1
CPU scheduling.		1	1	1	1	1	1	1	1	1	1
Deadlocks		1	1	1	1	1	1		1	1	1
MT Assessments	1	1	1	1	1	1	1		1		1
Threads, Inter-process Communication.			1	1	1	1	1	1			1
Memory Management	1		1	1	1	1	1	1	1	1	1
File Management	1										
Input-Output and interrupts	1				1					1	
Multi-Processing systems and Parallel computing	1				1					1	
Topics Covering Competences	7	4	6	6	8	6	6	4	5	5	6

5- Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods						Learning Methods			Assessment Method					
	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Researched, Reports &	Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report
c1	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	
c4	1	1		1	1	1			1	1	1	1		1	
c5	1	1		1	1	1			1	1	1	1		1	
c6	1	1		1		1			1	1	1	1		1	
c7	1	1		1	1	1			1	1	1	1		1	
c8		1	1			1		1	1		1	1			
c9	1	1		1		1			1	1	1	1		1	
c10	1	1		1		1			1	1	1	1		1	
c11		1	1			1		1			1				
Σ	9	11	2	9	5	10	0	2	9	9	10	10	0	9	0

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Semester Work	Quizzes	3 Quizzes (one each 4 weeks)	6
	Reports/Research	Two reports per semester	8
	Tutorials	3 Assignments per semester	6
Practical Exam		Fifteenth week	20
Written Exam		Sixteenth week	40
Total			100

7- List of references:

7-1 Course notes:

“Operating Systems – Lectures Notes” : Khaled Ahmed Morsy

7-2 Required books

Andrew S. Tatenbaun, (1997), Operating system design & implementation, Prentice Hall

Abraham Silberschatz, (2010), operating system concepts, wiley

William Stallings, (1998), Operating Systems Internals and Design Principles, Prentice Hall.

7-3 Recommended books:

7-4 Periodicals, Web sites, etc.

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

8- Facilities required for teaching and learning:

- Data show,
- Software Programs
- On-line teaching facilities (if required)

Course coordinator: Dr. Khaled Morsy

Head of the Department: Dr. A. Fouda

Date: August 2020

Modern Academy

for Engineering and Technology in Maddi



Course Specification CMPn439: Real Time Computing

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: August 2020

B - Basic information

Title: Real Time Computing **Code:** CMPn439 **Level:** Senior-2, 9th OR 10th Semester
Credit Hours: 3 **Lectures:** 2 **Tutorial:** 2 **Practical** **Total:** 4
Pre-requisite: CMPn310, CMPn324

C - Professional information

1 – Course Learning Objectives:

By the end of this course the students should demonstrate the knowledge and understanding of the contemporary real time systems as well as embedded systems and internet of things and their real time interface with different peripherals, input/output, and memory devices. The students will be able to provide a comprehensive view of real-time systems with theory, techniques and methods for the practitioner. Moreover; Address and understand the issues of system software unique to real time and embedded systems. Also; the student will be able to solve problems and different case studies related to real time systems to connect, interface, operate, maintain, and analyze such systems, then achieve the suitable method to test the performance.

2- competencies

- c1. Identify fundamental concepts and terminology of real-time systems. (C1, C5)
- c2. Explain, formulate, and use theoretical background all types of electrical/electronic devices and requirements needed to deal with real-time systems (C1, C3)
- c3. Illustrate different basics concepts and theories and operation of embedded systems to clarify the fundamental problems of real-time systems (C1, C3)
- c4- take knowledge of Inspection Approach, to make the effective use of the organization and input/output interfacing of real time systems. Also discuss timing and related attributes associated with real-time systems (C11)
- c5. Illustrate the basics principals to consider the critical requirements imposed by real-time applications, and deduce scheduling concepts and algorithms and their relative merits (C2, C4)
- c6. Practice research techniques and methods of investigation as an inherent part of learning to recognize the systems development process and its relationship to real-time issues (C5)
- c7. Decide the appropriate analysis and design methods for a real-time system (C12, C13)
- c8. Use a wide range of analytical tools, techniques, and software packages pertaining to the discipline and develop
required computer programs to investigate the role of architecture in real-time systems engineering (C17, C18)
- c9. Investigate on a mini project for Innovating solutions based on non-traditional thinking and the use of recent tools and programs to analyze, connect, operate, and maintain the different methods of computer interface deployments and implementations to apply techniques for modeling dynamic behavior in real-time systems (C20)

This course contributes in the following program competencies: [C1, C2, C3, C4, C5, C11, C12, C13, C17, C18& C20](#)

3 – Contents

SN	Topic	Lecture hours	Tutorial hours	Practical hours
1	➤ Basic concepts, literature survey about terminologies of computer interface, computer architectures technologies	2	2	
2	➤ Basic concepts and literature survey of embedded systems and IOT	2	2	
3	➤ Basic concepts of instruction set, timing and interrupt structure	2	2	
4	➤ Introduction to real time systems. -Description of real time systems.	2	2	
5	➤ Concepts and issues of real time computing systems		2	
6	➤ Measuring real time systems.	2	2	
7	➤ Assessment (midterm exam)	2	2	
8	➤ Components of real time systems.	2	2	
9	➤ Functional description of real time systems.	2	2	
10	➤ Analog Sensors, data acquisition systems DAS and interfacing	2	2	
11	➤ Software, hardware and performance of RT systems.	2	2	
12	➤ Modular design and programming.	2	2	
13	➤ Interfacing real time systems.	2	2	
14	➤ Real time communication	2	2	
15	➤ Mini project seminar analysis and design utilizing overall concepts of computer interfaces and real time system commuting	2	2	
Total hours		30	30	

4. Course content/Course Competencies mapping matrix

Topic	c1	c2	c3	c4	c5	c6	c7	c8	c9
Basic concepts, literature survey about terminologies of computer interface, computer architectures technologies	1							1	
Basic concepts and literature survey of embedded systems and IOT	1	1				1			
Basic concepts of instruction set, timing and interrupt structure	1			1			1		
Introduction to real time systems. - Description of real time systems.			1		1	1			1
Measuring real time systems.		1	1		1		1		1
Components of real time systems.		1	1		1	1			1
Functional description of real time systems.		1	1			1			1
Analog Sensors, data acquisition systems DAS and interfacing		1	1				1		
Software, hardware and performance of RT systems.							1	1	1
Modular design and programming.		1	1	1	1				

Real time communication and interfacing real time systems.		1				1	1	1	1
Mini project seminar analysis and design utilizing overall concepts of computer interfaces	1	1	1	1	1	1	1	1	1
Topics Covering Competences	4	8	7	3	5	6	6	4	7

5 - Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods						Learning Methods			Assessment Method					
	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Research, Reports & Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report	
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		1	
c4	1	1		1				1	1	1				1	
c5	1	1		1	1		1	1	1	1		1	1	1	
c6	1	1	1	1	1				1	1		1		1	
c7	1	1	1	1			1	1	1	1		1	1	1	
c8	1	1	1	1			1	1	1	1			1	1	
c9	1	1	1		1		1	1	1				1	1	
Σ	9	9	4	8	5		4	6	3	8	8	5	4	9	

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Semester Work	Quizzes	3 Quizzes (one each 4 weeks)	15
	Reports/Research	Two reports per semester	5
	Tutorials	3 Assignments per semester	5
	Mini project	Once per semester	15
Written Exam		Sixteenth week	40
Total			100

7- List of references:

7-1 Course notes:

Lecture notes and handouts

Abd elmoneim fouda, **Computer peripherals and interfaces** .Cairo :MAM Press

7-2 Required books

Valvano (2012) Embedded microcomputer system and real time interfacing, Thomson

Anthpny T Velte,(2010), cloud computing a practical approach ,MC-Graw hill.

v. Jaganathan,(1999),basic electrical electronics computers engineering, publishing house

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

7-3 Recommended books:

Qiyang Chen, (2001) Human Computer Interaction, Idea Group Publishing,

Barry B. Berry. (2003).The intel microprocessor architecture, programming and interfacing, Prentice Hall, USA,

Jörg Henkel and Muhammad Shaniqua, (2011) Hardware/Software Architectures for Low-Power Embedded Multimedia Systems, Springer

7-4 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.rcs.et.tum.de>

8- Facilities required for teaching and learning:

- Computer Lab. equipped with Data show and Computer package
- Lecture and Exercise rooms equipped with Data show projection and sound systems.
- High speed internet and communication facilities for distance learning.

Course coordinator: Dr. Abd Elmoneim FoudA

Head of the Department: Dr. Abd Elmoneim FoudA

Date: August 2020

Modern Academy

for Engineering and Technology in Maddi



Course Specification CMPn 331: Computer Peripherals

A- Affiliation

Relevant program: Computer Engineering and Information Technology BSc Program
Department offering the program: Computer Engineering and Information Technology Department
Department offering the course: Computer Engineering and Information Technology Department
Date of specifications approval: August 2020

B - Basic information

Title: Computer Peripherals **Code:** CMPn331 **level:** Senior 1, 1st or 2nd Semester
Credit Hours:3 **Lectures:** 2 **Tutorial:**2 **Practical** **Total:**4
Pre-requisite: CMPn 321

C - Professional information

1 – Course Learning Objectives:

By the end of this course the students should demonstrate the knowledge and understanding of the contemporary computer components, and its computer peripherals standards and technologies. They should be able to operate, integrate and evaluate the performance of Computer peripherals. Moreover, the student will be able to solve problems and different case studies to connect, interface, operate, maintain, and analyze the computer peripherals, and achieve the suitable method to test the performance.

2- competencies

- c1. Identify basic concepts and deferent items of sophisticated computer system principle of operations, Including high- performance peripheral interfaces. (C1,C5)
- c2. Explain, formulate, and use theoretical background all types of semiconductor memory devices and requirements needed to deal with different computer peripherals (C1,C3)
- c3. Illustrate different basics concepts and theories of digital Audio/ Video, computer graphics, data transmissions and networking related to computer peripherals (C1,C3)
- c4- take knowledge of Inspection Approach, and Confidence Interval Approach based on independent data to make the effective use of the different coding algorithms for multimedia activities (C11)
- c5. Explain the basics of the instruction set design principles, and the different types of interrupt structures (C2,C4)
- c6. Practice research techniques and methods of investigation as an inherent part of learning to keep track with developments and trends of digital communication interface adapters (C5)
- c7. Manipulate Multimedia programming techniques to eestimate and measure the performance of some physical systems, and evaluate its suitability for a specific application (C12, C13)
- c8. Use a wide range of analytical tools, techniques, and software packages pertaining to the discipline and develop
required computer programs to compare and put specification of computer/peripherals (C17, C18)
- c9. Investigate on a mini project for Innovating solutions based on non-traditional thinking and the use of recent tools and programs for deployments and implementations of computer peripheral interface activities and techniques (C20)

This course contributes in the following program competencies: [C1](#), [C2](#), [C3](#), [C4](#), [C5](#), [C11](#), [C12](#), [C13](#), [C17](#), [C18](#) & [C20](#)

3 – Contents

SN	Topic	Lecture hours	Tutorial hours	Practical hours
1	➤ Basic concepts and terminologies of computer peripheral technologies	2	2	
2	➤ Basic concepts of computer interface	2	2	
3	➤ Basic concepts of computer architecture	2	2	
4	➤ Basic concepts of instruction sets and interrupt structure	2	2	
5	➤ Input devices: Introduction, human factor considerations, keyboards, digitizers, input tables, mouse, track-balls and joy-sticks, voice input systems	2	2	
6	➤ Output display devices: CRT, LCD, Gas-plasma displays, controllers, software support.	2	2	
7	➤ Assessment (midterm exam)	2	2	
8	➤ Output hard copy devices: Plotters, impact printing (line and matrix). Nonimpact printers (Electro-photographic, magneto and iconographic, thermal, ink-jet). Color printing, printer controllers	2	2	
9	Audio/Video fundamentals including analog and digital representations, human perception, and audio/video equipment's.	2	2	
10	➤ Mass storage devices: Semiconductor, flash, magnetic floppy, hard disk, magnetic tapes, standard cartridge, optical (CD-ROM, WORM), magneto-optical	2	2	
11	Audio and video compression including Perceptual transform coders for images/video hardware/software tradeoffs. Image/video processing Applications and algorithms.	2	2	
12	➤ Multimedia and virtual reality devices	2	2	
13	➤ Head mounted displays, and data gloves	2	2	
14	➤ Multimedia Programming Frameworks	2	2	
15	➤ Mini project seminar analysis and design utilizing overall concepts of computer interface and peripherals capabilities	2	2	
Total hours		30	30	

4. Course content/Course Competencies mapping matrix

Topic	c1	c2	c3	c4	c5	c6	c7	c8	c9
Basic concepts and terminologies of computer peripheral technologies	1							1	
Basic concepts of computer interface and computer architectures	1	1				1			
Basic concepts of instruction sets and interrupt structure	1			1			1		
Input devices: Introduction, human factor considerations, keyboards, digitizers, input tables, mouse, track-balls and joy-sticks, voice input systems			1		1	1			1
Output display devices:		1	1		1		1		1

CRT, LCD, Gas-plasma displays, controllers, software support.									
Output hard copy devices: Plotters, impact printing (line and matrix). Nonimpact printers (Electro-photographic, magneto and iconographic, thermal, ink-jet). Color printing, printer controllers		1	1		1	1			1
Audio/Video fundamentals including analog and digital representations, human perception, and audio/video equipment's.		1	1			1			1
Mass storage devices: Semiconductor, flash, magnetic floppy, hard disk, magnetic tapes, standard cartridge, optical (CD-ROM, WORM), magneto-optical		1	1				1		
Multimedia and virtual reality devices, Head mounted displays, and data gloves									
Multimedia Programming Frameworks		1	1	1	1				
Mini project seminar analysis and design utilizing overall concepts of computer interface and peripherals capabilities	1	1	1	1	1	1	1	1	1
Topics Covering Competences	4	7	7	3	5	5	4	2	5

5 - Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods						Learning Methods			Assessment Method					
	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Research, Reports & Self-Learning	Modeling and Simulation		Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report
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		1
c4	1	1		1				1		1	1				1
c5	1	1		1	1		1	1		1	1		1	1	1
c6	1	1	1	1	1					1	1		1		1
c7	1	1	1	1			1	1	1	1	1		1	1	1
c8	1	1	1	1			1	1	1	1	1			1	1
c9	1	1	1		1		1	1	1					1	1
Σ	9	9	4	8	5		4	6	3	8	8		5	4	9

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Semester Work	Quizzes	3 Quizzes (one each 4 weeks)	6
	Reports/Research	Two reports per semester	4
	Tutorials	3 Assignments per semester	6
	Mini project	Once per semester	4
Practical Exam		Fifteenth week	20
Written Exam		Sixteenth week	40
Total			100

7- List of references:

7-1 Course notes:

Lecture notes and handouts

7-2 Required books

Valvano (2012) Embedded microcomputer system and real time interfacing, Thomson

Jörg Henkel and Muhammad Shaniqua, (2011) Hardware/Software Architectures for Low-Power Embedded Multimedia Systems, Springer.

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

Leo F. Doyle, Computer Peripherals, second edition, Prentice Hall, 1990.

Barry B. Berry. The intel microprocessor architecture, programming and interfacing, Prentice Hall, USA,

7-3 Recommended books:

P.W. Agnew and A.S. Kellerman, (1996) Multimedia Communication, Addison Wesley.

Jörg Henkel and Muhammad Shaniqua, (2011) Hardware/Software Architectures for Low-Power Embedded Multimedia Systems, Springer

7-4 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/>.

8- Facilities required for teaching and learning:

- Computer Lab. equipped with Data show and Computer package
- Lecture and Exercise rooms equipped with Data show projection and sound systems.
- High speed internet and communication facilities for distance learning.

Course coordinator: Dr. Abd Elmoneim FoudA

Head of the Department: Dr. Abd Elmoneim FoudA

Date: August 2020

Modern Academy

for Engineering and Technology in Maddi



Course Specification CMPn336: Software Engineering

A- Affiliation

Relevant program: Computer Engineering and Information Technology BSc Program
Department offering the program: Computer Engineering and Information Technology Department
Department offering the course: Computer Engineering and Information Technology Department
Date of specifications approval: August 2020

B - Basic information

Title: Software Engineering **Code:** CMPn336 **Year/level:** Senior 1, first Semester
Credit Hours: 3 **Lectures:** 2 **Tutorial:** 2 **Practical:** 1 **Total:** 5
Pre-requisite: CMPn323

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 – Competencies

- c1– Talking in objective manner to capture requirements (C1,).
- c2 – Analyze the real problems by the software engineering (C7, C 9, C 10, C12).
- c3 – Classify and compare the different ways of manage software (C2, C5)
- c4- Capture requirement from customers (C1).
- c5- Design Software based on requirement document (C2, C3, C12).
- c6- Differentiates between software offers and determine the proper deliverables with each case (C9, C4, C10).
- c7- Select of proper models and modify to a specific software development project. (C11, C9, C10).
- c8- Perform systems analysis and design. (C14, C6, C12).
- c9- Communicate with others; work in a team and involvement in group discussion (C9, C11.C12).
- c10- Present data and results orally and in written form (C12, C11)
- c11- Understanding of people and team's formation. (C11, C12)
- c12- Practice self-learning C10, C9,C20)

This course contributes in the following program competencies: C1, C2, C3, C4, C5, C6, C7, C9, C10, C11, C12,C14&C20)

3 – Contents

Weak #	Topic	Lecture hours	Tutorial hours	Practical
1	Software, software engineering and main topics of software engineering.	3	2	1
2	ISO standards for software quality attributes	3	2	1
3	Software organization structure and interaction between activities.	3	2	1
4	Software organization roles understanding	3	2	1
5	Software development models	3	2	1
6	Waterfalls and evolutionary, Mills increment and mathematical	3	2	1
7	Spiral model understanding	3	2	1
8	Requirement engineering	3	2	1
9	Requirement Definition and Specification	3	2	1
10	Non-function requirements	3	2	1
11	UML and requirement engineering	3	2	1
12	Software Design processes	3	2	1
13	Establishment of software organization	3	2	1
14	Management of people.	3	2	1
15	planning activities with dependencies	3	2	1
Total hours		45	30	15

4. Course content/Course Competencies mapping matrix

Topic	c1	c2	c3	c4	c5	c6	c7	c8	c9	C10	C11	C12
Software, software engineering and main topics of software engineering.	1		1				1		1	1		
ISO standards for software quality attributes	1		1									1
Software organization structure and interaction between activities.	1		1				1		1	1		
Software organization roles understanding			1	1		1			1			
Software development models	1	1	1		1						1	
Water falls and evolutionary, Mills increment and mathematical	1			1			1		1			
Spiral model understanding	1	1	1						1			
Requirement engineering		1	1									
Requirement Definition and Specification		1							1	1		
Non-function requirements		1	1						1			
UML and requirement engineering		1				1						1
Software Design processes		1	1	1	1							1
Establishment of software organization	1			1		1						
Management of people.	1	1	1		1	1	1		1			
planning activities with dependencies	1							1	1			
Topics Covering Competences	9	7	10	4	3	3	3	2	8	2	1	3

5 - Teaching and Learning and Assessment methods:

Course Competences	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Researched, Reports & Assignments	Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report
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	1	1
c4	1	1	1			1	1			1			1	1	1
c5	1		1	1	1	1	1			1		1	1	1	1
c6						1						1		1	1
c7	1	1	1	1	1	1	1					1		1	
c8	1	1		1	1		1			1			1		1
c9	1			1	1					1			1	1	1
c10	1	1		1	1	1				1		1		1	
c11	1	1		1	1	1	1			1		1	1	1	1
c12	1			1	1	1				1			1	1	1
Σ	11	7	5	9	9	9	7	0	0	10	0	5	9	11	9

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Semester Work	Mid-Term Exam	7 th Week	20
	Quizzes	3 Quizzes (one each 4 weeks)	6
	Reports/Research	Two reports per semester	4
	Tutorials	3 Assignments per semester	6
	Mini project	Once per semester	4
Practical Exam		Fifteenth week	20
Written Exam		Sixteenth week	40
Total			100

7- List of references:

7-1 Course notes

Lectures Notes of software engineering

7-2 Required books

IAN Summerville, (2010), Software Engineering, parson

7-3 Recommended books

Even and Andre Karlsson, (1996), Reuse a holistic approach, Wiley.

7-4 Periodicals, Web sites, etc.

IEEE transactions on Software Engineering.

8- Facilities required for teaching and learning:

- Computer Labs Equipped with any UML software.

Course coordinator: Dr. Sabry Abdel Meety

Head of the Department: Dr. Abd Elmoneim FoudA

Date: August 2020

Modern Academy

for Engineering and Technology in Maddi



Course Specification CMPn326: Logic Circuits Design2

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: August. 2020

B - Basic Information

Title: Logic Circuits Design2 **Code:** **Level:** 3rd Fall & Spring
CMPn326
Credit Hours: 3 **Lectures:** 2 **Tutorial/Exercise:** 1 **Practical:** 2
Pre-requisite: CMPn111

C - Professional information

1 – Course Learning Objectives:

By the end of this course, the students should have gained the planned competencies (based on the knowledge, skills and personal attitudes) related to constructions and operations of the different logic components, which are the main modules of a modern digital system. They students should be able to design logic digital circuits and modules using VHDL besides joining those modules in a complete operating system introducing the adequate performance analysis.

2 – Competencies

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

- c1. Create, compose, collect and modify the combinational and sequential logic circuits in the computer systems (C1, C13, C15).
- c2. Design and evaluate the minimum cost of circuit realization (C1, C2, C3, C4, C11, C12, C16, C17, C18).
- c3. Create, design and analyze the parallel processing in digital circuits (C1, C2, C3, C4, C11, C12, C15, C16, C17, C18).
- c4. Use the sequential circuits to realize the memories, counters, clock dividers by VHDL (C1, C2, C6, C20).
- c5. Utilize the VHDL to design ALUs, CPUs for the microprocessors and/or microcontrollers (C1, C2, C3, C6, C20).
- c6. Solving the designing of the UpToDate advanced computer systems (like artificial neural network) by VHDL codes (C1, C5, C9, C10, C19, C20).
- c7. Verify and test the overall design using proper and reliable simulators (like ISE, Modalism and HDL-designer) (C1, C3, C15, C16, C18).
- c8. Design and investigate the memory circuits that required to transfer data under control of control unit, beside their associated address and data buses (C1, C2, C5, C12, C15).
- c9. Communicate effectively through using the contemporary tools for searching the required reports of UpToDate modern techniques (C5, C8)

This course contributes in the following program competencies: [C1, C2, C3, C4, C5, C6, C9, C10, C11, C12, C13, C15, C16, C17, C18,19 AND C20](#)

3 – Contents

	Topic	Lecture hours	Tutorial hours	Practical hours
1	Introduction	5	4	6
	Aims realized through the topics of this subjects.			
2	Designing and synthesizing of combinational logic circuits by VHDL			
	Designing and realizing different Logic gate types and tristate buffer by VHDL.			
	Designing and realizing different vector MUXs and DEMUXs by VHDL.	6	4	8
3	Designing and realizing different decoders and encoders by VHDL.			
	Designing and synthesizing of sequential logic circuits by VHDL			
4	Designing and realizing different types of Flip-Flops by VHDL.			
	Designing and realizing different types of registers by VHDL.	6	4	8
5	Designing and realizing different types of Counters and clock dividers by VHDL.			
6	Designing and realizing different types of SRAM by VHDL.			
	Designing and realizing ROM with and store data inside it by VHDL.			
7	Midterm	2	1	
8	Building logical circuits using the state diagram techniques	4	1	8
9	Building logical circuits using the ASM chart techniques			
10	Building logical circuits using the FSM techniques			
	Analysis of sequential circuits			
11	Design and realizing of arithmetic logic unit (ALU) by VHDL.	3	2	8
12	Designing and implementing the control units by VHDL.			
	Trieste bus based data-transfers.			
13	Explaining the micro-operations (Register transfer, Arithmetic op., logic op, shifting. ...etc.) to design CPUs			
14	Designing and realizing concurrent digital circuits using arrays and matrices configuration (such as ANN, Encryption systems).	3	1	--
15	Designing and realizing simple microcontroller or microprocessor by VHDL.	4	1	--
Total hours		30	15	30

4. Course content/Course Competencies mapping matrix

Topic	c1	c2	c3	c4	c5	c6	c7	c8	c9
Designing and synthesizing combinational logic circuits (such as vector MUXs, DeMUXs, Decoder, Encoder and comparator) by VHDL.	1	1	1				1		
Designing and synthesizing of sequential logic circuits (such as Flip-Flops, Registers, Counters and clock dividers, SRAMs, ROMs) by VHDL.	1	1	1	1			1		
Design logic circuits using state diagram techniques, ASM chart techniques, FSM techniques.	1	1	1		1	1	1		

Topic	c1	c2	c3	c4	c5	c6	c7	c8	c9
Design and realizing of arithmetic logic unit (ALU) by VHDL	1	1	1	1	1	1	1	1	
Designing and implementing the control units by VHDL.	1	1	1	1	1	1	1	1	
Explaining the micro-operations (Register transfer, Arithmetic op., logic op, shifting. ...etc.) to design CPUs			1	1		1	1		
Designing and realizing concurrent digital circuits using arrays and matrices configuration (such as ANN, Encryption systems).					1	1		1	1
Designing and realizing simple microcontroller/ microprocessor and advanced digital circuits by VHDL.	1	1	1	1	1	1	1	1	1
Topics Covering Competences	6	6	7	5	5	6	7	4	2

5 – Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods						Learning Methods			Assessment Method					
	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Researched Reports &	Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report
c1	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	1		
c4	1	1		1	1	1			1	1	1	1		1	
c5	1	1		1	1	1			1	1	1	1	1	1	
c6	1	1	1	1		1	1		1	1	1	1	1		
c7	1	1	1				1	1		1	1	1		1	
c8	1	1	1				1	1	1			1		1	
c9			1		1		1							1	
Σ	8	8	4	6	5	6	4	2	3	7	7	8	4	5	

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Practical exam		12 th Week	20
Semester Work	Quizzes	1 Quiz	20
	Reports/Research	1 report per semester	
	Tutorials	1 Assignment per semester	
Written Exam		Sixteenth week	40
Total			100

7- List of references:

7-1 Course notes:

Assem B, (2018) The Logic Circuits Design2:, Modern academy Laboratory work printed notes

7-2 Required books

- Mano, M.M, and Kime, C.R, (2000) Logic and Computer Design Fundamental, 2nd ed., Englewood cliffs, NJ: Prentice Hall.
- Stephen D., Stephen B., Zvonko G., and Zvonko V., (2004) Fundamentals of Digital Logic with VHDL Design: McGraw-Hill Higher Education.
- Volnei A. Pedroni, (2010) Circuit Design and Simulation with VHDL, 2nd ed : MIT Press Cambridge.

7-3 Recommended books:

- Volnei apedroni, (2013) circuit design and simulation with vhdL: the mit press
- Pratima mangas, (2013) digital logic & design: kataria songs.
- Mano, M.M, (1991) Digital Design 2nd ed. Englewood cliffs, NJ: Prentice Hall.

7-4 Periodicals, Web sites, etc.

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

<https://www.xilinx.com/>

<https://www.crunchbase.com/organization/mentor-graphics>

8- Facilities required for teaching and learning:

- Computer Lab. equipped with Data show and Computer package (like Xilinx-ISE, HDL-designer, ModelSim)
- Lecture and Exercise rooms equipped with Data show projection and sound systems.
- High speed internet and communication facilities for online learning.

Course coordinator:

Dr. Assem Badr

Head of the Department:

Dr. Abd Elmoneim Fouda

Date:

August. 2020

Summer Training

Modern Academy

for Engineering and Technology in Maddi



Course Specification Course Specification

CMPn360: Industrial Training -2

A- Affiliation

Relevant program:

Computer Engineering and Information Technology BSc Program

Department offering the program: Computer Engineering and Information Technology Department

Department offering the course: Computer Engineering and Information Technology Department

Date of specifications approval: August 2020

B - Basic information

Title: Industrial Training -2

Code: CMPn360

Level: Senior-2 9th Semester

Credit Hours: -

Lectures: -

Tutorial/Exercise: **Credit** **Lectures:**
- **Hours:** 0 -

Pre-requisite: CMPn260

C - Professional information

1 – Course Learning Objectives:

By the end of this course, the students should have gained the planned competences related to the construction and operation of 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 - Competencies:

- c1- Enrich their practical learning experience. Enrich their ability to work within defined constraints (C6,C10)
- c2- Communicate with others; work in a team and involvement in group discussion (C8)
- c3- Present data and results orally and in written form. (C8,C18)
- c4- Use ICT facilities in presentations. Identify the practical up to date techniques and technologies(C1,C11,C14)
- c5- Use creative, innovative and flexible thinking in ordinary courses by practical cases (C15,C19,C20)
- c6-Identify the hardware/software production cycles(C15,C16)

This course contributes in the following program competencies: C1, C6, C8,C10, C11, C14,C15,C16, C18, C19 & C20

3 – Contents

SN	Topic	Lecture hours	Tutorial hours	Practical hours
1	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:			

	<ul style="list-style-type: none"> • Profile of the industry • Organization structure • Machine, equipment, devices • Personal welfare scheme • Details of the training undergo Project undertaken during the training 			
Total hours				60

4. Course content/Course Competencies mapping matrix

Topic	c1	c2	c3	c4	c5	c6
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: <ul style="list-style-type: none"> • Profile of the industry • Organization structure • Machine, equipment, devices • Personal welfare scheme • Details of the training undergo Project undertaken during the training 	1	1	1	1	1	1
Topics Covering Competences	1	1	1	1	1	1

5 - Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods						Learning Methods			Assessment Method					
	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Research, Reports & Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report	
c1		1				1	1							1	
c2		1				1	1							1	
c3		1				1	1							1	
c4		1				1	1							1	
c5		1				1	1							1	
c6		1				1	1							1	
Σ		6				6	6							6	

6- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Training and course Project	At the end of the training period	60
Practical Exam	At the end of semester	40
Total		100

7- List of references:

2. None

7-1 Course notes: None

7-2 Required books

none.

7-5 Recommended books: None

Periodicals, Web sites, etc.

www.mcit.gov.eg/Ar/Training/Affiliate/12

www.cisco.com/web/ME/ar/learn_events/

[http://www-](http://www-304.ibm.com/services/learning/ites.wss/eg/en?pageType=page&c=V087174W21666K25)

[304.ibm.com/services/learning/ites.wss/eg/en?pageType=page&c=V087174W21666K25](http://www-304.ibm.com/services/learning/ites.wss/eg/en?pageType=page&c=V087174W21666K25)

8- Facilities required for teaching and learning:

- The tools applied by the training company (software courses or hardware practicing)
- [High speed internet and communication facilities for distance learning.](#)

Course coordinator: Members committee of accreditation company

Head of the Department: Dr. Abd Elmoneim FoudA

Date: August 2020

Ninth Semester (Level Four)

Modern Academy

for Engineering and Technology in Maddi



Course Specification

CMPn421: Distributed Computer systems

A- Affiliation

Relevant program: Computer Engineering and Information Technology BSc Program

Department offering the program: Computer Engineering and Information Technology Department

Department offering the course: Computer Engineering and Information Technology Department

Date of specifications approval: December 2018

B - Basic information

Title: Distributed Computer systems	Code: CMPn421	level: Senior2, 1 st semester
Credit Hours: 3	Lectures: 2	Tutorial: 2 Practical: 1 Total: 5
Pre-requisite: CMPn324		

C - Professional information

1 – Course Learning Objectives:

By the end of this course, the students should have gained the planned competences related to the construction and operation of the principles and concepts of Distributed Computer systems, the details of the software architecture and communications support required, the commercial Distributed Computer systems. They should be able to operate, maintain, design, calculate and analyze the performance of the Distributed Computer systems.

2 - Competencies:

- c1 - Gain hands-on experience on client-server programming and applications (C3, C4)
- c2 - Appreciate Problem selection, Solution & research methodology and Presentation (C1, C20)
- c3 - Design approaches, implementation, analysis and evaluation of networked systems (C14)
- c4 - Develop a working knowledge of the infrastructure required to support distributed systems. (C7)
- c5 – Define Inter-process communication and remote invocation (C5).
- c6 - Examine the algorithms for both client and server components of a distributed program and apply the different implementation techniques (C7, C8)
- c7 - Connect users, resources and apply the synchronization technique (C15)
- c8- Use ICT facilities in presentations, and manage resources efficiently, Search for information's in references in internet, and Practice self-learning (C7, C8, C10)
- c9- Use creative, innovative and flexible thinking and acquire entrepreneurial and leadership skills to build business distributed system (C9)

This course contributes in the following program competencies: C1, C3, C4,C5, C7, C8,C9,C10, C14, C15 & C20

3 – Contents

SN	Topic	Lecture hours	Tutorial hours	Practical hours
1	Distributed Systems definitions and technologies	2	2	1
2	Distributed Systems definitions and technologies	2	2	1
3	Distributed Computer Systems hardware Architectures and models	2	2	1
4	Distributed Computer Systems software Architectures and models	2	2	1
5	Distributed Computer Systems performance measure	2	2	1
6	Inter-process communication	2	2	1
7	Assessment (Midterm exam)	2	2	1
8	Inter-process communication	2	2	1
9	Distributed file storage, DAS, SAN, and NAS storage	2	2	1
10	Distributed file storage, DAS, SAN, and NAS storage	2	2	1
11	Timing issues, co-ordination, concurrency control and transactions	2	2	1
12	Timing issues, co-ordination, concurrency control and transactions	2	2	1
13	Security and fault-tolerance	2	2	1
14	Security and fault-tolerance	2	2	1
15	Mini project	2	2	1
Total hours		30	30	15

4. Course content/Course Competencies mapping matrix

Topic	c1	c2	c3	c4	c5	c6	c7	c8	c9
Distributed Systems definitions and technologies	1	1	1						
Distributed Computer Systems hardware Architectures and models		1		1	1	1		1	1
Distributed Computer Systems software Architectures and models		1		1	1	1		1	1
Distributed Computer Systems performance measure					1				
Inter-process communication		1	1		1	1	1		1
Distributed file storage, DAS, SAN, and NAS storage	1	1	1	1		1		1	
Timing issues, co-ordination, concurrency control and transactions		1		1		1			
Security and fault-tolerance		1		1			1	1	1
Mini project		1	1		1	1	1	1	1
Topics Covering Competences	2	8	4	5	5	6	3	5	5

5 - Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods						Learning Methods			Assessment Method					
	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Research, Reports &	Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report
	c1	1		1		1	1	1	1	1		1	1		1
	c2	1		1	1	1				1	1	1	1		
	c3	1		1	1	1	1		1	1	1	1	1		1
	c4	1			1	1	1		1	1		1	1		1
	c5	1			1		1		1	1	1	1			
	c6	1			1	1	1	1	1	1		1	1		1
	c7	1				1	1		1			1			1
	c8	1							1						1
c9					1	1	1	1							1
Σ	8	0	3	5	7	8	4	5	5	6	3	7	5	0	7

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Semester Work	Quizzes	3 Quizzes (one each 4 weeks)	6
	Reports/Research	Two reports per semester	4
	Tutorials	3 Assignments per semester	6
	Mini project	Once per semester	4
Practical Exam		Fifteenth week	20
Written Exam		Sixteenth week	40
Total			100

7- List of references:

7-1 Course notes

Wafaa Boghdady, Distributed Computer Systems, Modern Academy notebook, 2018

7-2 Required books

Vikas Chaudhary (2017) Cryptography and network security, S.K. Kataria & Sons

Sanjay Shama 92013) A course in computer network, S.K. Kataria & Sons

Marial (2012) Computer Communications, S.K. Kataria & Sons

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

7-3 Recommended books

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

George Coulouris, Jean Dollimore and Tim Kind berg, (2005) Distributed Systems, 3rd edition, Addison Wesley

7-4 Periodicals, Web sites, etc.

<http://www.prenhall.com/panko/index.html>

8- Facilities required for teaching and learning:

- [Lab network.](#)
- [Lecture and Exercise rooms equipped with projection and sound systems.](#)
- [Computer, Data show and Computer programs;](#)
- [High speed internet and communication facilities for distance learning.](#)

Course coordinator:	Ass. Prof. Dr. Wafaa Boghdady
Head of the Department:	Dr. Abd Elmoneim FoudA
Date:	August 2020

Modern Academy

for Engineering and Technology in Maddi



Course Specification

CMPn431: Advanced Computer Systems

A- Affiliation

Relevant program: Computer Engineering and Information Technology BSc Program
Department offering the program: Computer Engineering and Information Technology Department
Department offering the course: Computer Engineering and Information Technology Department
Date of specifications approval: August 2020

B - Basic Information

Title :Advanced Computer Systems
Code: CMPn431
Level: Senior-2, 9th OR 10th Semester
Credit Hours: 3
Lectures: 2
Tutorial/Exercise : 2
Practical: : 2
Total: 4
Pre-requisite: CMPn310

C - Professional information

1 – Course Learning Objectives:

By the end of this course, the students should have gained the planned competences related to the construction and to 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 - Competencies

- c1- Describe Fuzzy expert systems, covariance matrix, genetic algorithms, neural networks, solutions of integer optimization and visualization of multivariate data. Use the fuzzy expert systems, neural network in multidimensional classification problems (C11, C14)
- c2 -Use the negotiations for distributing algorithm, distributed computing, intelligent tutoring system, shared virtual environment, work flow model at distributed intelligent system and knowledge sharing system (C15,C16)
- c3- Classify AI technological with probability, temporal data presentation, e-business and other problems (C15, C19)
- c4- Describe new approaches to the techniques of image synthesis and face recognition (C13, C17)
- c5- - Utilize the multi-value logic (MVL) design, the model-checking tool support available for MVL, digital circuit design and the code parallelism paradigm (C15, C16)
- c6- Utilize the models and methods of optimal planning, (C16, C17).
- c7- Use the real-time approaches to face detection in face recognition systems (C17, C18)
- c8- Apply the software support for collaborative risk management (C16)
- c9- Search for knowledge and using ICT in search and presentation (C10, C14).

This course contributes in the following program competencies:(C10, C11,C13,C14,C15,C16,C17,C18,C19,C20)

3 – Contents

weeks	Topic	Lecture hours	Tutorial hours	Practical hours
1	Describe Fuzzy expert systems	2	2	
2	, genetic algorithms, neural networks	2	2	
3	distributing algorithm, distributed computing	2	2	
4	Method of Artificial intelligence	2	2	
5	Intelligent Agents and Distribute activities	2	2	
6	Distributed production Networks	2	2	
7	Assessment (Midterm exam)	2	2	
8	modeling complex systems	2	2	
9	the agent-based distribution system	2	2	
10	methods of optimal planning	2	2	
11	pattern recognition,	2	2	
12	computer vision	2	2	
13	face detection	2	2	
14	face recognition systems	2	2	
15	Logic Synthesis and simulation.	2	2	
Total hours		30	30	

4. Course content/Course Competencies mapping matrix

Topic	c1	c2	c3	c4	c5	c6	c7	c8	c9
Describe Fuzzy expert systems	1				1				1
, genetic algorithms, neural networks	1				1				1
distributing algorithm, distributed computing	1	1							1
Method of Artificial intelligence		1	1		1				1
Intelligent Agents and Distribute activities		1	1		1				1
Distributed Computer Networks		1							1
Assessment (Midterm exam)									1
modeling complex systems									1
the agent-based distribution system					1				1
methods of optimal planning						1		1	1
pattern recognition,			1		1				1
computer vision			1	1					1
face detection			1	1	1		1		1
face recognition systems			1	1	1		1		1
Logic Synthesis and simulation.	1		1	1	1		1	1	1
Topics Covering Competences	4	4	7	4	9	1	3	2	15

5 - Teaching and Learning and Assessment methods:

Course Competences	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Researched, Reports & Assignments	Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report
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	1	
c4	1		1	1	1		1		1	1	1		1	1	
c5	1		1	1	1		1		1	1	1		1	1	
c6	1	1	1	1	1		1		1	1	1		1	1	
c7	1		1	1	1		1		1	1	1		1	1	
c8	1								1					1	
c9	1						1		1		1			1	
Σ	9	3	7	6	5	0	8	0	8	7	8	0	7	9	0

6- Assessment Timing and Grading

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Semester Work	Quizzes	3 Quizzes (one each 4 weeks)	6
	Reports/Research	Two reports per semester	4
	Tutorials	3 Assignments per semester	6
	Mini project	Once per semester	4
Practical Exam		Fifteenth week	20
Written Exam		Sixteenth week	40
Total			100

7- List of references:

7-1 Course notes: Lecture notes and handouts

7-2 Required books

- o Ian Sinclair,(2001),building &upgrade your own PC, Newness'

7-6 Recommended books: None

7-4 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/>

8- Facilities required for teaching and learning:

- Computer Lab.
- Computer, Data show and Computer package.
- High speed internet and communication facilities for distance learning

Course coordinator:

Dr. Seham Ebrahim

Head of the Department:

Dr. Abd Elmoneim FoudA

Date:

August 2020

Modern Academy

for Engineering and Technology in Maddi



Course Specification CMPn332: Digital Image Processing

A- Affiliation

Relevant program: Computer Engineering and Information Technology BSc Program
Department offering the program: Computer Engineering and Information Technology Department
Department offering the course: Computer Engineering and Information Technology Department
Date of specifications approval: August 2020

B - BASIC INFORMATION

Title: Digital Image Processing **Code:** **level:** 3
Credit Hours: 3 **Lecture:** 2 **Tutorial:** 1 **Practical:** 2 **Total:** 5
Pre-requisite: CMPn210

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 - Competencies

- c1- Build and design of systems that includes software and hardware. (C1,C2,C12)
- c2 - Analyze the problem decompositions. (C17,C18)
- c3 -Solve problems using transformers to suitable domain. (C7,C12,C11)
- c4- Design and realize application software's to read and enhancement images of different formats (C1,C2,C3,C4)
- c5 - Use compression and transformation programs to design and develop image system. (C5,C7,C12)
- c6 – Use image Segmentations applications and familiarization with open CV. (C10,C11)
- c7 - Solve limited operational problems related to the image transformation. (C7)
- c8 - Calculate the object segmentations and features in software design and develop. (C7,C12,C11) .
- c9- Communicate with others; work in a team and involvement in group discussion (C3,C4)
- c10- Present data and results orally and in written form. (C4C8,C9)
- c11- Use ICT facilities in presentations (C3,C6)
- c12- Differentiate between the alternatives methodologies of Digital Image Processing (C6, C7).

This course contributes in the following program competencies: C1,C2,C3,C4,C5,C6, C7, C8, C9, C10, C11,C12,C17,C18)

Week #	Topic	Lecture hours	Tutorial hours	Practical hours
1	Image , Digital image and image processing based systems	2	1	2
2	Sampling and quantization	2	1	2
3	Understanding Statistics on image matrix and image histogram.	2	1	2
4	Images enhancement: Contrast stretching and histogram equalization.	2	1	2

5	Spatial domain filters, Median filter	2	1	2
6	Weighted Average, Circular, Cone	2	1	2
7	Frequency domain	2	1	2
8	Transformations Fourier and DCT	2	1	2
9	Low and high pass filters in frequency domain	2	1	2
10	Inverse transform, Power and phase of frequency components	2	1	2
11	Image Encoding and compression	2	1	2
12	Hoffman, Shannon Fanon encoding	2	1	2
13	Vector quantization, Fractal, and Run length,	2	1	2
14	Image segmentation techniques	2	1	2
15	Morphology, features extraction, boundary description, and distance metrics.	2	1	2
Total hours		30	15	30

4. Course content/Course Competencies mapping matrix

Topic	c1	c2	c3	c4	c5	c6	c7	c8	c9	C10	C11	C12
Image, Digital image and image processing-based systems	1		1				1		1	1		
Sampling and quantization	1		1									1
Understanding Statistics on image matrix and image histogram.	1		1				1		1	1		
Images enhancement: Contrast stretching and histogram equalization.			1	1		1			1			
Spatial domain filters, Median filter	1	1	1		1						1	
Weighted Average, Circular, Cone	1			1			1		1			
Frequency domain	1	1	1						1			
Transformations Fourier and DCT		1	1									
Low and high pass filters in frequency domain		1							1	1		
Inverse transform, Power and phase of frequency components		1	1						1			
Image Encoding and compression		1				1						1
Hoffman, Shannon Fanon encoding		1	1	1	1							1

Vector quantization, Fractal, and Run length,	1			1		1						
Image segmentation techniques	1	1	1		1	1	1		1			
Morphology, features extraction, boundary description, and distance metrics.	1							1	1			
Topics Covering Competences	9	7	10	4	3	3	3	2	8	2	1	3

5 - Teaching and Learning and Assessment methods:

Course Competences	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Researched Reports & Assignments	Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report
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	
c4	1	1		1	1	1	1			1		1	1	1	1
c5	1			1	1	1				1		1	1	1	1
c6	1		1	1	1	1	1		1	1				1	1
c7	1		1	1	1	1	1		1	1				1	1
c8		1		1	1	1	1		1			1			
c9	1	1	1			1	1							1	
c10	1	1	1	1	1	1	1							1	
c11				1	1		1								
c12		1					1								
Σ	9	7	4	10	10	8	9	0	4	7	0	6	4	8	6

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Semester Work	Quizzes	3 Quizzes (one each 4 weeks)	6
	Reports/Research	Two reports per semester	4
	Tutorials	3 Assignments per semester	6
	Mini project	Once per semester	4
Practical Exam		Fifteenth week	20
Written Exam		Sixteenth week	40
Total			100

7- List of references:

7-1 Course notes

Lectures Notes of Digital Image Processing

7-2 Required books

Rafael C. Gonzalez & Richard E. Woods, (2011) Digital Image Processing, Prentice Hall.

7-3 Recommended books

Eveen and Andro Karlisson, (1996), Reuse a holistic approach, Wiley.

7-4 Periodicals, Web sites, etc.

IEEE transactions on Software Engineering.

8- Facilities required for teaching and learning:

- Computer Labs Equipped with any UML software.

Course coordinator: Prof. Dr. Sabry Abdel Meety

Head of the Department: Dr. Abd Elmoneim FoudA

Date: August 2020

Modern Academy

for Engineering and Technology in Maddi



Course Specification CMPn 334: Multimedia

A- Affiliation

Relevant program: Computer Engineering and Information Technology BSc Program
Department offering the program: Computer Engineering and Information Technology Department
Department offering the course: Computer Engineering and Information Technology Department
Date of specifications approval: August 2020

B - Basic Information

Title: Multimedia **Code:** CMPn334 **level:** Senior 1st or 2nd Semester
Credit Hours: 3 **Lectures:** 2 **Tutorial:** 1 **Practical:** 2
Total: 5
Pre-requisite: CMPn324

C - Professional information

1 – Course Learning Objectives:

The tremendous change of digital technologies implies high effect on the digital multimedia world. By the end of this course the students should demonstrate the knowledge and understanding of the contemporary multimedia standards and technologies. They should be able to operate, integrate and evaluate the performance of multimedia systems. Moreover, the student will be able to solve problems and different case studies using multimedia technologies and techniques, and achieve the suitable method to test the performance.

2- competencies

- c1. Identify the different features, Basic concepts and deferent items of modern multimedia technologies. (C1, C5)
- c2. Explain, formulate, and use theoretical background of probabilities and Statistics needed to deal with different multimedia enhancement techniques (C1, C3)
- c3. Illustrate different Basics concepts and theories of digital Audio/ Video, Graphics, and data transmission /compression, and coding constituting multimedia systems (C1, C3)
- c4- take knowledge of Inspection Approach, and Confidence Interval Approach based on independent data to make the effective use of the different coding algorithms for multimedia activities (C11)
- c5. Explain the basics of Authentication and delivery of multimedia (C2, C4)
- c6. Practice research techniques and methods of investigation as an inherent part of learning to keep track with developments and trends of multimedia (C5)
- c7. Manipulate Multimedia programming techniques to eestimate and measure the performance of some physical systems, and evaluate its suitability for a specific application (C12, C13)
- c8. Use a wide range of analytical tools, techniques, and software packages pertaining to the discipline and develop
required computer programs to recognize the concepts and representations of sound, pictures and video to multimedia data compression, coding, and transmission for different physical case studies (C17, C18)

c9. Investigate on a mini project for Innovating solutions based on non-traditional thinking and the use of recent tools and programs for deployments and implementations of multimedia activities techniques to solve (C20)

This course contributes in the following program competencies: [C1, C2, C3, C4, C5, C11, C12, C13, C17, C18& C20](#)

3 – Contents

SN	Topic	Lecture hours	Tutorial hours	Practical hours
1	➤ Basic concepts and terminologies of multimedia technologies	2	1	2
2	➤ Review of basic probabilities, Statistics and distribution theory	2	1	2
3	Introduction: Multimedia applications and requirements: Huffman Coding	2	1	2
4	Audio/Video fundamentals including analog and digital representations, human perception, and audio/video equipment, applications	2	1	2
5	Compression Techniques, Lossless Compression algorithms, Lempel–Ziv–Welch LZW algorithm	2	1	2
6	Lossless Compression algorithm: Adaptive Huffman Coding.	2	1	2
7	Assessment (midterm exam)			
7	Lossless Compression algorithm: Arithmetic Coding	2	1	2
8	Audio and video compression including Perceptual transform coders for images/video hardware/software tradeoffs. Image and video processing Applications and algorithms.	2	1	2
9	Application and performance comparison of various coding algorithms including hardware/software trade-offs.	2	1	2
10	Speech processing applications and algorithms.	2	1	2
11	Image and video processing applications and algorithms.	2	1	2
12	Lossless Compression algorithm: Binary Arithmetic Coding	2	1	
13	Lossy Compression algorithm: Predictive Coding, Feed Forward, Feed Backward	2	1	2
14	Multimedia Programming Frameworks: Java for QuickTime, Java Media Framework	2	1	2
15	Mini project seminar analysis and design utilizing overall concepts of modeling and simulation capabilities	2	1	2
Total hours		30	15	30

4. Course content/Course Competencies mapping matrix

Topic	c1	c2	c3	c4	c5	c6	c7	c8	c9
Basic concepts and terminologies of multimedia technologies	1							1	1
Review of basic probabilities, Statistics and distribution theory	1	1				1			
Introduction: Multimedia applications and requirements: Huffman Coding	1			1			1		1

Audio/Video fundamentals including analog and digital representations, human perception, and audio/video equipment, applications			1		1	1			1
Compression Techniques, Lossless Compression algorithms, LZW		1	1		1		1		1
Lossless Compression algorithm: Adaptive Huffman Coding, and Arithmetic Coding		1	1		1	1			1
Lossy Compression algorithm: Predictive Coding, Feed Forward, Feed Backward		1	1			1			1
Speech, image, audio, and video processing applications and algorithms.		1	1				1		
Multimedia Programming Frameworks: Java for QuickTime, Java Media Framework		1	1	1	1				
Mini project seminar analysis and design utilizing overall concepts of multimedia recent technologies and its capabilities'	1	1	1	1	1	1	1	1	1
Topics Covering Competences	4	7	7	3	5	5	4	2	7

5 - Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods						Learning Methods			Assessment Method					
	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Researched, Reports &	Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report
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		1
c4	1	1		1				1		1	1				1
c5	1	1		1	1		1	1		1	1		1	1	1
c6	1	1	1	1	1					1	1		1		1
c7	1	1	1	1			1	1	1	1	1		1	1	1
c8	1	1	1	1			1	1	1	1	1			1	1
c9	1	1	1		1		1	1	1					1	1
Σ	9	9	4	8	5		4	6	3	8	8		5	4	9

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Practical exam		12 th Week	
Semester Work	Quizzes	3 Quizzes (one each 4 weeks)	15
	Reports/Research	Two reports per semester	5
	Tutorials	3 Assignments per semester	5

	Mini project	Once per semester	15
	Written Exam	Sixteenth week	40
Total			100

7- List of references:

7-1 Course notes:

Lecture notes and handouts
Abd elmoneim fouda, **Computer modeling and simulation**. Cairo :MAM Press

7-2 Required books

Valvano (2012) Embedded microcomputer system and real time interfacing, Thomson
Jörg Henkel and Muhammad Shaniqua, (2011) Hardware/Software Architectures for Low-Power Embedded Multimedia Systems, Springer.
C. Marlin Brown, (1998) Computer Interface Design Guidelines, Intellect Books.

7-3 Recommended books:

P.W. Agnew and A.S. Kellerman, (1996) Multimedia Communication, Addison Wesley.
Jörg Henkel and Muhammad Shaniqua, (2011) Hardware/Software Architectures for Low-Power Embedded Multimedia Systems, Springer

7-4 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/>.

8- Facilities required for teaching and learning:

- Computer Lab. equipped with Data show and Computer package
- Lecture and Exercise rooms equipped with Data show projection and sound systems.
- High speed internet and communication facilities for distance learning.

Course coordinator: Dr. Abd Elmoneim FoudA

Head of the Department: Dr. Abd Elmoneim FoudA

Date: August 2020

Modern Academy
for Engineering and Technology in Maddi



Course Specification
CMPn423: Languages and Compilers

A- Affiliation

Relevant program:	Computer Engineering and Information Technology BSc.
Department offering the program:	Computer Engineering and Information Technology Department
Department offering the course:	Computer Engineering and Information Technology Department
Date of specifications approval:	August 2020

B - Basic information

Title: Languages and Compilers	Code: CMPn423	level: Senior 2, first Semester
Credit Hours: 3	Lectures: 2	Tutorial: 2 Practical: - Total: 4
	Pre-requisite: CMPn110	

C - Professional information

1 – Course Learning Objectives:

By the end of this course the students should have gained the planned competencies (based on the knowledge, skills and personnel attitudes) related to differentiation between the interpreter and the compiler, lexical analysis, formal specification of computer languages, grammar parsers and the advantage structure of compiler. They should compete on the design, implementation and execute of different compiler techniques.

2- Competencies

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

- c1– Build and design parsing tables (C1, C2, C3, C11, C15).
- c2 – Analyze of different Language constructs ((C1, C2, C3, C11, C15).
- c3 – Solve problem using grammars and setup of production rules (C1, C2, C3, C11, C15).

c4- Design and realize simple lexical analyzer programs (C1, C2, C3, C11, C15).

c5 – Investigate program structure and select best way to do it (C1, C2, C3, C11, C15).

c6 – Use experimental facilities to investigate the given compile performance (C1, C2, C3, C11, C15).

c7 – Design proper parser suitable for a given computer language (C1, C2, C3, C11, C15).

c8 – Design and use of natural language grammars (C1, C2, C3, C11, C15).

c9- Communicate with others; work in a team and involvement in group discussion and seminars (C1, C2, C3, C11, C15).

c10- Write technical reports and prepare convenient presentations (C1, C2, C3, C11, C15).

c11- Practice self-learning (C1, C2, C3, C11, C15).

This course contributes in the following program competencies (C1,C2,C3,C11,&C15,)

3 – Contents

Week	Topic	Lecture hours	Tutorial hours	Practical hours
1	➤ Introduction: structure of a compiler.	2	2	
2,3,4,5	<ul style="list-style-type: none"> ➤ Lexical analysis: tokens, regular expressions, Lex. ➤ Finite state machine ➤ NFA ➤ DFA ➤ Minimization 	8	8	
6	➤ Parsing: context-free grammars,	2	2	
7	MT Assessments	2	2	
8,9	<ul style="list-style-type: none"> ➤ predictive and LR parsing, recursive descent parsing. ➤ Bottom-up parsing 	4	4	
10	<ul style="list-style-type: none"> • Shift-reduce. • Building bottom-up parse tree 	2	2	
11,12	➤ Intermediate code generation and representation	4	4	
➤ 13,	➤ Code Optimization	2	2	
➤ 14,15	➤ Case study , Revision ,Report presentation and discussions	4	4	
Total		30	30	-

4. Course contents / course Competencies mapping matrix

Topic	c1	c2	c3	c4	c5	c6	c7	c8	c9	c10	c11
Introduction: structure of a compiler.		1			1						
Lexical analysis: tokens, regular expressions, Lex.	1	1		1		1	1		1	1	1
Parsing: context-free grammars, Natural Languages		1	1			1	1	1	1	1	1
predictive and LR parsing, recursive descent parsing	1	1	1			1	1				
Shift-reduce.	1	1	1			1	1				
Building bottom-up parse tree	1	1	1			1					
MT assessment	1	1	1	1	1	1	1	1			
Intermediate code generation and representation	1	1	1	1	1	1					
Code Optimization	1	1				1		1			
Case study , Revision ,Report	1	1	1	1	1	1	1	1	1	1	1

presentation and discussions											
Topics Covering Competences	8	10	7	4	4	9	6	4	3	3	3

5 - Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods						Learning Methods				Assessment Method				
	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Researched, Reports & Assignments	Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report
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				
c5	1			1	1					1	1		1		
c6	1		1	1	1		1			1	1				
c7	1		1	1	1		1			1	1		1		
c8		1		1	1		1			1	1		1		
c9	1	1	1				1			1	1		1		
c10	1	1	1	1	1		1			1	1				
c11				1	1		1				1		1		
sum	9	6	4	10	10	0	8	0	1	9	11	0	8	0	0

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Semester Work	Quizzes	3 Quizzes (one each 4 weeks)	20
	Reports/Research	Two reports per semester	10
	Tutorials	3 Assignments per semester	10
Written Exam		Sixteenth week	40
Total			100

7- List of references:

7-1 Course notes:

Lectures Notes of Languages and Compilers

7-2 Required books

A.V. Aho . J.D.Ullman, (2000).Principles of compiler design, Pearson Education
 Randera singh ,(2009), Design and Implementation of Compilers, India-NewAge
 Grune , bal,(200), Modern Compiler Design, Wiley,

7-3 Recommended books:

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

7-4 Periodicals, Web sites, etc.

None

8- Facilities required for teaching and learning: (optional)

- Data show,
- Computer Labs Equipped with Python programming language interpreter and Compiler
- On-line teaching facilities (if required)

Course coordinator: Dr. Khaled A. Morsy
Head of the Department: Prof. Dr. A. Fouda
Date: August 2020

Modern Academy

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Course Specification CMPn460: Project-2A

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: August 2020

B - Basic information

Title: Project-2 **Code:** CMPn460 **Level:** Senior-1 8th semester and Senior-2 9th semester
Credit Hours: 3 **Lectures:** 2 **Tutorial/Exercise:-** **Practical:**2 **Total:**4
Pre-requisite: CMPN361+132 Credit, CMPN360

C - Professional information

1 – Course Learning Objectives:

The proposed projects must complement the other courses in computer engineering and information technology. The students are given as much freedom as possible in the choice of the idea of their projects. Also, they are given much freedom to combine their teamwork. Each student must understand the project contribution and know his project task. By the end of this course the students should able to work together in teamwork to design, implement, document, and test their application using appropriate software simulators and hardware equipment.

2 - Competencies:

- c1- Practice research techniques and methods of investigation to get the idea of Project, Plan, supervise and monitor implementation of engineering projects, use flexible thinking and acquire entrepreneurial and leadership skills (C5, C6, C9,).
- c2- Function efficiently as a member of multi-disciplinary, Communicate effectively (C7, C8).
- c3-Apply a new Knowledge and using other Learning strategies to design and implement modules and subsystems (C10, C11).
- c4- using Modern trends in the field of project scope, integrating computer objects running on different system configurations and (C14, C15).
- c5- Use appropriate specialized software and hardware required in project. Also, analytical tools and techniques to evaluate the performance(C16,C17).
- c6-Presenting the idea and clarify the problem formulation (C3,C8)

This course contributes in the following program competencies: C5, C6, C7,C8,C9,C10, C11, C14,C15,C16, & C17

3 – Contents

weeks	Topic	Lecture hours	Tutorial hours	Practical hours
1,2	The students propose their project idea or undertake a dedicated one by the supervisor.	4		4
3	Survey of the previous similar Projects	2		2
4	Survey on the proposed tools Software	2		2

5	Survey on the proposed tools hardware	2		2
6,7	Compare between different used techniques used	4		4
8	Budling the project block diagram	2		2
9,10	Gathering the required data	4		4
11,12	Testing the whole project functions.	4		4
13,14	Make final technical report documentation.	4		4
15	Preparing for project presentation.	2		2
Total hours		30		30

4. Course content/Course Competencies mapping matrix

Topic	c1	c2	c3	c4	c5	C6
The students propose their project idea or undertake a dedicated one by the supervisor.	1	1				
Survey of the previous similar Projects	1		1		1	1
Survey on the proposed tools Software	1		1	1	1	
Survey on the proposed tools hardware	1		1	1	1	
Compare between different used techniques used	1				1	
Budling the project block diagram			1	1	1	1
Gathering the required data	1		1			
Testing the whole project functions.				1	1	
Make final technical report documentation.		1				
Preparing for project presentation.		1				1
Topics Covering Competences	6	3	5	4	6	3

5 - Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods						Learning Methods			Assessment Method					
	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Researched Reports &	Self-Learning	Modeling and Simulation	Final Report	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report
c1	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			1	1
C6										1	1			1	1
Σ	5	5	5	3	4	0	0	4	0	5	6	0	0	5	

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Year work	Reports/Research	During term	60
Evaluation of discussion and final report of project		By the end of the project period	40
Total			100

7- List of references:

7-1 Course notes: None

7-2 Required books: None

7-3 Recommended books: None

7-4 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.gobokee.org/electrical-engineering-students-small-project/>
- http://www.realworldengineering.org/library_search.html

8- Facilities required for teaching and learning:

- Software and Hardware Labs.
- Simulator software programs. Data show
- [High speed internet and communication facilities for distance learning.](#)

Course coordinator:

Dr. Seham Ebrahim

Head of the Department:

Dr. Abd Elmoneim FoudA

Date:

[August 2020](#)

Modern Academy

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Course Specification

ENGn312a: Engineering Laws and Professional ethics.

A- Affiliation

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

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

Department offering the course: Basic Science Department

Date of specifications approval: August 2020

B - Basic Information

Title: Engineering Laws and Professional ethics **Code:** ENGn312a **Level:** 3rd and 4th Fall and Spring

Credit Hours: 2 **Lectures:** 2 **Tutorial/Exercise:** - **Practical:** -
Pre-requisite: None

C - Professional information

1 – Course Learning Objectives:

مع نهاية هذا المقرر يكون الطالب قد تمكن من فهم وتحليل وتطبيق المصطلحات والمفاهيم القانونية و التشريعات الصناعية المصرية - قوانين وتشريعات اعمال البناء والتخطيط العمراني و قوانين وتشريعات بيئية لحماية البيئة المصرية و المناقصات والعطاءات- قانون تنظيم المناقصات والعطاءات و العقود الهندسية الدولية و العقود الهندسية المحلية و المطالبات والتحكيم. بالإضافة إلى ذلك ، فإنه يوضح دور ومسؤوليات المهندس مع الأخذ في الاعتبار القواعد واللوائح التي تتحكم في عمله ، وحقوقه وواجباته ، وإلى علاقته مع الاستشاريين من العمل المتخصص وأخيراً مسؤوليات المالك والمقاول والعقود الهندسية. وتهدف الدورة أيضاً إلى دراسة التدريب وقوانين النقابات ، مع التأكيد على أهمية تحقيق أخلاقيات المهنة ومبادئها من خلال تقديم مقدمة لها وايضا علامات اكتساب تلك الاخلاقيات وكيفية ترسيخها وتنميتها. كما يتطرق الي تخصص مهنة الهندسة باختلاف تخصصاتها على انها من المهن الحساسة والدقيقة لاحتياجها الي الاخلاقيات المهنية.

2 – Competencies

- c1- (C4, C8). دراسة منهجيات حل المشاكل الهندسية ، وجمع البيانات وتفسيرها
- c2- (C9, C10). معرفة نظم ضمان الجودة ، ومدونات الممارسات والمعايير ومتطلبات الأمن الصناعي والقضايا البيئية
- c3- (C4). أخلاقيات المهنة والآثار المترتبة على الحلول الهندسية على المجتمع والبيئي الربط بين-
- c4- (C10). إيجادة اللغة وكتابة التقارير الهندسية -
- c5- (C9). . والهندسيه ان يفكر بطريقة خلاقة ومبتكرة في حل المشكلات القانونية-
- c6- (C2, C4). . والهندسيه ان يدمج ويستبدل ويقيم مختلف الأفكار والآراء من وجه النظر القانونية-
- c7- (C3, C6, C7). المختلفه تخطيط وإجراء وكتابة التقارير والتكاليف عن المشروعات-
- c8- (C2, C6, C7, C9). أن يعرض ويحل أحد المشاكل القانونية في احد الشركات -

c9 - Work in a team and involve in group discussion. (C2, C3, C7)

c10 - Search for information in references and in internet. (C5, C9)

c1 1- Practice self-learning and communicate effectively orally and in written form. (C7, C8)

3 – Contents

This course contributes in the following program competencies: C2, C3, C4, C5, C6, C7, C8, C9, C10

week	Topic	Lecture hours	Tutorial hours	Practical hours
1	مصطلحات ومفاهيم قانونية	2		
2,3,4	التشريعات الصناعية المصرية - قوانين وتشريعات اعمال البناء والتخطيط العمراني	6		
5	قوانين وتشريعات بيئية لحماية البيئة المصرية	2		
6	المناقصات والعطاءات. - قانون تنظيم المناقصات والعطاءات	2		
7	امتحان منتصف الفصل	2		
8,9,	العقود الهندسية المحلية - العقود الهندسية الدولية- المطالبات والتحكيم	4		
10,11,12	القواعد واللوائح التي تحكم في عمل المهندس ، وحقوقه وواجباته	6		
13,14,15	دراسة التدريب وقوانين النقابات ، مع التأكيد على أهمية تحقيق أخلاقيات المهنة ومبادئها من خلال تقديم مقدمة لها وتخصيص مهنة المهندس بجميع تخصصاتها في دراسة وترسيخ اخلاقيات المهنة	6		
		30		

4. Course content/Course Competencies mapping matrix

Topic	Knowledge				Skills				Attitude		
	c1	c2	c3	c4	c5	c6	c7	C8	C9	c10	c11
مصطلحات ومفاهيم قانونية	1			1	1	1	1	1	1	1	1
التشريعات الصناعية المصرية - قوانين وتشريعات اعمال البناء والتخطيط العمراني	1	1	1	1	1	1	1	1	1	1	1
قوانين وتشريعات بيئية لحماية البيئة المصرية	1	1	1	1	1	1	1	1	1	1	1
المناقصات والعطاءات. - قانون تنظيم المناقصات والعطاءات	1	1		1	1	1	1	1	1	1	1
العقود الهندسية المحلية - العقود الهندسية الدولية- المطالبات والتحكيم	1	1		1	1	1	1	1	1	1	1
القواعد واللوائح التي تحكم في عمل المهندس ، وحقوقه وواجباته	1	1	1	1	1	1	1	1	1	1	1
دراسة التدريب وقوانين النقابات ، مع التأكيد على أهمية تحقيق أخلاقيات المهنة ومبادئها من خلال تقديم مقدمة لها وتخصيص مهنة المهندس بجميع تخصصاتها في دراسة وترسيخ اخلاقيات المهنة	1		1	1	1	1	1	1	1	1	1
Topics Covering Competences	7	5	4	7	7	7	7	7	7	7	7

5 - Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods				Learning Methods	Assessment Method		
	Lecture	Discussions and seminars	Tutorials	Problem solving	Research and Reports	Written Exam	Quizzes	Assignments
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	1
c5	1	1			1	1	1	1
c6	1	1			1	1	1	1
c7	1	1			1	1	1	1
c8	1	1			1			
c9	1	1			1			
c10		1			1			
c11		1			1			
Σ	9	11	-	-	11	7	7	7

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Semester Work	Mid-Term Exam	7 th Week	20
	Quizzes	5 th and 10 th	20
	Assignments/ Reports	Bi-2Weeks	20
	Written Exam	Seventeenth week	40
Total			100

7- List of references:

7-2 Course notes:

د عبير حسن سراج الدين، قوانين وتشريعات هندسيه، الأكاديمية الحديثه للهندسة و التكنولوجيا، المعادى، 2019 .

7-7 Required books:

7-8 Recommended books:

جمال الدين احمد نصار، محمد ماجد خلوصى، قانون وتشريعات وعقود الاتحاد الدولى للمهندسين الاستشاريين، القاهرة، 2008.

7-4 Periodicals, Web sites, etc.

www.alamiria.com

8- Facilities required for teaching and learning:

- Library.
- Internet.

Course coordinator: Dr. Abeer Serag El-Deen
Head of the Department: Associat Professor / Ashraf Taha EL-Sayed
Date: August 2020

Modern Academy

for Engineering and Technology in Maadi



Course Specification GENn453: Marketing

A- Affiliation

Relevant program:

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

Department offering the program:

Manufacturing Engineering and Production Technology Department
Electronic Engineering and Communication Technology Department
Computer Engineering and Information Technology Department
Architecture Engineering and Building Technology Department
Civil Engineering and Building Technology Department

Department offering the course:

Basic Science Department

Date of specifications approval:

August 2020

B - Basic Information

Title: Marketing

Code: GENn453

Level: 3th

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 المهارات التي تمكنه من فهم مجال المبيعات، إدارة قوة المبيعات الاستراتيجية، عملية البيع الشخصية وتنظيم قوى المبيعات، تخطيط وتوظيف البائعين، اختيار وتوظيف المتقدمين، تطوير برنامج المبيعات، تحفيز قوى المبيعات، تعويض قوة المبيعات والمصروفات والنقل، قيادة قوة المبيعات، التنبؤ بالمبيعات وتطوير الميزانيات و مناطق المبيعات الإقليمية، تحليل حجم المبيعات، تحليل تكلفة التسويق والربح، ومعرفة سياسة التوزيع و استراتيجية الترويج.

2 – Competencies

(C9, C1) يستطيع الطالب كيفية ادارة المبيعات وتطوير برنامج المبيعات -c1

(C8) تحليل حجم المبيعات، تحليل تكلفة التسويق والربح، تقييم الأداء -c2

(C9) تخطيط وتوظيف البائعين، اختيار وتوظيف المتقدمين -c3

(C1, C2) يكتسب الطالب مهارات في مجال اساسيات ادارة المبيعات -c4

(C1, C2) يدرك الطالب كيفية اختيار وتوظيف المتقدمين وفضل الطرق لتحفيز فريق المبيعات -c5

(C1, C2) يستطيع الطالب تحليل تكلفة التسويق حسب مناطق التوزيع و الربح -c6

(C7) تدريب الطالب على كيفية البحث عن المعلومات في المراجع وفي الانترنت -c7

(C1, C9) يكتسب الطالب كيفية العمل في فريق و اشراكهم في مناقشات جماعية -c8

(C7, C8) تعليم الطالب على كيفية ايجاد الطرق اللازمة لابتكار كل ما هو جديد -c9

(C7, C10) يكتسب الطالب الخبرة في ايجاد حلول عملية تخدم برامج خارج تخصصه -c10

This course contributes in the following program competencies: C1, C2, C7, C8, C9, C10

3 – Contents				
week	Topic	Lecture hours	Tutorial hours	Practical hours
1	مفهوم التسويق ومراحل تطور الفكر التسويقي	2	-	-
2	ادارة وتخطيط وتنظيم قوة المبيعات	2		
3	التنبؤ بالمبيعات واساليب التنبؤ	2		
4	اختيار القوى العاملة	2		
5	وتوظيف المتقدمين	2	-	-
6	الرقابة التسويقية	2	-	-
7	امتحان منتصف الفصل	2		
8	تكاليف التسويق	2	-	
9	تحليل التكاليف التسويقية	2		
10	تعظيم الارباح	2	-	-
11	رقابة وخفض التكلفة	2		
12	استراتيجية الترويج	2		-
13	سياسة التوزيع	2	-	-
14	مفهوم واشكال قنوات التوزيع	2		
15	مراجعة عامة	2	-	-
Total hours		30	-	-

4. Course content/Course Competencies mapping matrix

Topic	Knowledge			Skills				Attitude		
	c1	c2	c3	c4	c5	c6	c7	c8	c9	c10
مفهوم التسويق ومراحل تطور الفكر التسويقي	1						1	1	1	1
ادارة وتخطيط وتنظيم قوة المبيعات	1	1	1				1	1	1	1
التنبؤ بالمبيعات واساليب التنبؤ	1	1					1	1	1	1
اختيار القوى العاملة			1	1	1		1	1	1	1
توظيف المتقدمين			1	1	1		1	1	1	1
الرقابة التسويقية				1		1	1	1	1	1
تكاليف التسويق						1	1	1	1	1
تحليل التكاليف التسويقية						1	1	1	1	1
تعظيم الارباح						1	1	1	1	1
رقابة وخفض التكلفة						1	1	1	1	1
استراتيجية الترويج							1	1	1	1
سياسة التوزيع							1	1	1	1
مفهوم واشكال قنوات التوزيع							1	1	1	1
Topics Covering Competences	3	2	3	3	2	5	13	13	13	13

5 - Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods						Learning Methods			Assessment Method					
	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Researched Reports & Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report	
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		1			1	1	
c5	1	1					1	1					1	1	
c6	1	1	1				1			1			1		
c7	1	1	1					1					1	1	
c8	1	1					1								
c9	1	1					1	1		1					
c10	1									1					
Σ	10	9	4	-	-	-	7	5	-	7	-		6	6	

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Semester Work	Quizzes	2 Quizzes (one each 4 weeks)	10
	Assignments	3 assignments per semester	15
	report	One report per semester	15
Written Exam		Sixteenth week	40
Total			100

7- List of references:

7-1 Course notes: Marketing

7-2 Required books

MARKETING PRINCIPLES AND PERSPECTIVES

WILLIAM O. BEARDEN New York : McGraw-Hill/Irwin, ©2004

7-3 Recommended books: None

7-4 Periodicals, Web sites, etc.

- 1- <http://goo.gl/cH9x4G>
- 2- <http://goo.gl/8mNZU1>
- 3- <http://goo.gl/8txKD9>

8- Facilities required for teaching and learning:

- Computer, Data show.
- Computer programs.
- High speed internet and communication facilities for distance learning

Course coordinator:	Dr. Shaymaa Sherif
Head of the Department:	Prof. Dr. Ashraf Taha
Date:	August 2020

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Course Specification

GENn451: Environmental Effects of Electromagnetic Waves

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
Civil Engineering and Building Technology BSc Program

Department offering the program:

Manufacturing Engineering and Production Technology Department
Electronic Engineering and Communication Technology Department
Computer Engineering and Information Technology Department
Architecture Engineering and Building Technology Department
Civil Engineering and Building Technology Department

Department offering the course:

Basic Science Department

Date of specifications approval:

August 2020

B - Basic Information

Title: Environmental Effects of
Electromagnetic Waves

Code: GENn451 **Level:** 3rd

Credit Hours: 2

Lectures: 2 **Tutorial/Exercise:** - **Practical:** -
Pre-requisite: None

C - Professional information

1 – Course Learning Objectives:

The Environmental Studies of electromagnetic Waves major prepares students for understanding and addressing complex environmental issues of EMW from a problem-oriented, interdisciplinary perspective.

2 – Competencies

- c1- Understanding the main concepts and methods from physical Sciences and their application in environmental problem solving. (C4, C8)
- c2- Explain the basic information about electromagnetic waves and use appropriate Strategies, methods and techniques for identifying, diagnosing and dealing with environmental effects. (C3, C6, C7,C9)
- c3 - Understanding the concepts and terminology for electromagnetic waves applications and uses. (C4)
- c4 - Classify the EMW environmental problems and ways of addressing them, including interactions across local to global scales. (C10)
- c5 - Demonstrate the critical reflection about their roles and identities as citizens, consumers and environmental actors in a complex, interconnected world. (C2, C3)
- c6 - Analyze, different types of environmental effects of electromagnetic fields. (C2, C3)
- c7 - Develop deep understanding and analysis of EMW environmental effects design. (C2, C3)
- c8 - Relate general theory to specific contexts and develop problem solving approaches and controlling the environmental effects. (C2, C6, C7, C9)
- c9 - Critically analyze EMW environmental effect issues in communication as well as provide innovative solutions. (C2, C4)
- c10 - Enhance the ability to critically reflect on own and others' practice to improve own/others 'actions. (C2, C3, C7)
- c11 - Search for information and engage in life-long self-learning discipline. (C5, C9)
- c12 - Practice self-learning and communicate effectively orally and in written form. (C7, C8)

This course contributes in the following program competencies: C2, C3, C4, C5, C6, C7, C8, C9, C10

3 – Contents

week	Topic	Lecture hours	Tutorial hours	Practical hours
1	➤ Maxwell's equations	1	-	-
1	➤ Optical properties of electromagnetic waves	1	-	-
2	➤ Physical properties of electromagnetic waves	1	-	-
3	➤ Electromagnetic radiation	1	-	-
4	➤ Electromagnetic waves spectrum	2	-	-
5	➤ Antenna and transmission lines	2	-	-
6	➤ Ground waves, sky waves, and space waves	2	-	-
7	➤ Mid term	2	-	-
8	➤ Radio waves and fading of electromagnetic waves	2	-	-
9	➤ Applications of electromagnetic waves	1	-	-
9	➤ Absorption of electromagnetic waves	1	-	-
10	➤ Health and environmental effects of electromagnetic waves	2	-	-
10	➤ Health and environmental effects of non-ionizing radiation	2	-	-
11	➤ Radio frequency radiation	2	-	-
12	➤ Microwave oven	1	-	-
12	➤ Radar and human health	1	-	-
13	➤ Infrared radiation health effect	2	-	-
14	➤ Visible light health effect	1	-	-
14	➤ Ultraviolet radiation health effect	1	-	-
15	➤ International recommendations for radiation exposure	2	-	-
		30		

4. Course content/Course Competencies mapping matrix

Topic	Knowledge					Skills				Attitude		
	c1	c2	c3	c4	c5	c6	c7	C8	C9	c10	c11	c12
Maxwell's equations	1	1	1				1	1			1	1
Optical properties of electromagnetic waves	1	1	1				1	1	1		1	1
Physical properties of electromagnetic waves	1	1	1				1	1	1		1	1
Electromagnetic radiation	1	1	1	1	1	1	1	1	1		1	1
Electromagnetic waves spectrum	1	1	1	1	1	1	1	1	1		1	1
Antenna and transmission lines	1	1	1	1	1	1	1	1	1		1	1
Ground waves, sky waves, and space waves	1	1	1	1	1	1	1	1	1		1	1
Radio waves	1	1	1	1	1	1	1	1	1		1	1
Fading of electromagnetic waves	1	1	1	1	1	1	1	1	1		1	1

Applications of electromagnetic waves	1	1	1	1	1	1	1	1	1	1	1	1
Absorption of electromagnetic waves	1	1	1	1	1	1	1	1	1		1	1
Health and environmental effects of electromagnetic waves	1	1	1	1	1	1	1	1	1	1	1	1
Health and environmental effects of non-ionizing radiation	1	1	1	1	1	1	1	1	1	1	1	1
Radio frequency radiation	1	1	1	1	1	1	1	1	1	1	1	1
Microwave oven	1	1	1	1	1	1	1	1	1	1	1	1
Radar and human health	1	1	1	1	1	1	1	1	1	1	1	1
Infrared radiation health effect	1	1	1	1	1	1	1	1	1	1	1	1
Visible light health effect	1	1	1	1	1	1	1	1	1	1	1	1
Ultraviolet radiation health effect	1	1	1	1	1	1	1	1	1	1	1	1
International recommendations for radiation exposure	1	1	1	1	1	1	1	1	1		1	1
Topics Covering Competences	20	20	20	17	17	17	20	20	19	9	20	20

5 - Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods				Learning Methods	Assessment Method		
	Lecture	Discussions and seminars	Tutorials	Problem solving	Research and Reports	Written Exam	Quizzes	Assignments
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	1
c5	1	1			1	1	1	1
c6	1	1			1	1	1	1
c7	1	1			1	1	1	1
c8	1	1			1	1	1	1
c9	1	1			1	1	1	1
c10	1	1			1			
c11		1			1			
c12	1	1			1	1	1	1
Σ	11	12			12	8	8	8

6- Assessment Timing and Grading:

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

7- List of references:

7-3 Course notes:

Environmental Effects of Electromagnetic Waves.

7-9 Required books:

Physics for Scientists and Engineers, Raymond A. Serway, Thomson Brooks, 2004; 6th Edition. Introduction to RF Propagation, John S. Seybold, by John Wiley & Sons, Inc: 2005.

7-10 Recommended books:

Halliday, David, Robert Resnick, Jearl Walker.

7-4 Periodicals, Web sites, etc.

<http://www.slideshare.net/bleonacoba/history-of-electromagnetic-waves-discovery>

<http://www.infocellar.com/networks/wireless/spectrum.htm>

Serway, RAYMOND Physics for scientists and engineers 6th Ed. San Francisco: (2003).

Health Effects of Electromagnetic Fields– Department of Communications, Marine and Natural Resources.

Expert Group on Health Effects of Electromagnetic Fields. 29–31 Adelaide Road, Dublin 2, Ireland.

www.dcmnr.gov.ie

8- Facilities required for teaching and learning:

- **Library.**
- **Computer, Internet, and Data Show.**
- High speed internet and communication facilities for distance learning

Course coordinator:

Dr. Marwa Shoeib

Head of the Department:

Associat Professor / Ashraf Taha EL-Sayed

Date:

August 2020

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Course Specification GENn452: Civilization and Heritage

A- Affiliation

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

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

Department offering the course: Architecture Engineering and Building Technology BSc Program

Date of specifications approval: August 2020

B - Basic Information

Title: Civilization and Heritage **Code:** GENn452 **Level :** 4th, Tenth Semester (Level Four)

Credit Hours: 2 **Lectures:** 2 **Tutorial/Exercise: -** **Practical: -**
Pre-requisite: None

C - Professional information

1 – Course Learning Objectives:

By the end of this is course the student should have background in the field of social, cultural and humanitarian studies throughout identifying the cultural environment; and must be able to analyses the meaning, features, characteristics, and social interaction, in addition to its impact on the human's needs in the field of specialization. In addition, the student must be able to generate ecologically responsible, environmental conservation and rehabilitation heritage. And analyzing its elements and the alternative of dealing with it. Additionally, study some case from old and modern traditional societies in the field of study.

2 - Competencies

- c1. Classify and compare between Heritage buildings and Architecture (C1)
- c2. Explain, Analyse and Adapt innovative approaches in urban and architectural design considering the cultural backgrounds and realities of the local community. (C3, C5)
- c3. Explain the theoretical background needed and Generate and develop selective interventions that cope with the significance of Architectural Heritage (C1, C7,C13).
- c4. Investigate and evaluate and criticize the outcomes of urban and Architectural projects in relation to cultural and heritage considerations (C12, C14)
- c5. Practice self-learning and communicate effectively orally and in written form (C8, C10).
- c6. Search for information required to develop successful approaches in design. (C15).

c7. Evaluate environmental conservation and rehabilitation designs. (C13)

This course contributes in the following program competencies: **C1, C3, C5, C7, C8, C9, C10, C13 C14 & C15**

3 – Contents

Week	Topic	Lecture hours	Tutorial hours	Practical hours
1	General definitions, terms, and characteristics of culture and Architecture)	2		
2	Definitions, Classification of Heritage, World Heritage sites.	2		
3	The Interrelation between culture and traditional and heritage	2		
4	The Interrelation between culture and Civilization (General theories, concepts and examples)	2		
5	Architecture as cultural and Civilization expression - Features and characteristics (A detailed discussion of the multi-components of culture and its impacts in urban sites.	2		
6	Social interaction and urban environment – perception, environment image and behaviour patterns.	2		
7	Midterm Exam- Assignment	2		
8	The role of participation and community involvement in Architectural and Urban Design (Local Case studies)	2		
9	A brief discussion of the Anthropology as a tool of understanding local and indigenous cultures and its application to Architecture	2		
10	Regionalism of architecture and architectural expression	2		
11	Urban Heritage (A review of Values)	2		
12	Urban and Architectural Conservation (A review of interventions)	2		
13	Local case studies of urban and Architectural projects corresponding to the cultural dimension of the societies.	2		
14	international case studies of urban and Architectural projects corresponding to the cultural dimension of the societies.	2		
15	Research project presentation and discussion	2		
Total hours		30		

4. Course content/Course Competencies mapping matrix

Topic	c1	c2	c3	c4	c5	c6	c7
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General definitions, terms, and characteristics of culture and Architecture)	1		1					
Definitions, Classification of Heritage, World Heritage sites.	1	1	1	1	1	1	1	
The Interrelation between culture and traditional and heritage		1	1		1	1		
The Interrelation between culture and Civilization (General theories, concepts and examples)	1	1		1	1		1	
expression - Features and characteristics (A detailed discussion of the multi-components of culture in urban sites.	1	1	1	1	1	1		
Social interaction and urban environment – perception, environment image and behaviour patterns.		1	1	1	1			
General definitions, terms, and characteristics of culture and Architecture)	1	1		1	1	1		
Definitions, Classification of Heritage, World Heritage sites.	1	1	1	1	1	1	1	
The Interrelation between culture and traditional and heritage		1	1	1		1		
The role of participation and community involvement in Architectural and Urban Design (Local Case studies)	1	1		1	1	1	1	1
A brief discussion of the Anthropology as a tool of understanding local and indigenous cultures and its application to Architecture	1	1	1	1	1	1		
Regionalism of architecture and architectural expression	1	1		1	1		1	1
Urban Heritage (A review of Values)			1	1	1		1	
Urban and Architectural Conservation (A review of interventions)	1	1	1		1		1	1
Topics Covering Competences	10	12	11	11	11	10	6	6

5 - Teaching and Learning and Assessment methods:

Course Comprehences	Teaching Methods						Learning Methods			Assessment Method					
	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory &	Researched, Reports &	Self-Learning	Modeling and	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report
c1	1	1	1				1	1		1	1		1		
c2	1	1						1		1	1			1	1
c3	1	1								1	1		1	1	
c4	1	1	1		1					1	1				
c5	1	1	1					1		1	1		1	1	
c6	1	1	1		1		1	1		1	1		1	1	1
c7	1	1					1			1				1	1
Σ	7	7	4		2		3	4		7	6		4	4	3

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Semester Work	Quizzes	2 Quizzes (one each 4 weeks)	20
	Reports/Research	Two reports per semester	20
Written Exam		Sixteenth week	40
Total			100

7- List of references:**7-1 Course notes:** None

- 7-2 Required books Fraser, D. (1968) "Village Planning in the Primitive World", Studio Vista, London
- Oliver, P. (1969) "Shelter and Society", Barrie & Rockliff, The Cresset Press, London
- Oliver, P. (1997) "Encyclopaedia of vernacular architecture of the world", Cambridge University Press, New York
- Rapoport, A. (1969) "House, Form and Culture", Englewood Cliffs, N.J
- Silverman, H., & Waterton, E., & Watson, S., (2017), "Heritage in Action: Making the Past in the Present", Springer International Publishing, Switzerland.
- Born, G., (2006), "Architecture, Preserving Paradise: The Architectural Heritage and History of the Florida Keys", The History Press, USA.

Recommended books: None

- أشرف كامل بطرس (1998) "الثقافة والنتاج البنائي - منهج لرصد وتحليل واستقراء الأبعاد الثقافية وتوظيفها في عملية البناء" رسالة دكتوراه غير منشورة، كلية الهندسة، جامعة القاهرة.
- حسن المويلحي (2005) "العمارة بين الثقافة والتنمية نحو فهم ثقافة مجتمع المستخدمين لخدمة عملية التنمية من خلال البرمجة المعمارية" رسالة ماجستير غير منشورة، كلية الهندسة، جامعة القاهرة.
- Silverman, H., & Waterton, E., & Watson, S., (2017), "Heritage in Action: Making the Past in the Present", Springer International Publishing, Switzerland.
- Born, G., (2006), "Architecture, Preserving Paradise: The Architectural Heritage and History of the Florida Keys",

7-4 Periodicals, Web sites, etc.

- 1- <https://www.ierek.com/news/index.php/2017/06/03/architectural-cultural-heritage>
http://www.cultureindevelopment.nl/Cultural_Heritage/What_is_Cultural_Heritage
<https://en.unesco.org/themes/biodiversity/culture-values>

2- Course Links:

Lecture No.	URL (Youtube Links)
1	https://youtu.be/dAw_vMIuxrs
2	https://youtu.be/Q2anXY8suNc
3	https://youtu.be/BAz72vtzU2I
4	https://youtu.be/umirdwrXzeQ
5	https://youtu.be/PrOGtofq_Xc
6	https://youtu.be/CzwMD8Bo7sU
7	https://youtu.be/XvJfLLChZdc
8	https://youtu.be/LyaCGQEDERM
9	https://youtu.be/vT7WS6TGXQw

8- Facilities required for teaching and learning:

- Lecture and Exercise rooms equipped with projection and sound systems.
- Computer, Data show
- High speed internet and communication facilities for distance learning.

Course coordinator: Professor Nahed Omran

Head of the Department: Dr. Ebrahim Guoda

Date: August, 2020

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Course Specification CMPn422: Artificial Intelligence

A- Affiliation

Relevant program: Computer Engineering and Information Technology BSc Program
Department offering the program: Computer Engineering and Information Technology Department
Department offering the course: Computer Engineering and Information Technology Department
Date of specifications approval: August 2020

B - Basic information

Title: Artificial Intelligence **Code:** CMPn422 **Level:** Senior-2, Semester-10
Credit Hours: 3 **Lectures:** 2 **Tutorial:** 2 **Practical:** 1 **Total:** 5
Pre-requisite: CMPn321

C - Professional information

1 – Course Learning Objectives:

By the end of this course 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.

– Competencies

- c1 - Build a simple artificial intelligent system. (C2,C3,C4,C14)
- c2 - Build the successor function for different AI problems. (C2,C3,C4,C14)
- c3 - Develop the searching models used in AI., Solve problems using different artificial intelligent techniques., Build an Expert System. (C3,C4, C14,C16)
- c4 - Build neural networks for solving AI problems and different applications. C3,C4,C14,C16)
- c5- Build different machine learning algorithms. (C3,C4,C14,C16)
- c6- Collect and analyze different types of AI problems. (C3,C11,C13)
- c7 - Collect training vectors for neural network training process. (C3,C11,C14)
- c8 - Use the neural network and expert system for practical systems. (C12,C13,C14)
- c9 - Form intelligent agents' systems. (C11,C12,C13,C14)
- c10- Work in a team and involve in group discussion and seminars (C1, C17).
- c11- Communicate effectively and present data and results orally and in written form (C17).
- c12- Search for information's in references and in internet, Practice self-learning (C19, C16, C18).

This course contributes in the following program competencies: C1, C2, C3, C4, C11, C12, C13, C14, C16, C17, C18, C19)

3 – Contents				
Week #	Topic	Lecture hours	Tutorial hours	Practical hours
1	Artificial intelligent Concepts.	2	2	1
2	Fundamentals of neural network	2	2	1
3	Learning algorithms used in neural network training, Different practical applications using neural network (logic gates).	2	2	1
4	Solving problems using searching techniques	2	2	1
5	Non-heuristic techniques, Depth first, breadth first search, uniform cost search.	2	2	1
6	Non-heuristic techniques, depth limited search, iterative deepening depth first search, bi-directional search, comparing searching techniques.	2	2	1
7	Assessment (M.T)	2	2	1
8	Heuristic techniques, recursive best first search, learning to search better, Heuristic functions.	2	2	1
9	Expert system architecture.	2	2	1
10	Expert system, non-production system architecture.	2	2	1
11	Semantic network basics and components.	2	2	1
12	Semantic network and optimal search.	2	2	1
13	Machine learning, frame work for symbol-based learning, version space search.	2	2	1
14	Elimination algorithm, decision tree (induction algorithm).	2	2	1
15	Introduction to genetic algorithm	2	2	1
Total hours		30	30	15

4. Course content/Course Competencies mapping matrix

Topic	c1	c2	c3	c4	c5	c6	c7	c8	c9	c10	c11	c12
Artificial intelligent Concepts.	1		1				1		1	1		
Fundamentals of neural network	1		1									
Learning algorithms used in neural network training, Different practical applications using neural network (logic gates).	1		1				1		1	1		
Solving problems using searching techniques			1	1		1			1			
Non-heuristic techniques, Depth first, breadth first search, uniform cost search.	1	1	1		1						1	
Non-heuristic techniques, depth limited search, iterative deepening depth first search, bi-directional search, comparing searching techniques.	1			1			1		1			1
Heuristic techniques, Greedy best first search, memory bounded heuristic search.	1	1	1						1			
Assessment (M.T)		1	1									1
Expert system architecture.		1							1	1		
Expert system, non-production system architecture.		1	1						1			
Semantic network basics and components.		1				1						
Semantic network and optimal search.		1	1	1	1							
Machine learning, frame work for symbol-based learning, version space search.	1			1		1						
Elimination algorithm, decision tree (induction algorithm).	1	1	1		1	1	1		1			
Introduction to genetic algorithm	1							1	1			
Topics Covering Competences	9	7	10	4	3	3	3	2	8	2	1	2

5 - Teaching and Learning and Assessment methods:

Course Competences	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Research, Reports & Assignments	Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report
c1	1			1		1				1			1		1
c2	1			1	1	1				1			1	1	1
c3	1	1	1	1		1	1			1				1	
c4	1	1		1		1	1			1			1	1	1
c5	1			1		1				1			1		1
c6	1			1	1	1				1			1	1	1
c7	1			1		1				1			1		1
c8	1			1	1	1				1			1	1	1
c9	1	1	1	1		1	1			1		1		1	
c10	1	1		1		1	1			1		1	1	1	1
c11	1	1	1	1		1	1			1		1	1	1	
c12	1			1		1				1		1	1	1	1
Σ	12	5	3	12	3	12	5	0	0	12	0	4	10	9	9

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Semester Work	Quizzes	3 Quizzes (one each 4 weeks)	6
	Reports/Research	Two reports per semester	4
	Tutorials	3 Assignments per semester	6
	Mini project	Once per semester	4
Practical Exam		Fifteenth week	20
Written Exam		Sixteenth week	40
Total			100

7- List of references:

7-1 Course notes: None

7-2 Required books

Er Rajir, (2012) Artificial Intelligence, S CAND.

Nils Jnilsson (2013), artificie intelligence a new synthesis, MK

7-3 Recommended books:

Russell, P, (2003). Nerving Artificial Intelligence, A Modern Approach, 2nd ed. Prentice hall.

David L. Pool, Artificial, (2010), Intelligence for Da. & Computational Age, Cambridge

7-4 Periodicals, Web sites, etc.

<http://aima.cs.berkeley.edu/>

8- Facilities required for teaching and learning:

Computer, Data show and Computer programs.

Course coordinator:	Dr. Sabry. M Abdul-Meety
Head of the Department:	A. Prof. Dr. Wafaa Boghdady
Date:	August 2020

Tenth Semester (Level Four)

Modern Academy

for Engineering and Technology in Maddi



Course Specification

CMPn424: Computer Modeling and Simulation

A- Affiliation

Relevant program: Computer Engineering and Information Technology BSc Program
Department offering the program: Computer Engineering and Information Technology Department
Department offering the course: Computer Engineering and Information Technology Department
Date of specifications approval: August 2020

B - Basic Information

Title: Computer Modeling and Simulation
Credit Hours: 3
Code: CMPn424
Lectures: 2
Level: Senior 2, second Semester
Tutorial: 2
Practical: Total:4
Pre-requisite: CMPn210

C - Professional information

1 – Course Learning Objectives:

The basic idea of Simulation is to build an experimental device (model) that act like (simulate) the real system in certain important aspects. So it is required to understand or evaluate the behavior of a complex real-world system over extended period without risk to the real system performance. By the end of this course the students should demonstrate the knowledge and understanding of the different types of systems, and their interconnections to drive the suitable mathematical model. Specify the elements of modeling and simulation to develop their mathematical models. The students should understand the principles of Random Numbers Generations using simulation techniques as well as an introduction to queuing theory. Moreover, the student will be able to solve problems and different case studies using simulation techniques, and achieve the suitable method to test the performance.

2- competencies

- c1. Identify the different features, Basic concepts and deferent items of systems, models and simulation. (C1, C5)
- c2. Explain, formulate, and use theoretical background of probabilities and Statistics needed to build a valid and credible Simulation Models to solve complex engineering simulation problems utilizing P-CODE and any High-level language for technical computations (C1, C3)
- c3. Illustrate different principles of Mont Carlo simulation, Random Number Generators, Linear Congruent Generators (LCG), Mixed Generator, and Multiplicative Generator (C1, C3)
- c4- take knowledge of Sensitivity Analysis, Inspection Approach, and Confidence Interval Approach based on independent data(C11)
- c5. Explain the basics of Queuing theory, stochastic Model, and - Different aspects of Single – Server Queuing System Simulation (C2, C4)

- c6. Practice research techniques and methods of investigation as an inherent part of learning to solve different physical problems via simulation techniques (C5)
- c7. Manipulate SIMULINK models to estimate and measure the performance of some physical systems, and evaluate its suitability for a specific application (C12, C13)
- c8. Use a wide range of analytical tools, techniques, and software packages pertaining to the discipline and develop required computer programs to create mathematical model functions for different physical case studies (C17, C18)
- c9. Investigate on a mini project for Innovating solutions based on non-traditional thinking and the use of latest technologies to investigate a physical problem, deduce its mathematical model, then perform the P-code and simulation techniques to solve (C20)

This course contributes in the following program competencies: [C1, C2, C3, C4, C5, C11, C12, C13, C17, C18& C20](#)

3 – Contents

SN	Topic	Lecture hours	Tutorial hours	Practical hours
1	➤ Basic concepts and terminologies of systems: -fundamentals of a systems and their terminologies --fundamentals of models and simulation and their terminologies -Advantages and disadvantages of simulation	2	2	
2	➤ Basic concepts and terminologies of modeling and simulation: --fundamentals of models and simulation and their terminologies -Advantages and disadvantages of simulation	2	2	
3	➤ Review of basic probabilities and Statistics: - Set theory, Conditional probability, compound events and, independent events - Estimation of Means, Variance and Correlation.	2	2	
4	➤ Review of basic probabilities, and distribution theory: -Discrete and Continuous distributions -Function of a random variable	2	2	
5	Selecting appropriate Probability Distributions specifying a physical phenomenon-Case study	2	2	
6	Mont Carlo simulation -Case Study	2	2	
7	Assessment (Midterm exam)	2	2	
8	Introduction to Queuing Theory,	2	2	
9	Simulation of Single – Server Queuing System-case study	2	2	
10	Building Valid and Credible Simulation Models	2	2	
11	Sensitivity Analysis, Inspection Approach, Confidence Interval Approach Based on Independent Data Testing, Null Hypothesis, Paired t Approach, case study .	2	2	

12	Random Number Generators techniques, Mid Square Method, - case study	2	2	
13	Linear Congruent Generators (LCG) algorithm	2	2	
14	Mixed Generator, and Multiplicative Generator algorithms	2	2	
15	Mini project seminar analysis and design utilizing overall concepts of modeling and simulation capabilities	2	2	
Total hours		30	30	

4. Course content/Course Competencies mapping matrix

Topic	c1	c2	c3	c4	c5	c6	c7	c8	c9
Basic concepts and terminologies of systems, models, and simulation:	1							1	1
Review of basic probabilities, Statistics and distribution theory:	1	1				1			
Mont Carlo simulation -Case Study	1			1			1		1
Selecting appropriate Probability Distributions specifying a physical phenomenon-Case study			1		1	1			1
Introduction to Queuing Theory, and Simulation of Single – Server Queuing System-case study		1	1		1		1		1
Building Valid and Credible Simulation Models		1	1		1	1			1
Sensitivity Analysis, Inspection Approach, Confidence Interval Approach Based on Independent Data Testing, Null Hypothesis, Paired t Approach, case study .		1	1			1			1
Random Number Generators, Mid Square Method, -case study		1	1				1		
Linear Congruent Generators (LCG), Mixed Generator, Multiplicative Generator		1	1	1	1				
Mini project seminar analysis and design utilizing overall concepts of modeling and simulation capabilities	1	1	1	1	1	1	1	1	1
Topics Covering Competences	4	7	7	3	5	5	4	2	7

5 - Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods						Learning Methods			Assessment Method					
	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Researched, Reports & Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report	
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		1	
c4	1	1		1				1	1	1				1	
c5	1	1		1	1		1	1	1	1		1	1	1	
c6	1	1	1	1	1				1	1		1		1	

c7	1	1	1	1			1	1	1	1	1		1	1	1
c8	1	1	1	1			1	1	1	1	1			1	1
c9	1	1	1		1		1	1	1					1	1
Σ	9	9	4	8	5		4	6	3	8	8		5	4	9

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Practical exam		12 th Week	
Semester Work	Quizzes	3 Quizzes (one each 4 weeks)	15
	Reports/Research	Two reports per semester	5
	Tutorials	3 Assignments per semester	5
	Mini project	Once per semester	15
Written Exam		Sixteenth week	40
Total			100

7- List of references:

7-1 Course notes:

Lecture notes and handouts

Abd elmoneim fouda, **Computer modeling and simulation**.Cairo :MAM Press

7-2 Required books

Bernard p. Zeigler (2012), Theory of modeling and simulation ,delhi ,elsevier

M. M.woolfson,(1999), An introduction to computer simulation, USA, OXFORD University Press

Volnei Apedroni,(2010), circuit design and simulation with vhdl, USA, the MIT press

7-3 Recommended books:

D, Kelton, (1998) Simulation Modeling and Analysis, Averill M. L, W, McGraw-Hill, Inc..

Derry Banks, John S. Carson, Barry L. Nelson David M. Nicol, (2005) Discrete-event System

Simulation, person education,.

C. M Harris, Ross D., second edition, Fundamental of Queuing Theory, John Wiley. 1990.

7-4 Periodicals, Web sites, etc.

<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/>.

8- Facilities required for teaching and learning:

- Computer Lab. equipped with Data show and Computer package
- Lecture and Exercise rooms equipped with Data show projection and sound systems.
- High speed internet and communication facilities for distance learning.

Course coordinator: Dr. Abd Elmoneim FoudA

Head of the Department: Dr. Abd Elmoneim FoudA

Date: August 2020

Modern Academy

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Course Specification

CMPn437: Computer interfacing

A- Affiliation

Relevant program: Computer Engineering and Information Technology BSc Program
Department offering the program: Computer Engineering and Information Technology Department
Department offering the course: Computer Engineering and Information Technology Department
Date of specifications approval: August 2020

B - Basic information

Title: Computer Interfacing **Code:** CMPn437 **level:** Senior 2, first Semester
Credit Hours: 3 **Lectures:** 2 **Tutorial:** 2 **Practical** **Total:** 4
Pre-requisite: CMPn321

C - Professional information

1 – Course Learning Objectives:

By the end of this course the students should demonstrate the knowledge and understanding of the contemporary 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. Moreover, the student will be able to solve problems and different case studies to connect, interface, operate, maintain, and analyze the computer interface with different peripherals, and achieve the suitable method to test the performance.

2- competencies

- c1. Identify basic concepts and deferent items of sophisticated computer system. (C1, C5)
- c2. Explain, formulate, and use theoretical background all types of semiconductor memory devices and requirements needed to deal with different computer interface (C1, C3)
- c3. Illustrate different basics concepts and theories of computer architecture and operation of embedded systems, semiconductor memory devices, I/O devices and interface requirements (C1, C3)
- c4- take knowledge of Inspection Approach, to make the effective use of the organization and interfacing of input/output (C11)
- c5. Illustrate the basics principals of instruction set design, and interrupt structures of different microcontroller/microprocessor (C2, C4)
- c6. Practice research techniques and methods of investigation as an inherent part of learning to keep track with developments and trends of serial and parallel communication interface between humans or machines and the microcontroller/microprocessors (C5)
- c7. Design the interface circuits between the microcontroller/microprocessors and I/O devices (C12, C13)
- c8. Use a wide range of analytical tools, techniques, and software packages pertaining to the discipline and develop required computer programs to select appropriate and compatible communication interface between humans or machines and the microcontroller/microprocessors (C17, C18)

c9. Investigate on a mini project for Innovating solutions based on non-traditional thinking and the use of recent tools and programs to analyze, connect, operate, and maintain the different methods of computer interface deployments and implementations (C20)

This course contributes in the following program competencies: [C1](#), [C2](#), [C3](#), [C4](#), [C5](#), [C11](#), [C12](#), [C13](#), [C17](#), [C18& C20](#)

3 – Contents

SN	Topic	Lecture hours	Tutorial hours	Practical hours
1	➤ Basic concepts and terminologies of computer interface technologies	2	2	
2	➤ Basic concepts of computer architecture	2	2	
3	➤ Basic concepts of instruction sets and interrupt structure	2	2	
4	➤ Introduction to Embedded Systems	2	2	
5	➤ The 68000-Series computers Architecture, Simple 68000 based computer,		2	
6	➤ . PIC Microcontroller PIC16F84	2	2	
7	➤ Assessment (midterm exam)	2	2	
8	➤ AVR microcontroller, Bus Interfacing, and memory interfacing.	2	2	
9	➤ Serial and parallel interfaces: -Analog interfaces. -Analog to digital conversion.	2	2	
10	➤ Analog Sensors and data acquisition systems DAS	2	2	
11	➤ Digital to analog converters: -USB. - Wireless. - Special interfaces	2	2	
12	➤ Peripherals and Interfacing: SPI and I2C, Serial Ports, USB, Networks interface	2	2	
13	➤ Interfacing with mass storage devices	2	2	
14	➤ Output hard copy interface devices	2	2	
15	➤ Mini project seminar analysis and design utilizing overall concepts of computer interfaces	2	2	
Total hours		30	30	

4. Course content/Course Competencies mapping matrix

Topic	c1	c2	c3	c4	c5	c6	c7	c8	c9
Basic concepts and terminologies of computer interface technologies	1							1	
Basic concepts of architectures	1	1				1			
Basic concepts of instruction sets and interrupt structure	1			1			1		
Introduction to Embedded Systems			1		1	1			1
The 68000-Series computers Architecture, Simple 68000 based computer		1	1		1		1		1
. PIC Microcontroller PIC16F84		1	1		1	1			1

Peripherals and Interfacing: SPI and I2C, Serial Ports, USB, Networks interface,		1	1			1			1
Serial and parallel interfaces		1	1				1		
Analog Sensors and data acquisition systems DAS							1	1	1
Peripherals and Interfacing: SPI and I2C, Serial Ports, USB, Networks interface		1	1	1	1				
Mini project seminar analysis and design utilizing overall concepts of computer interfaces	1	1	1	1	1	1	1	1	1
Topics Covering Competences	4	7	7	3	5	5	5	3	6

5 - Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods						Learning Methods			Assessment Method					
	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Researched, Reports &	Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report
	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		1
	c4	1	1		1			1		1	1				1
	c5	1	1		1	1		1	1	1	1		1	1	1
	c6	1	1	1	1	1				1	1		1		1
	c7	1	1	1	1			1	1	1	1	1		1	1
	c8	1	1	1	1			1	1	1	1	1		1	1
c9	1	1	1		1		1	1	1				1	1	
Σ	9	9	4	8	5		4	6	3	8	8		5	4	9

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Semester Work	Quizzes	3 Quizzes (one each 4 weeks)	15
	Reports/Research	Two reports per semester	5
	Tutorials	3 Assignments per semester	5
	Mini project	Once per semester	15
Written Exam		Sixteenth week	40
Total			100

7- List of references:

7-1 Course notes:

Lecture notes and handouts

7-2 Required books

Valvano (2012) Embedded microcomputer system and real time interfacing, Thomson

Jörg Henkel and Muhammad Shaniqaa, (2011) Hardware/Software Architectures for Low-Power Embedded Multimedia Systems, Springer.

v. Jaganathan,(1999),basic electrical electronics computers engineering, publishing house
C. Marlin Brown, (1998) Computer Interface Design Guidelines, Intellect Books.
Leo F. Doyle, Computer Peripherals, second edition, Prentice Hall, 1990.
Barry B. Berry. The intel microprocessor architecture, programming and interfacing, Prentice Hall, USA,

7-3 Recommended books:

Qiyang Chen, (2001) Human Computer Interaction, Idea Group Publishing,
Barry B. Berry. (2003).The intel microprocessor architecture, programming and interfacing, Prentice Hall, USA,
Jörg Henkel and Muhammad Shaniqua, (2011) Hardware/Software Architectures for Low-Power Embedded Multimedia Systems, Springer

7-4 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/> .

8- Facilities required for teaching and learning:

- Computer Lab. equipped with Data show and Computer package
- Lecture and Exercise rooms equipped with Data show projection and sound systems.
- High speed internet and communication facilities for distance learning.

Course coordinator: Dr. Abd Elmoneim FoudA

Head of the Department: Dr. Abd Elmoneim FoudA

Date: August 2020

Modern Academy

for Engineering and Technology in Maddi



Course Specification

CMPn435: Computer System Technology

A- Affiliation

Relevant program: Computer Engineering and Information Technology BSc Program
Department offering the program: Computer Engineering and Information Technology Department
Department offering the course: Computer Engineering and Information Technology Department
Date of specifications approval: Aug. 2020

B - Basic Information

Title: Computer System Technology
Code: CMPn435
Level: 4th Fall & Spring
Credit Hours: 3
Lectures: 2
Tutorial/Exercise: 2
Practical: -
Total: 4
Pre-requisite: CMPn321

C - Professional information

1 – Course Learning Objectives:

By the end of this course, the students should have gained the planned competencies (based on the knowledge, skills and personal attitudes) related to constructions and operations of 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 – Competencies

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

- c1- Demonstrate the features, functions and uses of the following input devices: keyboard, mouse, microphone, touchpad, digital camera, bar code reader, scanner, webcam. (C1, C2)
- c2- Describe the features, functions and display types - projector, CRT and LCD, display connector types and Configure display settings - Refresh rate, Resolution. (C1, C2, C11, C13)
- c3- 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. (C1, C2, C15)
- c4- Differentiate among memory types, describe single sided vs. double sided memory and Characterize single channel vs. dual channel memory (C1, C2, C12)
- c5- Define the features, functions and uses of current magnetic storage devices and media including floppy drive, hard drive, zip drive, magnetic tape drive (C1, C2, C12, C16)
- c6- 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 (C1, C2, C3, C4, C11)
- c7- 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. (C1, C2, C3, C10)
- c8- Differentiate between printer types (Laser, Inkjet, Thermal and Impact) and explain how to install printer drivers (compatibility). (C1, C2, C3, C4, C15)
- c9. Communicate effectively through using the contemporary tools for searching the required reports of up-to-date Computer System Technology (C5, C8, C20).

This course contributes in the following program competencies: [C1, C2, C3, C4, C5, C6, C9, C10, C11, C12, C13, C15, C16 AND C20](#)

3 – Contents

Contents		Lecture hours	Tutorial hours
	Topic		
1	Introduction	8	8
	Aims realized through the topics of this subjects.		
2	Technology of computer manufacturing.		
	Materials and devices.-Peripheral devices.		
3	Quality control and reliability measures.		
4	PC planning, buying, construction and setup		
5	Working with DVD rewriting drives	6	6
6	Adding boards. -Connections. -Preparations. -Upgrading the operating systems.		
7	Midterm		
8	64-bit processors. -Using Firewire and USB external drives.	7	7
9	Using combined printer-scanners		
10	Troubleshooting installation CDs		
	Small-scale networks. -Wireless networks.		
11	Technology of computer manufacturing.		
12	Materials and devices.-Peripheral devices.		
13	Quality control and reliability measures.	7	7
14	PC planning, buying, construction and setup		
15	The motherboard and its fittings.		
Total hours		30	30

4. Course content/Course Competencies mapping matrix

Topic	c1	c2	c3	c4	c5	c6	c7	c8	c9
Technology of computer manufacturing. & Materials and devices. -Peripheral devices.	1	1	1				1		
Quality control and reliability measures. & PC planning, buying, construction and setup	1	1	1	1			1		
Working with DVD rewriting drives & Adding boards. -Connections. -Preparations. -Upgrading the operating systems.		1	1		1	1	1		
64-bit processors. -Using Firewire and USB external drives.	1	1	1	1	1	1	1	1	
Using combined printer-scanners	1	1	1	1	1	1	1	1	
Troubleshooting installation CDs			1	1		1	1		
Small-scale networks.-Wireless networks.					1	1		1	1
Technology of computer manufacturing.	1	1	1	1	1	1	1	1	1
Materials and devices.-Peripheral devices.	1	1		1		1	1		
Topics Covering Competences	6	7	7	6	5	7	8	4	2

5 – Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods						Learning Methods			Assessment Method					
	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Researched, Reports & Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report	
c1	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	1		1	1		
c6	1		1	1			1	1	1	1		1			
c7	1		1				1	1	1	1			1		
c8	1		1				1	1	1				1		
c9			1		1		1						1		
Σ	8		4	6	5		4	2	3	7	7		4	5	

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Semester Work	Quizzes	1 Quiz	30
	Reports/Research	1 report per semester	
	Tutorials	1 Assignment per semester	
Written Exam		Sixteenth week	50
Total			100

7- List of references:

7-1 Course notes:

Assem B, (2018) The Logic Circuits Design2:, Modern academy Laboratory work printed notes

7-2 Required books

none

7-3 Recommended books:

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

7-4 Periodicals, Web sites, etc.

<http://www.tcu.gov.on.ca/pepg/audiences/colleges/progstan/techno/compSys3.pdf>

8- Facilities required for teaching and learning:

- Data show and Computer
- Lecture and Exercise rooms equipped with Data show projection and sound systems.
- High speed internet and communication facilities for online learning.

Course coordinator:

Dr. Assem Badr

Head of the Department:

Dr. Abd Elmoneim Fouda

Date:

Aug. 2020

Modern Academy

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Course Specification CMPn436: Fault tolerant Systems

A- Affiliation

Relevant program: Computer Engineering and Information Technology BSc Program
Department offering the program: Computer Engineering and Information Technology Department
Department offering the course: Computer Engineering and Information Technology Department
Date of specifications approval: August 2020

B - Basic information

Title: Fault tolerant Systems **Code:** CMPn436 **level:** Senior 2, fifth Semester
Credit Hours: 3 **Lectures:** 2 **Tutorial:** Practical **Total:** 4
Pre-requisite: CMPn421,

C - Professional information

1 – Course Learning Objectives:

Generally, Software fault tolerance is the ability for software to detect and recover from a fault that is happening or has already happened in either the software or hardware in the system in which the software is running to provide service by the specification. Fault tolerance refers to the ability of a system (computer, network, cloud cluster, etc.) to continue operating without interruption when one or more of its components fail. Fault-tolerant systems use backup components that automatically take the place of failed components, ensuring no loss of service, thus increase system reliability.

By the end of this course the students should demonstrate the knowledge and understanding of the contemporary Fault tolerant systems. The students will be able to provide a comprehensive view of fault of computer systems with theory, techniques and methods for the practitioner. Moreover; Address and understand the issues of system software unique to fault tolerant systems. As well as understanding of the system reliability and the ability for recovery from the failure or system crash in speed way. They should be able to calculate and analyze the Fault tolerant of computer systems. Also; the student will be able to solve problems related to the Fault tolerant systems operate, maintain, and analyze such systems, then achieve the suitable method to test the performance.

2- competencies

- c1. Identify fundamental concepts and terminology of fault tolerant systems. (C1,C5)
- c2. Explain, formulate, and use theoretical background all types of electrical/electronic systems and network component requirements needed to deal with fault tolerant systems (C1, C3)
- c3. Illustrate different basics concepts, theories and operations of system reliability to clarify the fundamental problems of fault tolerant systems (C1,C3)
- c4- take knowledge of Inspection Approach, to make the effective use of attributes associated with fault tolerant systems (C11)
- c5. Explain basics principals to compare the different types of computer faults. Then analyze and identify the different components of a fault-tolerant system. (C2,C4)
- c6. Practice research techniques and methods of investigation as an inherent part of learning to explain and compare different error recovery mechanisms (C5)
- c7. Decide the appropriate analysis and design methods for measuring network fault tolerance (C12, C13)
- c8. Use a wide range of analytical tools, techniques, and software packages pertaining to the discipline and develop

required computer programs to measure different faults using the appropriate error recovery. (C17, C18)

c9. Investigate on a mini project for Innovating solutions based on non-traditional thinking and the use of recent tools and programs to analyze, connect, operate, and maintain the different methods to solve limited operational problems related to the fault-tolerant system (C20)

This course contributes in the following program competencies: [C1, C2, C3, C4, C5, C11, C12, C13, C17, C18& C20](#)

3 – Contents

SN	Topic	Lecture hours	Tutorial hours	Practical hours
1	Basic concepts, literature survey about terminologies of systems and network components	2	2	
2	Basic concept of system faults - key terms, network and service outages	2	2	
3	Basic concepts and literature survey about system software engineering	2	2	
4	Basic concepts and definition of system reliability	2	2	
5	Recognizing the different types of computers system faults	2	2	
6	Functional description of fault tolerant systems.	2	2	
7	Assessment (midterm exam)	2	2	
8	compare different error recovery mechanisms	2	2	
9	Design strategies for network survivability.	2	2	
10	Basic concepts of network security			
11	Improving network security via fault-tolerance mechanism.	2	2	
12	Network fault-tolerance and Multiprotocol Label Switching MPLS-based recovery	2	2	
13	Measuring Network fault-tolerance.	2	2	
14	Network fault-tolerance and In-service software upgrades	2	2	
15	Mini project seminar analysis and design utilizing overall concepts of fault tolerant systems	2	2	
Total hours		30	30	

4. Course content/Course Competencies mapping matrix

Topic	c1	c2	c3	c4	c5	c6	c7	c8	c9
Basic concepts, literature survey about terminologies of systems and network components	1							1	
Basic concept of system faults - key terms, network and service outages	1	1				1			
Basic concepts and literature survey about system software engineering, and system reliability	1			1			1		
Recognizing the different types of computers system faults			1		1	1			1

Functional description of fault tolerant systems.		1	1		1		1		1
compare different error recovery mechanisms		1	1		1	1			1
Design strategies for network survivability.		1	1			1			1
Basic concepts of network security		1	1				1		
Improving network security via fault-tolerance mechanism.							1	1	1
Network fault-tolerance and Multiprotocol Label Switching MPLS-based recovery		1	1	1	1				
Measuring Network fault-tolerance.		1				1	1	1	1
Network fault-tolerance and In-service software upgrades				1	1		1	1	
Mini project seminar analysis and design utilizing overall concepts of computer interfaces	1	1	1	1	1	1	1	1	1
Topics Covering Competences	4	8	7	4	6	6	7	5	7

5 - Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods						Learning Methods			Assessment Method					
	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Researched, Reports &	Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report
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		1
c4	1	1		1				1		1	1				1
c5	1	1		1	1		1	1		1	1		1	1	1
c6	1	1	1	1	1					1	1		1		1
c7	1	1	1	1			1	1	1	1	1		1	1	1
c8	1	1	1	1			1	1	1	1	1			1	1
c9	1	1	1		1		1	1	1					1	1
Σ	9	9	4	8	5		4	6	3	8	8		5	4	9

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Semester Work	Quizzes	3 Quizzes (one each 4 weeks)	15
	Reports/Research	Two reports per semester	5
	Tutorials	3 Assignments per semester	5
	Mini project	Once per semester	15
Written Exam		Sixteenth week	40

Total	100
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7- List of references:

7-1 Course notes:

Lecture notes and handouts

7-2 Required books

Anthony T Velte,(2010), cloud computing a practical approach ,MC-Graw hill.

Richard H. Belube,(2000), computer simulated exp for electric circuit, Printice Hall

V. Jaganathan,(1999),basic electrical electronics computers engineering, publishing house

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

7-3 Recommended books:

Qiyang Chen, (2001) Human Computer Interaction, Idea Group Publishing,.

Martine L. Shooman, (2001),Reliability of Computer Systems and Networks, John Wiley InterScience

7-4 Periodicals, Web sites, etc.

www.dis.uniroma1.it/irl/docs/ftcorbatutorial

www.ie.u-ryukyu.ac.jp/~wada/design/CS-96-332.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/> .

8- Facilities required for teaching and learning:

- Computer Lab. equipped with Data show and Computer package
- Lecture and Exercise rooms equipped with Data show projection and sound systems.
- High speed internet and communication facilities for distance learning.

Course coordinator: Dr. Abd Elmoneim FoudA

Head of the Department: Dr. Abd Elmoneim FoudA

Date: August 2020

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Course Specification

CMPn 438: Pattern Recognition and Neural Networks

A- Affiliation

Relevant program: Computer Engineering and Information Technology BSc Program
Department offering the program: Computer Engineering and Information Technology Department
Department offering the course: Computer Engineering and Information Technology Department
Date of specifications approval: August 2020

B - Basic Information

Title: Pattern Recognition and Neural Networks
Credit Hours: 3
Code: CMPn438
Lectures: 2
Level: Senior 2, second Semester
Tutorial: 2
Practical: Total:4
Pre-requisites: MTHn103, CMPn 310

C - Professional information

1 – Course Learning Objectives:

Pattern is everything around in this digital world. A pattern is a physical object or an abstract notion it's very important to deal with pattern and tools that processing it like neural network. By the end of this course the students should demonstrate the knowledge and understanding of different aspects relevant to pattern recognition. As well as basic knowledge about booth biological neuron, neuron models and artificial neural network ANN. Investigation of different ANN architectures. They should be able to introduce the concepts and training algorithms for different ANN paradigm. The student should be able to analyze the problem and design the proper ANN type to solve physical problems.

2- competencies

- c1. Identify the different features, Basic concepts and Definitions of pattern, pattern recognition, and artificial neural network ANN.(C1,C5)
- c2. Explain, formulate, and use theoretical background of physics to assign the analogy between human brain cell and artificial neuron to build a valid and credible Simulation Models of human brain (C1,C3)
- c3. Illustrate different principles of The Neuron Models. – Mclluph-Pitts model (C1,C3)
- c4- take knowledge relevant to the different architectures of artificial neural networks (C11)
- c5. Explain Mathematical basis of training different network architectures (C2,C4)
- c6. Practice research techniques and methods of investigation as an inherent part of learning to solve different physical problems via ANN (C5)
- c7. Manipulate bbasic principles of Back propagation algorithm (C12, C13)
- c8. Use a wide range of analytical tools, techniques, and software packages pertaining to the discipline and develop required computer programs to create mathematical model functions for different physical case studies (C17, C18)
- c9. Investigate on a mini project for Innovating solutions based on non-traditional thinking and the use of latest

technologies to investigate a physical problem, deduce its mathematical model, then design and implement

suitable ANN to solve (C20)

This course contributes in the following program competencies: [C1, C2, C3, C4, C5, C11, C12, C13, C17, C18& C20](#)

3 – Contents

SN	Topic	Lecture hours	Tutorial hours	Practical hours
1	Basic concepts and terminologies of pattern, pattern recognition and feature extractions.	2	2	
2	Analogy between human brain cell and artificial neuron	2	2	
3	Basic concepts and terminologies of neural network and artificial neural network ANN	2	2	
4	Basic concepts of Mclluph-Pitts model	2	2	
5	Logic Gate implementation using Mclluph-Pitts model	2	2	
6	Neuron and perceptron Models	2	2	
7	Assessment (Midterm exam)	2	2	
8	ANN architectures, single layer perceptron classifier, multilayer feedforward network, and recurrent neural network.	2	2	
9	Recurrent neural network.	2	2	
10	Supervised ANN learning and training algorithms	2	2	
11	Unsupervised ANN learning and training algorithms	2	2	
12	Principle of Back propagation algorithm.	2	2	
13	Associative memories	2	2	
14	Matching and self-organizing networks	2	2	
15	Mini project seminar analysis and design utilizing overall concepts of pattern recognition and ANN capabilities	2	2	
Total hours		30	30	

4. Course content/Course Competencies mapping matrix

Topic	c1	c2	c3	c4	c5	c6	c7	c8	c9
Basic concepts and terminologies of pattern, pattern recognition and feature extractions.	1							1	1
Analogy between human brain cell and artificial neuron	1	1				1			
Basic concepts and terminologies of neural network and artificial neural network ANN	1			1			1		1
Neuron Models. – Mclluph-Pitts model			1		1	1			1
ANN architectures, single layer perceptron classifier, multilayer feedforward network, and recurrent neural network.		1	1		1		1		1
ANN learning and training		1	1		1	1			1
Principle of Back propagation algorithm.		1	1			1			1
Associative memories		1	1				1		
Matching and self-organizing networks		1	1	1	1				

Mini project seminar analysis and design utilizing overall concepts of pattern recognition and ANN capabilities	1	1	1	1	1	1	1	1	1
Topics Covering Competences	4	7	7	3	5	5	4	2	7

5 - Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods						Learning Methods			Assessment Method				
	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Researched, Reports & Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report
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		1
c4	1	1		1			1		1	1				1
c5	1	1		1	1		1	1	1	1		1	1	1
c6	1	1	1	1	1				1	1		1		1
c7	1	1	1	1			1	1	1	1		1	1	1
c8	1	1	1	1			1	1	1	1			1	1
c9	1	1	1		1		1	1	1				1	1
Σ	9	9	4	8	5		4	6	3	8	8	5	4	9

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Practical exam		12 th Week	
Semester Work	Quizzes	3 Quizzes (one each 4 weeks)	15
	Reports/Research	Two reports per semester	5
	Tutorials	3 Assignments per semester	5
	Mini project	Once per semester	15
Written Exam		Sixteenth week	40
Total			100

7- List of references:

7-1 Course notes:

Lecture notes and handouts

Abd elmoneim fouda, **pattern recognition and nueral network**.Cairo :MAM Press

7-2 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.

7-3 Recommended books:

Jacek M. ZuradaK., Introduction to Artificial Neural Networks, PWS West, 1995.

7-4 Periodicals, Web sites, etc.

<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/>.

8- Facilities required for teaching and learning:

- Computer Lab. equipped with Data show and Computer package
- Lecture and Exercise rooms equipped with Data show projection and sound systems.
- High speed internet and communication facilities for distance learning.

Course coordinator: Dr. Abd Elmoneim FoudA

Head of the Department: Dr. Abd Elmoneim FoudA

Date: August 2020

Course Specification
ELCn425: 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: Electronic Engineering and Communication Technology Dept
Computer Engineering and Information Technology Dept

Department offering the course: Electronic Engineering and Communication Technology Dept

Date of specifications approval: August 2020

B - Basic Information

Title: Digital Signal Processing **Code:** ELCN425 **Year/level:** 4th, Fall

Credit Hours: 3 **Lectures:** 2 **Tutorial/Exercise:** -2 **Practical:** 1-
Pre-requisite: MATn103, CMP211

C - Professional information

1 – Course Learning Objectives:

By the end of this course, the students should have gained the planned competences (knowledge and understanding of the basic concepts & theories of Signals, Systems, Signal Processing and discrete transformations and digital filters). They should compete on the design, calculate and analyze the performance of digital systems.

2 - Competencies

- c1. Explain and sketch the continuous-time signal and list its main features, to apply it in a specific application. (C10)
- c2. Explain and sketch the discrete-time signal and list its main features, to apply it in a specific application. (C10)
- c3. Discuss and compare the continuous-time and discrete-time signals. (C11)
- c4. Explain, Classify and Compare between different digital filters. (C12, C16)
- c5. Use a suitable advanced software, e. g. MATLAB, to design digital filters for some certain specifications and estimate their performance. (C2, C14, C16)
- c6. Discuss the digital filters design steps to choose a suitable national and international standards and codes to design and implement the digital filters for a specific application. (C15)
- c7. Practice self-learning and communicate effectively orally and in written form (C5, C8, C10).
- c8. Disuse, Analyze and compare the correlation and convolution operations to take their concepts in the design f digital systems or sub-systems. (C12, C17)
- c9. Forming groups to work as a team on a specific project, making use of what they learned in DSP course. (C7)

This course contributes in the following program competencies: **C2, C5, C7, C8, C10, C11, C12, C14, C15, C16 & C17.**

3 – Contents

Week	Topic	Lecture hours	Tutorial hours	Practical hours
1	Signal, system and signal processing	2	2	1
2	Classification of signals	1	-	-

3	The concept of frequency in continuous-time and discrete-time signals.	2	2	1
4	Analog-to-digital and digital-to-analog conversion	1	2	-
5	Discrete Fourier Transform (DFT) and its inverse	2	2	1
6	Computational complexity of the DFT	2	2	2
7	Assessment (Mid- Term)	-	-	-
8	Correlation, cross-correlation, and convolution	4	3	2
9	Z- transform and its inverse , Properties	6	3	1
10	Application of Z-transform in DSP	2	4	2
11	Design of the digital filters	-	3	1
12	Types of the digital filters and choosing between them	1	-	-
13	FIR filter design	2	2	1
14	IIF filter design	3	3	1
15	Mini project; design, analysis and measure the performance of digital filter applications.	2	2	2
Total		30	30	15

4. Course content / Course Competencies mapping matrix

Topic	Course Competencies								
	c1	c2	c3	c4	c5	c6	c7	c8	c9
Signal, system and signal processing	1	1	1						
Classification of signals	1	1	1						
The concept of frequency in continuous-time and discrete-time signals.	1	1	1						
Analog-to-digital and digital-to-analog conversion			1						
Discrete Fourier Transform (DFT) and its inverse									
Computational complexity of the DFT									
Correlation, cross-correlation, and convolution								1	
Z- transform and its inverse									
Properties of the Z-transform						1			
Application of Z-transform in DSP				1		1			1
Design of the digital filters				1	1	1	1	1	1
Types of the digital filters and choosing between them				1	1	1			1
FIR filter design					1	1	1	1	1
IIF filter design					1		1	1	1

Mini project; design, analysis and measure the performance of digital filter applications.					1	1	1	1	1
Topics Covering Competencies	3	3	4	3	5	6	4	5	6

5 – Course Competencies/Teaching and Learning and Assessment methods:

Course Competencies	Teaching Methods						Learning Methods			Assessment Method					
	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Researched, Reports &	Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report
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	1	1	1	
c4	1	1		1				1		1	1	1	1	1	1
c5	1	1		1		1			1			1			1
c6	1	1	1	1	1	1						1			
c7	1	1		1		1	1	1	1	1				1	
c8	1	1	1	1	1		1		1	1	1	1	1		1
c9	1	1	1	1		1	1		1			1		1	1
Σ	9	9	4	9	5	7	3	3	4	6	5	8	5	4	4

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Mid-Term Exam		7 th Week	20
Semester Work	Quizzes	3 Quizzes (one each 4 weeks)	6
	Reports/Research	Two Reports / Research per semester	6
	Tutorials	4 Assignments per semester	8
Practical	Final Lab Exam	Fifteenth week	10
	Reports	3 Reports per semester	6
	Mini project	Once per semester	4
Written Exam		Sixteenth week	40
Total			100

7- List of References

7-1 Course Notes:

- Digital Signal Processing “*Theoretical and “Practical parts”*”

7-2 Essential Books (Text Books)

- Emmanuel C. Ifeakor and Barriew W. Jervis (2002) Digital signal processing: A practical Approach 2nd Ed, Prentice-Hall.

- John G. Proakis and Dimitris G. Manolakis (2007) Digital Signal Processing: Principles, Algorithms and Applications, Fourth Edition, Pearson Prentice Hall.

7-3 Recommended Books

- Nasser Kehtarnavaz, (2008) Digital Signal Processing System Design Second Edition, Elsevier Inc
- Sanjit K. Mitra (2006) Digital Signal Processing: A computer Based Approach 3rd Ed., McGraw-Hill. International Edition.

7-4 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>

8- Facilities Required for Teaching and learning

- DSP LAB.
- Lectures room equipped with OHP and data show facility
- High speed internet and communication facilities for distance learning.

Course coordinator: Dr. Samir Kamal
Head of the Department: Prof. Dr. Shouman S. E. I.
Date: August, 2020

Modern Academy

for Engineering and Technology in Maddi



Course Specification CMPn434: 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: August 2020

B - Basic information

Title: Computer Performance **Code:** CMPn434 **Level:** Senior2, second Semester
Credit Hours: 3 **Lectures:** 2 **Tutorial/Exercise:** 2 **Practical:** - **Total:** 4

Pre-requisite: CMPn 110

C - Professional information

1 – Course Learning Objectives:

By the end of this course, the students should have gained the planned competences related to the construction and operation 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 - Competencies

- c1- Investigate on the different approaches in General performance evaluation (C1,C2).
- c2- Follow on a systematic approach to performance evaluation (C4)
- c3- Select the appropriate mathematical tools, computing methods, design techniques for modeling and analyzing computer systems (C12)
- c4- Manipulate different fundamental laws of queuing network models (C14).
- c5- Investigate on the different techniques for performance benchmarks (C15)
- c6 – investigate on the quantitative approaches of machine and CPU performance and the reliability of components, systems, and processes. (C12, C11)
- c7- Apply knowledge of science, and IT to deal with Computer performance (C18)
- c8- Use a wide range of analytical tools, techniques, and software packages for Computer performance evaluation (C17)
- c9. Solving the problem of Designing the system to meet the required Performance based on non-traditional thinking (C20)

This course contributes in the following program competencies: C1, C2, C4, C11,C12,C14,C15, C17,C18,&C20

3 – Contents

SN	Topic	Lecture hours	Tutorial hours
1	Introduction to Performance Measurement and evaluation	2	2
2	Case Study (1)	2	2
3	Selection of evaluation techniques and metrics	2	2
4		2	2

5	Case Study (2)	2	2
6	Quantitative approach of machine performance	2	2
7	Assessment (Midterm exam)	2	2
8	Quantitative approach of machine performance	2	2
9	Fundamental Laws of network reliability and traffic modeling	2	2
10	Workload and benchmarking	2	2
11	Workload and benchmarking	2	2
12	An Overview of Queuing network modeling	2	2
13	Queuing Modeling Tools	2	2
14	Measuring performance of modern computer system	2	2
15	Methods to improve program execution speed based on non-traditional thinking	2	2
Total hours		30	30

4. Course content/Course Competencies mapping matrix

Topic	c1	c2	c3	c4	c5	c6	c7	c8	c9
Introduction to Performance Measurement and evaluation			1						
Case Study (1)	1					1	1		1
Selection of evaluation techniques and metrics	1		1	1		1		1	
Case Study (2)	1	1	1	1			1	1	1
Quantitative approach of machine performance		1	1	1			1		
Assessment (Midterm exam)	1	1	1	1					
Quantitative approach of machine performance		1	1		1		1	1	
Fundamental Laws of network reliability and traffic modeling		1		1		1			
Workload and benchmarking	1	1	1	1	1			1	
An Overview of Queuing network modeling		1	1	1					
Queuing Modeling Tools		1		1				1	
Measuring performance of modern computer system		1	1		1	1	1	1	
Methods to improve program execution speed		1		1	1	1	1	1	1
Topics Covering Competences	5	10	9	9	4	5	6	7	3

5 - Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods						Learning Methods			Assessment Method					
	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Research, Reports & Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report	
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	1		1		1
c4	1			1	1		1	1	1	1			1		1
c5	1		1	1	1			1	1	1			1		1
c6	1		1	1	1			1	1	1			1		
c7							1	1							1
c8	1	1	1				1	1	1				1		1
c9	1	1	1		1		1	1	1				1		1
Σ	8	4	7	4	7	0	7	6	5	7	3	0	8	0	6

6- Assessment Timing and Grading:

Assessment Method		Timing	Grade (Degrees)
Semester Work	Mid-Term Exam	7 th Week	20
	Quizzes	3 Quizzes (one each 4 weeks)	20
	Reports/Research	Two reports per semester	5
	Tutorials	3 Assignments per semester	5
	Mini project	Once per semester	10
Written Exam		Sixteenth week	40
Total			100

7- List of references:

7-1 Course notes: Lecture notes and handouts

7-2 Required books

Valvano (2012) Embedded microcomputer system and real time interfacing

John Hennesy, David Patterson, (2007) Computer Architecture a Quantitative Approach, 4th Ed. Elsevier Inc.

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

7-3 Recommended books:

J. Marsic, (2013) Computer Networks Performance and Quality of Service, New jersey

John Hennesy, David Patterson, (2007) Computer Architecture a Quantitative Approach, 4th Ed. Elsevier Inc.

7-4 Periodicals, Web sites, etc.

Website: <http://www.ece.rutgers.edu/~marsic/books/CN/>

8- Facilities required for teaching and learning:

- Computer, Data show and Computer programs
- [High speed internet and communication facilities for distance learning](#)

Course Coordinator: Dr. Seham Ebrahim
Head of the Department: Dr. Abd Elmoneim FoudA
Date: [August 2020](#)

Modern Academy

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Course Specification CMPn432: Advanced Database System

A- Affiliation

Relevant program: Computer Engineering and Information Technology BSc Program
Department offering the program: Computer Engineering and Information Technology Department
Department offering the course: Computer Engineering and Information Technology Department
Date of specifications approval: August 2020

B - Basic Information

Title: Advanced Database Systems	Code: CMPn432	Level: Senior 1, Semester 8		
Credit Hours: 3	Lectures: 2	Tutorial/Exercise : 2	Practical: 1	Total: 5
Pre-requisite: CMP N323				

C - Professional information

1 – Course Learning Objectives:

By the end of this course, the students should have gained the planned competences related to the construction and 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 - Competencies

- c1- analyze user's data requirements using Theoretical concepts (C18)
- c2- Investigate Relational model conformity and Integrity (C19)
- c3- Adopt suitable Database performance tuning, managing Distributed relational systems and Data Replication (C15, C19)
- c4- Determine attribute data types, SQL standards development (C12, C17)
- c5- Apply normalization form on the data model (C16)
- c6- Design a secure Encrypted database schema (C14)
- c7- Build New database application and architecture (C14, C15, C16).
- c8- Capability of integrating Object oriented, deductive, spatial, temporal and constraint database management systems (C17, C19)
- c9- Query optimization (C16)
- c10- Search for knowledge and using ICT in search and presentation (C4, C9).

This course contributes in the following program competencies:(C4,C9,C12,C14,C15,C16,C17,C18,&C19)

3 – Contents

weeks	Topic	Lecture hours	Tutorial hours	Practical hours
1	Theoretical concepts	2	2	1
2	Relational model conformity and Integrity	2	2	1
3	Advanced SQL programming	2	2	1
4	Query optimization	2	2	1
5	Concurrency control and Transaction management	2	2	1
6	Database performance tuning	2	2	1
7	Assessment (Midterm exam)	2	2	1
8	Distributed relational systems and Data Replication	2	2	1
9	Object oriented, deductive, spatial, temporal and constraint database management systems	2	2	1
10	New database applications and architectures	2	2	1
11	Data Warehousing; Multimedia; Mobility; NoSQL, Native XML databases (NXD), Document orientated databases	2	2	1
12	SQL standards development	2	2	1
13	Standards for interoperability and integration e.g., Web Services	2	2	1
14	Database security Data Encryption, redaction and masking techniques. Authentication and authorization.	2	2	1
15	Database auditing.	2	2	1
Total hours		30	30	15

4. Course content/Course Competencies mapping matrix

Topic	c1	c2	c3	c4	c5	c6	c7	c8	c9	c10
Theoretical concepts	1		1	1	1		1	1		
Relational model conformity and Integrity	1		1				1		1	1
Advanced SQL programming	1		1							
Query optimization	1		1				1		1	1
Concurrency control and Transaction management			1	1		1			1	
Database performance tuning	1	1	1		1					
Assessment (Midterm exam)	1			1			1		1	
Distributed relational systems and Data Replication	1	1	1						1	
Object oriented, deductive, spatial, temporal and constraint database management systems		1	1							
New database applications and architectures		1							1	1
Data Warehousing; Multimedia; Mobility; NoSQL, Native XML databases (NXD), Document orientated databases		1	1						1	

SQL standards development		1				1				
Standards for interoperability and integration e.g. Web Services		1	1	1	1					
Database security Data Encryption, redaction and masking techniques. Authentication and authorization.	1			1		1				
Database auditing.	1	1	1		1	1	1		1	
Topics Covering Competences	9	7	10	4	3	3	3	2	8	2

5 - Teaching and Learning and Assessment methods:

Course Competences	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Researched, Reports & Assignments	Self-Learning	Modeling and Simulation	Written Exam	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report
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	
c4			1	1	1	1	1			1	1	1	1	1	
c5	1		1	1	1	1	1			1	1	1	1	1	
c6	1	1	1	1	1	1	1		1	1	1	1	1	1	
c7	1		1	1	1	1	1			1	1	1	1	1	
c8						1						1			1
c9						1					1	1			1
c10		1	1				1						1	1	
Σ	5	5	9	6	5	9	9	0	1	7	8	9	10	10	3

6- Assessment Timing and Grading

Assessment Method		Timing	Grade (Degrees)
Semester Work	Mid-Term Exam	7 th Week	20
	Quizzes	3 Quizzes (one each 4 weeks)	6
	Reports/Research	Two reports per semester	4
	Tutorials	3 Assignments per semester	6
	Mini project	Once per semester	4
Practical Exam		Fifteenth week	20
Written Exam		Sixteenth week	40
Total			100

7- List of references:

7-1 Course notes: Lecture notes and handouts

7-2 Required books

Wilfried Lemahieu, Seppe vanden Broucke, Bart Baesens,(2018),Principles of Database Management: Practical Guide to Storing, Managing and Analyzing Big and Small Data, (1st Ed), ,Cambridge University press

Thomas M. Connolly, Carolyn Begg, (2015), Database Systems: practical approach to design, implementation, and management, 6th edition, Pearson Education Limited,

7-11 Recommended books: None

7-4 Periodicals, Web sites, etc.

<https://www.eecs.berkeley.edu/Courses/Data/188.html>

<http://www.GenLib.org/> .

8- Facilities required for teaching and learning:

- Computer Lab.
- Computer, Data show and Computer package.
- [High speed internet and communication facilities for distance learning](#)

Course coordinator: Dr. Seham Ebrahim

Head of the Department: Dr. Abd Elmoneim FoudA

Date: [August 2020](#)

Modern Academy

for Engineering and Technology in Maddi



Course Specification CMPn461: Project-2B

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: August 2020

B - Basic information

Title: Project-2B **Code:** CMPn461 **Level:** Senior-1 8th semester and Senior-2 9th semester
Credit Hours: 3 **Lectures:** 2 **Tutorial/Exercise:-** **Practical:** 2 **Total:** 4
Pre-requisite: CMPn 460

C - Professional information

1 – Course Learning Objectives:

The proposed projects must complement the other courses in computer engineering and information technology. The students are given as much freedom as possible in the choice of the idea of their projects. Also, they are given much freedom to combine their teamwork. Each student must understand the project contribution and know his project task. By the end of this course the students should be able to work together in teamwork to design, implement, document, and test their application using appropriate software simulators and hardware equipment.

2 - Competencies:

- c1- Identify and formulate project objective. Develop and conduct appropriate simulation and conclusion (C1,C2)
- c2- Apply engineering design processes to produce cost-effective solutions that meet project evaluation and quality guidelines, health and safety requirements, (C3,C4).
- c3-Acquire and apply new knowledge during project implementation, modification, testing and performance measure criteria (C10, C12)
- c4-Integration of project to meet business system users and business processing requirements using of latest technologies (C18,C19,C20)
- c5- - Function efficiently as a member of multi-disciplinary, Communicate effectively (C7, C8).
- c6- Presenting the idea and clarify the problem formulation (C3,C8)

This course contributes in the following program competencies:

C1,C2,C3,C4,C7,C8,C10,C12,C18,C19&C20)

3 – Contents

weeks	Topic	Lecture hours	Tutorial hours	Practical hours
1,2	The students propose their refined project idea and project block diagram to the supervisor.	4		4
3	Preparation of the used project material (Data, Software and Hardware)	2		2
4,5,6,7,8,9,10,11	Start the project cycle. (Implementation, testing, measuring the results, project modification)	16		16

12	Testing the whole project functions.	2		2
13,14	Make final technical report documentation.	4		4
15	Preparing for project presentation.	2		2
Total hours		30		30

4. Course content/Course Competencies mapping matrix

Topic	c1	c2	c3	c4	c5	C6
The students propose their refined project idea and project block diagram to the supervisor.	1	1		1	1	
Preparation of the used project material (Data, Software and Hardware)	1		1	1	1	1
Start the project cycle. (Implementation, testing, measuring the results, project modification)	1	1	1	1	1	1
Testing the whole project functions.	1		1	1	1	
Make final technical report documentation.	1	1	1		1	
Preparing for project presentation.	1	1	1		1	1
Topics Covering Competences	6	4	5	4	6	3
	40.0	26.7	33.3	26.7	40.0	20.0

5 - Teaching and Learning and Assessment methods:

Course Competences	Teaching Methods						Learning Methods			Assessment Method					
	Lecture	Presentations & Movies	Discussions & seminars	Tutorials	Problem solving	Laboratory & Experiments	Researched Reports & Self-Learning	Modeling and Simulation		Final Report	Tutorials	Practical Exam	Quizzes	Research & Presentations	Mini Project Report
c1	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	1			1	
C6										1	1			1	
Σ	5	5	5	3	4	0	0	4	0	5	6	0	0	5	
%	33.3	33.3	33.3	20.0	26.7	0.0	0.0	26.7	0.0	33.3	40.0	0.0	0.0	33.3	

6- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Year work Reports/Research	During term	60
Evaluation of discussion and final report of project	By the end of the project period	40
Total		100

7- List of references:

7-1 Course notes: None

7-2 Required books: None

7-3 Recommended books: None

7-4 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

8- Facilities required for teaching and learning:

- Software and Hardware Labs.
- Simulator software programs.Data show
- [High speed internet and communication facilities for distance learning.](#)

Course coordinator:	Dr. Seham Ebrahim
Head of the Department:	Dr. Abd Elmoneim FoudA
Date:	August 2020

Appendix 2

شروط النجاح والتخرج وقواعد حساب التقدير

الآتي بعد مستخرج من الشق القانوني لللائحة الأكاديمية الحديثة للهندسة والتكنولوجيا بالمعادي
للدراصة بالساعات المعتمدة (لائحة 2020)

مادة [3]

تسري أحكام هذه اللائحة على الطلاب الجدد الذين يلتحقون بالأكاديمية بعد تاريخ التصديق عليها (مايو 2020)

مادة [5]

مدة الدراسة لنيل درجة البكالوريوس خمس سنوات موزعة على 10 فصول دراسية رئيسية ويمكن للطلاب إنهاء متطلبات الحصول على درجة البكالوريوس المذكورة في المادة (29) قبل ذلك بفصل دراسي واحد على الأكثر.

مادة [6]: مشروع التخرج

يكون المشروع مقسماً على فصلين دراسيين متتاليين ليس منهما الفصل الصيفي لجميع البرامج عدا برنامج هندسة العمارة فيتم تسجيل المشروع في الفصل الدراسي الأخير قبل التخرج.

مادة [18]

إذا انقطع الطالب عن الدراسة لمدة أقصاها ثلاثة فصول دراسية رئيسية بعذر مسبق يقبله مجلس إدارة الأكاديمية فيمكن له ان يواصل دراسته على ان تحسب له المقررات السابق له النجاح فيها ويخضع تخرجه لأية متطلبات جديدة في الفصل الذي اعيد قيده فيه.

مادة [26]: مواعيد الدراسة والقيود

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

- أ) الفصل الدراسي الرئيسي الأول (الخريف): يبدأ في بداية العام الدراسي في شهر سبتمبر ولمدة لا تقل عن 14 أسبوع.
- ب) الفصل الدراسي الرئيسي الثاني (الربيع): يبدأ عقب إجازة منتصف العام في شهر فبراير ولمدة لا تقل عن 14 أسبوع.
- ج) الفصل الصيفي: يبدأ أواخر شهر يونيو بعد انتهاء الفصل الدراسي الثاني ولمدة لا تقل عن 7 أسابيع.

مادة [27]

شروط التسجيل للدراسة بنظام الساعات المعتمدة:

- أ) حتى 18 ساعة معتمدة في الفصل الدراسي الرئيسي للطالب الحاصل على معدل تراكمي ≤ 2 .
- ب) حتى 14 ساعة معتمدة في الفصل الدراسي الرئيسي للطالب الحاصل على معدل تراكمي > 2 .
- ج) حتى 21 ساعة معتمدة في الفصل الدراسي الرئيسي للطالب الحاصل على معدل تراكمي ≤ 3 .
- د) حتى 6 ساعات معتمدة لأي طالب في الفصل الصيفي ويمكن التسجيل حتى 9 ساعات بموافقة المرشد الأكاديمي إذا استدعت متطلبات التخرج ذلك.

ويتم إعداد خريطة للمقررات مع تقسيم المقررات على المستويات الدراسية التصاعدية المحددة بالمادة [28]. ويتم التسجيل طبقاً لخريطة المقررات مع الالتزام بتسجيل مقررات المستويات الأدنى واستكمال التسجيل من المستويات الأعلى.

كما يتم تحصيل رسوم الخدمة التعليمية كل فصل دراسي ويكون حسابها طبقاً لعدد الساعات المعتمدة التي يسجل فيها الطالب في كل فصل دراسي، وبحد أدنى ما يقابل رسوم خدمة تعليمية لعدد 12 ساعة معتمدة، إلا إذا كان عدد الساعات المعتمدة المتبقية للطالب للحصول على درجة البكالوريوس أقل من ذلك فتتم محاسبته على الساعات المعتمدة المتبقية فقط للدراسة. وتكون رسوم الخدمة التعليمية للفصل الصيفي طبقاً لعدد الساعات المعتمدة التي يسجل فيها الطالب.

مادة [28]: مستويات الدراسة

يوضح الجدول التالي موقع الطالب ومستويات الدراسة معتمداً على عدد الساعات المعتمدة التي ينتهي الطالب من دراستها.

جدول رقم (1)

المستوى الدراسي	تعريف موقع الطالب بنظام الدراسة	نسبة عدد الساعات المعتمدة التي اجتازها الطالب
صفر	Freshman	من 0% حتى 20%
الأول	Sophomore	أكثر من 20% حتى 40%
الثاني	Junior	أكثر من 40% حتى 60%
الثالث	Senior 1	أكثر من 60% حتى 80%
الرابع	Senior 2	أكثر من 80% حتى 100%

مادة [29]

متطلبات الحصول على درجة البكالوريوس:

- الاجتياز بنجاح لمقررات مكافئة لعدد (165) ساعة معتمدة وبمعدل تراكمي لا يقل عن (2).
- النجاح في مشروع التخرج.
- اجتياز المقررات التي يكون التقييم فيها ناجح / راسب (Pass/Fail) ولا تحتسب ضمن المعدل التراكمي مثل مقررات التدريب الصيفي للمستوي صفر والمستوي الأول ، ومقررات التدريب الصناعي للمستوي الثاني والثالث.

مادة [31]

شروط التعديل والإلغاء والانسحاب وإيقاف القيد:

- (أ) يحق للطالب تغيير مقررات سجل فيها، بأخرى خلال أسبوعين من بدء الدراسة، ويحق له سحب المقرر خلال أسبوعين من بدء الدراسة مع استرداد الرسوم ولا يسري ذلك على الفصل الصيفي.
- (ب) يحق للطالب الانسحاب من المقرر خلال ثمانية أسابيع على الأكثر من بداية الدراسة بالفصلين الأول والثاني وثلاثة أسابيع على الأكثر في الفصل الصيفي وفي هذه الحالة لا ترد له الرسوم.
- (ج) الطالب الذي يرغب في الانسحاب من فصل دراسي، لظروف المرض أو بعذر تقبله الأكاديمية، عليه التقدم بطلب لشئون الطلاب، ويحصل على موافقة مجلس الأكاديمية على الانسحاب، دون استرداد ما سبق سداده من رسوم، ويكون هذا الانسحاب قبل انعقاد الامتحان النهائي لهذا الفصل. ويقوم بإعادة المقررات التي سجل فيها، في فصل دراسي لاحق دراسة وامتحاناً بعد سداد رسوم الخدمة التعليمية المقررة، ولا تحتسب عليه مرة رسوب.

مادة [32]

تقديرات المقررات الدراسية:

- (أ) تقدر نقاط كل مقرر على النحو الموضح بالجدول رقم (2):
جدول رقم (2)

التقدير	عدد النقاط	النسبة المئوية المناظرة
A+	4.0	97% وأعلى
A	4.0	93% حتى أقل من 97%
A-	3.7	89% حتى أقل من 93%
B+	3.3	84% حتى أقل من 89%
B	3.0	80% حتى أقل من 84%
B-	2.7	76% حتى أقل من 80%
C+	2.3	73% حتى أقل من 76%
C	2.0	70% حتى أقل من 73%
C-	1.7	67% حتى أقل من 70%
D+	1.3	64% حتى أقل من 67%
D	1.0	60% حتى أقل من 64%
F	صفر	أقل من 60%

مادة [33]

حساب متوسط النقاط: (GPA)

- (أ) عند إعادة الطالب دراسة مقرر سبق أن حصل فيه على تقدير (F) يحتسب له التقدير الذي حصل عليه في الإعادة بحد أقصى (B+) وعند حساب المعدل التراكمي يحتسب له التقدير الأخير فقط على أن يذكر كلا التقديرين في سجل الطالب الأكاديمي.
- (ب) تحسب النقاط التي حصل عليها الطالب في كل مقرر على إنها عدد الساعات المعتمدة للمقرر مضروبة في النقاط التي حصل عليها الطالب حسب جدول التقديرات المذكور بالمادة رقم [32].
- (ت) يحسب متوسط نقاط أي فصل دراسي (Semester GPA)، على أنه ناتج قسمة مجموع النقاط التي حصل عليها الطالب في هذا الفصل، مقسوماً على مجموع الساعات المعتمدة لهذه المقررات.
- (ث) يحسب متوسط النقاط التراكمي (Cumulative GPA) عند نهاية كل فصل دراسي على أنه ناتج قسمة مجموع كل نقاط المقررات التي درسها الطالب على مجموع الساعات المعتمدة لهذه المقررات.
- (ج) متوسط النقاط التراكمي (Cumulative GPA) عند نهاية الفصل الدراسي الأخير للطالب هو الأساس في تحديد تقدير التخرج والنسبة المئوية.

مادة [34]

مراتب الشرف ومنح التفوق:

- (أ) تمنح مرتبة الشرف للطالب الذي لا يقل المعدل التراكمي عن 3.3 مع تحقيق مثل هذا المعدل على الأقل خلال جميع فصول الدراسة ببرامج الساعات المعتمدة أو عند التحاقه بالدراسة من البرامج ذات الفصلين الدراسييين وذلك بعد عمل مقاصة ويشترط لمنح مرتبة الشرف ألا يكون الطالب قد حصل على تقدير (F) في أي مقرر خلال دراسته الجامعية.

مادة [35]

الإنذار الأكاديمي - الفصل من الدراسة - آليات رفع المعدل التراكمي:

- (أ) إذا انخفض المعدل التراكمي للطالب إلى أقل من (2) في أي فصل دراسي يوجه له إنذار أكاديمي يقضي بضرورة رفع الطالب لمعدله التراكمي إلى (2) على الأقل.
- (ب) يُفصل الطالب المنذر أكاديمياً من الدراسة ببرامج الساعات المعتمدة إذا تكرر انخفاض معدله التراكمي عن (2) لمدة ستة فصول دراسية رئيسية متتابعة.
- (ت) إذا لم يحقق الطالب شروط التخرج خلال الحد الأقصى للدراسة وهو عشر سنوات يتم فصله.
- (ث) يجوز لمجلس الأكاديمية أن ينظر في إمكانية منح الطالب المعرض للفصل نتيجة عدم تمكنه من رفع معدله التراكمي إلى (2) على الأقل فرصة واحدة وأخيره مدتها فصلين دراسيين رئيسيين لرفع معدله التراكمي إلى (2) وتحقيق متطلبات التخرج إذا كان قد أتم بنجاح دراسة 80% من الساعات المعتمدة المطلوبة للتخرج على الأقل.
- (ج) يجوز للطالب إعادة دراسة المقررات التي سبق نجاحه فيها بغرض تحسين المعدل التراكمي وتكون الإعادة دراسة وامتحاناً ويُحتسب له التقدير الأعلى وذلك بحد أقصى 5 مقررات إلا إذا كان التحسين لغرض رفع الإنذار الأكاديمي أو تحقيق متطلبات التخرج وفي جميع الأحوال يُذكر كلا التقديرين في سجله الأكاديمي.

مادة [37]

أسلوب تقييم الطالب:

- (أ) يعقد لكل مقرر امتحان تحريري في منتصف الفصل الدراسي لا تقل درجته عن 20% من مجموع درجات المقرر.
- (ب) يعقد لكل مقرر امتحان تحريري في نهاية الفصل الدراسي لا تقل درجته عن 40% من درجات المقرر، مع وضع القواعد والشروط المنظمة والتي تؤكد على وجوب حصول الطلاب على نسبة لا تقل عن 40% في الامتحان التحريري من إجمالي درجته، لكي يعد ناجحاً حتى لو كان مجموع درجاته في المقرر أعلى من الحد الأدنى للنجاح. وفي حالة رسوب الطالب لهذا السبب يسجل (FF) أي راسب لرسوبه في الامتحان التحريري.
- (ت) يضع مجلس الأكاديمية القواعد المنظمة لتوزيع درجات أي مقرر طبقاً لطبيعته على النحو التالي: الامتحانات الدورية السريعة (عددها ودرجة كل منها)، الأعمال الإضافية التي يقوم بها الطالب، التقارير المقدمة عن أبحاث قام بإعدادها، الاختبارات العملية، الامتحان النهائي للمقرر.
- (ث) مدة الامتحان التحريري النهائي لا تقل عن ساعتين ويحدد مجلس الأكاديمية مدة الامتحان لكل مقرر حسب طبيعته.
- (ج) يعد الطالب راسباً إذا كان مجموع درجاته في المقرر أقل من 60% أو لم يحضر الامتحان التحريري في نهاية الفصل الدراسي لحرمانه من الدخول لتجاوز نسبة الغياب أو بقرار تأديبي. وفي حالة عدم أداء الطالب للامتحان النهائي للفصل الدراسي بعذر تقبله الأكاديمية يسمح للطالب إعادة تسجيل المقرر دراسة وامتحاناً مع احتساب التقدير الذي يحصل عليه كاملاً.
- (ح) تقيم بعض المقررات مثل التدريب العملي للمستوى صفر والمستوى الأول، والتدريب الصناعي للمستوى الثاني والثالث على أساس ناجح / راسب (Pass/Fail) ولا تدخل في حساب المعدل التراكمي.
- (خ) يتم توثيق قرارات مجلس الأكاديمية المفسرة لهذه المادة في لائحة تنفيذية ملزمة ومعلنة.
- مادة [38]**

نسبة الحضور والحرمان من الامتحان والأعذار:

- (أ) الحد الأدنى لنسبة الحضور للمقرر لا تقل عن 75% ليسمح للطالب بدخول الامتحان النهائي للمقرر. وفي حالة حرمانه من الامتحان يعتبر راسباً (يعطى درجة صفر في درجة الامتحان النهائي للمقرر).
- (ب) يحق لمجلس الأكاديمية حرمان الطالب من التقدم للامتحان كله أو في بعض المقررات إذا رأى أن انتظامه غير مرضي طبقاً لأحكام اللائحة الداخلية. وفي هذه الحالة يعتبر الطالب راسباً في المقررات التي حرم من التقدم للامتحان فيها.

جدول رقم (3)

مفتاح الكود			N ₁ N ₂ N ₃	L ₁ L ₂ L ₃
1- L ₁ L ₂ L ₃ ثلاثة حروف ترمز إلى القسم والتخصص المسئول عن تدريس المقرر				
ARC			قسم العمارة	
CMP			قسم الحاسبات	
ELC			قسم الاتصالات	
MTH			تخصص الرياضيات قسم العلوم الأساسية	

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
N ₁ -2 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
N ₂ -3 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
N ₃ -4 رقم يرمز إلى مسلسل المقرر داخل التخصص	

تم بحمد الله