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

Computer Engineering and Information Technology BSc Program Specifications

By Law-2000

September 2015

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مقدمة

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

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

وتقدم دراسة الهندسة للطلاب تعليما فعالا ومبنيا على أسس تكنولوجية، آخذا فى الاعتبار التوقعات المستقبلية للعلم والتكنولوجيا. وهى أيضا توفر المعارف التقنية والمهارات الضرورية لحل المشاكل التي تسمح بمواجهة التحديات المستقبلية . وقد حددت المعايير الأكاديمية المرجعية (ARS)، لبرنامج هندسة الإلكترونيات وتكنولوجيا الاتصالات والمعتمدة من الهيئة القومية للاعتماد وجودة التعليم، الطبعة الأولى يوليو ٢٠١٥، مفاهيما شاملة تمثل التوقعات والطموحات العامة بخصوص معايير درجة البكالوريوس في العلوم الهندسية، كما توضح هذه المفاهيم المواصفات والخصائص التى يتمتع بها خريج البرامج الدراسية الهندسية خاصة:

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

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

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

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

والله ولى التوفيق،،،

أ.د. سعيد جاويش
منسق البرنامج

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Content

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Computer Engineering and Information Technology B.Sc. Program Specifications

1. General

1.1. Basic Information

Program Title: Computer Engineering and InformationTechnology B.Sc. Program

Program Type: Single

Department: Computer Engineering and Information Technology Department

Coordinator: Prof. Dr. Said A. Gawish

Assistant Co-ordinator: Dr. Adel Khedr

External Evaluators: Prof. Aly Aly Fahmy, Former Dean of the Faculty of Computer and Information, Cairo University

Academic Standard: The program adopts the Academic Reference Standards for the Computer Engineering and InformationTechnology B.Sc. Program (ARS) approved by the National Authority for Quality Assurance and Accreditation in Education (NAQAAE), first edition, July 2015.

Program Commencement: 2000-2001

Date of Program Specifications Approval: August 2015

1.2. Staff Members

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

1.3. Program Reviewing

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

2. Professional Information

2.1. Preamble

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

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

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

The engineering education should achieve excellence in undergraduate and graduate education, research, public service and advancement of the state-of-the-art within the discipline. It aims to produce able, broadly educated, highly qualified engineers through academic excellence. Moreover, it motivates students, faculty and staff to learn,

grow, achieve and serve the needs of society nationally, regionally and internationally. It also prepares students for a productive and rewarding career in engineering based on strong moral and ethical foundation.

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

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

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

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

2.2. Program Mission and Aims

2.2.1. Program Mission

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

2.2.2. Program Aims:

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

2.2.3. Aimed Graduate Attributes:

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

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

2.2.4 Graduate Career Opportunities:

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

2.3. Intended Learning Outcomes (ILO's)
2-3-1-Knowledge and Understanding:
On successful completion of the program, The graduate of the computer engineering and information technology BSc engineering program should demonstrate the knowledge and understanding of:

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

architectures, embedded systems, signal processing, operating systems, real-time systems and reliability analysis.

A14. Quality assessment of computer systems.

A15. Related research and current advances in the field of computer software and hardware.

A16. Technologies of data, image and graphics representation and organization on computer storage media.

A17. Modern trends in the field of networking and data transmission widely used nowadays.

A18. Knowledge of fundamentals of programming and the construction of computer-based systems, data structures and algorithms, software engineering techniques and information retrieval.

A19. Knowledge of methods for the construction of web based materials and systems, design of internet-based systems.

A20. Understand the broad context within computer information technology such as quality, reliability, enterprise, employment law, accounting and health.

2.3.2. Intellectual Skills

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

B1. Select appropriate mathematical and computer-based methods for modeling and analyzing problems.

B2. Select appropriate solutions for engineering problems based on analytical thinking.

B3. Think in a creative and innovative way in problem solving and design.

B4. Combine, exchange, and assess different ideas, views, and knowledge from a range of sources.

B5. Assess and evaluate the characteristics and performance of components, systems and processes.

B6. Investigate the failure of components, systems, and processes.

B7. Solve engineering problems, often on the basis of limited and possibly contradicting information.

B8. Select and appraise appropriate ICT tools to a variety of engineering problems.

B9. Judge engineering decisions considering balanced costs, benefits, safety, quality, reliability, and environmental impact.

B10. Incorporate economic, societal, environmental dimensions and risk management in design.

B11. Analyze results of numerical models and assess their limitations.

B12. Create systematic and methodic approaches when dealing with new and advancing technology.

B13. Select the appropriate mathematical tools, computing methods, design techniques for modeling and analyzing computer systems;

B14. Select, synthesize, and apply suitable IT tools to computer engineering problems.

B15. Propose various computer-based solutions to business system problems. Cost-benefit analysis should be performed especially in sensitive domains where direct and indirect costs are involved.

B16. Identify symptoms in problematic situations.

B17. Innovate solutions based on non-traditional thinking and the use of latest technologies

B18. Classify computer objects running on different system configurations.

B19. Analyze data/ information to support activities of business system users

B20. Organize information innovatively in a form appropriate to decision making process

B21. Analyze, discuss and evaluate using various networking techniques

B22. Give examples of Information technology systems problems, set goals towards solving them, observe results, reason and apply judgment.

B23. Recognize the professional, moral and ethical issues of involved in the exploitation of Information Technology and be guided by their adoption, reflect on issues of professional practice within the discipline.

2.3.3. Professional and Practical Skills

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

C1. Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.

C2. Professionally merge the engineering knowledge, understanding, and feedback to improve design, products and/or services.

C3. Create and/or re-design a process, component or system, and carry out specialized engineering designs.

C4. Practice the neatness and aesthetics in design and approach.

C5. Use computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design experiments, collect, analyze and interpret results.

C6. Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs.

C7. Apply numerical modeling methods to engineering problems.

C8. Apply safe systems at work and observe the appropriate steps to manage risks.

C9. Demonstrate basic organizational and project management skills.

C10. Apply quality assurance procedures and follow codes and standards.

C11. Exchange knowledge and skills with engineering community and industry.

C12. Prepare and present technical reports.

C13. Design and operate computer-based systems specifically designed for business applications.

C14. Use appropriate specialized computer software, computational tools and design packages throughout the phases of the life cycle of system development;

C15. Write computer programs on professional levels achieving acceptable quality measures in software development.

C16. Conduct user support activities competently.

C17. Build and run databases and integrate them with business processing requirements

C18. Deploy tools for the implementation and documentation of databases, networks and computer-based systems.

C19. Evaluate systems in terms of their quality and possible trade-offs, evaluate appropriate hardware and software solutions for given scenarios.

C20. Make effective use of general IT facilities, plan and manage a project to complete within budget and schedule.

2.3.4. General and Transferable Skills:

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

D1   Collaborate effectively within multidisciplinary team

D2   Work in stressful environment and within constraints

D3   Communicate effectively

D4   Demonstrate efficient IT capabilities

D5   Lead and motivate individuals

D6   Manage tasks and resources efficiently

D7   Search for information and adopt life-long self learning

D8   Acquire entrepreneurial skills

D9   Refer to relevant literature effectively

2.4. Curriculum Structure and Contents

The following are the subjects taught during this program.

1st Semester (1st year)

Code	Name	Lecture	Exercise	practical	Total	Exam Duration (hr)	Year Work	Practical	Writ. Ex.	Total	Humanities & Social Sciences	Math & Basic Sciences	Basic Eng	Applied Eng&g Design	Computer Appl&ICT*	Projects* & Practice	Discretionary
		|--- Hours / Week ---|					|--- Evaluation ---|										
B111	Mathematics I	4	2	0	6	3	30	0	70	100		6					
B131	Physics I	4	0	2	6	3	20	20	60	100		6					
B141	Chemistry	2	0	2	4	3	20	20	60	100		4					
B121	Mechanics I	2	1	0	3	3	30	0	70	100		3					
M160	Production Engineering - Workshop I	2	0	2	4	3	30	10	60	100			2			2	
E111	Introduction to Computers I	2	0	2	4	3	20	20	60	100		4					
M150	Engineering Drawing & Projection I	0	4	0	4	3	40	0	60	100			4				
B101	English Language I	2	0	0	2	2	15	0	35	50	2						
Total		18	7	8	33	23	205	70	475	750	2	23	6	0	0	2	0

2nd Semester(1st year)

Code	Name	Lecture	Exercise	practical	Total	Exam Duration (hr)	Year Work	Practical	Writ. Ex.	Total	Humanities & Social Sciences	Math & Basic Sciences	Basic Eng	Applied Eng&g Design	Computer Appl&ICT*	Projects* & Practice	Discretionary
		|--- Hours / Week ---|					|--- Evaluation ---|										
B112	Mathematics II	4	2	0	6	3	30	0	70	100		6					
B132	Physics II	2	2	2	6	3	20	20	60	100		6					
B122	Mechanics II	2	1	0	3	3	30	0	70	100		3					
M161	Production Engineering - Workshop II	2	0	2	4	3	30	10	60	100			2			2	
E112	Introduction to Computers II	2	0	2	4	3	20	20	60	100		4					
M151	Engineering Drawing & Projection II	2	4	0	6	3	40	0	60	100			6				
B102	English Language II	2	0	0	2	2	15	0	35	50	2						
B142	Descriptive Geometry	2	2	0	4	3	30	0	70	100		4					
Total		18	11	6	35	23	215	50	485	750	2	23	8	0	0	2	0

3rd Semester (2nd year)

Code	Name	Lecture	Exercise	practical	Total	Exam duration	Year Work	Practical	Writ. Ex.	Total	Humanities & Social Sciences	Math & Basic Sciences	Basic Eng	Applied Eng&g Design	Computer Appl&ICT*	Projects* & Practice	Discretionary
		Hours / Week					**Evaluation**										
B211	Mathematics III	4	2	-	6	3	30	-	70	100		6					
E201	Electrical Circuits Analysis I	2	2	1	5	3	20	20	60	100			5				
B221	Physics III	2	2	1	5	3	20	20	60	100		5					
A060	Civil Engineering Technology	2	2	-	4	3	30	-	70	100			4				
E210	Computer Programming I	2	-	2	4	3	20	20	60	100				2	2		
E220	Instruments & Measurements I	2	-	2	4	3	30	-	70	100				2		2	
B200	English III	2	-	-	2	3	20	20	60	100	2						
E212	Digital Logic Circuits	4	-	1	5	2	15	-	35	50			5				
Total		**20**	**8**	**7**	**35**	**23**	**185**	**80**	**485**	**750**	**2**	**11**	**16**	**2**	**2**	**2**	**0**

4thSemester(2nd year)

Code	Name	Lecture	Exercise	practical	Total	Exam duration	Year Work	Practical	Writ. Ex.	Total	Humanities & Social Sciences	Math & Basic Sciences	Basic Eng	Applied Eng&g Design	Computer Appl&ICT*	Projects* & Practice	Discretionary
		Hours / Week					**Evaluation**										
B212	Mathematics IV	4	2	-	6	3	30	-	70	100		6					
E202	Electrical Circuits Analysis II	2	2	-	4	3	30	-	70	100			4				
E240	Data Structures	3	-	-	3	3	20	20	60	100			2		1		
M051	Tech of mechanical Engineering	2	2	-	4	3	30	-	70	100			4				
B222	Physics IV	2	-	2	4	3	20	20	60	100		4					
E213	Computer Programming II	2	-	2	4	3	20	20	60	100			2		2		

Code	Name	Lecture	Exercise	practical	Total	Exam duration	Year Work	Practical	Writ. Ex.	Total	Humanities & Social Sciences	Math & Basic Sciences	Basic Eng	Applied Eng&g Design	Computer Appl&ICT*	Projects* & Practice	Discretionary
B202	History of Science	2	-	-	2	2	15	-	35	50	2						
E221	Instruments & Measurements II	2	-	2	4	3	20	20	60	100				2		2	
Total		19	6	6	31	23	185	80	485	750	2	10	14	0	3	2	0

3rd year (5th Semester)

Code	Name	Lecture	Exercise	practical	Total	Exam duration	Year Work	Practical	Writ. Ex.	Total	Humanities & Social Sciences	Math & Basic Sciences	Basic Eng	Applied Eng&g Design	Computer Appl&ICT*	Projects* & Practice	Discretionary
B 311	Mathematics (5)	4	2		6	3	50		100	150		6					
E 301	Microelectronics (1)	2	2		4	3	30	-	70	100			4				
E 361	Operating Systems (1)	4	2		6	3	30	-	70	100				6			
E 321	Digital Circuits Design	2	2	2	6	3	30	30	90	150				4	1	1	
E 333	Database Management	2	2		4	3	30	-	70	100							4
B 300	English (4)	2	-		2	2	15	-	35	50	2						
E 330	Engineering Comp. Application(1)	1	-	3	4	3	20	20	60	100				2	2		
Total		17	10	5	32	20	205	50	495	750	2	6	4	12	3	1	4

3rd year (6thSemester)

Code	Name Total	Lecture	Exercise	practical	Total	Exam duration	Year Work	Practical	Writ. Ex.	Total	Humanities & Social Sciences	Math & Basic Sciences	Basic Eng	Applied Eng&g Design	Computer Appl&ICT*	Projects* & Practice	Discretionary
E 302	Microelectronics (2)	2	-	2	4	3	20	20	60	100			2			2	
E 303	Digital Signal Processing	4	2		6	3	50		100	150			4		2		
E 351	Control Engineering (1)	2	2	1	5	3	30	30	90	150			3		1	1	
M360	Industrial Psychology	2	-	-	2	2	15	-	35	50	2						
E 331	Engineering Comp. Application(2)	2		2	4	3	20	20	60	100					2	2	

E 362	Electrical Machines & Power	2	2	1	5	3	20	20	60	100			4			1	
E 399	Project	1	-	3	4	3	40	60	-	100				1		3	
Total		**15**	**6**	**9**	**30**	**20**	**195**	**150**	**405**	**750**	**2**	**0**	**13**	**3**	**5**	**7**	**0**

4th year (7th Semester)

Code	Name	Lecture	Exercise	practical	Total	Exam duration	Year Work	Practical	Writ. Ex.	Total	Humanities & Social Sciences	Math & Basic Sciences	Basic Eng	Applied Eng&g Design	Computer Appl&ICT*	Projects* & Practice	Discretionary
B 411	Mathematics (6)	2	2		4	3	30	-	70	100		4					
E 414	Computer Architecture (1)	4	2		6	3	50	-	100	150			4		2		
E 421	Microprocessor Based Systems (1)	3	2	1	6	3	30	30	90	150				4	1	1	
B 401	Environmental Science and Technology	3	-	-	3	2	15	-	35	50	3						
E 461	Operating Systems (2)	4		2	6	3	30	30	90	150				3	2	1	
E 451	Digital Image Processing	4	3		7	3	50	-	100	150				4	3		
Total		**20**	**9**	**3**	**32**	**17**	**205**	**60**	**485**	**750**	**3**	**4**	**4**	**11**	**8**	**2**	**0**

4th year (8th Semester)

Code	Name	Lecture	Exercise	practical	Total	Exam duration	Year Work	Practical	Writ. Ex.	Total	Humanities & Social	Math & Basic Sciences	Basic Eng	Applied Eng&g Design	Computer Appl&ICT*	Projects* & Practice	Discretionary
E 412	Information Systems	4	2	-	6	3	50	-	100	150							6
E 460	Software Engineering	3	2	2	7	3	30	30	90	150				4	2	1	
E 422	Microprocessor Based Systems (2)	2	1	1	4	3	20	20	60	100				2	1	1	
E 432	Electronic Measurements	2	-	4	6	3	20	20	60	100			3			3	
E 462	Computer Graphics	2	1	4	7	3	50	-	100	150				4	2	1	
B 412	International Business Management	3	-	-	3	2	15	-	35	50	3						
E 400	Summer Training	-	-	-	-	-	30	20	-	50							
Total		**16**	**6**	**11**	**33**	**17**	**215**	**90**	**445**	**750**	**3**	**0**	**3**	**10**	**5**	**6**	**6**

5th year (9th Semester)

Subject Structure		Hours / Week					Evaluation				Subject Fields						
Code	Name	Lecture	Exercise	practical	Total	Exam duration	Year Work	Practical	Writ. Ex.	Total	Humanities & Social	Math & Basic Sciences	Basic Eng	Applied Eng&g Design	Computer Appl&ICT*	Projects* & Practice	Discretionary
M 561	Engineering Economics	2	2	-	4	2	15	-	35	50	4						
E 512	Computer Architecture (2)	4	2	-	6	3	50	-	100	150				5	1		
E 515	Advanced Computer Systems	4	2	-	6	3	50	-	100	150				4	1	1	
E 521	Distributed Computer Systems	2	2	2	6	3	30	20	100	150				4	2		
E 530	Data Transmission &Com. Networks (1)	3	1	-	4	3	30	-	70	100				3	1		
E 538	Elective Course	4	2	-	6	3	50	-	100	150							6
Total		**19**	**11**	**2**	**32**	**17**	**225**	**20**	**505**	**750**	**4**	**0**	**0**	**16**	**5**	**1**	**6**

5th year (10th Semester)

Subject Structure		Hours / Week					Evaluation				Subject Fields						
Code	Name	Lecture	Exercise	practical	Total	Exam duration	Year Work	Practical	Writ. Ex.	Total	Humanities & Social Sciences	Math & Basic Sciences	Basic Eng	Applied Eng&g Design	Computer Appl&ICT*	Projects* & Practice	Discretionary
B 512	Laws and Regulations for Eng.	3	-	-	3	2	15	-	35	50	3						
E 504	Artificial Intelligence	4	2	-	6	3	50		100	150							6
E 531	Data Transmission & Computer Networks(2)	3	2	2	7	3	30	30	90	150				4	1	2	
E 534	Computer performance	2	2	2	6	3	20	20	60	100				4	2		
E 538	Elective Course	4	2	-	6	3	30	-	70	100				4	2		
E 599	Project	-	-	4	4	-	100	100	-	200				1		3	
Total		**16**	**8**	**8**	**32**	**14**	**245**	**150**	**355**	**750**	**3**	**0**	**0**	**13**	**5**	**5**	**6**

Total teaching hours and subjects distribution over the subject areas

Semester	Teaching Hours				Wr. Exam Dur.	Marking				Subject Area						
	Lectures	Exercises	Practical	Total hours		Year work	Practical Exam	Written Exam	Total	Hum. & Soc. Sc.	Math. & B. Sc.	B. Eng. Sc.	App. Eng. & Des.	Comp. App. &ICT	Proj. & Practice	Discretionary
Total 1st Year/ 1st	18	7	8	33	23	205	70	475	750	2	23	6	0	0	2	0
Total 1st Year/ 2nd	18	11	6	35	20	215	50	485	750	2	23	8	0	0	2	0
Total 2nd Year/ 1st	20	8	7	35	23	185	80	485	750	2	11	16	2	2	2	0
Total 2nd Year/ 2nd	19	6	6	31	23	185	80	485	750	2	10	14	0	3	2	0
Total 3rd Year/ 1st	17	10	5	32	20	205	50	495	750	2	6	4	12	3	1	4
Total 3rd Year/ 2nd	15	6	9	30	20	195	150	405	750	2	0	13	3	5	7	0
Total 4th Year/ 1st	20	9	3	32	17	205	60	485	750	3	4	4	11	8	2	0
Total 4th Year/ 2nd	16	6	11	33	17	215	90	445	750	3	0	3	10	5	6	6
Total 5th Year/ 1st	19	11	2	32	17	225	20	505	750	4	0	0	16	5	1	6
Total 5th Year/ 2nd	16	8	8	32	14	245	150	355	750	3	0	0	13	5	5	6
Total of Five Years	178	82	65	325	194	2080	800	4620	7500	25	77	68	67	36	30	22
% of Five Years	**54.8**	**25.2**	**20**	**100**		**27.7**	**10.7**	**62.6**	**100**	**7.69**	**23.69**	**21**	**20.1**	**11.08**	**9.23**	**6.77**
% NARS										**9-12 %**	**20-26 %**	**20-23 %**	**20-22 %**	**9-11 %**	**8-10 %**	**6-8 %**

2.5. Curriculum Mapping

Appendix 1 is dedicated to the curriculum mapping. It aims at insuring that the program courses cover the program ILO's. The courses coordinators prepared a table indicating the program ILO's covered by their courses and the courses subject areas hours. These tables were used to develop the mapping matrix. Program courses/program ILO's.

The mapping matrix showed that the program courses present balanced contribution to the program ILO's which proves the correct adoption of the NARS engineering, August 2009 edition.

2.6. Courses Specifications

The detailed program courses specifications are given in Appendix 2. These courses specifications were revised and approved on November 2009. The contribution of each course to the program ILO's were considered during this revision.

courses studied in Computer Engineering & Information Technology department				
Year	**Semester**	**code**	**name**	**page number**
first Year	first Semester	B111	Mathematics (1)	33
		B131	Physics (1)	37
		B141	Chemistry	41
		B121	Mechanics (1)	45
		M160	Production Eng.(1) Workshop	48
		E111	Intro. to Computers (1)	51
		M150	Engineering Drawing (1)	54
		B101	English Language (1)	57
	second Semester	B112	Mathematics (2)	60
		B132	Physics (2)	64
		B122	Mechanics (2)	68
		M161	Production Eng.(2) Workshop	71
		E112	Introd. to Computers 2	74
		M151	Engineering Drawing 2	77
		B102	English Language (2)	80
Second Year	first Semester	B211	Mathematics (3)	83
		E201	Electric circuit Analysis (1)	86
		B221	Physics (3)	90
		A60	Civil Engineering technology	94
		E210	Computer programming (1)	97
		E220	Instruments & Measurements I	100
		B200	English III	104
		E212	Digital Logic Circuits	107
	second Semester	B212	Mathematics IV	112
		E202	Electrical Circuits Analysis II	115
		E240	Data Structures	119
		M051	Tech of mechanical Engineering	123
		B222	Physics IV	127
		E213	Computer Programming II	131
		B202	History of Science	134
		E221	Instruments & Measurements II	137
Third Year	first Semester	B 311	Mathematics (5)	141
		E 301	Microelectronics (1)	145
		E 361	Operating Systems (1)	148
		E 321	Digital Circuits Design	151
		E 333	Database Management	155
		B 300	English (4)	158
		E 330	Engineering Comp. Application(1)	161
	Second Semester	E 302	Microelectronics (2)	165
		E 303	Digital Signal Processing	169
		E 351	Control Engineering (1)	173
		M360	Industrial Psychology	177
		E 331	Engineering Comp. Application(2)	180
		E 362	Electrical Machines & Power	184
		E 399	Project	187

3. Program Admission Requirements

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

4. Regulations for progression and program completion

➢ Attendance of program is on full-time basis.
➢ A student may be transferred to a following academic year if he/she passes all attended courses but a maximum of two in accumulation – excluding humanity or cultural courses
➢ The humanity and cultural courses are not counted as non-passing courses, but have to be completed before graduation.
➢ The study follows the semester system with two semesters per year, 15 weeks each.

- ➢ The time for the Bachelor degree is four years preceded by a preparatory year.
- ➢ A minimum of 75 % student attendance to lectures, tutorials and laboratory exercises per course is conditional for taking the final exams, in accordance with the Departmental Board recommendation approved by the Faculty Council, otherwise students would be deprived from taking their final exam(s).
- ➢ The student is entitled to re-set failed exam(s) with fellow-students undertaking the course(s) in following term(s).
- ➢ A 65%+ score in re-set exam(s) is reduced to a ceiling of "Pass" grade, except for acceptable excuses.
- ➢ Final-year students who fail no more than two courses plus any number of humanity cultural courses are re-examined in November.
- ➢ If they fail re-set(s), they are entitled to be re-examined with fellow-students undertaking the course(s) in following term(s).
- ➢ Except for those in final-year, students who provide evidence of successfully completing particular courses in parallel academic institutions, which are recognized by the Ministry of Higher Education, may be exempted from attending these courses. This may only take place after a decision from the Academy Chairman, following the Education & Student Affairs Council and the Faculty and Departmental Boards approval respectively; with no desecration of Article (36) of University Regulation Law.
- ➢ The course which is taught in one semester and has one examination mark and more than examination answer sheets, is treated as one-course as regards the course evaluation.
- ➢ 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 year.
- ➢ No mark is recorded for the student who fails to appear in the written examination.

Appendix 3 gives the details of regulations of program progression.

5. Teaching and Learning Methods
Teaching methods
- ▪ Lecture
- ▪ Presentations and Movies
- ▪ Discussions
- ▪ Tutorials
- ▪ Problem solving
- ▪ Brain storming
- ▪ Projects
- ▪ Modeling and Simulation
- ▪ Laboratory Experiment

Learning methods
- ▪ Site visits
- ▪ Self-learning
- ▪ Cooperative
- ▪ Discovering

6. Student Assessment
- ▪ Written exam
- ▪ Quizzes and reports
- ▪ Oral exams
- ▪ Practical
- ▪ Project applied on a practical field problems

- Other assessment methods

7. Program Evaluation

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

Appendix 1

Curriculum Mapping

Appendix A1 Curriculum Mapping

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

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

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

Code	Subject	A	B	C	D
B111	Mathematics (1)	A1,A2,A5	B1,B2,B3,B7	C1,C12	D3,D7
B131	Physics (1)	A1,A2,A3,A4,A13	B1,B2,B3,B7,B13, B17,B20	C1,C6,C12,C16,C17	D1,D2,D3,D4,D5,D6,D7,D8,D9
B141	Chemistry	A1,A3,A4,A5,A6,A8,A11,A12	B1,B2,B3,B4,B6,B8, B10,B12	C1,C2,C3,C5,C8, C12	D1,D2,D3,D4,D5,D7
B121	Mechanics (1)	A1,A3,A4	B1,B2,B3,B4,B11	C1,C2,C7	D1,D2,D3,D9
M160	Production Eng.(1) Workshop	A1,A2,A4	B2,B3,B8,B10	C1,C3,C7	D1,D3,D6
E111	Intro. to Computers (1)	A4,A7,A12,A13,A14, A18	B1,B2,B3,B6,B11, B12,B13	C5,C14,C16	D1,D3,D4,D7
M150	Engineering Drawing (1)	A1,A2,A4,A5	B2,B3,B4,B8	C1,C2,C3	D1,D3,D7
B101	English Language (1)	A9,A10	B4	C11,C12	D1,D2,D3,D4,D6,D7,D8
B112	Mathematics (2)	A1,A3,A5	B1,B2,B3,B4,B7,B11	C1,C12	D1,D3,D7
B132	Physics (2)	A1,A3,A5	B2,B3,B4,B5	C1,C5,C12	D5,D7
B122	Mechanics (2)	A1,A3,A4	B1,B2,B3,B4,B5,B11,B13	C1,C2,C7	D1,D2,D8,D9
M161	Production Eng.(2) Workshop	A1,A2,A4	B2,B3 ,B10	C1,C3,C7	D1,D3,D7,D9
E112	Introd. to Computers 2	A2,A5,A7,A15,A17,A18	B1,B2,B11,B12	C14,C15,C16,C17	D1,D3,D4,D7
M151	Engineering Drawing 2	A1,A2,A4	B3,B8,B9	C1,C3,C4	D3,D9
B102	English Language (2)	A9,A10	B4	C11,C12	D1,D2,D3,D4,D6,D7,D8
B211	Mathematics (3)	A1,A5	B1,B2,B7	C1,C12	D3,D7
E201	Electric circuit Analysis (1)	A1, A2, A3, A4, A5, A6,A8,A15	B1, B2,B4, B5, B6, B7	C1,C3,C5,C6,C9, C10,C11	D1, D2, D3,D6,D7, D9
B221	Physics (3)	A1,A2,A3,A8,A9	B1,B2,B4,B5,B6,B7, B8,B12	C1,C2,C3,C4,C7,C8,C11,C12	D1,D3,D4,D7,D9
A60	Civil Engineering technology	A3,A4,A7,A8	B1,B2,9	C1,C2,C3.C5,C7	D6
E210	Computer programming (1)	A1,A2,A4,A5,A13,A15, A16,A18	B1,B2,B3,B6,B8,B13,B14.B16,B17	C6,C14,C15,C18	D1,D3,D4,D7
E220	Instrumentation and Testing (1)	A1, A4, A14, A15	B1,B3,B5,B6,B7,B9, B10,B11,B13, B14	C2,C3,C5,C15,C16, C17,C18,C20	D1,D3,D6,D8, D9

Code	Subject	A	B	C	D
B200	English (3)	A9,A10	B4	C11,C12	D1,D2,D3,D4,D6,D7,D8
E212	Digital Logic Circuits	A1, A2, A3, A5, A14	B1,B2,B3,B4,B8,B12,B14	C1,C2,C3,C5,C6	D3,D4,D5,D6,D7,D9
B212	Mathematics (4)	A1,A2,A5	B1,B2,B3,B7	C1,C12	D3,D7
E202	Electric circuit Analysis (2)	A1, A2, A3, A4, A5, A6	B1, B2, B3, B4, B5, B6, B7	C1,C2	D1, D2, D3, D7, D9
E240	Data Structure	A1,A2,A3,A4,A5,A9,A12,A16,A18	B1,B2,B4,B8,B12,B14,B17,B18	C1,C2,C3,C5,C6	D1,D2,D3,D4,D6,D7
M051	Mechanical Engineering Tech.	A1,A3,A4,A5	B1,B2,B3,B4,B5,B6,B7,B12	C1,C2,C5,C6,C12	D1,D2,D3,D7,D9
B222	Physics (4)	A1,A2,A3,A8,A9	B1,B2,B4,B5,B6,B7,B8,B12	C1,C2,C3,C4,C7,C11,C12	D1,D3,D4,D7,D9
E213	Computer programming (2)	A1,A2,A4,A13,A15,A16,A18	B1,B2,B3,B6,B16,B17	C6,C14,C15,C18	D1,D3,D4,D7
B202	History of Science and Tech.	A1,A5,A8,A9,A11,A14	B1,B2,B6,B7	C1,C5	D1,D7,D8
E221	Instrumentation and Testing (2)	A1, A4, A14, A15	B1,B3,B5,B6,B7,B9,B10,B11,B13, B14	C2,C3,C5,C15,C16,C17,C18, C20	D1,D3,D6,D8, D9
B311	Mathematics (5)	A1,A3,A5	B1,B2,B3,B4,B7	C1,C12	D1,D3,D7
E301	Microelectronics (1)	A3, A4 , A8 , A13	B2 , B5 , B7	C2,C3	D3, D5 , D6 ,D7
E361	Operating Systems (1)	A1,A3,A4,A5,A8,A13,A14,A15,A18	B1,B2,B5,B9,B11	C1,C3,C10,C12,C14,C15	D2,D3,D6
E321	Digital Circuits Design	A2,A4	B2,B3	C2,C3	D3,D5,D6,D7
E333	Database Management	A1,A3,A4,A5A14,A15,A18	B1,B4,B5,B8,B11,B13,B19	C1,C2,C5,C6,C11,C14,C15,C17,C18, C19	D2,D3,D4,D7
B300	English (4)	A9,A10	B4	C11,C12	D1,D2,D3,D4,D6,D7,D8
E330	Engineering Computer Applic (1)	A1,A2,A5,A12,A13,A16	B1,B2,B3,B5,B7,B13,B14,B17,B18	C1,C2,C3,C4,C5,C6,C7,C14,C15	D1,D3,D4,D5,D7,D9
E302	Microelectronics (2)	A1, A3,A4,A15	B2,B3,B5	C1,C7,C15,C18	D2,D3,D6,D7,D9
E303	Digital Signal Processing	A2, A5, A8, A10	B1, B3, B7, B11, B14, B15	C2, C5, C6, C12, C14,C15	D3, D4,D7
E351	Control Engineering (1)	A1, A4, A5, A16	B1, B2, B3, B7	C1, C2, C3, C5, C12, C13, C15	D1, D3, D7, D9
M360	Industrial Psychology	A9,A11	B4,B9	C1,C2,C9	D5,D6
E331	Engineering Computer Applic (2)	A1,A2,A3,A4,A5,A12,A13,A15	B1,B2,B3,B4,B5,B6,B7,B8,B9	C1,C2,C3,C4,C5,C6,C13,C14,C15	D1,D3,D4,D5,D7,D9
E362	Electrical Machines & Power	A1,A4,A5,A7,A8,A12	B2,B3,B5,B6,B7,B9,B11,B13	C1,C4,C5,C8	D2,D3,D6,D7
E399	Project	A1,A3,A4,A5,A6,A7,A8,A9,A10,A11,A12,A13,A14,A15,A16,A17	B1,B2,B3,B4,B5,B10,B11,B12,B13,B16	C1,C2,C5,C6,C9,C10,C11,C12,C16	D1,D2,D3,D5,D6,D7,D8,D9
B411	Mathematics (6)	A1,A5	B1,B2,B3,B11	C1,C4	D3,D4,D7
E414	Computer Architecture (1)	A1,A2,A3,A4,A5,A8,A10,A13,A15	B1,B2,B3,B4,B5,B6,B7,B12,B13,B17	C1,C2,C3,C4,C6,C13,C14,C15	D1,D3D,4,D5,D6,D7,D9
E421	Microprocessor Based Systems (1)	A4,A5,A9,A14,A15,A16,A18	B1,B2,B3,B4,B5,B6,B9,B11,B12,B13, B16,B17	C5,C6,C12,C14,C15	D3,D5,D7,D9
B401	Environmental Sciece and Technology	A9,A10	B4,B9,B12	C1	D1,D3,D7,D9
E461	Operating Systems (2)	A1,A2,A3,A4,A5,A8,A14,A15,A17	B4,B5,B9,B13,B17	C1,C3,C4,C5,C6,C13,C15	D1,D2,D3,D4,D7,D8,D9

Code	Subject	A	B	C	D
E451	Digital Image Processing	A1,A2,A3,A5,A12,A15,A16	B1,B2,B7,B12,B13,B15,B16,B17	C1,C2,C3,C4,C5,C7,C13,C14,C15	D3,D4,D6,D7,D8,D9
E412	Information Systems	A1,A2,A3,A7,A8,A9,A12,A18,A19,A20	B1,B2,B3,B4,B12,B14,B18,B19,B20.B22,B23	C1,C2,C3,C4,C5,C6,C13,C14,C15,C17,C18	D1,D3,D4,D5,D6,D7,D9
E460	Software Engineering	A1,A3,A4,A6,A7,A8,A12,A13,A15,A18	B1,B2,B4,B5,B7,B9,B14,B17	C1,C2,C4,C6,C9,C10,C11,C12,C13,C14	D1,D3,D4,D6,D7,D8,D9
E422	Microprocessor Based Systems (2)	A4,A5,A9,A14,A15,A16,A18	B1,B2,B3,B4,B5,B6,B9,B11,B12,B13,B16,B17	C5,C6,C12,C14,C15	D3,D5,D7,D9
E432	Electronic Measurements	A5,A10,A15	B2,B3,B12	C3,C12,C15,C20	D4,D6,D7
E462	Computer Graphics	A1,A2,A4,A5,A8,A12,A15,A16	B1,B2,B3,B7,B8,B10,B13	C1,C2,C3,C4,C5,C6,C7,C11,C13,C15	D1,D3,D4,D6,D7,D8,D9
B412	International Business Management	A4,A5,A7,A8,A10,A12	B7	C2,C6,C8,C9	D1,D2,D3,,D7,D8,D9
E400	Summer Training	A5,A6,A7,A13,A14,A15,A16,A17	B1,B2,B3,B4,B6,B7,B8,B10,B11,B12,B13,B14,B17	C1,C2,C5,C7,C8,C9,C10,C11,C13,C14,C16	D1,D2,D3,D4,D6,D7,D8,D9
M561	Engineering Economics	A1,A2,A5,A7,	B1,B2,B7,B8	C1,C5,C6,C7,C9	D1,D2,D3,D7,D9
E512	Computer Architecture (2)	A1,A3,A4,A12,A13,A15	B2,B3,B4,B6,B7,B15	C1,C3,C4,C9,C11	D1,D3,D4,D5,D6,D7
E515	Advanced Computer Systems	A1,A2,A3,A5,A8,A13,A15,A17	B1,B2,B3,B5,B9,B13,B14	C5,C6,C7,C12,C14,C16	D3,D4,D7,D9
E521	Distributed Computer Systems	A2,A3,A5,A8,A12,A13,A14,A15,A17	B2,B3,B4,B5,B6,B13,B14,B17,B21	C1,C2,C3,C5,C6,C14,C16,C17	D1,D3,D4,D5,D6,D7,D9
E530	Data Transmission & Computer Networks	A1,A2,A3,A5,A6,A8,A12,A15,A17,A19,A20	B1,B4,B5,B7,B14,B17,B21	C1,C2,C3,C5,C6,C10,C11,C19	D1,D3,D4,D5,D6,D7,D9
E538c	Neural Networks	A1,A2,A3,A4,A5,A11,A12,A13,A15,A17	B1,B2,B3,B4,B5,B7,B8,B11,B13,B14,B15	C1,C2,C5,C6,C7,C14,C15	D1,D3,D4,D5,D7,D9
B 512	Laws and Regulations for Engineers	A5,A6,A9,A10,A11	B3,B4,B9,B12	C1,C5	D1,D3,D7,D9
E 504	Artificial Intelligence	A1,A3,A5,A13,A14,A15	B2,B3,B4,B14,B16	C3,C11,C12,C13,C14	D1,D3,D4,D7,D9
E 531	Data Transmission & Computer Networks(2)	A1,A2,A3,A4,A6,A8,A15,A17,A19,A20	B1,B4,B5,B21	C1,C2,C3,C4,C8,C13,C16,C19	D4,D6,D7,D8,D9
E 534	Computer performance	A1,A2,A3,A8,A9,A12,A13,A14,A15,A16	B1,B2,B3,B5,B6,B8,B11,B12,B13,B14,B18,B19,B21	C1,C2,C3,C4,C5,C6,C13,C14,C15,C19,C20	D1,D3,D4,D5,D7,D9
E 538b	Modling and simulation	A1,A2,A3,A4,A5,A13	B1,B2,B3,B7,B8	C1,C2,C5,C6,C7	D1,D3,D4,D5,D7,D9
E 599	Project	A4,A5,A6,A8,A14	B2,B3,B5,B7,B9,B10,B11,B12,B13,B15	C1,C2,C3,C7,C8,C9,C10,C11,C13,C14,C15	D1,D3,D7

Curriculum Mapping Matrix

Appendix 2.2, Table-1a, Curriculum Mapping Matrix (As)

Code	Subject	A																			
		01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
B111	Mathematics (1)	1	1			1															
B131	Physics (1)	1	1	1	1									1							

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Code	Subject	A																			
------	---------	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
B141	Chemistry	1		1	1	1	1		1			1	1								
B121	Mechanics (1)	1		1	1																
M160	Production Eng.(1) Workshop	1	1		1																
E111	Intro. to Computers (1)				1			1					1	1	1				1		
M150	Engineering Drawing (1)	1	1		1	1															
B101	English Language (1)									1	1										
B112	Mathematics (2)	1		1		1															
B132	Physics (2)	1		1		1															
B122	Mechanics (2)	1		1	1																
M161	Production Eng.(2) Workshop	1	1		1																
E112	Introd. to Computers 2		1			1		1								1		1	1		
M151	Engineering Drawing 2	1	1		1																
B102	English Language (2)									1	1										
B211	Mathematics (3)	1				1															
E201	Electric circuit Analysis (1)	1	1	1	1	1	1		1						1						
B221	Physics (3)	1	1	1						1	1										
A60	Civil Engineering technology			1	1			1	1												
E210	Computer programming (1)	1	1		1	1								1		1	1		1		
E220	Instrumentation and Testing (1)	1			1									1	1						
B200	English (3)									1	1										
E212	Digital Logic Circuits	1	1	1		1									1						
B212	Mathematics (4)	1	1			1															
E202	Electric circuit Analysis (2)	1	1	1	1	1	1														
E240	Data Structure	1	1	1	1	1			1			1					1		1		
M051	Mechanical Engineering Tech.	1		1	1	1															
B222	Physics (4)	1	1	1						1	1										
E213	Computer programming (2)	1	1		1									1		1	1		1		
B202	History of Science and Tech.	1				1			1	1		1			1						
E221	Instrumentation and Testing (2)	1			1										1	1					
B311	Mathematics (5)	1		1		1															
E301	Microelectronics (1)		1	1					1					1							
E361	Operating Systems (1)	1		1	1	1			1					1	1	1			1		
E321	Digital Circuits Design		1		1																

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Code	Subject	A																			
		01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
E333	Database Management	1		1	1	1									1	1			1		
B300	English (4)									1	1										
E330	Engineering Computer Applic (1)	1	1			1							1	1			1				
E302	Microelectronics (2)	1		1	1											1					
E303	Digital Signal Processing		1			1			1		1										
E351	Control Engineering (1)	1			1	1											1				
M360	Industrial Psychology									1		1									
E331	Engineering Computer Applic (2)	1	1	1	1	1							1	1		1					
E362	Electrical Machines & Power	1			1	1		1	1				1								
E399	Project	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
B411	Mathematics (6)	1				1															
E414	Computer Architecture (1)	1	1	1	1	1			1		1			1		1					
E421	Microprocessor Based Systems (1)				1	1				1					1	1	1		1		
B401	Environmental Sciece and Technology									1	1										
E461	Operating Systems (2)	1	1	1	1	1			1						1	1		1			
E451	Digital Image Processing	1	1	1		1							1			1	1				
E412	Information Systems	1	1	1				1	1	1			1						1	1	1
E460	Software Engineering	1		1	1		1	1	1				1	1		1			1		
E422	Microprocessor Based Systems (2)				1	1				1					1	1	1		1		
E432	Electronic Measurements				1						1					1					
E462	Computer Graphics	1	1		1	1			1				1			1	1				
B412	International Business Management				1	1		1	1		1		1								
E400	Summer Training				1	1	1						1	1	1	1	1				
M561	Engineering Economics	1	1			1		1													
E512	Computer Architecture (2)	1		1	1								1	1		1					
E515	Advanced Computer Systems	1	1	1		1			1						1		1		1		
E521	Distributed Computer Systems		1	1		1			1				1	1	1	1		1			
E530	Data Transmission & Computer Networks	1	1	1		1	1		1				1			1		1		1	1
E538c	Neural Networks	1	1	1	1	1						1	1	1		1		1			
B 512	Laws and Regulations for Engineers				1	1				1	1	1									
E 504	Artificial Intelligence	1		1		1									1	1	1				
E 531	Data Transmission & Computer Networks(2)	1	1	1	1		1		1							1		1		1	1
E 534	Computer performance	1	1	1				1	1				1	1	1	1	1				
E 538b	Modling and simulation	1	1	1	1	1								1							
E 599	Project				1	1	1		1						1						

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Appendix 2.2, Table-1b, Curriculum Mapping Matrix (Bs)

Code	Subject	B																						
		01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
B111	Mathematics (1)	1	1	1				1																
B131	Physics (1)	1	1	1				1						1				1			1			
B141	Chemistry	1	1	1	1		1		1		1		1											
B121	Mechanics (1)	1	1	1	1							1												
M160	Production Eng.(1) Workshop		1	1					1		1													
E111	Intro. to Computers (1)	1	1	1			1					1	1	1										
M150	Engineering Drawing (1)		1	1	1				1															
B101	English Language (1)				1																			
B112	Mathematics (2)	1	1	1	1			1				1												
B132	Physics (2)		1	1	1	1																		
B122	Mechanics (2)	1	1	1	1	1						1		1										
M161	Production Eng.(2) Workshop		1	1							1													
E112	Introd. to Computers 2	1	1									1	1											
M151	Engineering Drawing 2			1					1	1														
B102	English Language (2)				1																			
B211	Mathematics (3)	1	1					1																
E201	Electric circuit Analysis (1)	1	1		1	1	1	1																
B221	Physics (3)	1	1		1	1	1	1	1				1											
A60	Civil Engineering technology	1	1							1														
E210	Computer programming (1)	1	1	1			1		1					1	1		1	1						
E220	Instrumentation and Testing (1)	1		1		1	1	1		1	1	1		1	1									
B200	English (3)				1																			
E212	Digital Logic Circuits	1	1	1	1				1				1		1									
B212	Mathematics (4)	1	1	1				1																
E202	Electric circuit Analysis (2)	1	1	1	1	1	1	1																
E240	Data Structure	1	1		1				1				1		1			1	1					
M051	Mechanical Engineering Tech.	1	1	1	1	1	1	1					1											
B222	Physics (4)	1	1		1	1	1	1	1				1											
E213	Computer programming (2)	1	1	1			1										1	1						
B202	History of Science and Tech.	1	1					1	1															
E221	Instrumentation and Testing (2)	1		1		1	1	1		1	1	1		1	1									

Code	Subject	B																						
		01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
B311	Mathematics (5)	1	1	1	1			1																
E301	Microelectronics (1)		1			1		1																
E361	Operating Systems (1)	1	1			1				1		1												
E321	Digital Circuits Design		1	1																				
E333	Database Management	1			1	1			1			1		1						1				
B300	English (4)	`			1																			
E330	Engineering Computer Applic (1)	1	1	1		1		1						1	1			1	1					
E302	Microelectronics (2)		1	1		1																		
E303	Digital Signal Processing	1		1				1				1			1	1								
E351	Control Engineering (1)	1	1	1				1																
M360	Industrial Psychology				1					1														
E331	Engineering Computer Applic (2)	1	1	1	1	1	1	1	1	1														
E362	Electrical Machines & Power		1	1		1	1	1		1		1		1										
E399	Project	1	1	1	1	1					1	1	1	1			1							
B411	Mathematics (6)	1	1	1								1												
E414	Computer Architecture (1)	1	1	1	1	1	1	1					1	1				1						
E421	Microprocessor Based Systems (1)	1	1	1	1	1	1			1		1	1	1			1	1						
B401	Environmental Sciece and Technology				1					1			1											
E461	Operating Systems (2)				1	1				1				1				1						
E451	Digital Image Processing	1	1					1					1	1		1	1	1						
E412	Information Systems	1	1	1	1								1		1				1	1	1		1	1
E460	Software Engineering	1	1		1	1		1		1					1			1						
E422	Microprocessor Based Systems (2)	1	1	1	1	1	1			1		1	1	1			1	1						
E432	Electronic Measurements		1	1									1											
E462	Computer Graphics	1	1	1				1	1		1			1										
B412	International Business Management							1																
E400	Summer Training	1	1	1	1		1	1	1		1	1	1	1	1			1						
M561	Engineering Economics	1	1					1	1															
E512	Computer Architecture (2)		1	1	1		1	1								1								
E515	Advanced Computer Systems	1	1	1		1				1				1	1									
E521	Distributed Computer Systems		1	1	1	1	1							1	1			1				1		
E530	Data Transmission & Computer Networks	1			1	1		1							1			1				1		
E538c	Neural Networks	1	1	1	1	1		1	1			1		1	1	1								

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Code	Subject	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
B 512	Laws and Regulations for Engineers			1	1				1				1											
											B													
		01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
E 504	Artificial Intelligence		1	1	1										1		1							
E 531	Data Transmission & Computer Networks(2)	1			1	1																1		
E 534	Computer performance	1	1	1		1	1		1			1	1	1	1				1	1		1		
E 538b	Modling and simulation	1	1	1				1	1															
E 599	Project		1	1		1		1		1	1	1	1	1		1								

Appendix 2.2, Table-1c, Curriculum Mapping Matrix(C's)

Code	Subject	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
													C								
B111	Mathematics (1)	1											1								
B131	Physics (1)	1					1						1				1	1			
B141	Chemistry	1	1	1		1			1				1								
B121	Mechanics (1)	1	1					1													
M160	Production Eng.(1) Workshop	1		1				1													
E111	Intro. to Computers (1)					1									1		1				
M150	Engineering Drawing (1)	1	1	1																	
B101	English Language (1)											1	1								
B112	Mathematics (2)	1											1								
B132	Physics (2)	1				1							1								
B122	Mechanics (2)	1	1					1													
M161	Production Eng.(2) Workshop	1		1				1													
E112	Introd. to Computers 2														1	1	1	1			
M151	Engineering Drawing 2	1		1	1																
B102	English Language (2)											1	1								
B211	Mathematics (3)	1											1								
E201	Electric circuit Analysis (1)	1		1		1	1			1	1	1									
B221	Physics (3)	1	1	1	1			1	1			1	1								
A60	Civil Engineering technology	1	1	1		1		1													
E210	Computer programming (1)						1								1	1			1		
E220	Instrumentation and Testing (1)		1	1		1									1	1	1	1			1
B200	English (3)											1	1								

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Code	Subject	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
E212	Digital Logic Circuits	1	1	1		1	1														

C

Code	Subject	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
B212	Mathematics (4)	1											1								
E202	Electric circuit Analysis (2)	1	1																		
E240	Data Structure	1	1	1		1	1														
M051	Mechanical Engineering Tech.	1	1			1	1						1								
B222	Physics (4)	1	1	1	1			1				1	1								
E213	Computer programming (2)						1								1	1			1		
B202	History of Science and Tech.	1				1															
E221	Instrumentation and Testing (2)		1	1		1									1	1	1	1			1
B311	Mathematics (5)	1											1								
E301	Microelectronics (1)		1	1																	
E361	Operating Systems (1)	1		1							1		1		1	1					
E321	Digital Circuits Design		1	1																	
E333	Database Management	1	1			1	1					1			1	1		1	1	1	
B300	English (4)											1	1								
E330	Engineering Computer Applic (1)	1	1	1	1	1	1	1							1	1					
E302	Microelectronics (2)	1						1							1				1		
E303	Digital Signal Processing		1			1	1						1		1	1					
E351	Control Engineering (1)	1	1	1		1						1	1		1						
M360	Industrial Psychology	1	1							1											
E331	Engineering Computer Applic (2)	1	1	1	1	1	1							1	1	1					
E362	Electrical Machines & Power	1			1	1			1												
E399	Project	1	1			1	1			1	1	1	1				1				
B411	Mathematics (6)	1			1																
E414	Computer Architecture (1)	1	1	1	1		1							1	1	1					
E421	Microprocessor Based Systems (1)					1	1						1		1	1					
B401	Environmental Sciece and Technology	1																			
E461	Operating Systems (2)	1		1	1	1	1							1		1					
E451	Digital Image Processing	1	1	1	1	1		1						1	1	1					
E412	Information Systems	1	1	1	1	1	1							1	1	1		1	1		
E460	Software Engineering	1	1		1		1			1	1	1	1	1	1						
E422	Microprocessor Based Systems (2)				1	1							1		1	1					

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Code	Subject	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
E432	Electronic Measurements			1									1		1						1

| Code | Subject | C | | | | | | | | | | | | | | | | | | | |
		01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
E462	Computer Graphics	1	1	1	1	1	1	1					1		1		1				
B412	International Business Management		1				1		1	1											
E400	Summer Training	1	1			1		1	1	1	1	1		1	1		1				
M561	Engineering Economics	1				1	1	1		1											
E512	Computer Architecture (2)	1		1	1					1		1									
E515	Advanced Computer Systems					1	1	1					1		1		1				
E521	Distributed Computer Systems	1	1	1		1	1								1		1	1			
E530	Data Transmission & Computer Networks	1	1	1		1	1				1	1								1	
E538c	Neural Networks	1	1			1	1	1						1	1						
B 512	Laws and Regulations for Engineers	1				1															
E 504	Artificial Intelligence			1								1	1	1	1						
E 531	Data Transmission & Computer Networks(2)	1	1	1	1				1					1			1			1	
E 534	Computer performance	1	1	1	1	1	1							1	1	1				1	1
E 538b	Modling and simulation	1	1			1	1	1													
E 599	Project	1	1	1				1	1	1	1	1		1	1	1					

Appendix 2.2, Table-1d, Curriculum Mapping Matrix (Ds)

| Code | Subject | D | | | | | | | | |
		01	02	03	04	05	06	07	08	09
B111	Mathematics (1)			1				1		
B131	Physics (1)	1	1	1	1	1	1	1	1	1
B141	Chemistry	1	1	1	1	1		1		
B121	Mechanics (1)	1	1	1						1
M160	Production Eng.(1) Workshop	1		1			1			
E111	Intro. to Computers (1)	1		1	1			1		
M150	Engineering Drawing (1)	1		1				1		
B101	English Language (1)	1	1	1	1		1	1	1	
B112	Mathematics (2)	1		1				1		
B132	Physics (2)					1		1		
B122	Mechanics (2)	1	1						1	1
M161	Production Eng.(2) Workshop	1		1				1		1
E112	Introd. to Computers 2	1		1	1			1		

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Code	Subject	D								
M151	Engineering Drawing 2			1						1
		01	02	03	04	05	06	07	08	09
B102	English Language (2)	1	1	1	1		1	1	1	
B211	Mathematics (3)			1				1		
E201	Electric circuit Analysis (1)	1	1	1			1	1		1
B221	Physics (3)	1		1	1			1		1
A60	Civil Engineering technology						1			
E210	Computer programming (1)	1		1	1			1		
E220	Instrumentation and Testing (1)	1		1			1		1	1
B200	English (3)	1	1	1	1		1	1	1	
E212	Digital Logic Circuits			1	1	1	1	1		1
B212	Mathematics (4)			1				1		
E202	Electric circuit Analysis (2)	1	1	1				1		1
E240	Data Structure	1	1	1	1		1	1		
M051	Mechanical Engineering Tech.	1	1	1				1		1
B222	Physics (4)	1		1	1			1		1
E213	Computer programming (2)	1		1	1			1		
B202	History of Science and Tech.	1						1	1	
E221	Instrumentation and Testing (2)	1		1			1		1	1
B311	Mathematics (5)	1		1				1		
E301	Microelectronics (1)			1		1	1	1		
E361	Operating Systems (1)		1	1			1			
E321	Digital Circuits Design			1		1	1	1		
E333	Database Management		1	1	1			1		
B300	English (4)	1	1	1	1		1	1	1	
E330	Engineering Computer Applic (1)	1		1	1	1		1		1
E302	Microelectronics (2)		1	1			1	1		1
E303	Digital Signal Processing			1	1			1		
E351	Control Engineering (1)	1		1				1		1
M360	Industrial Psychology					1	1			
E331	Engineering Computer Applic (2)	1		1	1	1		1		1
E362	Electrical Machines & Power		1	1			1	1		
E399	Project	1	1	1	1	1	1	1	1	1

Code	Subject	D								
		01	02	03	04	05	06	07	08	09
B411	Mathematics (6)			1	1			1		
E414	Computer Architecture (1)	1		1	1	1	1	1		1
E421	Microprocessor Based Systems (1)			1		1		1		1
B401	Environmental Sciece and Technology	1		1				1		1
E461	Operating Systems (2)	1	1	1	1			1	1	1
E451	Digital Image Processing			1	1		1	1	1	1
E412	Information Systems	1		1	1	1	1	1		1
E460	Software Engineering	1		1	1		1	1	1	1
E422	Microprocessor Based Systems (2)			1		1		1		1
E432	Electronic Measurements				1		1	1		
E462	Computer Graphics	1		1	1		1	1	1	1
B412	International Business Management	1	1	1				1	1	1
E400	Summer Training	1	1	1	1		1	1	1	1
M561	Engineering Economics	1	1	1				1		1
E512	Computer Architecture (2)	1		1	1	1	1	1		
E515	Advanced Computer Systems			1	1			1		1
E521	Distributed Computer Systems	1		1	1	1	1	1		1
E530	Data Transmission & Computer Networks	1		1	1	1	1	1		1
E538c	Neural Networks	1		1	1	1		1		1
B 512	Laws and Regulations for Engineers	1		1				1		1
E 504	Artificial Intelligence	1		1	1			1		1
E 531	Data Transmission & Computer Networks(2)				1		1	1	1	1
E 534	Computer performance	1		1	1	1		1		1
E 538b	Modling and simulation	1		1	1	1		1		1
E 599	Project	1		1				1		

The preceding four tables includes the mapping matrix relating the program courses with the program ILO's. The program ILO's contributed by each course were determined in the course specification, Appendix 2. These tables showed that the program courses gave balanced coverage of the program ILO's.

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Appendix 2

Course Specifications

Modern Academy for Engineering & Technology

Basic Sciences Department
Course Specification
B 111: Mathematics 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

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

Department offering the course: Basic Sciences Department
Date of specifications approval: September, 2015

B - Basic Information

Title: Mathematics I	**Code:** B111	**Level:** First year	Semester: First
Total hours: 6 hrs	Lectures: 4 hrs	Tutorial: 2 hrs	Practical: --

C - Professional Information

1 – Course Learning Objectives

The main objective of this course is to introduce the main concepts of Differential calculus and modern algebra and their applications.

2 - Intended Learning Outcomes (ILOS)

A - Knowledge and understanding
On successful completion of the course, the student should demonstrate knowledge and understanding of:
a1- Rules of limits and continuity of functions of one variable. (A1)
a2- Differentiation concepts. (A1)
a3- Rules of Applications of differential calculus used engineering. (A1, A5)
a4- Basic concepts of mathematical logic and apply it to applications. (A1, A5)
a5- Relations and mappings. (A1)
a6- Properties of Algebraic structure and its applications. (A1)

B - Intellectual skills
By the end of the course the student should be able to:
b1- Solve problems on limits, continuity and differentiate all continuous function. (B1, B2)
b2- Use differential calculus to solve applied Engineering Models. (B1, B2, B7)
b3- Use mathematical logic solve applied Engineering Models. (B1, B2, B7)
b4- Solve problems on relations and mapping used in different applications. (B1, B3)
b5- Use Algebraic structure used in different applications. (B1, B3)

C - Professional and practical skills

By the end of the course the student should be able to:
    c1- Apply differential calculus in mechanics and electronics. (C1, C12)

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

Course Contribution in the Program ILO's

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

3 – Contents

Topic	Lecture hours	Tutorial hours
Calculus		
Function limit continuity	4	2
Derivatives	4	4
Inverse function and trigonometric function	4	2
Exponential and Logarithmic function	4	2
Hyperbolic and inverse hyperbolic functions	4	2
Application of differential calculus	10	3
Modern Algebra		
Sets	4	2
Mathematical logic with applications	4	2
Relation	6	3
Mapping	6	3
Algebraic structure	6	3
Final Revision	4	2
Total hours	**60**	**30**

4 - Teaching and Learning and Assessment methods:

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

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Quizzes, assignments, term paper	Weekly	15
Mid-Term Exam	7-th Week	15
Written Exam	Sixteenth week	70
Total		100

6- List of References

6-1 Course Notes:
Osama El-Gayar, Differential calculus, Lecture Notes, Modern Academy, 2011
Mohammad Khalifa, Modern Algebra, Lecture Notes, Modern Academy, 2011

6-2 Required books
B. S. Votsa, "Modern Algebra", 2-nd Edition, New Age International Limited Publisher, New Delhi, 2010.
6-3 Recommended books

E. W. Swokoski, "Calculus", 6-th Edition, PWS Publishing Company, Boston, 1994.

6-4 Periodicals, Web sites, etc.

www.mathwords.com ,

www.17calculus.com   ,

 www.sosmath.com ..

7- Facilities Required for Teaching and Learning

- Library
- Internet

Course coordinator: **Dr. Sabry Abd El-Aziz**

Head of the Department: **Prof. Dr. Lila Soliman**

Date: **September, 2015**

Modern Academy for Engineering & Technology
Basic Sciences Department
Course Specification
B131: Physics I

A- Affiliation

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

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

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

B - Basic Information

Title: Physics1   **Code: B 131**   **Level:** First year**.**   **Semester:** First**.**
Teaching Hours: 5   **Lectures: 2**   **Tutorial: 1**   **Practical: 2**

C - Professional Information

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

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

B - Intellectual skills
On successful completion of the course, the student should be able to.

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

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

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

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

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

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

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

C - Professional and practical skills

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

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

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

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

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

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

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

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

D - General and transferable skills

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

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

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

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

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

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

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

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A2, A3, A4, A13
B	Intellectual skills	B1, B2, B3, B7, B13, B17, B20
C	Professional and practical skills	C1, C6, C12, C16, C17
D	General and transferable skills	D1, D2, D3, D4, D5,D6,D7,D8,D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
Rotational motion, angular displacement, velocity, acceleration.	2		
Relation between linear and angular quantities.	1	2	4
Applications on rotational motion.	2	1	
Universal gravitational law.	1	1	2
Kepler's laws.	2	1	
Gravitational energy.	1		
Escape speed and orbital energy.	1	1	

Topic	Lecture hours	Tutorial hours	Practical hours
Elasticity: Linear, and shear deformation.	1		2
Bulk deformation, and energy stored in a wire.	2	2	4
Characteristics of fluids and stream lines.	1	1	2
Fundamental laws of fluid	2	1	
Applications on Bernoulli's equation.	2	1	2
Viscosity and Poiseulli's law.	1	1	2
Heat transfer by convection.	1		
Heat transfer by conduction.	2	1	2
Work and heat in thermodynamic system.	1		
First law of thermodynamic.	1		
Isothermal expansion of gases and Molar specific heat.	2	1	4
Mathematical representation of waves and speed of transverse waves.	2		2
The principle of superposition.	1		
Standing waves and Sound waves.	2	1	4
Total hours	**30**	**15**	**30**

4 - Teaching and Learning and Assessment methods:

Category	Course ILO's	Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments	Researches and Reports	Modeling and Simulation	Written Exam	Practical Exam	Quizes	Term papers	Assignments
Knowledge	a1	1		1	1	1	1	1		1	1	1	1	1
	a2	1		1	1	1	1	1		1	1	1	1	1
	a3	1		1	1	1	1	1		1	1	1	1	1
	a4	1		1	1	1	1	1		1	1	1	1	1
	a5	1		1	1	1	1	1		1	1	1	1	1
	a6	1		1	1	1	1	1		1	1	1	1	1
	a7	1		1	1	1	1	1		1	1	1	1	1
	a8	1		1	1	1	1	1		1	1	1	1	1
	a9	1		1	1	1	1	1		1	1	1	1	1
	a10	1		1	1	1	1	1		1	1	1	1	1
Intellectual	b1	1		1	1	1	1	1		1	1	1	1	1
	b2	1		1	1	1	1	1		1	1	1	1	1
	b3	1		1	1	1	1	1		1	1	1	1	1
	b4	1		1	1	1	1	1		1	1	1	1	1
	b5	1		1	1	1	1	1		1	1	1	1	1
	b6	1		1	1	1	1	1		1	1	1	1	1
	b7	1		1	1	1	1	1		1	1	1	1	1
Applied	c1			1	1	1	1	1		1	1	1	1	1
	c2						1			1				1
	c3						1			1				
	c4						1			1				
	c5						1			1				
	c6						1			1				

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	c7						1										1				
General	d1	1	1	1			1					1									
	d2		1	1		1						1								1	
	d3	1		1		1	1					1							1	1	
	d4					1											1	1	1		1
	d5		1			1						1							1		
	d6					1						1					1	1	1	1	1

5- Assessment Timing and Grading:

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

6- List of references:

6-1 Course notes:
- M. El- Tawab Kamal , Abo- Elyzeed B. Abo- Elyzeed, Marwa Yahia Shoeib and Nagat A. Salam Elmahdy, Physics 1- Properties of Matter Lecture Notes, Modern Academy, 2010.
- M. El- Tawab Kamal , Abo- Elyzeed B. Abo- Elyzeed, Marwa Yahia Shoeib and Nagat A. Salam Elmahdy, Physics Lab, Modern Academy, 2010.

6-2 Required books
Raymond A. Serway, Physics for Scientists and Engineers, Thomson Brooks, 2004; 6th Edition.

6-3 Recommended books:
Halliday, David, Robert Resnick, Jearl Walker. Fundamentals of Physics, 7th ed. Hoboken, N.J.: John Wiley and Sons. 2005.

6-4 Periodicals, Web sites, etc.
http.www.saunderscollege.cpm/physics
http://en.wikipedia.org/wiki/Bernoul/principle
http://www.physicsclassroom.com/calcpad/circgrav/
http://physicsworld.com/
http://www.britannica.com/science/wave-motion
http://physics.info/

7- Facilities required for teaching and learning:
- Library
- Computer, Internet, and Data Show
- Laboratories (Lab 1, Lab 2).

Course coordinator: Dr. Nagat A. Elmahdy
Head of the Department: Prof. Dr. Laila Soliman
Date: September, 2015

Modern Academy for Engineering & Technology
Basic Sciences Department
Course Specification
B141: Chemistry

A- Affiliation

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

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

Department offering the course: Basic Scienc Department

Date of specifications approval: September, 2015

B - Basic information

Title: Chemistry **Code:** B141 **Level:** First year. **Semester**: First
Hours Total 4 hrs **Lectures** 2 hrs **Tutorial** - **Practical** 2 hr

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 liquidation, Electro chemistry and its applications, thermo chemistry and its applications, solutions and antifreezes to understand some of chemical industries in different fields Such as polymers, lubricants, Soaps and detergents, petrochemicals, cement Industry, water treatments and Desalination.

2 - Intended Learning Outcomes (ILOS)

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

b - Intellectual skills:
On successful completion of the course, the student should be able to.
b1- Apply chem. Principles and analytical thinking to problems of Gases, Liquids and electrochemistry and determine its effective solutions.(B1,B2,B8,B12)
b2- Select and develop appropriate Some petrochemical Technologies.(B6)
b3- Exercise professional judgment with respect to commercial and technical risks.(B1)

b4- Overlap different scientific subjects to reach a new scientific systems with a better quality.(B1,B3.B4,B12,B10)

b5-Think in a creative new scientific ideas which are not exist in present time to be used in the fee ten line the field of development of energy recourses, pollution problem, new industrial products.(B3, B12)

b6- Select appropriate solutions for corrosion problems based on analytical thinking.(B1,B2,B6,B8)

b7- Consider the applicability, economy and risk management.(B4)

b8-Maintain a systematic and methodic approach in dealing with new advanced industrial products.(B1)

c - Professional and practical skills:
On successful completion of the course, the student should be able to:

c1-Apply knowledge of scientific equipment and instrumentation competently to determine known concentration and solve its problem.(C1,C5)

c2- Employ computational facilities, measuring instruments, Laboratory tools and equipment to design an experiment to treat underground water and make it safe for Human use. (C1,C5)

c3- Improve plan and execute project work including the preparation of descriptive and interpretative technical reports.(C2,C3,C5,C8)

c4- Create and design for a certain system using the subject information given during.(C2,C3,C8)

c5- Improve the designed system to be compatible with Eng. Conditions.(C2,C3,C8)

c6- Apply experimental facilities to investigate the system performance.(pH and water hardness degree).(C2,C3,C5,C8)

c7- Prepare and present technical materials.(Soaps, detergents, and some polymeric samples).(C2)

c8- Observe, record and analyze data in lab. As well as in Field.(Lab Fresh water and undergrawnd water).(C5)

c9- Use appropriate tools to measure system performance.(C5)

c10- Present work both in written and oral form.(C12)

d - General and transferable skills:
On successful completion of the course, the student should be able to:

d1- Improving own learning and performance, personal skills, working with others.(D1,D2,D3)

d2- Search for information from references, journals and internet.(D3)

d3- Write technical reports and prepare convenient presentations.(D5)

d4- Use the E-mail for communication.(D3,D4,D7)

Course Contribution in the Program ILO's

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

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
Gas law and gas liquefaction.	4	-	-
Liquid state, Refrigeration & heat pump.	4	-	-
Electrochemistry &Metallic corrosion.	4	-	-
Solution & Antifreezes	2	-	-
Thermo chemistry & solar heat, Rocket.	2	-	-
Pollution	2	-	-
Water treatment and destitution	2	-	10
Polymer and Industry	2	-	-
Fuels and combustion	2	-	-
Chemistry and tech. of petroleum new trends in energy resource	2	-	-
Industrial detergents chemistry such cement , lubricants , soap	2	-	4

Acid - base titration	-	-	10
Revision and sheets	2	-	6
Total hours	**30**	**-**	**30**

4 – Teaching, Learning and Assessement methods:

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

5- Assessment Timing and Grading:

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

6- List of references:
6-1 Course notes
Goda,S. Chemistry for engineering & applied sciences, Lecture note, MAM Press, 2014.

.
6-2 Required books:
W. Steedman, R. B. Snadden, Iain Howe Anderson, Chemistry for the engineering and applied sciences, Pergamon Press, 1980.
6-3 Recommended books: Non

6-4 Periodicals, Web sites, etc.

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

7- Facilities required for teaching and learning:
- Chemistry lab.
- Computer, Data show.
- Computer programs.

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

Modern Academy for Engineering & Technology
Basic Sciences Department
Course Specification
B 121: Mechanics-1

A- Affiliation

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

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

Department offering the course: Basic SciencDepartment

Date of specifications approval: September, 2015

B - Basic information

Title: Mechanics-1   **Code:** B121   **Level:** First year   **Semester**: 1st
Hours   Total   4 hrs   **Lectures**   2 hrs   **Tutorial**   2 hrs   **Practical** -
:

C - Professional information

1 – Course Learning Objectives:

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

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:
On successful completion of the course, the student should demonstrate knowledge and understanding of:
a1- Knowledge of the basic of statics in plane and space(A1,A3).
a2- Knowledge the difference between the moment of force in plane and space(A3,A4).
a3- Classification the support reaction in plane and in space(A1,A3).
a4- Understanding the structural analysis in plane(A3,A4).

b - Intellectual skills:
On successful completion of the course, the student should be able to.
b1- Analyze and classify between equilibrium in plane and equilibrium in space(B1, B2, B11).
b2- Classify and compare the different between equilibrium of a single rigid body and all forces involved were external to the rigid body(B1,B3) .

c - Professional and practical skills:
On successful completion of the course, the student should be able to:
c1- Solve the equations of equilibrium to get three unkownes(C1,C2).
c2- Solve the trusses to get the value of the forces in the structural by joints and by section methods(C1,C7).

d - General and transferable skills:
On successful completion of the course, the student should be able to:
d1-Work in a team to solve problem as a search(D1, D3).
d2- Search for information in references and in internet(D2, D9)

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A3, A4
B	Intellectual skills	B1, B2, B3, B4, B11
C	Professional and practical skills	C1, C2, C7
D	General and transferable skills	D1, D2, D3,D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical
Basic Concpts of statics.	2	1	
Resultant of concurrent forces in plane	2	2	
Resultant of concurrent forces in space	2	2	
Equilibrium of a particle (in plane and in space)	4	2	
Different types of support in plane	2	3	
Distributed loads	2	3	
Equilibrium of rigid body in plane	2	2	
Different types of supports in space	2	2	
Equilibrium of rigid body in space	4	2	
Special cases of two, three and four force members	2	2	
Analysis of Trussess by the method of joints	2	3	
Analysis of Trussess by the method of section	2	2	
Final revision	2	4	
Total hours	**30**	**30**	**-**

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

5- Assessment Timing and Grading:

Asessement Method	Timing	Grade (Degrees)
Semister Work: seminars, quizes assignments and reports	Bi-Weekly	20
Mid-Term Exam	6-th Week	10
Written Exam	Fifteen week	70
Total		100

6- List of references:

6-1 Course notes:
Hassan Awad, Mechanics l, Modern Academy Press, 2011.

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

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

6-4 Periodicals, Web sites, etc.

www.mathwprlds.com

www.exchange.com

Course coordinator: Dr Moamen Wafaee
Head of the Department: Prof. Dr. Laila Soliman
Date: September 2015

Modern Academy for Engineering & Technology
Manufacturing Engineering and Production Technology Department

M160: Production Engineering -Workshop I
Course Specifications

A- Affiliation

Relevant programs:	Computer Engineering & Information Technology BSc. Program.
	Electronic Engineering & communication Technology BSc. Program.
	Manufacturing Engineering & Production Technology BSc. Program.
	Architectural Engineering & Building Technology BSc. Program
Departments offering the programs:	Computer Engineering & Information Technology Department.
	Electronic Engineering & communication Technology Department.
	Manufacturing Engineering & Production Technology Department.
	Architectural Engineering & Building Technology Department.
Department offering the course:	Manufacturing Engineering & Production Technology Department.
Date of specifications approval:	September 2015

B - Basic Information

Title: Production Engineering I   **Code:** M160   **Year/level:** 1-st year / 1-st Term

Teaching Hours: **Lectures: 2**   **Tutorial: --**

Practical: 2   **Total: 4**

C - Professional Information

1 – Course Learning Objectives

A study of this course will enable the student to:

- Be familiar with the basic production engineering, basics of casting, metal forming & welding
- Understand the essentials of Material properties, selection and testing principle.
- Incorporate his/her concurrent Knowledge related to production engineering in his /her future job.
- Illustrate the potential applications of die casting, rolling, drawing and special welding Processes as MIG , TIG and Co_2 welding in a variety of production engineering applications.
- Participate effectively in communities activities related to production engineering.

2 - Intended Learning Outcomes (ILOS)

A - Knowledge and understanding

By the end of the course the student should gain the following knowledge.
- a1- The basic production methods related to casting , metal forming processes and welding. (A1)
- a2- The pattern design , allowances in casting & solidification .(A4)
- a3- The basics of centrifugal casting process. (A2)

B - Intellectual skills

By the end of the course the student should be able to:
- b1- Select the proper manufacturing process for a specific product. (B2)
- b2- Design the pattern for sand casting, design of weld. (B3)
- b3- Choose the suitable welding method.(B8)
- b4- Use the principle of production engineering in producing good quality cheap product. (B10, B2)

C - Professional and practical skills

By the end of the course the student should be able to:
- c1- Solve some simple production problems related to material and process selection. (C3)
- c2- Use the studied manufacturing methods in producing prototypes during tutorials. (C7)
- c3- Collect , record and submitting data about production engineering. (C1)

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D - General and transferable skills

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

d1-Collaborate effectively within multidisciplinary team. (D1, D3)

d2-Communicate effectively. (D3)

d3- Effectively manage tasks, time, and resources. (D6)

Course Contribution in the Program ILO's

	ILO's	Program ILO's
A	Knowledge and understanding	A1, A2, A4
B	Intellectual skills	B2, B3, B8, B10
C	Professional and practical skills	C1, C3, C7
D	General and transferable skills	D1, D3, D6

3 – Contents

Topic	Lecture hours		Practical hours
Role of prod eng., production system objective	2		
Types of industries Engineering materials	2		
Properties of materials , material testing principles	2		
Tensile test , hardness test , standardization	2		6
Impact test , fatigue test , creep test	3		4
Sand casting, melting of metals & furnaces	3		4
Solidification, pattern design	2		2
Pattern allowances, sand molding & gating system .	2		2
Die casting, centrifugal & investment casting	2		2
Hot & cold forming , forging , rolling	2		2
Extrusion , sheet &wire drawing	2		
Types of welding , design of welding	2		2
Oxy- acetylene welding , Electric-arc welding	2		4
Submerged arc welding , MIG ,TIG, resistance welding	2		2
Total hours	**30**		**30**

4 - Teaching and Learning and Assessment methods:

	Course ILO's	Lecture	Presentations & Movies	Discussions &seminars	Tutorials	Problem solving	Laboratory & Experiments	Projects	Researches and Reports	Modeling and Simulation	Site Visits	Discovering	Written Exam	Practical Exam	Quizzes	Term papers	Assignments
Knowledg	a1	1	1	1									1	1	1	1	1
	a2	1	1	1						1			1	1	1	1	1
	a3	1	1	1						1			1	1	1	1	1
Intellectual	b1	1	1	1									1	1	1	1	1
	b2	1	1	1						1			1	1	1	1	1
	b3	1	1	1									1	1	1	1	1
	b4	1	1	1									1		1		1
Applied	c1	1		1									1	1		1	1
	c2	1	1														
	c3	1	1														
Gener	d1		1	1													
	d2			1											1		

	d3												1			

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	20
Mid-Term Exam	6-th Week	10
Practical Exam	13th Week	10
Written Exam	Sixteenth week	60
Total		100

6- List of References

6-1 Course notes Lecture notes & workshop training notes

6-2 Required books

6-3 Recommended books

Kazanas , H.c. and Baker , G. E., Basic Manufacturing processes, McGraw – Hill, 1981

6-4 Periodicals, Web sites etc . Non

7- Facilities Required for Teaching and Learning

- Lecture room , laboratory and workshops

Course Coordinator: Prof. Ahmad Kohail
Head of the Department: Dr. Abdelmagid A. Abdalla
Date: September 2015

Modern Academy for Engineering & Technology,
Computer Engineering and Information Technology Department
Course Specification
E111: Introduction to Computers I

A- Affiliation

Relevant programs:	Computer Engineering and Information Technology BSc Programe
	Electronic Engineering and communication Technology BSc Programe
	Manufacturing Engineering and Production Technology BSc Programe
	Architectural Engineering and Building Technology BSc Programe
Departments offering the program:	Electronic Engineering and Communications Technology Department.
	Computer Engineering and Information Technology Department.
	Architecture Engineering and Building Technology Department.
	Manufacturing Engineering and Production Technology Department.
Department offering the course:	Computer Engineering and Information Technology Department.
Date of specifications approval:	September 2015

B- Basic information

Title: Introduction To Computers (I)   **Code:** E111   **Year/level:** 1st year- 1st semester
Teaching Hours: **Lectures:** 2   **Tutorials:** -
   Practical: 2   **Total:** 4

C - Professional information

1. Course Learning Objectives:
A study of this course will enable the student to:
- Appreciate the importance of computer and inf. technology in modern life
- Be familiar with computer applications and their categories
- Distinguish between various categories of computer software
- Identify various computer components
- Gain confidence in using computers to edit and format texts
- Change the defaults settings in computer display and file and folder management

2. Intended Learning Outcomes (ILOS):

A – Knowledge and understanding
By the end of this course the student should acquire the following knowledge and understanding:
- a1- Identification of different computer components and different computer, types(A14)
- a2- different operating systems.(A13)
- a3- advantages and disadvantages of computers.(A12, A14)
- a4- Identification of different types of text editors (A7)
- a5- procedures of running and closing programs (A18)
- a6- input and output devices (A13)
- a7- numbering systems (A4)

B – Intellectual skills
By the end of the course the student should be able to:
- b1- Analyze and decide the reasons behind simple computer problems(B2,B3)
- b2- Troubleshoot simple problems encountered during running application programs (B6)
- b3- Differentiate between operating system features (B13)

b4- Transfer from a numbering system to another (B1 ,B2)
b5- Add, Subtract, and Multiplying binary numbers (B1 ,B2)
b6- Transfer fractions from binary to decimal and vice versa.(B11 ,B12)

C – Professional and practical skills
By the end of the course the student should be able to:
c1- Carry out full tasks using computer programs(C5)
c2- Navigate from program to another.(C14 , C16)
c3- Handle open windows in multi-window operating environment.(C14)

D – General and transferable skills
By the end of the course the student should be able to:
d1- Communicate effectively in written form(D1 ,D3)
d2- Demonstrate efficient IT capabilities.(D4)
d3- Search for information and adopt life-long self-learning(D7)

Course Contribution in the Program ILO's

	ILO's	Program ILO's
A	Knowledge and understanding	A4, A7 , A12 , A13 , A14 , A18
B	Intellectual skills	B1 , B2 ,B3 , B6, B11, B12, B13
C	Professional and practical skills	C5 , C14 , C16
D	General and transferable skills	D1 , D3 ,D4 ,D7

3- Course Contents:

Topics	Lecture hours	Tutorial hours	Practical hours
• Historical overview	2	-	
• Types of computers	2	-	4
• Indices of computer performance	6	-	
• Computer components	4	-	4
• Storage media	4	-	
• Numbering systems	2	-	
• Binary arithmetic	4	-	
• DOS operating system and commands	4	-	4
• Windows Operating System	2		8
• Text Editing			10
Total hours	**30**	**-**	**30**

4 - Teaching and Learning and Assessment methods:

Course ILO's		Lecture	Presentations & Movies	Discussions & Seminars	Tutorials	Problem solving	Laboratory & Experiments	Researches and Reports	Modeling and Simulation	Site Visits	Quizzes & Presentations	Assignments	Written Exam	Practical Exam
Knowledge	a1	1	1										1	
	a2	1										1	1	
	a3	1	1										1	
	a4	1											1	
	a5	1					1						1	
	a6	1												
	a7	1		1		1		1			1		1	
Intellectual	b1	1		1									1	
	b2	1		1									1	
	b3	1											1	
	b4	1										1	1	
	b5	1										1	1	
	b6	1										1	1	
Applied	c1		1				1				1			1
	c2		1				1							1
	c3		1				1							1
General Tran.	d1		1					1			1			
	d2		1					1						
	d3		1					1						

5- Assessment Timing and Grading:

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

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

6-2 Essential books (text books)
Gale E., Introduction to Micro-computing, Newell,1991.
Peter Norton's. Introduction to computers, Fifth edition , Student Edition, 2002
David Reed . A Balanced Introduction to computer Science, Prentice hall , 2004

6-3 Recommended books Non

6-4 Periodicals, Web sites, etc.: Non
7- Facilities required for teaching and learning:
Computer Lab
Data show
Course coordinator: Prof. Dr. Said A. Gawish
Head of the Department: Prof. Dr. Said A. Gawish

Modern Academy for Engineering & Technology
Manufacturing Engineering and Production Technology Department

M150: Engineering Drawing &Projection I
Course Specifications

A- Affiliation
Relevant programs: Computer Engineering & Information Technology BSc. Program.
Electronic Engineering & communication Technology BSc Program.
Manufacturing Engineering & Production Technology BSc. Program
Architectural Engineering & Building Technology BSc. Program.

Departments offering the programs: Computer Engineering & Information Technology Dept.
Electronic Engineering & communication Technology Dept.
Manufacturing Engineering & Production Technology Dept.
Architectural Engineering & Building Technology Dept.

Department offering the course: Manufacturing Engineering & Production Technology Dept.
Date of specifications approval: September 2015

B - Basic Information

Title: Engineering Graphics I   **Code:** M150   **Year/level:** 1-st year / 1-st Term
Teaching Hours: **Lectures:** --   **Tutorial:** 4
                                   Practical: --   **Total:** 4

C - Professional information

1 – Course Learning Objectives
A study of this course will enable the student to visualize and communicate three dimensional objects.

2 - Intended Learning Outcomes (ILOS)

A - Knowledge and understanding
By the end of the course the student should gain the following knowledge.
a1-The principles of geometrical construction in engineering graphics.(A4)
a2-The basic information and theories in engineering graphics. (A1, A2)
a3- Methodology of solving problems in orthographic views.(A5)
a4- Methodology of solving problems in successive views.(A5)
a5-The basic and theories of developments and intersections. (A1, A5)

B - Intellectual skills
By the end of the course the student should be able to:
b1- Solve and communicate problems in orthographic views. (B3, B2)
b2- Solve and communicate problems in isometric and oblique drawings.(B2, B3)
b3- Consider the benefits of solving problems of developments and intersections.(B8, B4)

C - Professional and practical skills
By the end of the course the student should be able to:
c1- Produce orthographic views from 3D models.(C3)
c2- Read and understand orthographic drawing.(C3, C2)
c3- Prepare and interpret engineering drawing.(C1).

D - General and transferable skills
By the end of the course the student should be able to:
d1- Communicate effectively with other discipline using the graphical language. (D1, D3)
d2- Expand their creative talents and to communicate their ideas in a meaningful manner. (D3)

d3- Search for information and engage in life –long sell learning discipline. (D7)

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A2, A4, A5
B	Intellectual skills	B2, B3, B4, B8
C	Professional and practical skills	C1, C2, C3
D	General and transferable skills	D1, D3, D7

3 – Contents

Topic	Lecture hours	Tutorial hours
Drawing instruments , Draw sheets ; Scales; Folding		4
Lettering Alphabet of lines		4
Geometric Construction		8
Theory of orthographic projection		4
Projection of point ; line and plane ; true shape		4
Projection of geometric solids		8
Multi view drawing		12
Pictorial drawing (isometric)		8
Pictorial drawing (oblique)		4
Revision		4
Total hours		**60**

4 - Teaching and Learning and Assessment methods:

Course ILO's		Lecture	Presentations & Movies	Discussions &seminars	Tutorials	Problem solving	Laboratory & Experiments	Projects	Researches and Reports	Modeling and Simulation	Site Visits	Discovering	Written Exam	Practical Exam	Quizzes	Term papers	Assignments
Knowledge	a1	1	1		1								1				1
	a2	1	1		1	1				1			1		1		1
	a3	1	1		1	1				1			1				1
	a4	1			1	1							1		1		1
	a5																
Intellectu	b1	1	1		1								1				1
	b2	1			1	1							1				1
	b3	1			1	1				1			1		1		1
Applied	c1	1			1	1			1				1				1
	c2	1			1	1			1				1				1
	c3	1			1												1
General	d1	1			1												1
	d2	1			1	1											1
	d3	1			1												1

5- Assessment Timing and Grading:

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

6- List of References
6-1 Course notes
Engineering Drawing (1) by : Prof. Mamdouh Saber

6-2 Required books
James H.Earle, Graphics For Engineering, Addison Wesley Publishing Company 1991.
6-3 Recommended books Non

6-4 Periodicals, Web sites etc .

7- Facilities Required for Teaching and Learning
- o   Overhead projector and screen
- o   Models and prototype as teaching aids

Course Coordinator: Prof. Mamdouh Saber
Head of the Department: Dr. Abdelmagid A. Abdalla
Date: September 2015

Modern Academy for Engineering & Technology
Basic Sciences Department
Course Specification
B 101: English Language I

A- Affiliation

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

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

Department offering the course: Basic Sciences Department
Date of specifications approval: September, 2015

B - Basic information

Title: English Language I **Code:** B 101 **Year/ Level:** 1ST. Year, 1ST Semester
Teaching hours: **Lectures:**2 **Tutorial:** **Practical:**
Pre-requisite: **Total: 2**

C - Professional information

1 – Course Learning Objectives:

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

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

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

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

b - Intellectual skills:

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

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

c - Professional and practical skills:

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

c 1)Write paragraphs and peer edit them using error detection. (C12)

c 2)communicate with each other and with the professor. (C11)

c 3)Use different tenses in conversation. (C11)

c 4)Brainstorm ideas for homework writing. (C12)

d - General and transferable skills:

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

d1- Work in a team and involve in group discussion. (D1), (D2), (D3)

d2- Communicate effectively and present data and results orally and in written form. (D1), (D2), (D3), (D6)

d3- communicate effectively in written and oral forms.(D3), (D7)

d4- Search for information in references and in internet. (D4), (D7)

d5- Practice self-learning. (D4), (D7), (D8)

Course Contribution in the Program ILO's

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

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
Engineering, what's it all about?	6		
Alfred Nobel.	6		
Use of Prepositions.	2		
Adjectives: synonyms and anatomies.	2		
Infinitive and Gerund.	2		
Subject verb agreement Count & non –count nouns	4		
General exercises.	4		
Revision	4		
Total hours	**30**		

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods								Learning Methods			Assessment Method						
		Lecture	Warming up	Discussions	Tutorials	Problem solving				Researches and Reports	Modeling and Simulation		Written Exam	Class work	Quizzes	Class participation	Assignments		
Knowledge & Understanding	a1	1	1	1						1			1	1	1	1	1		
	a2	1	1	1						1			1	1	1	1	1		
	a3	1	1	1						1			1	1	1	1	1		
	b1	**1**	**1**	**1**						**1**			1	1	1	**1**	**1**		

Intellectual Skills	b2	1	1	1					1			1	1	1	1	1			
	b3	1	1	1					1			1	1		1	1			
	b4	1	1	1					1			1	1	1	1	1			
Applied Professional Skills	c1	1	1	1					1			1	1	1	1	1			
	c2	1	1	1					1			1	1	1	1	1			
	c3	1	1	1					1			1	1	1	1	1			
	c4	1	1	1					1			1	1	1	1	1			
General Tran. Skills	d1	1	1	1					1			1			1				
	d2		1	1					1						1				
	d3	1	1	1					1						1	1			
	d4	1	1	1					1										
	d5								1						1				

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: quizzes, assignments and class participation	Bi-Weekly	10
Mid-Term Exam	6-th Week	5
Practical Exam	-	
Written Exam	Sixteenth week	35
Total		50

6- List of references:
6-1 Course notes:
Learn, apply and Excel by Prof. Dr. A. H. El. Khoreiby

6-2 Required books
Shelton, James, *Handbook for technical writing*, NTC publishing Group, Illinois, USA, 1998.
6-3 Recommended books:
None

6-4 Periodicals, Web sites, etc.:
- http://www.bbc.co.uk/learningenglish
- http://www.rong-chang.com/
- http://legacy.australianetwork.com/studyenglish/

7- Facilities required for teaching and learning:
Library and Internet

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

Modern Academy for Engineering & Technology
Basic Sciences Department
Course Specification
B 112: Mathematics-2(Integral Calculus and Linear Algebra)
A- Affiliation

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

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

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

B - Basic information

Title: Mathematics - 2   **Code:** B 112   **Level:** First   **Semester:** Second
Teaching Hours: Total: 6   **Lectures:** 4   **Tutorial:** 2   **Practical:** --

C - Professional information

1 – Course Learning Objectives:
By the end of this course the students should be able to apply, demonstrate the knowledge and understanding of the the concepts of integral calculus and theory of linear algebra with their applications.

2 - Intended Learning Outcomes (ILOS)
a. Knowledge and understanding:
On successful completion of the course, the student should demonstrate knowledge and understanding of:
a1. Definition of anti-derivative, indefinite integral, definite integrals.(A1, A5)
a2. Methods of integration (integration by parts, substitution). (A1, A5)
a3. Integration rules of trigonometric functions, integration of rational functions, improper integrals. (A1, A5)
a4. Basic concepts of convergence of infinite sequences and series. (A1, A3)
a5. Solutions of linear systems using different methods. (A1, A3)
a6. Basic concepts of vectors, vector spaces and vector algebra. (A1, A3)
a7. Basics of Analytic geometry and basics of complex numbers. (A1, A3)
a8. Fundamentals of conic sections. (A1, A3)

b. Intellectual skills:
On successful completion of the course, the student should be able to.

b1. Investigate the geometric interpretation of the integration. (B1, B2, B3)

b2. Develop techniques for using basic integration formulas to obtain indefinite integrals of complicated functions.(B1, B2, B3, B7)

b3. Explore some of the geometric applications of the definite integral by using it to compute areas between curves, volumes of solids, arc length and surface area. (B1, B2, B3, B4, B7)

b4. Develop several tests to determine whether a series is convergent or divergent without explicitly finding its sum. (B1, B2, B3, B4, B7)

b5. Estimate of the sum of the convergent series and the error using various methods. (B1, B11)

b6. Derive the equation and main geometric properties of lines, planes and conic sections. (B2, B3, B4)

b7. Solve linear systems using different methods of linear algebra. (B2, B3, B4)

b8. Solve problems on vectors, vector spaces and vector algebra. (B2, B3, B4)

c - Professional and practical skills:
   On successful completion of the course, the student should be able to:
   c1. apply methods of integration and to engineering problems.(C1,C12)

d - General and transferable skills:
   On successful completion of the course, the student should be able to:

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

d2. Communicate effectively and present data and results orally and in written form (D3).

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

Course Contribution in the Program ILO's

	ILO's	Program ILO's
A	Knowledge and understanding	A1, A3, A5
B	Intellectual skills	B1, B2, B3, B4, B7, B11
C	Professional and practical skills	C1, C12
D	General and transferable skills	D1, D3, D7

Course Content

	Topic	Lecture hours	Tutorial hours
1	Anti-derivative, indefinite integral	3	2
2	Definite integrals and the fundamental thearem of calculus	3	1
3	Methods of integration (integration by parts, substitution)	4	2
4	Integration of trigonometric functions	3	2
5	Trignometric Substitutions	3	1
6	Integration of rational functions	4	2
7	Miscellaneous Substitutions, improper integrals	4	2
8	Application of definite integral(area, volume, arc length, surface area)	4	2
9	Sequences, series	4	2
10	Equations of lines, planes and circles	4	2
11	Conic sections (parabola, ellipse, hyperbola)	4	2
12	Complex numbers and polar coordinates	4	2
13	Matricies with applications	8	4
14	Vectors and vector spaces	8	4
	Total hours	**60**	**30**

4 - Teaching and Learning and Assessment methods:

Course ILO's		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Researches and Reports	Modeling and Simulation	Written Exam	Practical Exam	Quizzes	Term papers	Assignments
Knowledge & Understanding	a1	1		1	1		1		1		1		1
	a2	1	1		1	1			1		1		1
	a3	1			1	1			1		1	1	1
	a4	1		1	1	1	1		1		1	1	1
	a5	1	1		1	1	1		1		1	1	1
	a6	1		1	1	1	1		1		1	1	1
	a7	1	1		1	1	1		1		1		1
	a8	1			1	1	1		1		1		1
Intellectual Skills	b1	1			1	1			1		1		1
	b2	1			1	1			1		1	1	1
	b3	1	1	1	1	1	1		1		1	1	1
	b4	1			1	1			1		1		1
	b5	1			1	1			1		1	1	1
	b6	1		1	1	1	1		1			1	1
	b7	1	1		1	1	1		1			1	1
	b8	1		1	1	1	1		1			1	1
Applied Professional Skills	c1	1		1	1	1	1		1				1
General Tran. Skills	d1			1		1	1					1	
	d2		1	1			1					1	
	d3		1	1			1					1	

5- Assessment Timing and Grading:

Asessement Method	Timing	Grade (Degrees)
Quizes, assignments, term papers	Weekly	20
Mid-Term Exam	7-th Week	10
Written Exam	Sixteenth week	70
Total		100

6- List of references:

6-1 Course notes:

M. Khalefa, Integration and Analytic Geometry, Lecture Notes, 2013

M. Khalefa, Linear Algebra, Lecture Notes, 2013

6-2 Required books

R. E. Larson and B. H. Edwards, "Elementary Linear Algebra", 2-nd Edition, DG Heath and Company, Toronto, 1991.

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

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

6-3 Recommended books:

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

6-4 Periodicals, Web sites, etc.

www.sosmath.com   www.mathworlds.com.

7- Facilities required for teaching and learning:

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

Course coordinator: Dr. Sameh Shenawy
Head of the Department: Prof. Dr. Laila Soliman
Date: September, 2015

Modern Academy for Engineering & Technology
Basic SciencesDepartment
Course Specification
B132:Physics 2- Electricity, Magnetisms and Optics

A- Affiliation

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

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

Department offering the course: Basic SciencDepartment
Date of specifications approval: September, 2015

B - Basic information

Title: Physics 2 **Code:** B 132 **Level:** First. **Semester**: Second.
Total Hours 5 hrs **Lectures** 2 hrs **Tutorial** 1 hr **Practical** 2 hrs

C - Professional information

1 – Course Learning Objectives:

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

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:
a1- fundamental and basic law of applications in electricity, magnetism and electromagnetism (A1 , A3) .
a2- Gausses law in electricity for different type of charged bodies (A1 , A3).
a3- laws of electric capacitors and effect of dielectric (A5).
a4- direct current, resistance and solution of simple electric circuits and kerchief's laws (A5)
a5- analogy between magnetic field and electric field., and application of Ampere's law, Gausse's law in magnetism (A3) .
a6- magnetic properties of matter (A3, A5).
a7- fundamental theories of Electro-magnetic waves and main physical phenomena of physical optics (interference, diffraction and polarization) (A5) .

b - Intellectual skills:

On successful completion of the course, the student should be able to.
b1- investigate electric force and electric field (using Gauss's law) and select the proper manner to solve problem (B2, B3, B4).
b2- study of capacitors' and dielectric effect, uses of capacitors, and use Kirchoff's laws to solve simple electric circuits (B3,B4).
b3- investigate and compere electric field, magnetic field, and magnetic force using Gauss law in magnetism and Ampere's law; studying the nature of each, and identify magnetic properties and studying electromagnetic wave (B3, B4,B5).

c - Professional and practical skills:
On successful completion of the course, the student should be able to:
  c1- identify ohms law practically, and comparison between two nearly equal resistance by carey-foster bridge (C1, C5,C12).
  c2- determine time constant for (Rc) circuits (C1, C5,C12).
  c3- determine power, focal length for lenses and mirrors (convex and concave) (C1, C5,C12).
   c4- perform a physical experiment (Absorption co-efficient, polarization and Newton's rings) (C1,C5, C12).

d - General and transferable skills:
On successful completion of the course, the student should be able to:
   d1- write technical reports(D5)
   d2- use libraries information's in subjects (D7)
   d3- search for information's in references and in internet(D7).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1,A3, A5
B	Intellectual skills	B2, B3, B4, B5
C	Professional and practical skills	C1, C5,C12
D	General and transferable skills	D5, D7

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
Charge and Matter, The Electric Field, Gauss' law	2	1	2
Gauss's law, Electric Potential	2	1	2
Gauss's law applications	2	1	2
Capacitors and Dielectric	2	1	2
Current and Resistance, Electromotive force and Circuits	2	1	2
The Magnetic Field, Ampere's Law	2	1	2
Ampere's law, Inductance	2	1	2
Magnetic Properties of matter	2	1	2
Magnetic Properties of matter, Electromagnetic Waves	2	1	2
Electromagnetic Waves	2	1	2
Electromagnetic Waves, Physical Optics, Polarization of light	2	1	2
Polarization of light	2	1	2
Interference of light	2	1	2
Interference of light, Diffraction of light	2	1	2
Diffraction of light, Some applications	2	1	2
Total hours	**30**	**15**	**30**

4 – Teaching, Learning and Assessementmethods:

Course IL O's		Teaching Methods						Learning Methods		Assessement Method				
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments	Researches and Reports	Modeling and Simulation	Written Exam	Practical Exam	Quizes	Term papers	Assignments
Knowledge	a1	1		1	1	1	1	1		1	1	1	1	1
	a2	1			1	1				1		1	1	1
	a3	1			1	1	1			1	1	1	1	1
	a4	1			1	1	1			1	1	1	1	1
	a5	1		1	1	1		1		1			1	1
	a6	1		1	1	1		1		1			1	1
	a7	1		1	1	1	1	1		1	1		1	1
Intellectual	b1	**1**			**1**	**1**				1		1	1	**1**
	b2	**1**			**1**	**1**				1		1	1	**1**
	b3	**1**		**1**	**1**			**1**					1	**1**
Applied	c1	1			1		1	1			1		1	1
	c2	1			1	1	1	1			1		1	1
	c3	1			1		1	1			1		1	1
	c4	1			1		1	1			1		1	1
General	d1	1		1		1		1					1	1
	d2			1				1					1	1
	d3			1				1					1	1

5- Assessment Timing and Grading:

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

6- List of references:
6-1 Course notes
M. El- Tawab Kamal , Abo- Elyzeed B. Abo- Elyzeed, Marwa Yahia Shoeib and Nagat A. Salam Elmahdy, Electricity, Magnetisms and Optics, Lecture notes, Modern Academy, 2012.
6-2 Required books:
Halliday, D., Resnick, R., Wallker, J.(1993) Fundamentals of Physics .John Wiley, New York.

6-3 Recommended books
Serway, R. A. (1990) Physics for Scientists and Engineers with Modern Physics, 3rd ed. Wiely, New Yourk.

6-4 Periodicals, Web sites, etc.

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

http://booksgoogle.com/

7- Facilities required for teaching and learning:

- Physics Lab.
- Computer, and Data show
- Liberary
- Internet

Course coordinator: Dr. Marwa Shoeib
Head of the Department: Professor Dr. Laila Soliman
Date: September 2015

http://booksgoogle.com/

Modern Academy for Engineering & Technology
Basic SciencesDepartment
Course Specification
B 122: Mechanics-2

A- Affiliation

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

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

Department offering the course: Basic SciencDepartment

Date of specifications approval: September, 2015

B - Basic information

Title: Mechanics-2   **Code:** B 122   **Level: 1ˢᵗ year,**   **Semester**: Second
Hours   Total: 4 hrs   **Lectures**:   2 hrs **Tutorial**:   2 hrs

C - Professional information

1 – Course Learning Objectives:

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

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

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

b - Intellectual skills:

On successful completion of the course, the student should be able to.
b1- analyze and classify between the force acting on the system to get it's value and the principle of work and energy to get the velocity of the particle (B1, B2,B11)
b2- classify and compare the different between the average velocity and average speed (B4,B5, B13).

c - Professional and practical skills:

On successful completion of the course, the student should be able to:
c1- solve the equation of motion to get velocity,acceleration and total distance traveled at any time. (C1,C2)
c2- calculate the time of flight of projectile to get a target. (C1, C7).

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c3- solve the equation of motion graphically.(C2)

d - General and transferable skills:

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

d1- work in a team to solve problem as a search.(D1,D2, D9)

d2- search for information in references and in internet (D2, D8).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1 A3, A4
B	Intellectual skills	B1, B2, B3, B4, B5, B11, B13
C	Professional and practical skills	C1, C2, C7
D	General and transferable skills	D1, D2, D8, D9

3 – Contents

Topic	Lecture hours	Tutorial hours	practical
Rectilinear Motion of particles.	2	3	
Determination of the motion of a particle.	2	3	
Graphical Solution of Rectilinear Motion.	2	2	
Curvilinear Motion of particle, Free Flight Motion.	4	2	
Curvilinear Motion of particle:			
Normal and Tangention.	2	2	
Plane Curvilinear Motion.	2	2	
Polar Coordinates.	2	2	
Kinetics of Particles, Force and acceleration.	4	4	
Kinetics of Particles Energy and Momentum Methods	4	4	
Motion under a conservative centeral force.	2	3	
Principle of Impulse and Momentum for particle.	4	3	
Total hours	**30**	**30**	**-**

4 – Teaching and Learning and Assessementmethods:

Course ILO's		Teaching Methods									Learning Methods				Assessement Method							
		Le	Pr	Di	Tu	Pr	La				Re	Mo			Wr	Pr	Qu	Te	As			
Knowledge	a1	1			1	1					1				1		1	1	1			
	a2	1			1	1									1		1	1	1			
	a3	1			1	1					1				1		1	1	1			
	a4	1			1	1					1				1		1	1	1			
	a5	1			1										1		1	1	1			
Intellectual	b1	**1**			**1**										1		1		**1**			
	b2	**1**			**1**	**1**									1		1	**1**	**1**			
Applied	c1	1			1	1									1		1	1	1			
	c2	1			1										1		1	1	1			
	c3	1			1	1												1	1			
General	d1				1						1							1				
	d2										1							1				

5- Assessment Timing and Grading:

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

6- List of references:
6-1 Course notes:
Hassan Awad, Mechanics II, Lecture Notes, Modern Academy Press, 2011.
6-2 Required books:
F. Beer and Johnston Vector mechanics for Engineers, Dynamics, McGraw-Hill, 2002.

6-3 Recommended books:
R.C. Hibbeler, Engineering mechanics, Dynamics, McGraw-Hill, 2005.
6-4 Periodicals, Web sites, etc.

www.mathwprlds.com

www.exchange.com

Course coordinator:	Dr Moamen Wafaee
Head of the Department:	Professor Dr Laila Soliman
Date:	September 2015

Modern Academy for Engineering & Technology
Manufacturing Engineering and Production Technology Department

M161: Production Engineering - Workshop II
Course Specifications

A- Affiliation

Relevant programs:	Manufacturing Engineering and Production Technology BSc Program
	Electronic Engineering and Communication Technology BSc Program
	Computer Engineering and Information Technology BSc Program
	Architecture Engineering and Building Technology BSc Program
Departments offering the programs:	Electronic Engineering and Communications Technology Department.
	Computer Engineering and Information Technology Department.
	Architecture Engineering and Building Technology Department.
	Manufacturing Engineering and Production Technology Department.
Department offering the course:	Manufacturing Engineering and Production Technology Department.
Date of specifications approval:	September 2015

B - Basic Information

Title: Production Engineering II **Code:** M161 **Year/level:** 1-st year / 2-nd Term
Teaching Hours: **Lectures: 2** **Tutorial: --**
Practical: 2 **Total: 4**

C - Professional Information

1 – Course Learning Objectives
A study of this course will enable the student to:
- Be familiar with the basics of machining methods, turning, drilling, milling, shaping & grinding
- understand the essential requirements for tool materials and tool geometry
- Incorporate his/her concurrent knowledge related to machining processes in his/her future job
- Apply his / her knowledge to estimate manufacturing cost & select production method
- Illustrate the potential application of different machining methods in production
- Participate effectively in communities activities related to parts manufacturing

2 - Intended Learning Outcomes (ILOS)

A - Knowledge and understanding
By the end of the course the student should gain the following knowledge.
- a1- Identification of the basic conventional machining methods, tools, machine tools & function of its parts.(A1)
- a2- The effect of the selection of operation & working conditions on the accuracy.(A4)
- a3- The basic elements of manufacturing cost machining & production time. (A2)
- a4- Definition of the types, properties and use of different kinds of tool materials. (A1)

B - Intellectual skills
By the end of the course the student should be able to:
- b1-Choose the suitable machining method to reach prescribed accuracy. (B2)
- b2- Elaborate the proper technological procedure.(B3)
- b3- Select the machine tool (tools & working conditions). (B2)
- b4-Analyze the elements of cost which enables him/ her to choose the proper level of machine automation. (B10, B2)

C - Professional and practical skills
By the end of the course the student should be able to:
- c1- Use the studied machining methods producing prototypes during practice. (C3)

c2- Solve simple machining problems related to time study and production costing. (C7)

c3- Collect and submit data about workshop activities. (C1)

D - General and transferable skills

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

d1- Effectively manage tasks, time, and resources. (D1, D3)

d2-Collaborate effectively within multidisciplinary team.(D3, D9)

d3- Search for information and engage in life-long self-learning discipline. (D7)

Course Contribution in the Program ILO's

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

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
Basic machining methods , types of production	2		2
Principle of chip formation in orthogonal cutting	2		2
Mechanical & thermal stresses on tool, favorite properties	2		2
For tool materials , hot hardness			
Common types of tool materials , properties & application	2		2
Geometry of single point tool , angles , types	2		
Turning	4		6
Drilling	2		2
Milling	2		4
Time of machining & time study	2		
Principle of shaping , planning , slotting & broaching	2		4
Grinding operations , grinding which selection & accuracy	2		2
Technological procedure , selection of cutting conditions	2		4
Costing of machined parts , elements of cost	4		
Total hours	**30**		**30**

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods							Learning Methods				Assessment Method				
		Lecture	Presentations & Movies	Discussions &seminars	Tutorials	Problem solving	Laboratory & Experiments	Projects	Researches and Reports	Modeling and Simulation	Site Visits	Discovering	Written Exam	Practical Exam	Quizzes	Term papers	Assignments
Knowledge	a1	1	1	1									1	1	1	1	1
	a2	1	1	1						1			1	1	1	1	1
	a3	1	1	1						1			1	1	1	1	1
	a4	1	1	1									1	1	1	1	1
Intellectual	b1	1	1	1									1	1	1	1	1
	b2	1	1	1									1		1		1
	b3	1		1									1	1		1	1
	b4	1			1	1		1	1				1	1	1	1	1
Applied	c1	1	1														
	c2		1	1													
	c3			1											1		
General Trans	d1	1	1	1									1	1	1	1	1
	d2	1	1	1						1			1	1	1	1	1
	d3	1	1	1						1			1	1	1	1	1

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	10
Mid-Term Exam	6-th Week	10
Practical Exam	13th Week	20
Written Exam	Sixteenth week	60
Total		100

6- List of References
6-1 Course notes Lecture notes & workshop training notes
6-2 Required books
6-3 Recommended books
    Kazanas HC and Baker GE, Basic Manufacturing processes, McGraw-Hil 1981.
6-4 Periodicals, Web sites etc.: Non

   http://www.indiabix.com/mechanical-engineering/production-engineering/

   http://www3.nd.edu/~manufact/MET_Powerpoint.html

7- Facilities Required for Teaching and Learning
- Lecture room , laboratory and workshops

Course Coordinator: Prof. Ahmad Kohail
Head of the Department: Dr. Abdelmagid A. Abdalla
Date: September 2015

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department.

Course Specification
E112: Introduction to Computers II

A- Affiliation

Relevant programs:	Computer Engineering and Information Technology BSc Programe
	Electronic Engineering and communication Technology BSc Programe
	Manufacturing Engineering and Production Technology BSc Programe
	Architectural Engineering and Building Technology BSc Programe
	Computer Engineering and Information Technology BSc Programe
Departments offering the program:	Electronic Engineering and Communications Technology Department.
	Computer Engineering and Information Technology Department.
	Architecture Engineering and Building Technology Department.
	Manufacturing Engineering and Production Technology Department
Department offering the course:	Computer Engineering and Information Technology Department.
Date of specifications approval:	September 2015

B- Basic information

Title: Introduction To Computers (II) **Code:** E112 **Year/level:** 1st year- 2nd semester

Teaching Hours: **Lectures:** 2 **Tutorials:** -

 Practical: 2 **Total:** 4

C - Professional information

1. Course Learning Objectives:

A study of this course will enable the student to understand the concepts of information system, files and databases and to understand the concepts of programming and to use spread sheet programs to produce tables and graphs.

2. Intended Learning Outcomes (ILOS):

A – Knowledge and understanding

By the end of this course the student should acquire the following knowledge and understanding:

 a1- the differentiate between application and system software (A15)

 a2- the concepts of information technology (A2)

 a3- the different communications channels (A2 , A17)

 a4- how to build a good database (A5)

 a5- the different methods and languages to develop a program (A18)

 a6- how to Use Word processors to edit, format and print texts (A7)

 a7- how to Use spread sheets in the form of tables with intensive formula cells (A7)

 a8- Know how to Use simple databases using common Data Base Management System (A5)

B – Intellectual skills

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

 b1- Design format specifications for texts.(B12)

 b2- Construct and implement formulas from given requirements (B11)

 b3- Allocate data tables and relationships between them (B1)

 b4- Design simple program specifications (B1,B2)

 b5- Develop computer programs.

C – Professional and practical skills

By the end of the course the student should be able to:
    c1- Create and run simple database programs (C17)
    c2- Create spread sheets with heavy calculation tasks (C14)
    c3- Write and print formatted texts (C14 , C16)
    c4- Write and execute computer programs.(C15)
    D – General and transferable skills
    By the end of the course the student should be able to:
    d1- Communicate effectively in written form (D1 ,D3)
    d2- Demonstrate efficient IT capabilities.(D4)
    d3- Search for information and adopt life-long self-learning(D7)

Course Contribution in the Program ILO's

	ILO's	Program ILO's
A	Knowledge and understanding	A2, A5, A7, A15, A17, A18
B	Intellectual skills	B1, B2 ,B11 ,B12
C	Professional and practical skills	C14 ,C15 ,C16 ,C17
D	General and transferable skills	D1,D3 ,D4 ,D7

3- Course Contents:

Topic	Lecture hours	Tutorial hours	Practical hours
• Information technology	2		
• Communications	2		
• Files and databases	2		
• Computer languages (HLL, LLL)	6	-	
• Compilers	2	-	
• Operating systems (types and functions)	4	-	
• Application software (Word Processing)	2	-	2
• Application software (Spread Sheets)	2	-	10
• Application software (Files and Databases)	2	-	6
• Introduction to programming	6		12
Total hours	**30**	**-**	**30**

4 - Teaching and Learning and Assessment methods:

Course ILO's		Lecture	Presentations & Movies	Discussions & Seminars	Tutorials	Problem solving	Laboratory & Experiments	Researches and Reports	Modeling and Simulation	Site Visits	Quizzes & Presentations	Assignments	Written Exam	Practical Exam
Knowledge	a1	1		1									1	
	a2	1		1									1	
	a3	1											1	
	a4	1											1	
	a5	1											1	
	a6	1											1	
	a7	1											1	

		Teaching Methods						Learning Methods			Assessment Method			
		Lecture	Presentations & Movies	Discussions & Seminars	Tutorials	Problem solving	Laboratory & Experiments	Researches and Reports	Modeling and Simulation	Site Visits	Quizzes & Presentations	Assignments	Written Exam	Practical Exam
Intellectual	a8	1											1	
	b1										1	1	1	
	b2											1	1	
	b3										1	1	1	
	b4					1						1	1	
	b5					1							1	
Applied	c1		1			1								1
	c2		1											1
	c3		1											1
	c4		1											1
General Tran.	d1			1				1			1			
	d2			1				1						
	d3			1				1			1			

5- Assessment Timing and Grading:

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

6- List of references:

6-1 Course notes

S. A. Gawish, Introduction to computers (2), Cairo,2008

A. A. Khedr Introduction to computers (2),practical part, Cairo,2008

6-2 Essential books (text books)

Gale E., Introduction to Micro-computing, Newell,1991.

Peter Norton's. Introduction to computers, Fifth edition , Student Edition, 2002

David Reed . A Balanced Introduction to computer Science, Prentice hall , 2004

6-3 Recommended books

Non

6-4 Periodicals, Web sites, etc.: Non

7- Facilities required for teaching and learning:

Computer Labs.

Data show and Computer programs; Microsoft office

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

Modern Academy for Engineering & Technology
Manufacturing Engineering and Production Technology Department

M151: Engineering Drawing & Projection II
Course Specifications

A- Affiliation
Relevant programs:
Manufacturing Engineering and Production Technology BSc Program
Electronic Engineering and Communication Technology BSc Program
Computer Engineering and Information Technology BSc Program
Architecture Engineering and Building Technology BSc Program

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

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

B - Basic Information
Title: Engineering Graphics II   **Code:** M151   **Year/level:** 1-st year / 2-nd Term
Teaching Hours: **Lectures:** 2   **Tutorial:** 4
                       Practical: --   **Total:** 6

C - Professional Information
1 – Course Learning Objectives
A study of this course will enable the student to:
A study of this course will enable the student to:
- Originate section, know ways of drawing and location of cross section.
- Use the principles of drawing different types of sections for showing internal features.
- Apply the conventional way in sections and dimensions for presentation of figures.

2 - Intended Learning Outcomes (ILOS)
A - Knowledge and understanding
By the end of the course the student should gain the following knowledge.
  a1- Section views. (A1, A2, A4)
  a2- Presentation of components in sectional views. (A1, A2)
  a3- Conventional way in sectional views. (A1, A2)
  a4-The correct rules for dimensioning.(A1, A4)
B - Intellectual skills
By the end of the course the student should be able to:
  b1- Draw different problems in sectional views. (B3, B9)
  b2- Select the proper section for each component. (B3, B8)
  b3- Draw dimensions for components from production point of view. (B3, B9)
C – Professional and practical skills
By the end of the course the student should be able to:
  c1- Read orthographic drawing with sectional views. (C1, C3, C4)
  c2- Make necessary views using sections and dimensioning. (C1, C3, C4)
  c3- Communicate by graphic language. (C3, C4)

D – General and transferable skills

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

    d1- Communicate graphically effectively. (D3)

    d2- Refer to relevant literature. (D9)

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A2, A4
B	Intellectual skills	B3, B8, B9
C	Professional and practical skills	C1, C3, C4
D	General and transferable skills	D3, D9

3 – Contents

Topic	Lecture hours	Tutorial hours
• Importance of drawing sections	2	4
• Basic types of sections	2	4
• Full sections : longitudinal ,cross – section	2	4
• Off set ; aligned sections	2	4
• Half-section ;Partial S.; Revolved	2	4
• & Auxiliary sections .	2	4
• Dimensioning – Arrangements of	2	4
• dimensions – Rules for dimensions	2	4
• of circles ; radii ; angles ; plain holes	2	4
• Conventional practice in ED	2	4
• Drawing of steel sections	2	4
• Steel constructions	6	12
• Revision	2	4
Total hours	**30**	**60**

4 - Teaching and Learning and Assessment methods:

Course ILO's		Lecture	Presentations & Movies	Discussions &seminars	Tutorials	Problem solving	Laboratory & Experiments	Projects	Researches and Reports	Modeling and Simulation	Site Visits	Discovering	Written Exam	Practical Exam	Quizzes	Term papers	Assignments
Knowledge	a1	1	1		1								1				1
	a2	1	1		1					1			1				1
	a3	1	1		1					1			1		1		1
	a4	1			1								1				1
Intellectual	b1	1	1		1	1				1			1				1
	b2	1	1		1	1				1			1				1
	b3	1	1		1	1				1			1				1
Applied	c1	1			1	1				1			1				1
	c2	1	1		1	1				1			1				1
	c3	1	1		1	1				1			1				1
General	d1	1	1		1	1				1			1				1

	d2	1	1		1	1			1		1			1

5- Assessment Timing and Grading:

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

6- List of References

6-1 Course notes
   Engineering Drawing (2) by : Prof. Mamdouh Saber

6-2 Required books
James H.Earle, Graphics For Engineering, Addison Wesley Publishing Company, 1991.

6-3 Recommended books   Non

6-4 Periodicals, Web sites etc .Non
http://graphicalcommunication.skola.edu.mt/syllabus/engineering-drawing/
www.geniusnepal.com/downloads/**drawing**tutorial
http://drawsketch.about.com/od/technicaldrawing/

7- Facilities Required for Teaching and Learning
   o   Overhead projector and screen
   o   Models and prototype as teaching aids

Course Coordinator: Prof. Mamdouh Saber

Head of the Department: Dr. Abdelmagid A. Abdalla

Date: September 2015

Modern Academy for Engineering & Technology
Basic Sciences Department
Course Specification
B 102: English Language II

A- Affiliation

Relevant program: Manufacturing Engineering and Production Technology BSc Program

Electronic Engineering and Communication Technology BSc Program

Architecture Engineering and Building Technology BSc Program

Computer Engineering and Information Technology BSc Program

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

Department offering the course: Basic Sciences Department

Date of specifications approval: September, 2015

B - Basic information

Title: English Language I   **Code:** B 102   **Level:** 1ST. Year Second   **Semester:**

Teaching hours: 2   **Lectures:**2   **Tutorial:**   **Practical:**

C - Professional information

1 – Course Learning Objectives:

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

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

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

a1) identifying the most frequent words, phrases and grammar rules in everyday conversation. (A9), (A10)

a2) communicating effectively in written and oral forms, even at the very beginning levels. (A9), (A10)

a3) differentiating between tenses. (A9)

b - Intellectual skills:

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

b1) enhance class interaction in terms of speaking, reading, listening and writing. (B4)

b2) personalize the learning experience by offering students interesting topics relevant to their interests and experiences. (B4)

b3) employ tasks which encourage students to take an active role in learning and using new vocabulary. (B4)

b4) use different tenses in conversation. (B4)

c - Professional and practical skills:

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

c 1) write paragraphs and peer edit them using error detection. (C12)

c 2) communicate with each other and with the professor. (C11)

c 3) use different tenses in conversation. (C11)

c 4) brainstorm ideas for homework writing. (C12)

d - General and transferable skills:

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

d1- work in a team and involve in group discussion. (D1), (D2), (D3)

d2- present data and results orally. (D1, D2, D3, D6)

d3- communicate effectively in written forms.(D3), (D7)

d4- search for information in references and in internet. (D4), (D7)

d5- practice self-learning. (D4), (D7), (D8)

Course Contribution in the Program ILO's

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

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
A Symphony in Concrete	8		
The electricity	10		
Subject, verb, object	4		
Verb to be	4		
Revision	4		
Total hours	**30**		

4 - Teaching and Learning and Assessment methods:

Course ILO's		Lecture	Warming up	Discussions	Tutorials	Problem solving				Researches and Reports	Modeling and Simulation		Written Exam	Class work	Quizzes	Class participation	Assignments		
Knowledge & Understanding	a1	1	1	1						1			1	1	1	1	1		
	a2	1	1	1						1			1	1	1	1	1		
	a3	1	1	1						1			1	1	1	1	1		
Intellectual Skills	b1	1	1	1						1			1	1	1	1	1		
	b2	1	1	1						1			1	1	1	1	1		
	b3	1	1	1						1			1	1		1	1		

Applied Professional	b4	1	1	1						1				1	1	1	1	1	
	c1	1	1	1						1				1	1	1	1	1	
	c2	1	1	1						1				1	1	1	1	1	
	c3	1	1	1						1				1	1	1	1	1	
	c4	1	1	1						1				1	1	1	1	1	
General Tran. Skills	d1	1	1	1						1				1			1		
	d2		1	1						1							1		
	d3	1	1	1						1							1	1	
	d4	1	1	1						1									
	d5		1							1							1		

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: quizzes, assignments and class participation	Bi-Weekly	10
Mid-Term Exam	6-th Week	5
Practical Exam	-	
Written Exam	Sixteenth week	35
Total		50

6- List of references:
6-1 Course notes:
 El. Khoreiby A. H., Learn, Apply and Excel, lecture notes, Modern Academy Press, 2010.

6-2 Required books
Shelton, James, *Handbook for technical writing*, NTC publishing Group, Illinois, USA, 1998.
6-3 Recommended books:
 Shelton, James**, English for Engineering,** NTC publishing Group, Illinois, USA, 2008.
6-4 Periodicals, Web sites, etc.:
- http://www.bbc.co.uk/learningenglish
- http://www.rong-chang.com/
- http://legacy.australianetwork.com/studyenglish/

7- Facilities required for teaching and learning:
- Library
- Internet

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

Modern Academy for Engineering & Technology
Basic Sciences Department

Course Specification
B 211: Mathematics III

A- Affiliation

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

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

Department offering the course: Basic Scienc Department
Date of specifications approval: September, 2015

B - Basic information

Title: Mathematics III **Code:** B211 **Level:** Second **Semester:** First
Hours **Total** 6hrs **Lectures:** 4hrs **Tutorial** 2hrs **Practical** —

C - Professional information

1 – Course Learning Objectives:
A study of this course aims to realize the basic concepts in ordinary differential equations (O.D.E) and methods of solution and to realize the basic concepts in functions of two or more independent variables and its partial derivative with applications.

2 - Intended Learning Outcomes (ILOS)
a - Knowledge and understanding:
On successful completion of the course, the student should demonstrate knowledge and understanding of:
a1- classification of O.D.E. (A1)
a2- solution of the O.D.E using suitable methods.(A1,A5)
a3- modeling physical, Mechanical, Engineering problem to O.D.E. and solve it. (A1,A5)
a4- applications of partial derivatives to physical and Engineering problems.(A1,A5)

b - Intellectual skills:
On successful completion of the course, the student should be able to.
b1- choose the suitable methods for solving O.D.E. (B1,B2,B7)
b2- apply applications of partial derivatives to Engineering problems. (B1, B2)

c - Professional and practical skills:
On successful completion of the course, the student should be able to:
c1- apply O.D.E in electrical and mechanical problems. (C1, C12)

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

Course Contribution in the Program ILO's

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

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
Classification of Differential equations	4	2	—
First order Differential Equation	4	2	—
Separable and homogeneous Differential equations	4	2	—
Exact and linear Equations	4	2	—
Nth order D.E with constant coefficients	4	2	—
Variation of parameters-Undetermined coefficients	4	2	—
Euler's Equation-Reduction of order	4	2	—
Linear systems of ordinary differential equations	4	2	—
Partial derivatives- directional derivative	6	2	—
Total derivatives-directional derivative	6	2	—
Tangent planes and normal lines	4	2	—
Maxima and minima of function of two variables	4	2	—
Lagrange's multipliers	4	2	—
Series solution of O.D.E.	4	4	—
Total hours	**60**	**30**	**—**

4 - Teaching and Learning and Assessement methods:

Course ILO's		Teaching Methods				Learning Methods	Assessement Method		
		Lecture	Discussions and seminars	Tutorials	Problem solving	Researches and Reports	Written Exam	Quizes	Assignments
Knowledge	a1	1	1	1	1				1
	a2	1		1	1	1	1	1	1
	a3	1	1	1	1	1	1	1	1
	a4	1	1	1	1				1
Intellectual	b1	1	1		1		1	1	1
	b2	1	1		1		1	1	1
Ap	c1	1	1			1	1		
General	d1		1	1		1			1
	d2	1			1	1			1

5- Assessment Timing and Grading:

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

6- List of references:
6-1 Course notes:
Essawi, A. M. (2011) Differential Equations, Lecture Notes, Cairo: MAM Press

Essawi, A. M. (2011) Advanced Calculus (Part 1), Lecture Notes, Cairo: MAM Press
6-2 Required books
Kreyszig, E. (1980) Advanced Engineering Mathematics. John Wiley, New York.
6-3 Recommended books:
Wylie, C. R. and Barrett, L. C. (1996) Advanced Engineering Mathematics. McGraw-Hill.
6-4 Periodicals, Web sites, etc.
www.mathwords.com.

www.khanacademy.org/math/differential-equations

www.sosmath.com/diffeq/diffeq.html

7- Facilities required for teaching and learning:
- Library
- Internet

Course coordinator: Dr. Ashraf Taha EL-Sayed
Head of the Department: Prof.Dr. Lila Soliman
Date: September 2015

Modern Academy for Engineering & Technology
Course Specification
Electronic Engineering and Communications Technology Department
E201: Electrical Circuits Analysis (I)

A- Affiliation

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

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

Department offering the course: Electronic Engineering and Communications Technology Department

Date of specifications approval: September 2015

B - Basic information

Title: Electrical Circuits Analysis   **Code: E201**   **Year/level:** 2nd year, 1st semester.

Teaching Hours: **Lectures:** 2   **Tutorial:** 2

Practical: 1   **Total:** 4

1 – Course Learning Objectives:

The main Objective of this Course is to introduce the basic concepts & theories of: Power calculations in sinusoidal steady state, Balanced three-phase circuits, mutual inductance - Laplace transform and its applications in circuit analysis, Transfer function, Fourier series, Fourier transform and tow-port circuits.

2 - Intended Learning Outcomes (ILOS)

A - Knowledge and understanding:
By the end of the course the student should gain the following knowledge.
a1- Basic concepts, ideas and laws of electrical circuit analysis. (A1, A2, A3)
a2- Voltage, current, and power calculations for a simple resistive circuits. (A1, A3, A5)
a3- Applications of Ohm's and Kirchhoff's Laws. (A1, A3, A5)
a4- Series, parallel, and delta-star connections principles. (A1, A4, A5)
a5- Different techniques of circuit analysis. (A1, A5, A15)
a6- Operational-Amplifier characteristics and applications. (A1, A2, A15)
a7- Characteristics of a sinusoidal current and voltage. (A1, A6, A8)
a8- Basic concepts of RL and RC Circuits. (A1, A3, A5)
a9- Basic concepts of RLC circuits. (A1, A3, A5)

:B - Intellectual skills
By the end of this course the student should be able to:
b1- Apply the Ohm's and K's laws. (B1, B2)
b2- Apply the Powerful techniques of circuit analysis. (B1, B2, B4)
b3- Use the Operational-Amplifier in different applications. (B5, B6, B7)
b4- Apply Thevenin's theorem. (B1, B2, B4)
b5- Apply the maximum power transfer theory. (B1, B2, B4)

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

:D - General and transferable skills
By the end of the course the student should be able to:
d1- Communicate effectively through reports and e- mails. (D1, D2, D3)
d2- Effectively manage tasks, time, and resources. (D2, D6)
d3- Search for information and engage in life-long self-learning discipline. (D3, D7, D9)

Course Contribution in the Program ILO's

	ILO's	Program ILO's
A	Knowledge and understanding	A1, A2, A3, A4, A5, A6, A8, A15
B	Intellectual skills	B1, B2, B4, B5, B6, B7
C	Professional and practical skills	C1, C3, C5, C6, C9, C10, C11
D	General and transferable skills	D1, D2, D3, D6, D7, D9

Contents

Topic	Lecture hours	Tutorial hours	Practical hours
• Introduction	2	2	2
• Circuit element	4	4	2
• Simple resistive circuits	4	4	2
• Techniques of Circuit analysis	6	6	3
• Step Response of First-Order RL and RC circuit.	6	6	3
• Natural and step response of RLC circuits..	4	4	2
• Sinusoidal steady state analysis.	4	4	2
• Total hours	30	30	15

4 - Teaching and Learning and Assessment methods:

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

5- Assessment Timing and Grading:

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

6- List of references:

6-1 Course notes

Electrical Circuits Analysis (theory and Practice).

6-2 Required books

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

6-3 Recommended books

- Electric circuit Analysis, David E. Johnson, 1997, Printcehall, USA.
- Introductory Circuit Analysis, 10th Ed, Boylestad, 2003 printcehall, USA.
- Basic Engineering Circuit Analysis, 6th Ed, J.DaidIrwin, 1999, Johnwiely,USA.

6-4 Web Sites

Website Gallery at h t t p: / / www.prenhall.com.

7- Facilities required for teaching and learning: None

Course coordinator:	Prof. Dr. Said Refai
Head of the Department:	Prof. Dr. Mokhtar Abd El- Haleem
Date:	August 2015

Modern Academy for Engineering & Technology
Basic science Department

Course Specification
B221: Modern Physics

A- Affiliation

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

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

Department offering the course: Basic Science Department

Date of specifications approval: September, 2015

B - Basic information

Title: Modern Physics   **Code:** B221   **Level:** Second year   **Semester:** First
Hours   Total   5 hrs   **Lectures**   2 hrs **Tutorial**   1 hrs   **Practical** 2 hr

C - Professional information

1 – Course Learning Objectives:

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

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:
a1- the theory of relativity (A3, 8)
a2- the particle-wave duality and photoelectric effect (A3, A8,A9).
a3- Compton scattering (A8,A9).
a4- the application to infinite potential well, simple harmonic oscillator and the tunnel effect (A1, A2).
a5- the atomic structure and electronic configuration of elements (A1, A3).
a6- the energy stats and spectra of molecules and solids (A1, A3).
a7- The energy bands of solids (A1, A3).
a8- the theory and structure electrical conduction of metals, insulators and semiconductors. (A1, A3, , A8).

b - Intellectual skills:

On successful completion of the course, the student should be able to.
b1- do applications on the photoelectric effect and Compton scattering (B4, B6, B7).
b2-deduce mathematical relations describing the energy of photon and electron (B1, B2, B12).
b3- deduce relations describing the collision between photon and electron (B4, B5. B7).
b4- classify and compare the different ways of the conductivity of elements (, B5, B7, B8).

c - Professional and practical skills:

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

c1- design, operate, test and maintain photocell (C1, C2, C8)

c2- calculate the energy of electron and photon (C1, C2, C3).

c3- use the light to introduce electric current (C7).

c4- design amplifiers and transformers (C1, C2,C4).

c5- make current and voltage rectification (C1, C11, C12).

c6- use experimental facilities to assemble and operate electronic circuits (C1:C4, C12).

d - General and transferable skills:

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

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

d2- communicate effectively and present data and results orally and in written form(D3).

d3- use ICT facilities in presentations (D4).

d4- search for information's in references and in internet(D7).

d5- practice self-learning(D7, D9).

Course Contribution in the Program ILO's

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

3 – Contents

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

4 – Teaching, Learning and Assessment methods:

Course IL O's		Teaching Methods						Learning Methods		Assessment Method				
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments	Researches and Reports	Modeling and Simulation	Written Exam	Practical Exam	Quizzes	Term papers	Assignments
Knowledge	a1	1	1	1	1		1	1		1		1	1	
	a2	1			1					1		1	1	1
	a3	1			1					1		1	1	1
	a4	1	1	1	1	1	1	1		1		1	1	1
	a5	1					1			1	1	1	1	1
	a6	1						1				1	1	
	a7	1		1	1	1		1	1				1	
	a8	1	1	1	1		1	1		1		1	1	
Intellectual	b1	1			1					1		1		1
	b2	1			1	1				1		1	1	1
	b3	1	1	1	1		1	1		1	1		1	
	b4	1	1		1		1	1		1	1	1	1	1
Applied	c1	1	1		1	1	1			1	1	1	1	1
	c2	1			1					1		1	1	1
	c3	1		1		1		1	1				1	1
	c4	1			1	1					1		1	1
	c5						1				1			
	c6						1				1			
General	d1			1		1		1					1	
	d2		1	1				1	1				1	
	d3	1	1					1					1	1
	d4	1	1	1				1						
	d5							1	1				1	

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: seminars, quizzes assignments and reports	Bi-2 Weeks	10
Mid-Term Exam	6-th Week	10
Practical Exam	Fifteenth week	20
Written Exam	Sixteenth week	60
Total		100

6- List of references:
6-1 Course notes
M. Saad, Modern physics, Lectures notes, Modern Academy Press, 2010.
6-2 Required books:
Peter Y. Yu, Manuel Cordona, Fundamental of semiconductors: physics and Materials Properties, springer, 2010.

6-3 Recommended books
Jasprit Singh, Modern physics for engineers, WILEY-VCH Verlag GmbH & Co. KGaA, Weinheim, Germany, 2004.

Charles E. Burkhardt · Jacob J. Leventhal, Foundations of quantum physics**,** Springer Science, Business Media, LLC, New York, 2008.

6-4 Periodicals, Web sites, etc.

www.iop.org

physics.exchange.com

7- Facilities required for teaching and learning:
- Modern and Semiconductor Physics Lab.
- Library
- Internet

Course coordinator: Dr. Abeer Serag El-deen
Head of the Department: Prof. Dr. Laila Soliman
Date: September 2015

Modern Academy for Engineering & Technology
Architecture Engineering and Building Technology Department
Course Specifications
A 060: Civil Engineering Technology

A- Affiliation
Relevant programs: Manufacturing Engineering and Production Technology BSc Program
Electronic Engineering and Communication Technology BSc Program
Computer Engineering and Information Technology BSc Program
Architecture Engineering and Building Technology BSc Program

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

Department offering the course: Architecture Engineering and Building Technology Department

Date of specifications approval: October, 2013

B - Basic Information
Title: Civil Engineering Technology   **Code:** A060   **Year/level:** 2-nd year / 1st Term
Teaching Hours: **Lectures:** 2   **Tutorial:** 2
                              Practical: --   **Total:** 4

C - Professional Information

1 – Course Learning Objectives

A study of this course will enable the student to:
- Introduce the principles of Civil engineering technology.
- Study civil engineering applications on different   constructions.

2 - Intended Learning Outcomes (ILOS)

A - Knowledge and understanding

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

a1-The technology of building construction methods (A3, A4, A8)

a2- Soil mechanics science (A3, A4, A8)

a3- Process of surveying (A4)

a4-Theory of structures (A4)

a5- Quantities of civil construction works (A7)

B - Intellectual skills

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

b1-Analyze simple construction projects (B1)

b2-Choose suitable solution from different alternatives (B2, B9)

b3- Applying different equations to solve civil projects (B2, B9)

C - Professional and practical skills

c1- Perform longitudinal and transverse leveling. (C1)

c2- Compute quantities of civil works. (C1, C7)

c3- Design using civil standard systems. (C2, C3)

c4- Calculate quantities of earth excavation and fill. (C5)

D - General and transferable skills

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

d1- Application of civil technology in every day life. (D6)

Course Contribution in the Program ILO's

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

3 – Contents

Topic	Lecture hours	Practical hours	Tutorial hours
• Introduction	2		2
• Fundamentals of surveying	2		2
• Measurement of areas from maps and measurement of angles	2		2
• Leveling	2		2
• Computation of volumes	2		2
• Soil mechanics	2		2
• Highway and airports engineering	2		2
• Railway engineering	2		2
• Environmental engineering	2		2
• Building construction	2		2
• Foundations	2		2
• Building materials	2		2
• Quantities and specifications	2		2
• Isolating layers	2		2
• General revision	2		2
Total hours	**30**		**30**

4- Teaching and Learning Methods

Course ILO's		Teaching Methods							Learning Methods				Assessment Method				
		Lecture	Presentations & Movies	Discussions &seminars	Tutorials	Problem solving	Laboratory & Experiments	Projects	Researches and Reports	Modeling and Simulation	Site Visits	Discovering	Written Exam	Practical Exam	Quizzes	Term papers	Assignments
Knowledgea4	a1	1			1	1			1				1		1	1	1
	a2	1			1	1	1		1							1	1
	a3	1	1		1	1	1		1				1		1	1	1
	a4	1			1	1	1						1		1	1	1
	a5	1			1	1	1	1	1				1			1	1
Intellectu	b1		1	1				1	1	1						1	
	b2			1	1	1		1								1	1
	b3				1	1		1	1				1		1	1	1
Applied	c1							1		1							
	c2				1	1		1					1		1	1	1
	c3				1	1		1	1	1			1		1	1	1
	c4				1	1		1	1				1		1	1	1

General	d1		1			1	1		1				1	1

5- Assessment Timing and Grading:

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

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

6-2 Required books
المواد الهندسيه، د. كريم محمد عطا، دار الكتب، ١٩٩٥

6-3 Recommended books
- **Civil engineering books in the library**

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

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

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

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

Date: **September 2015**

Modern Academy for Engineering & Technology
Computer Engineering and Information Technology Department
Course Specification
E210: Computer Programming I

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

Department offering the course: Electrical Engineering Department.

Date of specifications approval: September 2015

B - Basic information

Title: Computer Programming (I)   **Code:** E210   **Year/level:** 2nd year, 1st semester

Teaching Hours: **Lectures:** 2   **Tutorial:** -
Practical: 2   **Total:** 4

C - Professional information

1 – Course Learning Objectives:

The main objective of this course is to acquaint students with the methodologies of problem solving and the way of formulating the problem such that it can be expressed as an algorithm and thereby convert it into computer program. Moreover, running, testing, debugging the program and analyzing output are among these objectives.

2 - Intended Learning Outcomes (ILOS)

A - Knowledge and understanding:

By the end of the course the student should be knowledgeable of:

a1- Program design and documentation tools. (A1, A2, A4)
a2- Syntax of Pascal as example of high level languages. (A5, A13, A16, A18)
a3- Various types of errors (syntax, logical, run-time). (A2, A5, A18)
a4- Arrays as a storage of multiple data elements in primary memory. (A13, A16, A18)
a5 - Syntax of functions and making calls. (A15, A18)

B - Intellectual skills:

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

b1- Design program and derive its functional specifications. (B1, B2, B3)
b2- Debug programs. (B2, B6, B16, B17)
b3- Create fully operational programs from multiple modules. (B8, B13, B14)
b4- Use documentation tools. (B13, B14)

C- Professional and practical skills:

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

c1- Develop software using Pascal language. (C6, C15)
c2- Convert HLL programs into executable code. (C14, C15)
c3- Document programs. (C18)

D- General and transferable skills:

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

d1- Communicate effectively in written form. (D1, D3)
d2- Demonstrate efficient IT capabilities. (D4)
d3- Search for information and adopt life-long self-learning. (D7)

Course Contribution in the Program ILO's

	ILO's	Program ILO's
A	Knowledge and understanding	A1, A2, A4, A5, A13, A15, A16, A18
B	Intellectual skills	B1, B2, B3, B6, B8, B13, B14, B16, B17
C	Professional and practical skills	C6, C14, C15, C18
D	General and transferable skills	D1, D3, D4, D7

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
• Steps for solving problems by comp. programs	2	-	
• Program documentation and flow charts	2	-	
• Structured programming	4	-	
• program parts	2	-	2
• Input / Output	2		4
• Data types and declaration	2	-	4
• Operators and precedence	2		6
• Selection constructs	4	-	3
• Loops	4		4
• Arrays	3		3
• Procedures and Functions	3		4
Total hours	**30**	**-**	**30**

4 - Teaching and Learning and Assessment methods:

	Course ILO's		Lecture	Presentations & Movies	Discussions & Seminars	Tutorials	Problem solving	Laboratory & Experiments	Researches and Reports	Modeling and Simulation	Site Visits	Assignments	Quizzes & Presentations	Written Exam	Practical Exam
Knowledge	a1		1	1	1	1	1					1	1	1	
	a2		1	1	1	1	1	1				1	1	1	1
	a3		1	1	1	1	1	1				1	1	1	1
	a4		1	1	1	1	1	1						1	
	a5		1	1	1	1	1							1	
Intellectual	b1		1	1	1	1	1					1	1	1	
	b2		1	1	1	1	1	1				1	1	1	1
	b3		1	1	1	1	1	1						1	1
	b4		1	1	1	1	1							1	
Applied	c1							1							1
	c2							1							1
	c3							1							1
General Tran	d1											1	1		
	d2											1	1		
	d3											1	1		

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	10
Mid-Term Exam	6th Week	10
Practical Exam	14th , 15th Weeks	20
Written Exam	Sixteenth Week	60
Total		**100**

6- List of references:

6.1 Course notes   Lecture and Lab Notes
6.2 Required books   Robert Lafore, "Object oriented Programming In C++", SAMS, 2002
6.3 Recommended books: Non
6.4 Periodicals, Web sites, etc.:   Non

7- Facilities required for teaching and learning:

- Data Show and laptop computer

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

Modern Academy for Engineering & Technology
Electronic Engineering and Communications Technology Department
E220 : Instrumentation and Testing I

A- Affiliation
Relevant program:

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

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

Department offering the course:
Electronics Engineering and Communications Technology Department.

Date of specifications approval:
Nov. 2011

B - Basic Information

Title :	Instrumentation and testing (1)	**Code:** E220	**Year/level:** 2nd E.E./ 1st S.
Teaching Hours :		**Lectures:** 2	**Tutorial** : -
		Practical: 2	**Total** : 4

C- Professional Information

1 – Course Learning Objectives

The main objective of this course is to introduce the basic concepts and theory of design of the different electrical measuring instruments such as: Voltmeters, ammeters, wattmeter, Ohmmeter, galvanometers….etc. Also it enables the student to calibrate these measuring instruments.

2 - Intended Learning Outcomes (ILOS)

A - Knowledge and Understanding
By the end of the course the student should gain the following knowledge:
a1- Concepts of different system of units. (A1)
a2- Principles of operation of the different electrical measuring instruments. (A14, A15)
a3- Functional circuit diagram of the different electrical measuring instruments. (A4)
a4- Analysis of measurement errors. (A4, A15)
a5- Advantages and disadvantages of each measuring instruments. (A4, A15)
a6- Procedure of calibration of measuring instruments. (A14, A15)

B - Intellectual Skills
By the end of the course the student should be able to:
b1- Transform any system of units to another more convenient one. (B3,B5,B7)
b2- Deduce the torque equations of measuring instruments. (B1,B3)
b3- Select the more appropriate measuring circuit diagram. (B5,B13)
b4-Choose the more suitable instruments for a specific measurement. (B6,B10,B14)
b5-Analyze the error of measurement. (B5, B9, B11)

C - Professional and Practical Skills

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

c1- Construct the most suitable measuring circuit diagram from the measuring errors point of view. (C3,C16,C17)

c2- Identify the most convenient measuring instruments for a given measured quantity. (C3,C16,C17)

c3- Calculate the resulting connection and instrumental errors. (C2,C5,C18)

c4- Avoid over loading of the used measuring instruments. (C15,C20)

D - General and Transferable Skills

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

d1- Ability to prepare presentations and Seminars. (D1,D3, D6)

d2- Search for information from references, journals and internet. (D8,D9)

Course Contribution in the Program ILO's

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

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
• Units, Dimensions, and Standards.	2	-	2
• Types and Analysis of Errors in Measurements.	2	-	2
• Fundamentals of Analogue Instruments.	2	-	2
• Deflection Type Permanent Magnet Moving Coil, and Electro-dynamic Instruments.	2	-	2
• General Torque Equations and Galvanometers	2	-	2
• DC Multi-Range Voltmeters.	2	-	2
• DC Multi-Range Ammeters.	2	-	2
• AC Rectifier Type Voltmeters.	2	-	2
• AC Rectifier Type Ammeters.	2	-	2
• Series and Multi-Range Ohmmeters.	2	-	2
• DC and AC Electro-dynamic Voltmeters, and Ammeters.	2	-	2
• DC and AC Electro-dynamic Voltmeters, and Ammeters.	2	-	2
• DC and AC Electro-dynamic Watt-meters.	2		2
• Calibration Methods of DC and AC Instruments.	2	-	2
• Calibration Methods of DC and AC Instruments.	2	-	2
Total Hours	30	-	30

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods						Learning Methods				Assessment Method						
		Lecture	Tutorials	Problem solving	Laboratory &Experiments			Researches and Reports	Self learning			Written Exam	Practical Exam	Quizzes	Mid-Term Exam	Assignments		
Knowledge & Understanding	a1	1	1	1				1	1			1		1	1	1		
	a2	1	1	1					1			1		1	1	1		
	a3	1	1	1	1			1				1	1	1	1	1		
	a4	1	1	1	1			1				1	1	1				
	a5	1	1	1	1			1				1	1	1				
	a6	1	1	1	1			1				1	1	1				
Intellectual Skills	b1	1			1			1				1	1					
	b2	1	1	1				1	1			1		1	1	1		
	b3	1	1	1				1				1		1	1	1		
	b4	1	1	1	1				1			1	1	1	1	1		
	b5	1	1	1	1			1	1			1	1	1	1	1		
Applied Prof. Skills	c1	1	1	1	1			1				1	1	1	1			
	c2	1	1	1	1				1			1	1	1	1			
	c3	1	1	1	1			1						1	1	1		
	c4	1	1	1	1			1						1	1	1		
General Trans. Skills	d1	1			1			1	1									
	d2	1	1	1	1			1	1					1	1		1	
	d3	1	1	1	1			1	1					1	1		1	

5- Assessment Timing and Grading:

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

6- List of References
6-1 Course notes:
SHOUMAN E.I. SHOUMAN, Electrical Instrumentation & Measurements: Part I, Cairo, 2008

6-2 Required books:
David A Bell, Electronic Instrumentation and Measurements, Prentice Hall PTR Canada,2005.

6-3 Recommended books:
Albert D. Hefrick, and William D. Cooper, Modern Electronic Instrumentation and Measurement Techniques, Prentice- Hall International, Inc., London UK,1990.

7- Facilities Required for Teaching and Learning
Electrical and Electronic lab.
SHOUMAN E.I. SHOUMAN, Experiments on Electrical instruments and measurements: Part I, Cairo, 2008.

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

Modern Academy for Engineering & Technology
Basic Sciences Department
Course Specification
B 200: English Language III

A- Affiliation

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

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

Department offering the course: Basic Sciences Department
Date of specifications approval: September, 2015

B - Basic information
Title: English Language III   **Code:** B 200   **Year/ Level:** 2nd Year, 1st Semester
Teaching hours: **Lectures:**2   **Tutorial:**   **Practical:**
    Pre-requisite: **Total: 2**

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

2 - Intended Learning Outcomes (ILOS)
a - Knowledge and understanding:
On successful completion of the course, the student should demonstrate knowledge and understanding of:
a1) Identifying the most frequent words, phrases and grammar rules in everyday conversation. (A9), (A10)
a2) how to communicate effectively, even at the very beginning levels. (A9), (A10)
a3) how to differentiate between tenses. (A9)
b - Intellectual skills:
On successful completion of the course, the student should be able to.
b1) Enhance class interaction in terms of speaking, reading, listening and writing. (B4)
b2) Personalize the learning experience by offering students interesting topics relevant to their interests and experiences. (B4)
b3) Employ tasks which encourage students to take an active role in learning and using new vocabulary. (B4)
b4) Use different tenses in conversation. (B4)

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

d - General and transferable skills:

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

d1- Work in a team and involve in group discussion. (D1), (D2), (D3)

d2- Communicate effectively and present data and results orally and in written form. (D1), (D2), (D3), (D6)

d3- communicate effectively in written and oral forms.(D3), (D7)

d4- Search for information in references and in internet. (D4), (D7)

d5- Practice self-learning. (D4), (D7), (D8)

Course Contribution in the Program ILO's

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

3 – Contents

Topic	Lecture hours
• Sir Isaac Newton.	8
• Making A Talkie Film.	8
• Energy Sense Makes Future Sense.	4
• Plural of nouns	4
• Regular and irregular verbs	4
• Revision	2
Total hours	**30**

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods							Learning Methods				Assessment Method						
		Lecture	Warming up	Discussions	Tutorials	Problem solving			Researches and Reports	Modeling and Simulation			Written Exam	Class work	Quizzes	Class participation	Assignments			
Knowledge & Understanding	a1	1	1	1					1				1	1	1	1	1			
	a2	1	1	1					1				1	1	1	1	1			
	a3	1	1	1					1				1	1	1	1	1			
Intellectual Skills	b1	**1**	**1**	**1**					**1**				1	1	1	**1**	**1**			
	b2	**1**	**1**	**1**					**1**				1	1	1	**1**	**1**			
	b3	**1**	**1**	**1**					**1**				1	1		**1**	**1**			
	b4	1	**1**	**1**					**1**				1	1	1	**1**	**1**			
	c1	1	1	1					1				1	1	1	1	1			

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Applied Professional	c2	1	1	1							1			1	1	1	1	1		
	c3	1	1	1							1			1	1	1	1	1		
	c4	1	1	1							1			1	1	1	1	1		
General Tran. Skills	d1	1	1	1							1			1		1				
	d2		1	1							1					1				
	d3	1	1	1							1					1	1			
	d4	1	1	1							1									
	d5										1					1				

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: quizzes, assignments and class participation	Bi-Weekly	10
Mid-Term Exam	6-th Week	5
Practical Exam	-	
Written Exam	Sixteenth week	35
Total		50

6- List of references:

6-1 Course notes:
Learn, apply and Excel by Prof. Dr. A. H. El. Khoreiby

6-2 Required books
Shelton, James, *Handbook for technical writing*, NTC publishing Group, Illinois, USA, 1998.

6-3 Recommended books:
None

6-4 Periodicals, Web sites, etc.:
- http://www.bbc.co.uk/learningenglish
- http://www.rong-chang.com/
- http://legacy.australianetwork.com/studyenglish/

7- Facilities required for teaching and learning:
Library and Internet

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

Modern Academy for Engineering & Technology
Computer Engineering and Information Technology Department
Course Specification
E212: Digital Logic Circuits

A- Affiliation

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

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

Department offering the course: Computer Engineering and Information Technology Department

Date of specifications approval: September 2015

B - Basic Information

Title: Digital Logis Circuits   **Code:** E 212   **Year/level:**2nd /2nd

Teaching Hours: **Lectures:** 4   **Tutorial:** -

Practical 1   **Total:** 5

C - Professional Information
1 – Course Learning Objectives
The basic objective of this course is to give the students the main concepts of digital circuits construction and the different approaches to achieve the highest speed and the lowest cost of these circuits

2 - Intended Learning Outcomes (ILOS)
A - Knowledge and Understanding
By the end of the course the student should gain the following knowledge:
a-1 The Laws of Boolean algebra to simplify a complicated logic expressions. (A1, A2)
a-2 Construction of the truth table for a special given problem. (A2, A5)
a-3 Expressing a logic function in the S.O.P and P.O.S algebraic forms and the Karnaugh map representation. (A2, A5)
a-4 Minimization of logic functions using K.M and Quine- Mc-Clusky's tabular method and realization using NAND and NOR gates only. (A2, A3)
a-5 Combinational modules used in digital systems like adders, de-multiplexers, multiplexers, decoder,encoders, parity checker and comparator circuits. (A2, A3)
a-6 Representation of simple sequential circuits using state diagram and state table. (A2, A5)
a-7 Sequential circuit elementary Flip-Flop circuits. (A2, A5)
a-8 Overcoming racing in synchronous sequential circuits using M.S or edge-triggered Flip-Flops. (A2, A3)
a-9 Sequential logic modules like registers, shift registers and counters. (A2, A3, A14)
a-10 Memory modules like combinational R.O.M and RAM sequential. Modules. (A2, A3, A14)

b - Intellectual skills:

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

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

c - Professional and practical skills:

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

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

d - General and transferable skills:

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

- Use internet, references and journals for searching information (D3, D7, and D9).
- Write a technical report for a given task and prepare its presentation (D3, D4, D6, and D7).
- Join teams (D1, D2, and D5).

Course Contribution in the Program ILO's

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

3 – Contents				
Week No.	**Topic**	**Lecture Hours**	**Tutorial Hours**	**Practical Hours**
1	• Introduction -Basic Definitions. -Laws of Boolean Algebra.	4	-	1
2	• Logic Functions Representation &Realization -Methods of representation of logic functions truth table, S.O.P and P.O.S) -Realization of logic functions using AND-OR-NOT, NAND only and NOR only gate systems.	2 2	-	1
3	-Matching logic functions with gate systems • Logic function minimization -Using Basic laws of Boolean Algebra.	2 2		1
4	o Using Karnaugh map minimization. -Using Quine -Mc Clusky's Method.	2 2	-	1
5	Minimization of multiple-output Logic Functions • Combinational logic modules -Half and full adders, Parallel adder connection, look ahead carry.	2 2	-	1
6	o Decoders and de-multiplexers o Encoders. o Data selectors (multiplexers).	2 2	-	1
7	-Parity checkers. -Read-only memories	2 2		1
8	-Binary comparators. • Sequential logic circuit elements -State diagram and stat table representation of sequential circuits.	2 2		1
9	o Asynchronous and synchronous sequential elements. - S-R Flip-flop,J-K flip-flop	2 2	-	1
10	-D-Flip-flop and T flip-flop -Racing in sequential circuits	2 2	-	1
11	-Master –slave and Edge –triggered Flip-flops. • Sequential Logic circuit modules -Introduction.	2 2		1
12	Registers and shift registers.	4		1
13	Asynchronous and synchronous counters.	4	-	1
14	Counters using shift –registers (Johnson and ring counters)	4		1
15	Random access memories(basic cell,addressing and read-write operations)	4		1
	Total Hours	**60**	**-**	**15**

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4 - Teaching and Learning and Assessment methods:

Course ILO's		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		
				Teaching Methods						Learning Methods				Assessment Method					
Knowledge & Understanding	a1	1	1	1			1			1			1		1		1		
	a2	1					1						1		1	1	1		
	a3	1					1						1		1		1		
	a4												1		1				
	a5	1			1		1						1	1	1		1		
	a6	1			1		1			1			1			1	1		
	a7	1	1	1	1	1	1			1	1		1	1		1	1		
	a8	1			1		1						1	1	1		1		
	a9	1			1		1			1			1			1	1		
	a10	1	1	1	1	1	1			1	1		1	1		1	1		
Intellectual Skills	b1	1			1								1		1		1		
	b2	1	1										1		1		1		
	b3	1		1	1		1			1			1	1			1		
	b4	1			1		1			1			1	1	1		1		
	b5	1	1		1	1	1						1	1	1		1		
Applied Professional Skills	c1	1			1	1	1						1		1				
	c2	1	1										1		1				
	c3	1		1			1			1	1								
	c4	1	1		1	1													
	c5	1	1		1		1												
General Tran. Skills	d1			1		1				1									
	d2		1	1						1	1								
	d3	1	1							1									

5- Assessment Timing and Grading:

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

6- List of References

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

6-2 Required books
-Mohi Eldin Rateb, "Digital Logic Circuits ", Modern Academy Press.,2002.
- Mano,M.M&Kime,C.R,"Logic and Computer Design Fundamentals 2nd ed., Englewood cliffs, NJ: Prentice tlall,2000.
- Nelson,V.P,Nagel,H.T.,Carroll,B.D. and Irwin,J.D." Digital Logic Circuit Analysis and Design ",NJ: Prentice Hall,1995.

6-3 Recommended books
- Warkely,J.F, "Digital Design: Principles and Practices"2nd ed. Engel wood cliffs, NJ: Prentice Hall,2000.
- Mano,M.M." Digital Design" 2nd ed.Englewood cliffs,NJ: Prentice Hall,1991

6-4 Periodicals, Web sites, etc.
Website Gallery at http: //www.prenhall.com/mano

7- Facilities Required for Teaching and Learning: None
Course coordinator: Prof. Dr. MOHI-ElDIN RATEB
Head of the Department: Prof. Dr. Mokhtar Abd El- Haleem
Date: August 2015

Modern Academy for Engineering & Technology
Basic Sciences Department

Course Specification
B 212: Mathematics IV

A- Affiliation

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

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

Department offering the course: Basic Scienc Department
Date of specifications approval: September, 2015

B - Basic information

Title: Mathematics IV   **Code:** B212   **Level:** Second year   **Semester:** Second
Hours   Total   6hrs   **Lectures:** 4hrs   **Tutorial**   2hrs   **Practical**   —

C - Professional information

1 – Course Learning Objectives:

A study of this course aims to realize the basic concepts in Laplace transform and special functions and Fourier series and to use the Laplace transform to solve O.D.E., integral equations to use double and trible integrals to integrate function of severed variables in different coordinates.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

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

a1- rules of Laplace transform and its inverse in applications.(A1,A2,A5)
a2- definitions of the special functions and its application. (A1,A5)
a3- fourier series and its applications in applied engineering problems. (A1,A2,A5)
a4- multiple integration in applications.(A1,A5)
a5- uses of vector calculus analysis in applications. (A1)

b - Intellectual skills:

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

b1- apply rules of Laplace transform and its inverse to Solve O.D.E and integral equations. (B1, B2, B3, B7)
b2- choose the right decision by choosing the best kind of multiple Integration in applications. (B1, B2, B3)
b3- use vector analysis to evaluate line integrals and surface integrals for a vector function. (B2)
b4- make analysis for electrical problem using Fourier series. (B1, B2)

c - Professional and practical skills:

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

c1- apply Laplace transform in electrical and mechanical problem. (C1, C12)
c2- apply Fourier series in electrical and mechanical problem. (C1, C12)

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c3- apply multiple Integration in electronics. (C1, C12)

c4- apply vector analysis to find the work done by the force field in electrical problem. (C1, C12)

d - General and transferable skills:

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

d1- communicate effectively. (D3)

d2- search for information. (D7)

Course Contribution in the Program ILO's

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

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
The Gamma and Beta function	4	2	—
Laplace transform	2	2	—
First shift theorem - Second shift theorem	4	2	—
Differentiation and integration of Laplace transform	2	2	—
Laplace transform of derivative and Integral	2	2	—
Convolution theorem and applications of Laplace transform	4	2	—
Fourier series and its applications	4	2	—
Legendre functions and Legendre O.D.E.	4	2	—
Bessel functions and Bessel O.D.E.	4	2	—
Double and triple integrals with applications	6	2	—
Polar, Cylindrical and spherical coordinates in multiple integrals with applications	6	2	—
Line integrals and applications and Green's theorem	6	2	—
Surface area and surface integrals with applications	4	2	—
Divergence Theorem	4	2	—
Stokes Theorem	4	2	—
Total hours	**60**	**30**	**—**

4 - Teaching and Learning and Assessement methods:

Course ILO's		Teaching Methods				Learning Methods	Assessement Method		
		Lecture	Discussions and seminars	Tutorials	Problem solving	Researches and Reports	Written Exam	Quizzes	Assignments
Knowledge	a1	1	1	1	1	1	1	1	1
	a2	1	1	1	1		1	1	1
	a3	1		1	1		1	1	1
	a4	1	1	1	1	1	1	1	1
	a5	1	1	1	1		1	1	1
Int ell	b1	1		1	1		1	1	1

Course ILO's		Teaching Methods				Learning Methods	Assessement Method		
		Lecture	Discussions and seminars	Tutorials		Lecture	Discussions and seminars	Tutorials	
	b2	1	1	1	1		1	1	1
	b3	1	1	1	1	1	1	1	1
	b4	1	1	1	1	1	1	1	1
Applied	c1	1	1			1	1		
Applied	c2	1	1		1	1	1		
Applied	c3	1	1			1	1		
Applied	c4	1	1			1	1		
General	d1		1	1		1			1
General	d2	1			1	1			1

5- Assessment Timing and Grading:

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

6- List of references:

6-1 Course notes:
Essawi, A. M. (2011) Laplace Transform and Special Functions, Lecture Notes, Cairo: MAM Press.
Essawi, A. M. (2011) Advanced Calculus (Part 2), Lecture Notes, Cairo: MAM Press

6-2 Required books
Wylie, C. R. and Barrett, L. C. (1996) Advanced Engineering Mathematics. McGraw-Hill.

6-3 Recommended books:
Kreyszig, E. (1980) Advanced Engineering Mathematics. John Wiley, New York.

6-4 Periodicals, Web sites, etc.
www.mathwords.com.
www.khanacademy.org/math
www.sosmath.com

7- Facilities required for teaching and learning:
- Library
- Internet

Course coordinator: Dr. Ashraf Taha EL-Sayed
Head of the Department: Prof.Dr. Lila Soliman
Date: September 2015

Modern Academy for Engineering & Technology
Course Specification
Electronic Engineering and Communications Technology Department
E202: Electrical Circuits Analysis (II)

A- Affiliation

Relevant program:	Computer Engineering and Information Technology BSc Program
	Electronic Engineering and communication Technology BSc Program
Department offering the program:	Electronic Engineering and Communications Technology Department
	Computer Engineering and Information Technology Department
Department offering the course:	Electronic Engineering and Communications Technology Department
Date of specifications approval:	September 2015

B - Basic information

Title: Electrical Circuits Analysis **Code:** E202 **Year/level:** 2nd year, 2nd semester.
Teaching Hours: **Lectures:** 2 **Tutorial:** 2
  Practical: - **Total:** 4

C - Professional information

1 – Course Learning Objectives:

The main Objective of this Course is to introduce the basic concepts & theories of: Power calculations in sinusoidal steady state, Balanced three-phase circuits, mutual inductance - Laplace transform and its applications in circuit analysis, Transfer function, Fourier series, Fourier transform and tow-port circuits.

2 - Intended Learning Outcomes (ILOS)

A - Knowledge and understanding:

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

a1- Basic concepts of power calculations in sinusoidal steady state(A1,A5).
a2- Basic concepts of the balanced three-phase circuits.(A1,A2,A3)
a3- Principles of mutual inductance.(A1,A3)
a4- Principles of series and parallel resonance.(A1,A2)
a5- Laplace transforms theory.(A4,A5)
a6- Transfer function.(A3,A5,A6)
a7- Fourier series and Fourier transform theories.(A3,A5,A6)
a8- Principles of the two-port circuits(A2,A6)

B Intellectual skills:

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

b1- Use the principles of the balanced three-phase circuits.(B1,B2)
b2- Apply the principles of series and parallel resonance.(B3,B4)
b3- Apply the Laplace transformation technique to circuit analysis(B5,B6,B7).
b4- Use The transfer function.(B1,B4)
b5- Apply the Fourier series and Fourier transform theories (B1,B4)
b6- Apply the principles of two-port circuits in circuit's analysis.(B1,B4)

C - Professional and practical skills:

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

c1- Estimate the cost of the electricity bill. (C1, C2)

c2- Improve the power factor for companies and industrial factors. (C1, C2)

c3- Implement the achieved knowledge to recognize 3-phase balanced circuits and its analysis. (C1, C2)

c4- Analyze the given realized circuits excited by other than simusoidal sources. (C1, C2)

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

c6- Implement the techniques of two- port terminated network and anlyze it to obtain its charachteristics. (C1, C2)

D - General and transferable skills:

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

d1- Communicate effectively through reports and e- mails. (D1, D2, D3)

d2- Effectively manage tasks, time, and resources. (D2, D7)

d3- Search for information and engage in life-long self-learning discipline. (D7, D9).

Course Contribution in the Program ILO's

	ILO's	Program ILO's
A	**Knowledge and understanding**	A1, A2, A3, A4, A5, A6
B	**Intellectual skills**	B1, B2, B3, B4, B5, B6, B7
C	**Professional and practical skills**	C1,C2
D	**General and transferable skills**	D1, D2, D3, D7, D9

3 – Contents

Opic	Lecture hours	Tutorial hours	Practical hours
Power calculations in sinusoidal steady state	2	4	-
Balanced three-phase circuits	4	2	-
Mutual inductance	4	2	-
Series and parallel resonance	2	4	-
Laplace transformation	6	6	-
The transfer function	2	2	-
Fourier series - the Fourier transform	4	4	-
Tow-port circuits	6	6	-
Total hours	30	30	-

4 - Teaching and Learning and Assessment methods:

Course ILO's		Lecture	Presentations & Movies	Discussions & Seminars	Tutorials	Problem solving	Laboratory & Experiments	Brain storming	Self Learning	Researches and Reports	Midterm	Quizzes	Assignments	Written Exam	Practical Exam
			Teaching Methods					**Learning Methods**			**Assessment Method**				
Knowledge & Unders	a1	1				1		1			1		1	1	
	a2	1				1		1			1		1	1	

	a3	1	1			1		1			1		1	1	
	a4	1				1		1				1	1	1	
	a5	1				1		1					1	1	
	a6	1	1	1		1		1		1		1	1	1	
	a7	1		1		1		1		1			1	1	
	a8	1		1		1		1		1			1	1	
Intellectual Skills	b1				1	1		1			1		1	1	
	b2				1	1		1			1	1	1	1	
	b3				1	1		1					1	1	
	b4				1	1		1					1	1	
	b5				1	1		1					1	1	
	b6				1	1		1					1	1	
Applied Professional Skills	c1	1		1		1		1		1		1	1	1	1
	c2	1		1		1		1		1		1	1	1	1
	c3	1		1		1		1		1		1	1	1	1
	c4	1		1		1		1		1		1	1	1	1
	c5	1		1		1		1		1		1	1	1	1
	c6	1		1		1		1		1		1	1	1	1
General Tran. Skills	d1									1					
	d2			1	1										
	d3							1							

5- Assessment Timing and Grading:

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

6- List of references:

6-1 Course notes
Electrical Circuits Analysis (theory and Practice).

6-2 Required books
Electrical Circuits, J.Nilson – Addison Wesly, Pub. Com.Inc, 1998.

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

6-3 Recommended books
- Electric circuit Analysis, David E. Johnson, 1997, Printcehall, USA.
- Introductory Circuit Analysis, lothEd, Boylestad, 2003printcehall, USA.
- Basic Engineering Circuit Analysis, 6th Ed, J.DaidIrwin, 1999, Johnwiely,USA.

6-4 Web Sites

Website Gallery at h t t p: / / www.prenhall.com.

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

7- Facilities required for teaching and learning: None

Course coordinator: Prof. Dr. Said Refai
Head of the Department: Prof. Dr. Mokhtar Abd El- Haleem
Date: Nov. 2011

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department

Course Specification
E240: Data Structures

A- Affiliation

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

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

Department offering the course: Computer Engineering and Information Technology Department
Date of specifications approval: September 2015.

B - Basic information

Title: Data Structures   **Code:** E 240   **Year/level:** 2nd /1st

| **Teaching Hours:** | **Lectures:** | 3 | **Tutorial:** | - |
| | **Practical** | - | **Total:** | 3 |

C - Professional information

1 – Course Learning Objectives:

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

2 – Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

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

a1- Storage of data in counter memory like numbers in the fixed and floating point, one and two-dimemsional arrays, matrices, records, and spare matrices (A1, A3,A18).

a2- Push and pop operations associated with a stack and memory addressing (A1, A3, A5, A9,A18).

a3- Insertion and deletion from a circular queue (A3, A9,A18).

a4- Representation of header, header-free, and two-way linked lists in memory (A2, A4, A9,A18).

a5- Traversing, searching, insertion, and deletion algorithms for linked lists (A3, A5, A12,A18).

a6- Linked, T.B.S and string array representation of binary tree in computer memory (A2, A4, A9,A18).

a7- Traversal algorithms, using preorder, inorder and postorder traversals (A3, A5, A12,A18).

a8- Path length and Huffman's algorithm (A2, A3, A16,A18).

a9- Direct and binary searching algorithms, and associated binary search tree (B.S.T) with searching, deletion, and insertion into B.S.T (A2, A3, A5, A12,A18).

a10- Sorting algorithms using selection, exchange, insertion, and deducing the algorithms complexity (A2, A4, A5,A18).

a11- Bubble, quick, and heap sort algorithms (A2, A4, A9,A18).

b - Intellectual skills:

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

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

b2- Deduce the proper data structures algorithms for problems arising in the engineering fields (B2, B4, B12, and B14).

b3- Optimize data manipulation to minimize the program running time implementing the Huffman's algorithm (B1, B2, B4, B8, and B14).

b4- Construct a special data base for storage of data on the basis of the B.S.T insertion, and deletion algorithms (B2, B3, B8, B12, B17, and B18).

c - Professional and practical skills:

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

c6- Use the data structure as program tools (C1, C2, and C5).

c7- Join the allocated topics with topics of the compiler subject to achieve an optimum compiler design (C1, C2, C3, and C6).

c8- Use the given topics to measure program efficiency (C1, C5, and C6).

d - General and transferable skills:

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

d1- Communicate effectively through reports and e-mails (D3, D6, and D7).

d2- Demonstrate efficient IT capabilities (D4, D6).

d3- Search forinformation and engage in life-long self-learning discipline (D1, D2, and D7).

Course Contribution in the Program ILO's

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

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
➢ Introduction	4		-
• Basic Definitions and basic operation.			
• Data representation and storage, fixed point and floating point formats.			
• Applications of data structure.			
➢ Arrays	6		-
• Storage of one dimensional arrays in memory.			
• Storage of two-dimensional arrays using row major and column major ordering.			
• Pointer arrays.			
• Parallel array storage of records.			
• Operations on matrices and associated algorithms.			
• Storage of sparse matrices.			
➢ Linear lists	6		-
• Definitions and properties.			
• Stacks, definition, push, pop operation.			
• Queues, definition, insertion, and deletion from circular queues.			
• De-queues, definition, and basic operations.			
➢ Linked lists	6		-
• Basic structures of header-free and header linked lists.			
• Representation in memory.			
• Travering and searching linked lists for sorted and unsorted linked lists.			
• Insertion and definaition algorithms.			
• Two-way lists.			
➢ Trees	10		-
• Basic definitions and structure.			
• Reoresentation of binary trees in memory.			
• Linked representation.			
• String array representation.			

	Hours		
• Terminating binary sequence (TBS) representation.			
• Transformation of a general tree into binary tree.			
• Transvering tree and tramsversal algorithms using stacks (Preorder, in order, and post order threading)			
• Threads and in order threating.			
• Path length and huffman's tree achieving using Huffman's algorithms.			
➢ Searching			
• Introduction and searching types.			
• Scanning.			
• Direct scanning and controlled scanning.			
• Binary search algorithms.	6		-
• Binary search trees.			
• Definition.			
• Searching and insertion into B.S.T.			
• Deletion from a B.S.T.			
• Building a B.S.T			
➢ Sorting			
• Introduction.			
• Sorting algorithms using selection, exchange, insertion techniques.			
• Complexity of algorithms.	6		-
• Bubble sort algorithms as an example for exchange technique.			
• Binary sort (quick sort) algorithm.			
• Heap sort algorithms.			
Total hours	45		-

4 - Teaching and Learning and Assessement methods:

Course ILO's		Teaching Methods						Learning Methods		Assessement Method				
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments	Researches and Reports	Modeling and Simulation	Written Exam	Practical Exam	Quizes	Term papers	Assignments
Knowledge & Understanding	a1	1								1		1		1
	a2	1								1		1		1
	a3	1								1		1		1
	a4	1		1				1		1				
	a5	1	1							1		1		1
	a6	1						1		1				
	a7	1	1	1						1		1		1
	a8	1		1						1				1
	a9	1						1		1		1		1
	a10	1	1							1				
	a11	1		1				1		1				1

		Teaching Methods						Learning Methods			Assessement Method			
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments	Researches and Reports	Modeling and Simulation	Written Exam	Practical Exam	Quizes	Term papers	Assignments
Intellectual Skills	b1	1						1		1				
	b2		1					1		1				1
	b3		1	1				1				1		1
	b4		1	1				1				1		
Applied Professional Skills	c1			1						1				1
	c2		1	1				1						
	c3		1	1				1						1
General Tran. Skills	d1			1				1				1		
	d2			1				1						1
	d3			1								1		1

5- Assessment Timing and Grading:

Asessement Method	Timing	Grade (Degrees)
Semister Work: seminars, quizes assignments and reports	Bi-Weekly	20%
Mid-Term Exam	6-th Week	10%
Practical Exam	Fifteenth week	-
Written Exam	Sixteenth week	70%
Total		100%

6- List of references:

6-1 Course notes: Data structures theory & Algorithms, Modern Academy Press, 2002.

6-2 Required books
- Mohi Eldin Rateb, Data structures theory & Algorithms, Modern Academy Press, 2002.
- Micheal Main and Water Savitch, Data Structure and other Objects, Benjamine/Cummings, CA, 1995.
- Nell, Susan Lily, Data Structure using Pascal, Prentice Hall, Inc., 1981.
- Adam Drozdek, Data Structure and Algorithms in C++, Cengage Learning , 4th edition, 2012.

6-3 Recommended books:
- Ellis Horowitz, Sartaj Sohni, Fundamnetals of Data Structires, Computer Science Press, Inc., 1982.
- Glenn W. Rowe, Introduction to Data Structures and Algorithms with C++, Prentice Hall, 1991.

6-4 Periodicals, Web sites, etc.

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

7- Facilities required for teaching and learning: None.

Course coordinator: Prof. Dr. MOHI-ELDIN RATEB
Head of the Department: Prof. Dr. SAID GAWISH
Date: September 2015

Modern Academy for Engineering & Technology
Manufacturing Engineering and Production Technology Department

M051: Mechanical Engineering Technology
Course Specifications

A- Affiliation

Relevant program:	Electronic Engineering and Communication Technology BSc Program
	Computer Engineering and Information Technology BSc Program.
Department offering the program:	Electronic Engineering and Communications Technology Department
	Computer Engineering and Information Technology Department.
Department offering the course:	Manufacturing Engineering and Production Technology Department
Date of specifications approval:	September 2015

B - Basic Information

Title: Mechanical Engineering Tech. **Code:** M051 **Year/level:** 2-nd year / 2-nd semester

Teaching Hours: **Lectures:** 2 **Tutorial:** 2
Practical: -- **Total:** 4

C - Professional Information

1 – Course Learning Objectives

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

2 - Intended Learning Outcomes (ILOS)

A - Knowledge and understanding

By the end of the course the student should acquire knowledge & clear understand of:
a1 - Different systems of dimensions and units. (A1)
a2 - Basic physical and mechanical principles and phenomena.(A4)
a3- Theoretical and practical background of fluid mechanics, thermo-dynamics, and heat transfer.(A1, A3, A4)
a4 - Physical and mathematical theories to analyze a fluid flow, thermo-dynamic, and heat transfer problems.(A5)
a5 - Basic principles and application to practical engineering problems.(A4)

B - Intellectual skills

By the end of the course the student should be able to:
b1- Use of different systems of dimensions and units. (B12)
b2-Apply physics and mathematical concepts to fluid flow, thermodynamics and heat transfer problems.(B1, B3, B4)

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b3-Analyze simple problems concerning fluid statics, thermodynamics, heat transfer, and power transmission. (B6)

b4- Solve real problems using engineering and science fundamentals. (B2, B5, B7)

C - Professional and practical skills

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

c1- Integrate knowledge from different courses to solve simple physical problems.(C1 C2, C6)

c2-Apply basic knowledge in analyzing practical engineering problem. (C5)

c3- Perform an experiment concerning fluid mechanics, thermo-dynamics, and heat transfer measurements. (C5)

c4-Perform standard and practical technical reports and presentations.(C12)

D - General and transferable skills

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

d1- Apply knowledge from different resources to solve a problem. (D9)

d2- Present the results of experiments concerning physical phenomenon in a professional manner. (D3)

d3- Search for information and engage in continued learning advanced courses. (D7)

d4- Collaborate effectively within team to perform the required tasks. (D1)

d5- Perform the assigned tasks correctly and in time. (D2)

Course Contribution in the Program ILO's

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

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
Importance of Thermodynamics, Fluid Flow, Heat Transfer for Electrical Eng.	2	4	
Fundamentals of Mechanics and Heat	6	4	
Fluid Flow	6	6	
Thermodynamics	6	6	
Heat Transfer	6	6	
Power Transmission	4	4	
Total hours	**30**	**30**	

3 – Teaching and Learning and Assessment Methods

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

5 – Assessment methods, timing, and grading

Tools	Time schedule	Grading
Assignments, Quizzes, and year work	Bi –weekly	20
Midterm Exam	7th Week	10
Final Written exam	Sixteenth Wk	70
	total	100

6- List of References

6.1 Course notes
Lecture notes and handouts

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

6.3 Recommended books
- Eastop and McCorran, Applied Thermodynamics for Engineering Technology, Longman Scientific and Technology
- Cengel Y. A. and Boyes M.A., Thermodynamics: An Engineering Approach, 3rd edition, WCB McGraw-Hill, 1998.
- Holman J.P., Thermodynamics, 4th edition, McGraw-Hill, 1998.

- Munson B. R., Young D. F. and Okiishi T. H., Fundamentals of Fluid Mechanics, John Wiley & Sons, Inc., 4th Ed., 2000.
- White F. M., Fluid Mechanics, 4th Ed., McGraw-Hill, 1999.

6.4 Periodical, Web sites, etc.

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

7- Facilities required for teaching and learning:

Laboratory – Web sites visits.

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

Modern Academy for Engineering & Technology
Basic Science Department
Course Specification
B222: Semiconductor Physics

A- Affiliation

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

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

Department offering the course: Basic Science department

Date of specifications approval: September, 2015

B - Basic information

Title: Semiconductor for Microelectronics   **Code:** B222   **Level:**, Second Semister
Total Hours: 5   **Lectures:** 2   **Tutorial/Exercise:**1   **Practical:** 2

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, characterstics, principale of operation and applications of PN junction (diode). They have to study the characterstics (forword and reversbias) of zene rand tunnel diodes, Ohmic contact, heterojunction, bipolar junction transistior (BJT), junction field effect transistor (JFET), metal oxide semiconductor transistor (MOSFT). They have to study physical structure, basic configuration and I-V characterstic.

2 - Intended Learning Outcomes (ILOS)
a - Knowledge and understanding:
On successful completion of the course, the student should demonstrate knowledge and understanding of:
a1 the properties of semiconductor materials (A3, A8, A9).
a2- The crystal structureand band structure of semiconductors (A8, A9).
a3- the difference between intrinsic and doped semiconductor carriars transport (A1, A2).
a4- the structures, characterstics, principale of operation and applications of PN junction (diode (A1, A3).
a5- the characterstics (forword and reversbias) of zener and tunnel diodes (A1, A3).
a6- the schottky, Ohmic contact, heterojunction, bipolar junction transistior (BJT), junction field effect transistor (JFET), metal oxide semiconductor transistor (MOSFT) (A1, A3).
a7- the physical structure, basic configuration and I-V characterstic. (A1, A2, A3).

b - Intellectual skills:
On successful completion of the course, the student should be able to.
b1- do an applications on intrinsic and doped semiconductor (B4, B6, B7).
b2-deduce mathematical relations describing the conductivity of deffernt types of semiconductors (B1, B2, B12).
b3- deduce relations describing the connection between P-type and N-type semiconductors (B4, B5. B7).

b4- classify and compare between different types of diodes and transistors (, B5, B7, B8).

c - Professional and practical skills:

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

c1- design, operate, test and maintain solarcell (C1, C2, C3)

c2- calculate the conductivity of deffernt types of semiconductors (C1, C2, C3).

c3- use the light to introduce electric currunt (C7).

c4- desine amplifiers and transformers (C1, C2,C4).

c5- make current and voltage rectification (C1, C11, C12).

c6- use experimental facilities to assemble and operate electronic circuits (C1:C4, C7).

d - General and transferable skills:

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

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

d2- communicate effectively and present data and results orally and in written form(D3).

d3- use ICT facilities in presentations (D4).

d4- search for information's in references and in internet(D7).

d5- practice self-learning(D7, D9).

Course Contribution in the Program ILO's

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

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
Introduction to semiconductors	1		
Classifyl deffernt types of semiconductors	1		1
Crystal structur and band structure of semiconductor	1	2	2
Conduction in deffernt types of semiconductor	2	2	2
P-N junction	1	2	2
Forward and revers biase and breakdown	2	2	
Diode	1	2	2
Zener diode	2	2	1
Tunnel diode	2	2	1
Solar cell	1		
Application of diodes	3	2	1
Schottky diode	2	2	1
Tunnel diode	2	2	
Bipolar junction transistor (BJT)	2	2	1
Junction field effect transistor (JFET)	2	4	1
Metal oxide semiconductor transistor(MOSFT)	3	2	
Physical structre, basic configuration and I-V charactrstics	3	2	
Total hours	**30**	**15**	**30**

4 - Teaching and Learning and Assessementmethods:

Course ILO's		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments	Researches and Reports	Modeling and Simulation	Written Exam	Practical Exam	Quizes	Term papers	Assignments
Knowledge & Understanding	a1	1	1	1	1	1	1	1		1		1	1	1
	a2	1	1	1	1	1	1			1		1	1	1
	a3	1	1	1	1	1	1			1		1	1	1
	a4	1	1	1	1	1	1	1		1		1	1	1
	a5	1	1	1	1	1	1			1	1	1	1	1
	a6	1	1	1		1	1	1		1			1	1
	a7	1	1	1	1	1	1	1		1			1	1
Intellectual Skills	b1	1		1	1	1	1			1		1		1
	b2	1		1	1	1	1			1		1	1	1
	b3	1	1	1	1	1	1	1		1	1	1	1	1
	b4	1	1	1	1	1	1	1		1	1	1	1	1
Applied Professional Skills	c1	1	1	1	1	1	1			1	1	1	1	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
	c6			1		1	1			1	1	1	1	1
General Tran. Skills	d1	1		1		1	1	1					1	
	d2	1	1	1			1	1					1	
	d3	1	1				1	1					1	1
	d4	1	1	1		1	1	1					1	
	d5	1				1	1	1					1	

5- Assessment Timing and Grading:

Asessement Method	Timing	Grade (Degrees)
Semister Work: seminars, quizes assignments and reports	Bi-2 Weeks	10
Mid-Term Exam	6-th Week	10
Practical Exam	Fifteenth week	20
Written Exam	Sixteenth week	60
Total		100

6- List of references:

6-1 Course notes:
M. Saad, Semiconductor for Microelectronics, Lectures notes, Modern Academy Press, 2010.

6-2 Required books:
Raymond A. Serway and John W. Jewett, Physics for Scientists and Engineers, 7 eddition, 2007.
Peter Y. Yu, Manuel Cordona, Fandamental of semiconductors: physics and Materials Properties, springer, 2010.

6-3 Recommended books:
Jasprit Singh, Modern physics for engineers, WILEY-VCH Verlag GmbH & Co. KGaA, Weinheim, Germany, 2004.

Charles E. Burkhardt · Jacob J. Leventhal, Foundations of quantum physics**,** Springer Science, Business Media, LLC, New York, 2008.

6-4 Periodicals, Web sites, etc.
www.iop.org
physics.exchange.com

7- Facilities required for teaching and learning:
- Semiconductor Physics Lab.
- Library
- Internet

Course coordinator: Dr. Abeer Serag El-deen
Head of the Department: Prof. Dr. Laila Soliman
Date: September, 2015

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department

Course Specification
E 213: Computer Programming II

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

Department offering the course: Computer Engineering and Information Technology Department

Date of specifications approval: September 2015

B - Basic information

Title: Computer Programming (II)   **Code:** E213   **Year/level:** 2nd year, 2nd Semester

Teaching Hours: **Lectures:** 2   **Tutorial:** -
     Practical: 2   **Total:** 4

C - Professional information

1 – Course Learning Objectives:

The main objective of this course is to acquaint students with the methodologies of problem solving and the way of formulating the problem such that it can be expressed as an algorithm and thereby convert it into computer program. Moreover, running, testing, debugging the program and analyzing output are among these objectives.

2 - Intended Learning Outcomes (ILOS)

A - Knowledge and understanding:

By the end of the course the student should be knowledgeable of:
  a1- Program design and documentation tools in C++ development environment. (A1, A2, A4)
  a2- Array variables in C++ programming language. (A13, A16, A18)
  a3- Subprograms in C++. (A15, A18)

B - Intellectual skills:

By the end of the course the student should be able to:
  b1- Formulate problems by building algorithms from given problem data. (B1, B2, B3)
  b2- Design programs specifications from the algorithm. (B1, B2, B3)
  b3- Deduce errors and suggest corrections (B6, B16)
  b4- Debug programs written in C++. (B2, B3, B17)

C- Professional and practical skills:

By the end of the course the student should be able to:
  c1- Develop software using C++ (C6, C15)
  c2- Convert HLL programs into executable code. (C14, C15)

c3- Document programs. (C18)

D- General and transferable skills:
By the end of the course the student should be able to:
   d1- Communicate effectively in written form. (D1, D3)
   d2- Demonstrate efficient IT capabilities. (D4)
   d3- Search for information and adopt life-long self-learning. (D7)

Course Contribution in the Program ILO's

	ILO's	Program ILO's
A	Knowledge and understanding	A1, A2, A4, A13, A15, A16, A18
B	Intellectual skills	B1, B2, B3, B6, B16, B17
C	Professional and practical skills	C6, C14, C15, C18
D	General and transferable skills	D1, D3, D4, D7

3 – Contents:

Topic	Lecture hours	Tutorial hours	Practical hours
• Function calls and function returns	4	-	6
• Pointers in programming	6	-	6
• Structures	4	-	4
• Classes and objects	6		6
• File IO	6	-	4
• Windows Programming	4		4
Total hours	**30**	**-**	**30**

4 - Teaching and Learning and Assessment methods:

Course ILO's		Lecture	Presentations & Movies	Discussions & Seminars	Tutorials	Problem solving	Laboratory & Experiments	Researches and Reports	Modeling and Simulation	Site Visits	Assignments	Quizzes & Presentations	Written Exam	Practical Exam
Knowledge	a1	1	1	1	1	1					1	1	1	
	a2	1	1	1	1	1	1	1	1	1	1	1	1	1
	a3	1	1	1	1	1	1	1	1	1			1	1
Intellectual	b1	1	1	1	1	1					1	1	1	
	b2	1	1	1	1	1	1	1	1	1	1	1	1	
	b3	1	1	1	1	1	1	1	1	1			1	
	b4	1	1	1	1	1		1	1	1			1	
Applied	c1						ٔ							1
	c2						ٔ							1
	c3						ٔ							1
General Tran.	d1										1	1		
	d2										1	1		
	d3										1	1		

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	10
Mid-Term Exam	6th Week	10
Practical Exam	14th, 15th Weeks	20
Written Exam	Sixteenth Week	60
Total		**100**

6- List of references:

6.1 Course notes   Lecture and lab notes
6.2 Required books   Robert Lafore, "Object oriented Programming In C++", SAMS, 2002
6.3 Recommended books: Non
6.4 Periodicals, Web sites, etc.:   Non

7- Facilities required for teaching and learning:

- Data Show and laptop computer

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

Modern Academy for Engineering & Technology
Basic Sciences Department
Course Specification
B202: History of Science & Technology
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: Electronic Engineering and Communications Technology Department
                                       Computer Engineering and Information Technology Department
                                       Manufacturing Engineering and Production Technology Department

Department offering the course: Basic Science Department

Date of specifications approval: November, 2011

B - Basic information
Title: History of Science & Technology **Code:** B202   **Level:** Second.   **Semester**: Second..
Hours   Total 2 hrs   **Lectures**   2 hrs **Tutorial**   -   **Practical** -

C - Professional information
1 – Course Learning Objectives
يعطى المنهج دراسه مختصره عن تاريخ الهندسة والتكنولوجيا فى مختلف العصور الفرق بين كل من العلم – الهندسة – التكنولوجيا – نقل التكنولوجيا – نشاطات العمل الهندسى ومسئوليات المهندس- امثله عن تطور اوجه النشاط الهندسى والتكنولوجى وكذا اشهر علماء الهندسة والتكنولوجيا.

2 - Intended Learning Outcomes (ILOS)
By the end of the course the student should acquire the following knowledge and understanding:
المعلومات التاريخية عن مهنه الهندسة والتكنولوجيا وكذا العلاقة بين مسمى المعهد او الكلية وبين ما يتم دراسته ـ المام الطالب بماهيه التعليم الهندسى ومجالات العمل للمهندسين وكيفيه القيد والتسجيل بنقابه المهندسين وكذا حقوق وواجبات المهندس.
a - Knowledge and understanding:
On successful completion of the course, the student should demonstrate knowledge and understanding of:
a1- مفهوم العلم و الهندسة والتكنولوجيا و علاقتهم ببعضهم البعض و كيفية ابتكار معدات و منظومات تحقق احتياجات المجتمع طبقا لتلك المفاهيم (A1, A11, A14)
a2- المعلومات التاريخية عن مهنه الهندسة و التكنولوجيا وكذا العلاقة بين مسمى المعهد او الكلية و بين ما يتم دراسته(A9,A1).
a3- مفهوم التعليم الهندسى و مجالات العمل للمهندسين و كيفيه القيد و التسجيل بنقابة المهندسين و كذا حقوق وواجبات المهندس (A9, A1)
a4-تطور اوجه النشاط الهندسى و التكنولوجى و ايضا التعرف على الطرق المختلفة لنقل التكنولوجيا (A8,A5)

b - Intellectual skills:
On successful completion of the course, the student should be able to.
b1- أن يكتسب الطالب مهارات توظيف النظريات و المعارف و البيانات و الافكار لابتكار معدات و منظومات متطورة (B1, B2)
b2-أن يستخدم الطالب المنهج العلمى فى التفكير وصولا لتصميم و تركيب الفروض (B2)
b3- أن يستطيع الطالب التفكير فى حل مشكلة ما من خلال تفهمه لموضوعات الهندسة العكسية (B7)
b4- ان يستطيع الطالب اتخاذ القرار السليم و اختيار انسب الحلول من خلال دراسته لنماذج و امثلة من المشاكل الهندسيه و عرض الحلول الممكنه لها (B6)
c - Professional and practical skills:
On successful completion of the course, the student should be able to:
c1- ان يتمكن الطالب من توظيف المعلومات التاريخية والمعرفية فى الابتكارات الهندسية(C1,C5)
d - General and transferable skills:

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

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

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

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

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

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A5, A8, A9, A11,A14
B	Intellectual skills	B1, B2, B6, B7
C	Professional and practical skills	C1, C5
D	General and transferable skills	D1, D7, D8

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
العلم و الهندسة والتكنولوجيا	2		
الهندسة و البحث العلمى – منظومة البحث العلمى	2		
عناصر و متطلبات البحث العلمى	2		
الهندسة وخريطة البحث العلمى – مراحل البحث العلمى	2		
تاريخ الهندسة و التكنولوجيا فى مختلف العصور	4		
نقل التكنولوجيا	2		
نشاطات العمل الهندسى و مسئوليات المهندس	2		
التعليم الهندسى	2		
نقابة المهندسين المصرية – جمعية المهندسين المصرية	4		
تطور اوجه النشاط الهندسى و التكنولوجى	4		
اشهر علماء الهندسة و التكنولوجيا	2		
مراجعة عامة	2		
Total hours	**30**		

4 – Teaching, Learning and Assessment methods:

Course IL O's		Teaching Methods						Learning Methods		Assessment Method				
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments	Researches and Reports	Modeling and Simulation	Written Exam	Practical Exam	Quizzes	Term papers	Assignments
Knowledge	a1	1	1	1		1		1					1	1
	a2	1	1	1		1		1						1
	a3	1	1	1		1		1					1	1
	a4	1	1	1		1		1						1
Intellectual	b1	1						1						1
	b2	1						1						1
	b3	1						1						1
	b4	1						1						
P r o	c1	1						1					1	

General	d1	1					1						
	d2	1					1						
	d3	1					1						
	d4	1					1						

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	5
Mid-Term Exam	6-th Week	10
Practical Exam	Fifteenth week	-
Written Exam	Sixteenth week	35
Total		50

6- List of references:
6-1 Course notes
S. R. Goda, History of Science and Technology, Lecture notes, Modern Academy Press, 2010.
6-2 Required books:
Martin, M. W.,and Schinzinger, R., Ethics in engineering, third edition, McGraw Hill book company, New York, 1996.
6-3 Recommended books
Wright, P. H., Introduction to engineering, second edition, John Wiley and Sons Inc., New York, 1994
6-4 Periodicals, Web sites, etc.

7- Facilities required for teaching and learning:
- Computer
- Data show
- Library and Internet

Course coordinator: Dr Marwa Mohamed Fouad
Head of the Department: Professor Dr Laila Soliman
Date: November 2011

Modern Academy for Engineering & Technology
Electronic Engineering and Communications Technology Department
Course Specification
E221 : Instrumentation and Testing II

A- Affiliation

Relevant program: Computer Engineering and Information Technology BSc Program

Electronic Engineering and communication Technology BSc Program

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

Department offering the course: Electronic Engineering and Communications Technology Department

Date of specifications approval: September 2015

B - Basic information

Title :	Instrumentation and Testing (2)	**Code:** E221	**Year/level:** 2nd E.E./ 2st S.
Teaching Hours :		**Lectures: 2**	**Tutorial** : -
		Practical: 2	**Total** : 4

C - Professional Information

1 – Course Learning Objectives

The main objective of this course is to introduce the basic concepts, theory, error analysis of the different method of measurements of the different electrical quantities such as: Resistors and storage elements and non-electrical quantities such as: pressure, temperature, light intensity,….etc. It also presents how these different electrical and non-electrical quantities can be acquired and stored on a computer memory for further measurements and processing.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

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

a1- The different methods used for measuring DC and AC power dissipation. (A14, A15)

a2- The different methods used for measuring accurate values of the very low, very high, and moderate value resistors. (A1)

a3- The different methods used for measuring accurate values capacitors and inductors using AC bridges. (A4, A15)

a4- Impedance measurements that based on resonance method. (A4)

a5- Measuring the different non-electrical quantities such as: temperature, displacement, pressure, velocity ….etc. (A14, A15)

a6- The principle of operation of the different transducers in order to be able to select the proper one for measuring a specific non-electrical quantity. (A14, A15)

a7- The construction and operation of the data acquisition systems in order to be able to record any electrical or non-electrical quantity on a computer for further processing or manipulation. (A14, A15)

a8- The construction and operation of the DACs, and ADCs. (A1)

B- Intellectual skills:
By the end of the course the student should be able to:

b1- Choose the suitable method to measure a specific measuring. (B3,B5,B7)

b2- Analyze the resulting error of the measurement. (B5, B9, B11)

b3- Select the most convenient transducer to measure a specific non-electrical quality. (B5,B13)

b4- Analyze and realize a data acquisition system to record either electrical or non-electrical quantity on a computer. (B6,B10,B14)

C - Professional and practical skills:
By the end of the course the student should be able to:

c1- Construct the most convenient measuring circuit diagrams to measure AC,DC power dissipation, high value and low value resistors, capacitors and coils. (C3,C16,C17)

c2- Identify the most suitable measuring instrument for measuring a given quantity. (C3,C16,C17)

c3- Design a suitable DC or AC bridge to measure a given resistor or storage element. (C2,C5,C18)

c4- Use the resonance method to measure a given impedance method. (C2,C5,C18)

c5- Analyze the measurement errors. (C15,C20)

D - General and transferable skills:
 By the end of the course the student should be able to:

d1- Prepare presentations and seminars. (D1,D3, D6)

d2- Search for information from references, journals and internet. (D8, D9)

Course Contribution in the Program ILO's

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

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
• DC Power and Accurate Resistance Measurements.	2	-	2
• AC Power and Very Low Resistance Measurements.	2	-	2
• Very High Resistance Measurements.	2	-	2
• Capacitance, Inductance Equivalent Circuits, and AC Bridges.	2	-	2
• Capacitance and Inductance Measurements Using AC Bridges.	2	-	2
• AC Bridges Accuracy and Sensitivity.	2	-	2
• Impedance Measurements Based On Resonance.	2	-	2
• Non-Electrical Quantities Measurements.	2	-	2
• R, L, C, and LVDT Transducers.	2	-	2
Displacement, Temperature, and Photoelectric Transducers.	2	-	2
• Semiconductor Photodiode and Phototransistors Transducers.	2	-	2
• Data Acquisition Systems.	2	-	2
• Data Acquisition Systems.	2	-	2

	2	-	2
• D/A Converters.	2	-	2
• A/D Converters.	2	-	2
Total Hours	30	-	30

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods				Learning Methods		Assessment Method				
		Lecture	Tutorials	Problem solving	Laboratory &Experiments	Researches and Reports	Self learning	Written Exam	Practical Exam	Quizzes	Mid-Term Exam	Assignments
Knowledge & Understanding	a1	1	1	1		1	1	1		1	1	1
	a2	1	1	1			1	1		1	1	1
	a3	1	1	1	1	1		1	1	1	1	1
	a4	1	1	1	1	1		1	1	1		
	a5	1	1	1	1	1		1	1	1		
	a6	1	1	1	1	1		1	1	1		
	a7	1	1	1	1	1		1	1	1		
	a8	1	1	1	1	1		1	1	1		
Intellectual Skills	b1	1			1	1		1	1			
	b2	1	1	1		1	1	1		1	1	1
	b3	1	1	1		1		1		1	1	1
	b4	1	1	1	1		1	1	1	1	1	1
Applied Prof. Skills	c1	1	1	1	1	1		1	1	1	1	
	c2	1	1	1	1		1	1	1	1	1	
	c3	1	1	1	1	1			1	1	1	
	c4	1	1	1	1	1			1	1	1	
	c5	1	1	1	1	1			1	1	1	
General Trans. Skills	d1	1			1	1	1					
	d2	1	1	1	1	1	1			1	1	1

5- Assessment Timing and Grading:

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

6- List of references:
6-1 Course notes
   SHOUMAN E.I. SHOUMAN, Electrical Instrumentation & Measurements: Part II, Cairo, 2008
6-2 Required books
1- David A Bell, Electronic Instrumentation and Measurements, Prentice Hall PTR Canada, 2005.
2- Larry D. Jones, and A. Foster Chin, "Electronic Instruments and Measurements, Prentice- Hall International, Inc., London UK, 1991.
 6-3 Recommended books
Robert A. Witte, Electronic Test Instruments; Analog and Digital Measurements Prentice Hall PTR USA, 2002.
7- Facilities required for teaching and learning:
Electrical and Electronic lab.
-Shouman E.I. Shouman, Experiments on Electrical instruments and measurements: Part II, Cairo, 2008.

Course coordinator	:	Prof. Dr. SHOUMAN E.I. SHOUMAN.
Head of the Department	:	Prof. Dr. Mokhtar Abd El- Haleem
Date	:	Nov. 2011

Modern Academy for Engineering & Technology
Basic Sciences Department
Course Specification
B311: Mathematics V:Complex analysis and partial differential equations

A- Affiliation

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

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

Department offering the course: Basic Scienc Department

Date of specifications approval: September, 2015

B - Basic information

Title: Complex analysis and partial differential equations   **Code:**B311   **Level:**Third.   **Semester**: First.

Total Hours   5hrs   **Lectures** 2 hrs   **Tutorial** 3hrs   **Practical** --

C - Professional information

1 – Course Learning Objectives

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

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:
On successful completion of the course, the student should demonstrate knowledge and understanding of:
a1. Comlex numbers, D'Moiver theorem, complex and analytic functions.(A1, A5)
a2. Conformal mappings and bilinear transformation. (A1, A5)
a3. Power series and integration by integration by methods of residues. (A1, A5)
a4. Basic concepts, classification and canonical form of PDEs. (A1, A3)
a5. Method of separation of variables for heat, wave and Laplace equations. (A1, A3)
a6. Solution of PDEs using Laplace trans form. (A1, A3)

b - Intellectual skills:
On successful completion of the course, the student should be able to.
b1. Investigate D'Moiver theorem, complex and analytic functions. (B1, B2, B3)
b2. Explore and recognize conformal mappings and bilinear transformation.(B1, B2, B3, B7)
b3. Expand and integrate complex functions using different methods. (B1, B2, B3, B4, B7)
b4. Develop several methods for soving PDEs. (B1, B2, B3, B4, B7)
b5. Apply the method of separation of variables to solve heat, wave and Laplace equations. (B1, B3, B4)
b6. Solve PDEs using Laplace transform. (B2, B3, B4)

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c - Professional and practical skills:
   c1. Solve partial differential equations describing real systems(C1, C12)

d - General and transferable skills:
On successful completion of the course, the student should be able to:

d1. Work in a team and involve in group discussion and seminars (D1, D3).
d2. Communicate effectively and present data and results orally and in written form (D3).
d3. Search for information's in references and in internet (D7).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A3, A5
B	Intellectual skills	B1, B2, B3, B4, B7
C	Professional and practical skills	C1, C12
D	General and transferable skills	D1, D3, D7

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
Complex numbers, arithmetic operations, polar forms	2	3	
D'Moiver theorem, complex functions. Analytic function	2	3	-
Elementary functions of complex variables	2	3	-
Mapping, and conformal mapping.	2	3	-
Bilinear transformation, complex integrals.	2	3	-
Power series (Taylor and Laurent series).	2	3	-
Integration by method of residues.	2	3	
Introduction to PDEs, Basic concepts of PDEs	2	3	-
Classifications and conical forms of 2nd order linear PDEs.	2	3	-
Method of separation of variables for heat equation.	4	6	
Wave and Laplace equations. D'Alembert solution of wave equation.	4	6	-
Solution of PDEs using Laplace transforms.	4	6	-
Total hours	**30**	**45**	**-**

4 – Teaching, Learning and Assessementmethods:

Course IL O's		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments	Researches and Reports	Modeling and Simulation	Written Exam	Practical Exam	Quizes	Term papers	Assignments
		Teaching Methods						**Learning Methods**		**Assessement Method**				
Knowledge	a1	1		1	1			1		1		1		1
	a2	1	1		1	1				1		1	1	1
	a3	1			1	1				1		1	1	1
	a4	1		1	1	1		1		1		1	1	1
	a5	1	1		1			1		1		1	1	1
	a6	1						1		1		1	1	1
Intellectual	b1	1			1	1				1		1		1
	b2	1			1	1				1		1	1	1
	b3	1	1	1	1	1		1		1			1	
	b4	1			1	1				1		1	1	1
	b5	1			1	1				1		1	1	1
	b6	1			1	1		1		1				1
Applied	c1	1			1			1		1		1		1
General	d1			1		1		1					1	
	d2		1	1				1	1				1	
	d3		1	1				1					1	

5- Assessment Timing and Grading:

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

6- List of references:

6-1 Course notes:
Aly M. Essawy& Dr. Mohamed A. K , Complex Analysis and partial Differential Equations, Lecture Notes, Modern Academy, 2010.

6-2 Required books
E. Kreyszig, Advanced Engineering Mathematics, 8ed, John Willey & Sons, Inc., 1999

6-3 Recommended books:
E. Kreyszig, Advanced Engineering Mathematics, 8ed, John Willey & Sons, Inc., 1999
6-4 Periodicals, Web sites, etc.

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

    www.sosmath.com

7- Facilities required for teaching and learning:

- Library, Required references
- Computer, Internet

Modern Academy for Engineering & Technology
Electronic Engineering and Communications Technology Department
Course Specification
E301:Micro Electronics I

A- Affiliation

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

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

Department offering the course: Electronic Engineering and Communications Technology Department

Date of specifications approval: Nov. 2011

B - Basic Information

Title: Micro Electronics (1)   **Code:** E301   **Year/level:** Third, 1st semester

Teaching Hours: **Lectures:** 2   **Tutorial:** 2

          Practical: --   **Total:** 4

C - Professional Information

1 – Course Learning Objectives

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

2 - Intended Learning Outcomes (ILOS)

A - Knowledge and Understanding

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

a1- Identify Linear and non Linear circuits.(A13)

a2- Design different configuration of op-amp circuits.(A4)

a3- Understands the different diode applications.(A3)

a4- Understands the Basic functions of transistors.(A8)

B - Intellectual Skills

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

b1- Design the op-amp circuits.(B7)

b2- Give the correct decision and test his solutions.(B2)

b3- Analyze the technical problems and find a suitable solution.(B2)

b4- Understand the JFET & CMOSFET circuits.(B5)

C - Professional and Practical Skills

c1- Develop a system to get a better efficiency (C2, C3)

c2- Establish the power supply circuits using diode rectifiers. (C2, C3)

c3- Use data sheets & read characteristics of different electronic components (C2, C3)

D - General and Transferable Skills

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

d1- Communicate effectively through assignments and e- mails.(D3)

d2- Lead and motivate individuals.(D5)

d3- Effectively manage tasks, time, and resources.(D6)

d4- Search for information and engage in life-long self-learning discipline.(D7)

Course Contribution in the Program ILO's

	ILO's	Program ILO's
A	**Knowledge and understanding**	A3, A4 , A8 , A13
B	**Intellectual skills**	B2 , B5 , B7
C	**Professional and practical skills**	C2,C3
D	**General and transferable skills**	D3, D5 , D6 ,D7

4 - Teaching and Learning and Assessment methods:

Course ILO's			Teaching methods						Learning methods			Assessment method				
			Lecture	Presentations & Movies	Discussions & Seminars	Tutorials	Problem solving	Laboratory &Experiments	Brain storming	Self Learning	Researches and Reports	Midterm	Quizzes	Assignments	Written Exam	Practical Exam
Knowledge & Understanding	a1		1	1	1	1			1			1		1	1	
	a2		1			1						1	1	1	1	
	a3		1			1									1	
	a4		1	1		1			1	1			1		1	
Intellectual Skills	b1		1						1			1	1	1	1	
	b2		1			1			1			1	1	1	1	
	b3		1			1				1					1	
	b4		1												1	
Applied Professional Skills	c1		1			1				1					1	
	c2		1			1				1					1	
	c3		1			1				1					1	
General Tran. Skills	d1				1					1				1		
	d2		1				1									
	d3		1				1			1				1		
	d4				1											

5- Assessment Timing and Grading:

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

6- List of References
6-1 Course Notes
    Lecture notes & Handouts.

6-2 Essential Books (Text Books)
    Sedra / Smith, "Micro Electronics", 1998,Oxford Univ. press

6-3 Recommended Books
     A.Malvino," Electronics Principless",1999,MacGraw Hill
    Smith, Sedra. (2011) Microelectronic circuits. USA: oxford.

6-4 Periodicals, Web Sites, etc.
    IEEE, www.prenhall.com
    https://www.coursehero.com/
http://www.academia.edu/
7- Facilities Required for Teaching and Learning
    White board, Power point, Research paper reporting (References & Internet)

Course Coordinator: Prof. Dr. H. TawfiK Kamel
Head of the Department: Prof. Dr. Mokhtar Abd El- Haleem
Date: Nov. 2011

Modern Academy for Engineering & Technology
Computer Engineering and Information Technology Department
Course Specification
E361: Operating System (I)

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 Departmen
Date of specifications approval: September 2015
B – Basic information
Title: Operating System (I)   **Code:** E361   **Year / level:** 3rdyear / 1st term
Teaching Hours: **Lecture: 4**   **Tutorial : 2**
                                          Practical: –   **Total :6**

C - Professional information
1- Course learning objectives:

The main objective is to familiarize students with the nature and characteristics of operating system as well as appreciate the role of operating systems in modern computers. The objective includes also understanding the differences between operating systems and identifying the various functions of operating systems.

2- Intended Learning Outcomes (ILO'S)
A– Knowledge and understanding:

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

a1- Definitions and concepts involved in the domain of operating systems(A1,A4)
a2- Different algorithms used in CPU scheduling(A1 ,A5 ,A18)
a3- Problems arising from concurrent processing and the way how to deal with   each(A18 ,A1)
a4- Memory management principles and algorithms(A18,A13)
a5- Modern techniques of paging and segmentation(A15)
a6- The concept and application of virtual memory(A14)
a7- Input/output management techniques(A3,A4,A8)
a8- Secondary storage management methods(A4,A8)

B– Intellectual skills:

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

b1- Compare between characteristics of various scheduling algorithms and memory mgt. techniques(B2,B5)
b2- Select the best scheduling algorithm for a specific problem(B5,B1,B2)
b3- calculate the average turnaround time depending on the selected algorithm(B9,B11)

C – Professional and practical skills:

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

c1- Design a module as part of the operating system(C15,C14)
c2- Implement a suitable scheduling algorithm in a specific environment(C3,C1)
c3- Analyze system performance under a particular operating system(C10,C12)
D – General and transferable skills:

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

d1- develop personal management skills in the light of management functions of OS(D2)
d2- Schedule for tasks in team work(D6,D3)
d3- Report and demonstrate the gained outcomes(D3)

Course Contribution in the Program ILO's

	ILO's	Program ILO's
A	Knowledge and understanding	A1,A4 ,A5 , A18,A13, A15, A14, A3,A8
B	Intellectual skills	B5,B1,B2, B9,B11
C	Professional and practical skills	C15,C14, C3,C1, C10,C12
D	General and transferable skills	D2, D6,D3,

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
• Introduction to computer system architecture	6	4	–
• Common definitions in the field of operating system	6	2	–
• Process managem nt	6	2	–
• CPU scheduling	6	4	–
• Starvation, Deadlocks, race conditions	6	2	–
• Memory management., placement, replacement algorithms	6	3	–
• Paging and segmentation of memory	9	3	–
• Virtual memory	6	3	–
• Input/output management	6	3	–
• Secondary storage mana ement	3	4	–
Total	60	30	–

4 - Teaching and Learning and Assessment methods:

Course ILO's		Lecture	Presentations & Movies	Discussions & Seminars	Tutorials	Problem solving	Laboratory & Experiments	Researches and Reports	Modeling and Simulation	Site Visits	Assignments	Quizzes & Presentations	Written Exam	Practical Exam
		Teaching methods						**Learning methods**			**Assessment method**			
Knowledge	a1	1	1					1			1			
	a2	1	1					1			1			
	a3	1	1					1			1			
	a4	1	1					1			1			
	a5	1	1					1			1			
	a6	1	1											
	a7	1	1								1			
	a8	1	1											
Intellectua	b1	1	1											
	b2	1	1					1						
	b3	1	1											
Applied	c1					1								
	c2					1								
	c3					1								
General Tran.	d1							1						1
	d2							1						1
	d3							1						1

5- Assessment Timing and Grading:

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

6- List of references:

6-1 Course notes   Operating System, Dr. Adel Khedr, 2008

6-2 Required books: William Stallings, "Operating System Internals and Design Principles", 5th edition, Printice Hall, 2005.

6-3 Recommended books: Andrew S. Tanenbaum, "Modern Operating Systems", edition 3, Addison Wisely, 2007.

7-Facilities required for teaching and learning: Data Show

Course coordinator: Dr. Eng. Adel Khedr

Head of the Department: Prof.Dr. Said Gawish

Date: September 2015

Modern Academy for Engineering & Technology
Computer Engineering and Information Technology Department
Course Specification
E321: Digital Logic Circuits Design

A- Affiliation

Relevant program: Computer Engineering and Information Technology BSc Program
Electronic Engineering and communication Technology BSc Program
Department offering the program: Electronic Engineering and Communications Technology Department
Computer Engineering and Information Technology Department

Department offering the course: Computer Engineering and Information Technology Department

Date of specifications approval: September 2015

B - Basic information

Title: Digital Logic Circuits Design   **Code:** E 321   **Year/level:** 3rd /1st

Teaching Hours: **Lectures:** 2   **Tutorial:** 2
     Practical 2   **Total:** 6

C - Professional information

1 – Course Learning Objectives:
The main objective of this course is to design different sequential parts with the associated memory sizes up to the level of special-purpose computing system design

2 - Intended Learning Outcomes (ILOS)

A - Knowledge and understanding
By the end of the course the student should gain the following knowledge:

a1 Transformation of an allocated sequential problem to a state diagram and state table and discrimination between the Mealy and Moore models. (A2, A4)

a2 State reduction technique using the implication chart and favour state assignment techniques. (A2, A4)

a3 Extracting state table for a given sequential circuit. (A2, A4)

a4 Digital systems realized by combinational and sequential modules. (A2, A4)

a5 Data path register transfer, arithmetic, logic and shift micro operations. (A2, A4)

a6 Multiplexer, bus and memory transfers based on tri-state bus implementation. (A2, A4)

a7 Arithmetic-Logic unit (ALU). (A2, A4)

a8 Sequencing control using the algorithmic state machine. (A2, A4)

a9 Realizing a sequencer using either sequence register and decoder or one Flip-Flop per state techniques. (A2, A4)

a10 Static and dynamic memories construction addressing, and data flow in the Read and Write Operations. (A2, A4)

B - Intellectual skills:
By the end of this course the student should be able to:

b1 Deduce the proper state diagram and the associated reduced state table for systems having small number of states. (B2, B3)

b2 Deduce the optimum A.S.M control and associated data path for systems having large number of states. (B2, B3)

b3 Judge the favorite solution approach for either state diagram or A.S.M solution selection. (B2, B3)

b4   Attempt new solution approaches combining both the above methods to obtain a minimum-cost realization. (B2, B3)

b5   Investigate how performance improvement can be achieved for a real –existing system. (B2, B3)

b6   Deduce his own measuring procedure to keep his system always in function. (B2, B3)

C - Professional and practical skills:

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

c1   Design of a sequential circuit with finite number of states using Flip-Flops and logic gates. (C2, C3)

c2   Build a data path with limited number of registers connected by a tristate bus and designing the associated A.L.U. (C2, C3)

c3   Design the control unit which produces to sequence of control signals fulfilling the required operation sequence according to status signals feed from the data path. (C2, C3)

c4   Expand an already existing memory in capacity and word length with a suggested address and data buses new width. (C2, C3)

D - General and transferable skills:`

Completing this course the student should be able to:

d1- Communicate effectively through assignments and e- mails. (D3)

d2- Lead and motivate individuals. (D5)

d3- Effectively manage tasks, time, and resources. (D6)

d4- Search for information and engage in life-long self-learning discipline. (D7)

Course Contribution in the Program ILO's

	ILO's	Program ILO's
A	Knowledge and understanding	A2, A4
B	Intellectual skills	B2, B3
C	Professional and practical skills	C2, C3
D	General and transferable skills	D3, D5, D6, D7

3 – Contents

Week No.	Topic	Lecture Hours	Tutorial Hours	Practical Hours
1	- Introduction	2	2	2
	-Aims realized through the topics of this subject.			
2	• Synthesis of sequential logic circuits -State diagrams and state table representation.	2	2	2
3	-The Mealy and Moore models. -Synthesis procedure of completely specified sequential circuits.	2	2	2
4	• Building state diagram (table) • Using state reduction techniques (state equivalence) and specially the implication chart method.	2	2	2
5	• State assignment techniques. • Excitation functions derivation. - Controllable counters as an example for a Moore model.	2	2	2
6	Analysis of sequential logic circuits.	2	2	2
7	• Modular Design Approaches using Register Transfers and Data paths - Digital systems subdivision (Data path and control). ○ Register transfer operations.	2	2	2

	-Arithmetic micro operations.			
8	o Logic micro operations. o Shift micro operations. o Multiplexer-based micro operations. - Tristate bus based transfers.	**2**	**2**	**2**
9	-Memory based transfers. - A data path design proposed model. -Design of arithmetic logic unit (ALU). - Control word based design.	**2**	**2**	**2**
10	• Sequencing Control and Algorithmic State Machines (ASM) -The control unit. -The ASM chart construction.	**2**	**2**	**2**
11	-An illustrative model (binary multiplier).	**2**	**2**	**2**
12	-Hardwired control. - Realization of the sequencing part of the ASM chart using sequence register and decoder and using one flip-flop per state.	**2**	**2**	**2**
13	- Micro programmed control.	**2**	**2**	**2**
14	• Memory System Design o Static RAMs (RAM cell and RAM bit slice) o Coincident selection. o Dynamic RAMs (Basic cell, addressing and refreshing. o Memory system hierarchy. -Cache memory.	**2**	**2**	**2**
15	o Design using ROM-RAM combination. o Design involving decoder implementation. o Design using memory array configuration. -Increasing the size of physical memory space.	**2**	**2**	**2**

4 - Teaching and Learning and Assessment methods:

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

		Teaching Methods									Learning Methods			Assessment Method					
		Lecture	Presentations	Discussions	Tutorials	Problem solving	Laboratory &				Researches	Modeling and		Written Exam	Practical Exam	Quizzes	Term papers	Assignments	
	b5	1	1		1	1	1							1	1	1		1	
	b6	1	1		1	1	1							1	1	1		1	
Professiona	c1	1			1	1	1							1		1			
	c2	1	1											1		1			
	c3	1		1		1					1	1							
	c4	1	1		1	1													
General Tran. Skills	d1			1		1					1								
	d2		1	1							1	1							
	d3	1	1								1								
	d4	1	1								1								

5- Assessment Timing and Grading:

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

6- List of references:

6-1 Course notes

- Digital logic circuit (Theoretical + Practical).

6-2 Required books

- Mohi Eldin Rateb, "Digital Logic Circuits Design", Modern Academy Press.,2002.
- Mano,M.M&Kime,C.R,"Logic and Computer Design Fundamentals" 2nd ed., Englewood cliffs, NJ: Prentice Hall,2000.
  Nelson,V.P,Nagel,H.T.,Carroll,B.D.and Irwin,J.D."Digital Logic Circuit Analysis and Design", NJ: Prentice Hall,1995.
 Weste, Neil. (2011) Integrated circuit design. USA: Addision Wesly.

6-3 Recommended books

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

6-4 Periodicals, Web sites, etc.

- Website Gallery at http: //www.prenhall.com/mano
  - http://opencourses.emu.edu.tr/
  - http://www.csie.ntu.edu.tw/
    7- Facilities required for teaching and learning: None

Course coordinator: Prof. Dr. Mohi-Eldin Rateb
Head of the Department: Prof. Dr. Mokhtar Abd El- Haleem
Date: August 2015

Modern Academy for Engineering & Technology

Electrical Engineering Department
Course Specification
E 333: Database Mangment

A- Affiliation:
Relevant program: Computer Engineering and Information Technology BSc Program
Department offering the program: Computer Engineering and Information Technology Department
Department offering the course: Computer Engineering and Information Technology Department

Date of specifications approval: September 2015

B – Basic information
Title: Database Management   **Code: E 333**   **Year / level: 3rd year / 1st term**
Teaching Hours: **Lecture: 2**   **Tutorial : 2**
                                           Practical: −   **Total :4**

C - Professional information

1- Course learning objectives:
   The main objective is to familiarize students with the concepts and techniques used in data analysis and modeling and the methods of converting the model into physical data base design. The objective includes also the way of implementing the design using the available tools of database management systems.

2- Intended Learning Outcomes (ILO'S)
A– Knowledge and understanding:
   By the end of this course the student should have the following Knowledge:
       a1- Dealing with various database models(A1,A3,A18)
       a2- Appreciating the methodology for data modeling and diagramming techniques(A5)
       a3- Identifying the steps for converting data models into schema designs(A1,A3,A4)
       a4- Syntax used in Structured Query Language (SQL)(A14,A18)
       a5- Methods of dealing with problems associated with database such as concurrency control, database
           security, database recovery(A5,A14,A15)
B– Intellectual skills:
   By the end of the course the student should be able to:
       b1- Design data models representing various miniworlds(B4,B8)
       b2- Analyzing datasets to identify different entities(B13,B19)
       b3- Set integrity constraints for application databases(B5,B8)
       b4- Build data model(B1,B19)
       b5- Apply normalization forms on the data model(B5,B11)
C – Professional and practical skills:
   By the end of the course the student should de able to:
       c1- Solve business cases involving database applications(C11,C14,C19)
       c2- Build complete data models(C1,C2,C17)
       c3- Convert data models into relational database design(C5,C6)
       c4- Write Structured Query Language programs efficiently to manipulate data in the database(C15,C18)
D – General and transferable skills:
   By the end of the course the student should be able to:
       d1- Communicate with the user community(D2,D3)
       d2- Identify the information requirements of users(D4,D7)
       d3- Present query results to team members (D4)

Course Contribution in the Program ILO's

	ILO's	Program ILO's
A	Knowledge and understanding	A1,A3,A4,A5,A14,A15,A18
B	Intellectual skills	B1,B4,B5,B8,B11,B13,B19
C	Professional and practical skills	C1,C2,C5,C6,C11,C14,C15,C17,C18,C19
D	General and transferable skills	D2,D3,D4,D7

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
• Database concepts and fundamentals	4	-	
• Database definitions	2	-	
• Entity-Relationship diagram (data modeling)	4	8	
• Converting data model into schema design	4	8	
• Normalization forms	2	6	
• Integrity, security, and consistency of databases	2	2	
• Distributed database	2		
• Structured Query Language	10	6	
Total hours	**30**	**30**	**--**

4 - Teaching and Learning and Assessment methods:

Course ILO's		Lecture	Presentations & Movies	Discussions & Seminars	Tutorials	Problem solving	Laboratory & Experiments	Researches and Reports	Modeling and Simulation	Site Visits	Assignments	Quizzes & Presentations	Written Exam	Practical Exam
		Teaching Methods						Learning Methods			Assessment Method			
Knowledge	a1	1	1		1						1		1	
	a2	1	1		1						1		1	
	a3	1			1						1		1	
	a4	1			1						1		1	
	a5	1	1		1								1	
Intellectual	b1	1			1						1		1	
	b2		1		1						1		1	
	b3	1	1		1						1		1	
	b4	1	1		1			1					1	
	b5	1			1			1			1		1	
	b6	1	1		1			1			1		1	
Applied	c1		1		1			1		1	1	1		
	c2		1		1			1		1	1	1		
	c3		1					1		1	1	1		
	c4							1		1	1	1		
General Tran.	d1		1								1	1		
	d2										1	1		
	d3										1	1		

5- Assessment Timing and Grading:

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

6- List of references:
6-1 Course notes   Fundamentals Database systems, Dr. Adel Khedr, 2008

6-2 Required books: Ramez Elmasri, Shamkant B. Navathe, "Fundamentals of DataBase Systems", 4th Edition, Pearson Education, 2004.

6-3 Recommended books: C. J. Date, "An Introduction to Database Systems", 6th Edition, Addison Wiseley, 2007.

Yadav, P.K. (2013) Introduction database management system. India: Katson.

6-4 Periodicals, web sites, etc.:
http://www.esp.org/db-fund.pdf
http://public.dhe.ibm.com/software/dw/db2/express-c/wiki/Database_fundamentals.pdf
http://www.ebook3000.com/Database/

7- Facilities required for teaching and learning:
Computer Lab
Data base software

Course coordinator: **Dr. Eng. Adel Khedr**

Head of the Department: **Prof .Dr. Said Gawish**

Date: September 2015

Modern Academy for Engineering & Technology
Basic Sciences Department
Course Specification
B 300: English Language IV

A- Affiliation

Relevant program: Manufacturing Engineering and Production Technology BSc Program

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

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

Department offering the course: Basic Sciences Department

Date of specifications approval: September, 2015

B - Basic information

Title: English Language4   **Code:** B 300   **Level:** 3rd. Year   **Semester:** First

Teaching hours: 2   **Lectures:**2   **Tutorial:**   **Practical:**

C - Professional information

1 – Course Learning Objectives:

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

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

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

a1) identifying the most frequent words, phrases and grammar rules in everyday conversation. (A9), (A10)

a2) communicating effectively in written and oral forms, even at the very beginning levels. (A9), (A10)

a3) differentiating between tenses. (A9)

b - Intellectual skills:

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

b1) enhance class interaction in terms of speaking, reading, listening and writing. (B4)

b2) personalize the learning experience by offering students interesting topics relevant to their interests and experiences. (B4)

b3) employ tasks which encourage students to take an active role in learning and using new vocabulary. (B4)

b4) use different tenses in conversation. (B4)

c - Professional and practical skills:

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

c1) write paragraphs and peer edit them using error detection. (C12)

c2) communicate with each other and with the professor. (C11)

c3) use different tenses in conversation. (C11)

c4) brainstorm ideas for homework writing. (C12)

d - General and transferable skills:

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

d1- work in a team and involve in group discussion. (D1, D2, D3)

d2- present data and results orally. (D1, D2, D3, D6)

d3- communicate effectively in written forms.(D3), (D7)

d4- search for information in references and in internet. (D4), (D7)

d5- practice self-learning. (D4), (D7), (D8)

Course Contribution in the Program ILO's

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

3 – Contents

Topic	Lecture hours
• Murder, Conversation	5
• Murder, Grammar	4
• A False Charge, Conversation	5
• A False Charge, Grammar	4
• Interviewing Preparation, part 1	4
• Interviewing Preparation, part 2	4
• Writing a CV/Resume'	4
Total hours	**30**

4 - Teaching and Learning and Assessment methods:

Course ILO's		Lecture	Warming up	Discussions	Tutorials	Problem solving				Researches and Reports	Modeling and Simulation		Written Exam	Class work	Quizzes	Class participation	Assignments			
Knowledge &	a1	1	1	1						1			1	1	1	1	1			
	a2	1	1	1						1			1	1	1	1	1			
	a3	1	1	1						1			1	1	1	1	1			
Intellectual Skills	b1	1	1	1						1			1	1	1	1	1			
	b2	1	1	1						1			1	1	1	1	1			
	b3	1	1	1						1			1	1		1	1			
	b4	1	1	1						1			1	1	1	1	1			
Applied Professional	c1	1	1	1						1			1	1	1	1	1			
	c2	1	1	1						1			1	1	1	1	1			
	c3	1	1	1						1			1	1	1	1	1			
	c4	1	1	1						1			1	1	1	1	1			
General Tran. Skills	d1	1	1	1						1			1			1				
	d2		1	1						1						1				
	d3	1	1	1						1						1	1			
	d4	1	1	1						1										
	d5		1							1						1				

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: quizzes, assignments and class participation	Bi-Weekly	10
Mid-Term Exam	6-th Week	5
Practical Exam	-	
Written Exam	Sixteenth week	35
Total		**50**

6- List of references:

6-1 Course notes:

El. KhoreibyA. H., Learn, Apply and Excel, lecture notes, Modern Academy Press, 2010.

6-2 Required books

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

6-3 Recommended books:

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

6-4 Periodicals, Web sites, etc.:

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

7- Facilities required for teaching and learning:

Library and Internet

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

Modern Academy for Engineering & Technology
Computer Engineering and Information Technology Department
Course Specification
E330 Engineering Computer Applications (I)

A – Affiliation

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

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

Department offering the course: Computer Engineering and Information Technology Department
Academic year/level: Third Year / 1ˢᵗ term
Date of specifications approval: September 2015

B - Basic information

Title: Engineering Computer Applications I **Code: E330** Year/level: Third/First

Teaching Hours: **Lectures: 1** Tutorial: -
Practical: 3 Total: 4

C - Professional information

1 – Course Learning Objectives:

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

2 - Intended Learning Outcomes (ILOS)

a – Knowledge and understanding:

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

b – Intellectual Skills:

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

c - Professional and practical skills:

On successful completion of the course, the student should be able to:
c1- Use of different matrix and array operations for both real and complex numbers(C1,C2)

c2- Produce graphics in two and three dimension (C5,C14)

c3- Develop MATLAB programs to simulate different systems (C6,C7,C14).

c4-Solve different operational problems related to the electrical, electronic, and control systems and their basic elements (C1, C5, C6, C7, C15).

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

d - General and transferable skills:
On successful completion of the course, the student should be able to:

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

d2- Communicate effectively and present data and results orally and in written form(D3,D4).

d3- Use ICT facilities in presentations, and manage resources efficiently (D4,D5).

d4- Search for information's in references, journals and in internet(D7).

d5- Practice self-learning (D7, D9).

Course Contribution in the Program ILO's

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

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
➢ . Introduction to MATLAB	1		3
➢ Matlab Fundamentals	1		3
➢ Matrix Operations, Array Operations Vectors and Matrix Operations, Graphing	1		3
➢ Data Analysis	1		3
➢ Plotting Commands	1		3
➢ Control Flow. -M – Files	1		3
➢ Control Statements	1		3
➢ DC Analysis	1		3
➢ Transient Analysis	1		3
➢ AC Analysis and network functions	1		3
➢ Advanced Programming in MATLAB in Semiconductor physics . -Operational Amplifier	2		4
➢ Computer Application using MATLAB-Mathematical Models of systems	1		4
➢ Introduction to Simulink	1		4
➢ Seminar	1		3
Total hours	15		45

4 - Teaching and Learning and Assessment methods:

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

5- Assessment Timing and Grading:

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

6- List of references:

6-1 Course notes:

   Lecture notes and handouts

6-2 Required books

- D. Hanselman and B. Littlefield, Mastering MATLAB7, Prentice Hall, 2005
- David C. Kuncicky ,"Matlab Programming ",Pearson Prentice Hall ,2004.
- Amos Giltat," Matlab An Introduction with Applications", John Wiley.2004

6-3 Recommended books:

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

- Jaan Kiusalaas, Numerical Methods in Engineering with MATLAB, Cambridge University Press, 2010.

6-4 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/ .
http://www.W3schools.com/

7- Facilities required for teaching and learning:
- Computer Lab.
- Data show
- Computer software package.

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

Modern Academy for Engineering & Technology
Electronic Engineering and Communications Technology Department
Course Specification
E302 Microelectronic II

A- Affiliation

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

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

Department offering the course: Electronic Engineering and Communications Technology Department

Date of specifications approval: September 2015

B-Basic Information

Titel :Microelectronics(II) **Code :E302** **Year:3rd Year /2nd term**
Teaching Hours:2 **Lectures:2** **Tutorial: -** **Practical:2**
Total :4

1 – Course Learning Objectives:
- Understand the transistor biasing
- Analyze the frequency response at low and high frequencies.
- Analyze the feedback topologies.
- Understand the basic theory of oscillation.

2 - Intended Learning Outcomes (ILOS)

A - Knowledge and understanding:

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

a1-Analysis the bias of any circuit. (A1, A3, A15)

a2- Analysis the frequency response of amplifiers (A1, A3, A4, A15)

a3- The feedback topologies. (A1, A3, A4, A15)

a4-Basic theory of oscillators and function generators. (A1)

B - Intellectual skills:

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

b1- Design the bias of simple circuits. (B2, B3.)

b2- Deduce the frequency response at low and high frequencies transistor amplifier. (B2)

b3-Evaluate the performance of power amplifier. (B2,B3,B5)

b4- Identify/describe the oscillation theory. (B2)

C - Professional and practical skills:

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

c1- Measure the transistor characteristics. (C1, C15)

c2- Measure the response of amplifiers. (C1, C15)

c3- Measure the output of the signal generators. (C7, C18)

D - General and transferable skills:

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

d1-Communicate effectively through assignments. (D3)

d2- Effectively manage tasks, time, and resour ces. (D6)

d3- Search for information and engage in life-long self-learning discipline. (D7, D9)

Course Contribution in the Program ILO's

	ILO's	Program ILO's
A	**Knowledge and understanding**	**A1, A3,A4,A15**
B	**Intellectual skills**	**B2,B3,B5**
C	**Professional and practical skills**	**C1,C7,C15,C18**
D	**General and transferable skills**	**D2,D3,D6,D7,D9**

3 – Contents

Topic	Lecture	Tutorial	Practical
Bipolar junction transistor amplifier	10		12
Frequency response	10		10
Feedback	10		8
Signal generator and waveform shaping circuits	4		2
Total hours	**32**		**32**

4 - Teaching and Learning methods:

Course ILO's		Lecture	Presentations & Movies	Discussions & Seminars	Tutorials	Problem solving	Laboratory & Experiments	Brain storming	Self Learning	Researches and Reports	Midterm	Quizzes	Assignments	Written Exam	Practical Exam
		Teaching methods						**Learning methods**			**Assessment method**				
Knowledge & Understanding	a1	1	1	1		1	1	1	1	1	1		1	1	1
	a2	1	1			1	1	1			1	1	1	1	1
	a3	1	1			1	1						1	1	1
	a4	1	1			1			1			1	1	1	
Intellectual Skills	b1				1	1	1	1			1		1	1	
	b2				1	1		1					1	1	
	b3				1	1	1	1	1			1	1	1	
	b4				1	1		1					1	1	
Applied Professional Skills	c1						1								1
	c2						1								1
	c3						1								1
General Tran. Skills	d1						1								
	d2						1								
	d3						1								

5- Students' Assessment Methods:

Mid-term exam to measure:	Contents from a1 to a2 and b1 to b2.
Final exam to measure:	Contents from a1 to a4 and b1 to b4.
Practical exam to measure:	Contents from c1 to c3.

5-2 Time schedule:

Mid-term exam	The 7th week
Final exam	The 16th week
Practical exam	The 12th week

5-3 Grading system

Mid-term exam	20%
Final exam	60%
Practical exam	20%
Total	100%

6- List of references:

6-1 Course notes

MICROELECTRONIC(II) By Dr. Hani Tawfik and M.Atef**.**

6-2 Required books: Adel S.sedra " micro-electronic circuits " oxford university press, Inc, 2004

Bishop, Owen. (2011) Electronics a first course. Italy: Elsvier

6-3 Recommended books

6-4 Periodicals, Web sites, etc.

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

www.Mawino.com

7- Facilities required for teaching and learning:

- none

Course coordinator:	Dr. Eman Muhammad
Head of the Department:	Prof. Dr. MokhtarAbd El- Haleem
Date:	August 2015

Modern Academy for Engineering & Technology
Electronic Engineering and Communications Technology Department
Course Specification
E303 Digital Signal 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: Electronic Engineering and Communications Technology Department

Date of specifications approval: September 2015

B-Basic Information

Titel :Digital Signal Processing   **Code :E303**   **Year:3rd Year /2nd term**
Teaching Hours: **Lectures:4**   **Tutorial:-2   Practical:- Total :6**

C - Professional information

1 – Cours   **e Learning Objectives:**
By the end of this course the students should demonstrate the knowledge and understanding of the basic
concepts & theory of Signals, Systems, signal Processing and discrete transformations and digital filters.
They should be able to design, calculate and analyze the performance of digital systems.

2 - Intended Learning Outcomes
(ILOS)
a - Knowledge and understanding:
On successful completion of the course, the student should demonstrate knowledge and understanding
of:
a1- the principles and concepts of digital signal processing (A8, A2).
a2- the concept of Analog-to-Digital and Digital-to-Analog Conversion (A2).
a3- the concept of   Discrete Transformations (FS, FT, DFT, FFT and z-Transform) (A5).
a4- the concept of Digital Filters design (FIR & IIR), (A10).

b - Intellectual skills:
On successful completion of the course, the student should be able to.
b1- select appropriate transformation (FS, FT, DFT or FFT), (B1).
b2- solve engineering problems using the concepts of Z-Transform in DS Processing (B7, B14).
b3- logically analyze the digital systems (B11 & B15).
b4- join the different topics in this subject to design a good new digital system (B3, B14).

c - Professional and practical skills:
On successful completion of the course, the student should be able to:
c1- discriminate between different signal types (C2).
c2- use the gained Lab information in this subject to design numerous of digital signal processing systems,
e.g., A/D, D/A converters and DSP processor (C2, C5, C15).
c3- design different digital filters (FIR&IIR), (C2, C5, C14).
c4- develop some DSP systems to attain high qualified system (C6).
c5- prepare and present works both in written & oral form (C12).
d - General and transferable skills:

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

d1- search for information from references and internet (D7).

d2- communicate effectively and present data and results orally and in written form(D3).

d3- use ICT facilities in presentations (D4).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A2, A5, A8, A10
B	Intellectual skills	B1, B3, B7, B11, B14, B15
C	Professional and practical skills	C2, C5, C6, C12, C14, C15
D	General and transferable skills	D3, D4 , D7

3 – Contents

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

4 - Teaching and Learning and Assessment methods:

Course ILO's		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments	Brain storming	Self Learning	Researches and Reports	Midterm	Quizzes	Assignments	Written Exam	Practical Exam
Knowledge & Understanding	a1	1			1		1		1	1	1	1	1	1	1
	a2	1		1	1		1			1	1	1	1	1	1
	a3	1		1	1	1	1			1	1	1	1	1	1
	a4	1	1	1	1	1	1		1	1		1	1	1	1
Intellectual Skills	b1	1		1	1	1				1	1	1	1	1	
	b2	1		1	1	1	1	1	1	1		1	1	1	
	b3	1		1	1	1		1	1			1	1	1	1
	b4	1					1		1	1		1	1		1
Applied Professional Skills	c1	1			1	1	1		1	1	1	1	1		1
	c2	1		1	1		1	1		1	1	1	1	1	
	c3	1	1	1	1	1	1		1	1		1	1	1	1
	c4	1		1			1		1	1		1	1		
	c5	1	1	1			1		1	1		1	1		
General Tran. Skills	d1								1	1			1		
	d2	1							1	1			1		1
	d3		1	1						1			1		

5- Assessment Timing and Grading:

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

Total	100

6- List of References
6-1 Course Notes:
- Digital Signal Processing *"Theoretical part"*
- Digital Signal Processing *"Practical part"*

6-2 Essential Books (Text Books)
- Emmanuel C. Ifeachor and Barriew W. Jervis," Digital signal processing" A practical Approach ", 2nd Ed, prentice-Hall 2002.
- Joun G. proakis and Dimitris G. Manolkis, "Digital signal processing: principles, Algorithms, and Applications", 3rdEd, Macmillman Publishing Compay 1992.

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

6-3 Recommended Books
- Ashok Ambardar, "Analog and Digital signal processing ",2nd Edition,   Brooks/Cole publishing Company,1999
- Sanjit K. Mitra, "Digital Signal Processing: A computer Based Approach", 3rd Ed., McGraw-Hill. International Edition, 2006.

6-4 Periodicals, Web Sites, etc.
- http://www.amazon.com/Digital-Signal-Processing-Practical-Approach/dp/0201596199.
- http://en.wikipedia.org/wiki/Digital_signal_processing.
- http://www.dspguru.com/dsp/links

7- Facilities Required for Teaching and learning
- Lectures room equipped with OHP and data show facility.
- Computer Lab installed by DSP Kits and MATLAB software.

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

Modern Academy for Engineering & Technology
Electronic Engineering and Communications Technology Department
Course Specification
E351: Control Engineering I

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

Department offering the course: Electronic Engineering and Communications Technology Department

Date of specifications approval: September, 2015

B - Basic Information
Title: Control Engineering (I)   **Code: E351**   **Year/level:** Third, 1st term

Teaching Hours: **Lectures:** 2   **Tutorial:** 2

  Practical: 2   **Total:** 6

C - Professional Information
1 – Course Learning Objectives
By the end of this course the students should demonstrate the knowledge and understanding of the concepts for modeling, analysis of performance of F.B. linear control systems and design of controllers according to the classical control theory.

2 - Intended Learning Outcomes (ILOS)
A - Knowledge and Understanding
On successful completion of the course the student should demonstrate the knowledge and understanding of :

a1- Mathematical modeling of some electrical and mechanical physical systems and calculation of output responces(A1).

a2- Transfer function model of system and block diagram algebra (A1,A5).

a3- Time domain analysis of open loop and closed loop control system (A16).

a4- Construction of State-Space model of linear system and solution of state equation (A1,A5).

a5- Function of P, PI, PD and PID controllers for improving the F.B. system performance (A4,A16).

a6- Analizing the effect of roots of the characteristic equation (poles of the system) on the system transient response parameters (A1,A16).

a7- Steady state error analysis and evaluation of accuracy of control system in presense of disturbance input (A16).

B - Intellectual Skills
On successful completion of the course the student should be able to:

b1- Deduce the mathematical models,state models and transfer functions for some typical electrical and mechanical systems (B1).

b2-Calculate the output responces and investigate the transient response parameters of control systems (B2, B3).

b3-Analize the accuracy of F.B. system and investigate the steady state error of system in presense of disturbance inputs (B2, B3).

b4- Investigate how to improve the transient response and accuracy of F.B. system by design of an appropriate controller (B3,B7).

C - Professional and Practical Skills:

On successful completionof the course the student should be able to:

c1- Construct, test, and investigate the performance characteristics of open and closed loop control systems (C1, C5, C12).

c2- Design of proper controller for a given control system (C1, C2, C3, C13).

c3- Use experimental facilities to investigate the system performance for different control actions (C5, C12, C15).

c4- Use experimental facilities to assemble , operate and measure characteristics of servo loop control system (C5, C12, C15).

D - General and Transferable Skills

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

d1- Search for information's from references, journals and internet (D7).

d2-Work in a team and cooperate with other students (D1, D3).

d3-Present data and results orally and in written form (D3, D9).

d4- Practice self learning (D7, D9).

Course Contribution in the Program ILO's

	ILO's	Program ILO's
A	Knowledge and understanding	A1, A4, A5, A16
B	Intellectual skills	B1, B2, B3, B7
C	Professional and practical skills	C1, C2, C3, C5, C12, C13, C15
D	General and transferable skills	D1, D3, D7, D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
1-Introduction to control systems(closed loop versus open loop control)	2	2	2
2-Mathematical background and solving of linear time-invariant differential equations	4	4	2
3-Mathematical modeling of dynamic systems a. Transfer function & impulse response b. Block diagram system & block algebra. c. Mason's gain formula for determination of system transfer function. d. Closed loop system subjected to disturbance & error transfer function. e. State-space representation of dynamic systems &Transfer matrix and solution of state equation. f. Modeling & transfer functions of some typical electrical and mechanical systems.	12	10	12
4-Transient and steady-state response analyses:- 5-First-order & second-order open and closed loop step response. 6-Effect of roots of the characteristic equation (poles of the system) on the system transient response parameters.	6	6	6
• Basic control actions of control systems a. P, PI, PD, PID controller. b. Effects of integral and derivative control actions on system performance.	6	8	8
Total	30	30	30

4 - Teaching and Learning and Assessment methods:

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

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	15
Mid-Term Exam	6-th Week	15
Practical Exam	Fifteenth week	30
Written Exam	Sixteenth week	90
Total		150

6- List of References
6-1 Course Notes
Tantawy, M .(2009) Control Engineering – I (Lecture). Cairo: MAM Press.
Tantawy, M .(2009) Control Engineering – I (Lab). Cairo: MAM Press.

6-2 Essential Books (Text Books)
Ogata, K.(2010) Modern controls engineering. Prentice Hall.

6-3 Recommended Books
KUO,B.L.(2001) Automatic control systems. Prentice Hall.
Dorf,R.&Bishop,R.(1995) Modern Control systems.A.Wesley.

6-4 Periodicals, Web Sites, etc.
http://www.control.1th.se/Education/DoctorateProgram/linear-systems.html

http://engineersevanigm.blogspot.com/2013/09/automatic-control-by-benjamin-c-kuo-ebook-free-pdf-download-read-online.html

http://ocw.mit.edu/courses/aeronautics-and-astronautics/16-06-principles-of-automatic-control-fall-2012/lecture-notes/

7- Facilities Required for Teaching and Learning:
- Lectures
- Automatic Control Lab.

Course Coordinator: Ass.Prof. Dr. Magdy O. Tantawy
Head of the Department: Dr. MokhtarAbd El- Haleem
Date: September 2015

Modern Academy for Engineering & Technology
Manufacturing Engineering and Production Technology Department

M360: Industrial Psychology
Course Specifications

A- Affiliation

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

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

Department offering the course: Manufacturing Engineering and Production Technology Department

Date of specifications approval: September 2015

B - Basic Information

Title: Industrial Psychology   **Code:** M360   **Year/level:** 3-rd year / 1-st Term

Teaching Hours: **Lectures: 2**   **Tutorial: --**
                      Practical: --   **Total: 2**

C - Professional Information

1 – Course Learning Objectives

A study of this course will enable the student to:
Improve the performance of the whole work system as well to reduce the stress imposed on the working human being.

2 - Intended Learning Outcomes (ILOS)

A - Knowledge and understanding
By the end of the course the student should gain the following knowledge:
a1- The role of industrial engineer. (A9)
a2- The structural system of human work. (A9)
a3- The physical environmental impacts on human beings which can be assessed quantitatively. (A11)

B - Intellectual skills
By the end of the course the student should be able to:
b1- Apply basics of ergonomics to instrument display, machine, control and lay out of work place. (B4)
b2- Consider effect of all environmental changes on equipment. (B9)
b3- Diminishing the effects physical environmental impacts on human beings.(B9)

C - Professional and practical skills
By the end of the course the student should be able to:
c1- Create new product design adapted to the customer. (C2)
c2- Make the best use of human abilities . (C1)
c3- Use the ergonomic factors in domestic and industrial products. (C9)

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D - General and transferable skills
By the end of the course the student should be able to:
d1- Lead and manage effectively multidisciplinary team. (D5)
d2- Planning the efficient use of resources and time to fulfill tasks.(D6)

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A9, A11
B	Intellectual skills	B4, B9
C	Professional and practical skills	C1, C2, C9
D	General and transferable skills	D5, D6

3 – Contents

Topic	Lecture hours	Tutorial hours
Industrial Design – Design concepts	2	
Ergonomics	2	
Application of ergonomics – Instruments – Controls – Work place	2	
Aesthetic and ergonomics consideration	2	
Working conditions and Environment	2	
Heating and Ventilation	2	
Local Ventilation - Industrial Ventilation	2	
Air condition systems – CFC'S - Ozone	2	
depletion and Global Warning	2	
Noise – Exposer to noise – Noise control	2	
technique – Vibration	2	
Lighting – Level of luminance – Factors	2	
affecting the quality of lighting	2	
Human effectiveness	2	
Revision	2	
Total hours	**30**	

4 - Teaching and Learning and Assessment methods:

Course ILO's		Lecture	Presentations & Movies	Discussions &seminars	Tutorials	Problem solving	Laboratory & Experiments	Projects	Researches and Reports	Modeling and Simulation	Site Visits	Discovering	Written Exam	Practical Exam	Quizzes	Term papers	Assignments
Knowledge	a1	1	1	1	1				1				1		1	1	
	a2	1	1	1	1				1				1		1	1	
	a3	1	1	1	1				1				1		1	1	
Intellectual	b1	1	1	1	1	1		1	1				1		1	1	1
	b2	1	1	1	1	1		1	1				1		1	1	1
	b3	1	1	1	1			1	1				1		1	1	1
Applied	c1		1	1				1		1						1	
	c2		1	1				1		1						1	
	c3		1	1				1		1						1	
General Trap	d1		1	1				1	1							1	
	d2		1	1				1	1							1	

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	15
Written Exam	Sixteenth week	35
Total		50

6- List of References
6-1 Course notes: Lecture notes and handouts prepared by the course coordinator.
6-2 Required books: Non
6-3 Recommended books: Non
6-4 Periodicals, Web sites, etc. : Non
   http://www.apa.org/about/division/div14.aspx
   https://www.socialpsychology.org/io.htm
   https://www.hfes.org/web/Default.aspx

7- Facilities Required for Teaching and Learning: Non
Course Coordinator: Dr. Mamdouh Saber
Head of the Department: Dr. Abdelmagid A. Abdalla
Date: September 2015

Modern Academy for Engineering & Technology

Engineering and Information Technology Department
Course Specification
E331 Engineering Computer Application II

A- Affiliation

Relevant program: Electronic engineering and communication technology BSc program

Computer Engineering and Information Technology BSc Program

Department offering the program: Electronic Engineering and Communications Technology Department

Computer Engineering and Information Technology Department

Department offering the course: Computer Engineering and Information Technology Department

Academic year/level: Thirdyear / 2nd term

Date of specifications approval September 2015

B - Basic information

Title: Engineering computer Application II **Code**: E331 **Year/level**: Third/2nd

Teaching Hours: Lectures: 2 Tutorial: -

  Practical: 2 Total: 4

C - Professional information

1 – Course Learning Objectives:

By the end of this course the students should demonstrate the knowledge and understanding of establishing simulation and measuring the performance of different electrical, electronic and digital circuits using PSPICE software package. performing different types of analysis for such circuits, manipulating different plots for measuring circuit response involving functions of frequency and time.

2 – Intended Learning Outcomes (ILOS)

a – Knowledge and understanding:

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

a1- the basic knowledge about PSPICE software package (A1, A3).

a2- The Basic format and structure of PSPICE files(A2,A12)

a3- Circuit simulations via SPICE commands using drag /drop principles(A4,A5).

a4- DC circuit, Transient circuit, and AC circuit analysis using SPICE package (A15)

a5- Different models of some active elements (diodes, transistors, and operational amplifiers) Some advanced command of SPICE (A13)

b – Intellectual Skills:

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

b1- Deduce the circuit description using PSPICE(B1,B2).

b2- Perform and run simulation of electrical and electronic circuits(B5,B8)

b3- Perform different types of circuit analysis including (bias point – DC analysis – AC analysis and transient analysis).(B6,B7)

b4- Develop models for different semi-conductor devices (diode – transistors –operational amplifiers) in addition to using the built–in model in PSPICE library (B3,B4)

b5- Plot and print the circuit response involving function of frequency and time (B5,B9)

c - Professional and practical skills:

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

c1- provide the analysis and performance measurements of the circuit behaviors without having the circuit implementation in the lap(C1,C2,C3).

c2- Perform schematics that allow the circuit designer to place the various components of a circuit on drawing board prior carrying out the analysis in PSPICE.(C4,C5,C6)

c3- Implement circuit prototype(C13,C14,C15).

d - General and transferable skills:

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

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

d2- Communicate effectively and present data and results orally and in written form(D3,D4).

d3- Use ICT facilities in presentations, and manage resources efficiently (D4,D5).

d4- Search for information's in references, journals and in internet(D7).

d5- Practice self-learning (D7, D9).

Course Contribution in the Program ILO's

	ILO's	Program ILO's
A	Knowledge and understanding	A1,A2,A3,A4,A5,A12,A13,A15
B	Intellectual skills	B1,B2,B3,B4,B5,B6,B7,B8,B9
C	Professional and practical skills	C1,C2,C3,C4,C5,C6,C13,C14,C15)
D	General and transferable skills	D1,D3,D4,D5,D7,D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
* **Introduction to PSPICE software package:**	2	-	2
-The Basic format and structure of PSPICE files.		-	2
- Circuit simulations via SPICE commands using both			
text command and drag /drop principles.			1
* performing DC circuit analysis using SPICE package	2		1
-the simulation of DC circuits with passive elements	1		
specifically resistance component and its model	1		1
- modeling of DC sources and DC output variables	1		
-Operating point , transfere function, and DC sweep analysis	1		1
*performing **Transient circuit analysis**.			
-the simulation of transients in the circuits with linear elements including capacitors and inductors	2		2
- modeling of transient sources and transient output variables	1		1
-Different statements for transient analysis.	1		1
-Voltage and current controlled switches	2		2
* **performing AC circuit analysis:**			
-modeling of AC sources and AC output variables	2		2
-Different statements for AC analysis.	2		2
- Model parameters for nonlinear magnetic elements	1		1
-Multiple analysis	1		1
* **Different models of some active elements:**			
-Diodes Models and transistors Models.	3	-	3
-Operational Amplifiers Circuits	3	-	3
***Some advanced command and analysis using SPICE**		-	
- Foureir analysis	2		2
-Noise analysis and Digital circuits simulation	2		2
Total hours	**30**	**-**	**30**

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods						Learning Methods			Assessment Method				
		Lecture	Presentations & Movies	Discussions & Seminars	Tutorials	Problem solving	Laboratory & Experiments	Researches and Reports	Modeling and Simulation	Site Visits	Assignments	Quizzes & Presentations	Assignments	Written Exam	Practical Exam
Knowledge	a1	1	1				1							1	1
	a2	1	1				1		1			1		1	1
	a3	1	1				1			1				1	1
	a4	1	1				1			1				1	1
	a5	1	1				1			1		1		1	1
Intellectual	b1	1					1							1	1
	b2	1					1					1		1	1
	b3	1					1			1		1		1	1
	b4	1					1			1				1	1
	b5	1					1			1				1	1
Applied	c1	1					1					1			1
	c2						1								1
	c3						1					1			1
General Tran.	d1			1		1		1							
	d2		1	1				1	1						
	d3	1	1					1							
	d4	1	1	1				1							
	d5			1				1	1						

5- Assessment Timing and Grading:

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

6- List of references:

a- Course notes
    Lecture notes and handouts
b- Essential books
    J.keown, "Microsim Pspice and Circuit Analysis", prentice Hall, 1998. **.**
c- Recommended books
- M.H. Rashid, "Spice for Circuits and Electronics Using Pspice", Prentice hall, 1995 **.**
-Sommervile, Ion. (2011) Software engineering. USA: Parson
 6-4 Periodicals, Web sites, etc.:
 http://www.GenLib.org/ .
 http://www.talkthecold.com/bizgoogle/ .
 http://www.SCI-hub.org/ .
 http://www.scrius.com/ .
 http://www.Merlot.org/ .
 http://www.Vlab.co.in/ .
 http://www.W3schools.com/
7- Facilities required for teaching and learning:

- **Laboratory**
- **Workshop**

Course coordinator: Dr. Abdelmoneim fouda
Head of the Department: Prof. Dr.said Gawish
Date   September 2015

Modern Academy for Engineering & Technology
Computer Engineering and Information Technology Department
Course Specification
E362 : Electrical Machines & Power

A- Affiliation

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

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

Department offering the course: Computer Engineering and Information Technology Department

Date of specifications approval: September 2015

B - Basic information

Title: Electrical Machine&Power   **Code:** E362   **Year/level:** 3rd (Comm. Comp.)

Teaching Hours: **Lectures: 2**   **Tutorial: 2**

   Practical: 1   **Total:5**

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 applications the theory of their operations.

2 - Intended Learning Outcomes (ILOS)

A - Knowledge and understanding:

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

a1- Know the construction of machines (transformers – motors – generators) (A4,A12)

a2- Know all kinds of machines and transformers.(A12)

a3-Know the theory of operation of all kinds of machines.(A1)

a4- Evaluate the losses of each kind of machines.(A7)

a5- Know the maintenance and protection of machines(A5).

a6- Know the applications of kinds of machines. (A7,A8)

B - Intellectual skills:

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

b1- Find the equivalent circuits of any machine type.(B5)

b2- Allocate any fault and know its reason.(B2,B3,B6)

b3- Calculate the suitable machine parameters necessary for specific load(B5,B11)

b4- Choose the suitable operating torque-speed point for best machine performance.(B9)

b5-Calculate the efficiency of transformers and machines.(B5,B7)

b6- Design a simple transformer.(B2,B13)

C - Professional and practical skills:

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

c9- Measure equivalent circuit parameters of transformer and machines (C1, C5).

c10- Measure efficiency of transformer and machines (C1, C5).

c11- Measure voltage-current characteristics of generators (C1, C4, and C5).

c12- Measure torque-speed characteristics of motors (C1, C4).

c13- Control torque-speed characteristic of three phase induction machines (C8).

c14- Test synchronous generator synchronization with grid (C8).

D - General and transferable skills:

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

d1- Communicate effectively through assignments.(D3)

d2- Work in stressful environment and within constraints (D2).

d3- Effectively manage tasks, time, and resources.(D6)

d4- Search for information and engage in life-long self-learning discipline (D7)

Course Contribution in the Program ILO's

	ILO's	Program ILO's
A	Knowledge and understanding	A1, A4, A5, A7, A8 , A12
B	Intellectual skills	B2,B3,B5,B6,B7,B9,B11,B13
C	Professional and practical skills	C1, C4,C5,C8
D	General and transferable skills	D2,D3,D6,D7

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
• Circuit analysis of transformers	4	2	-
• Transformer construction	2	-	2
• Equivalent circuit of a transformer	2	4	-
• Transformer test	2	2	2
• Construction of dc machines	2	-	-
• Classification of dc machines	2	2	2
• Circuit equations of dc machines	2	4	-
• DC machine efficiency	2	2	2
• Construction of induction motors	2	-	-
• Torque-speed characteristics	2	4	2
• Efficiency of induction motors	2	4	3
• Circuit equations of synchronous machines	2	2	-
• Construction of synch machines	2	2	-
• Operation of synch machines	2	2	2
Total hours	**30**	**30**	**15**

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods						Learning Methods			Assessment Method			
		Lecture	Presentations & Movies	Discussions & Seminars	Tutorials	Problem solving	Laboratory & Experiments	Researches and Reports	Modeling and Simulation	Site Visits	Quizzes & Presentations	Assignments	Written Exam	Practical Exam
Knowledge	a1	1		1	1	1	1	1				1	1	1
	a2	1			1		1	1				1	1	1
	a3	1			1	1							1	
	a4	1		1	1								1	
	a5	1			1								1	
	a6	1			1								1	
Intellectual	b1	1			1			1				1	1	
	b2	1			1			1				1	1	
	b3	1			1		1	1				1	1	
	b4	1			1		1	1				1	1	
	b5	1			1			1				1	1	
	b6	1			1			1				1	1	
Applied	c1						1							1
	c2						1							1
	c3						1							1
	c4						1							1
	c5						1							
	c6						1							
General Tran.	d1	1					1							
	d2	1												
	d3	1												
	d4	1												

5- Assessment Timing and Grading:

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

6- List of references:
6-1 Course notes
S.A. Gawish, Electrical Machines & Power, Cairo, 2008
S.A. Gawish, Electrical Machines & Power, Practical Part, Cairo, 2008
6-2 Essential books (text books)
A.E. Fitzgerald, "Electrical Machines & Power", 1997
6-3 Recommended books
S.D. Umans, "Electrical Machines", 1995
Ducman,J. (2010) Power system analysis and design. USA: Gengag learning
6-4 Periodicals, Web sites, etc.
Educational CD , http://www2.le.ac.uk/departments/engineering/research/electrical-power/electrical-machines-and-power-electronics , http://www.wempec.wisc.edu/, http://www.ece.tamu.edu/~empelab/
7- Facilities required for teaching and learning:
Electrical Machines Lab. Data show
Course coordinator:　　　　Prof. Dr. Said A. Gawish
Head of the Department:　　　Prof. Dr. Said A. Gawish

Date: September 2015

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department
Course Specification
E399: Project

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
Department offering the course: Computer Engineering and Information Technology Department
Date of specifications approval**:**   September 2015

B - Basic information
Title: Project   **Code:** E399   **Year/level:** 3rd
Teaching Hours: **Lectures:1**   **Tutorial:**
                                      Practical:3   **Total:** 4

C - Professional information

1 – Course Learning Objectives:
   Specify the problem and analyses it to propose solution and then design and implement the project of a simple electronic circuit.

2 - Intended Learning Outcomes (ILOS)

A - Knowledge and understanding:
a1- Have a good knowledge about planning (A3,A4,A8)

a2- Understand organizational methods(A5,A6)

a3- Know everything about electrical components (types, shape, price and electrical data)(A9,A11)

a4- Know how to weld and connect electrical components to form a useful circuit(A4,A13,A14)

a5- Know how to mesure and adjust the input and output.(A1,A5,A6)

a6- Know the rules of writing a standard project report(A8,A10.A17)

B - Intellectual skills:
b1- Develop design abilities (B2,B4,B5)

b2- Calculate the circuit the circuit parameters (B1,B2,B3)

b3- Converting concepts to real entities (B5,B6)

b4- Integrating the results of a project (B11,B12)

b5- Write a complete project report according to standards (B10,B16)

C - Professional and practical skills:
c1- Appreciate elements of electronic circuit design (C11,C12,C16)

c2- Practicing the setup of circuitry (C2,C9,C10)

c3- Testing and correcting circuit operation (C1,C5,C6)

c4- Measure the circuit variables (C2,C5)

D - General and transferable skills:

d1- Presenting project plans (D1,D2,)

d2- Demonstrating activities of different project phases (D3,D5)

d3- Explaining project outcomes by demonstration (D7,D9)

Course Contribution in the Program ILO's

	ILO's	Program ILO's
A	Knowledge and understanding	A1, A3, A4, A5, A6, A7, A8, A9, A10, A11, A12, A13, A14, A15, A16, A17
B	Intellectual skills	B1, B2, B3, B4, B5,B10, B11, B12, B13, B16
C	Professional and practical skills	C1, C2, C5, C6, C9, C10, C11, C12, C16
D	General and transferable skills	D1, D2, D3, D5, D6, D7, D8, D9

3 - Contents

Topic	Lecture hours	Tutorial hours	Practical hours
• Project background	6		
• Project activities	4		
• Practical implementation and measurements			12
• Production of final product			20
• Testing and correcting output			13
• Preparing for project presentation	5		
Total hours	**15**		**45**

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods						Learning Methods			Assessment Method				
		Lecture	Presentations & Movies	Discussions & Seminars	Tutorials	Problem solving	Laboratory & Experiments	Researches and Reports	Modeling and Simulation	Site Visits	Assignments	Quizzes & Presentations	Assignments	Written Exam	Practical Exam
Knowledge	a1	1		1						1					
	a2	1		1						1					
	a3	1		1						1					
	a4	1		1						1					
	a5	1		1						1					
	a6	1		1						1					
Intellectual	b1		1				1			1					
	b2		1				1			1					
	b3		1				1			1					
	b4		1				1			1					
	b5		1				1			1					
Applied	c1		1				1			1					
	c2		1				1			1					
	c3		1				1			1					
	c4		1				1			1					
General Tran.	d1		1				1	1		1					
	d2		1				1	1		1					
	d3		1				1	1		1					

5- Assessment Timing and Grading:

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

6- List of references: Library books according to project subject

7- Facilities required for teaching and learning:

Hard-ware labs computer labs

Course coordinator: Departement Stuff

Head of the Department: Prof. Dr. Said A. Gawish

Date: September 2015

Modern Academy for Engineering & Technology
Basic Sciences Department

Course Specification
B411 Mathematics VI

A- Affiliation

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

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

Department offering the course: Basic Sciences Department
Date of specifications approval: Septemper, 2015

B - Basic information

Title: Mathematics VI   **Code:** B411   **Level:** 4-th year   **Semester**: 1St
Hours total: 5   **Lectures:** 3   **Tutorial:**2   **practical**: -

C - Professional information

1 – Course Learning Objectives:

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

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:
On successful completion of the course, the student should demonstrate knowledge and understanding of:
a1- Methods of Least square curve fitting (A1,A5)
a2- Methods of numerical interpolation using Newton and Lagrange methods (A1,A5)
a3- Methods of numerical Integration (A1)
a4- Methods of numerical solution of initial value problems (A1)
a5- Methods of numerical solution of linear and non-linear equation (A1)

b - Intellectual skills:
By the end of the course the student should be able to:
b1- Make a logical Analysis to reach to the proper solution (B1,B2,B3)
b2- Choose the right decision by choosing the right method (B2,B3,B11)
b3- Recognize the right method which has minimum error and using minimum numerical steps(B2,B3)

c - Professional and practical skills:
By the end of the course the student should be able to:
c1- Identify appropriate economic modles (C1).
c2- Use appropriate IT packages effectively (C4).

d - General and transferable skills:
By the end of the course the student should be able to:
d1- Write technical reports (D3,D7)
d2- Communicate effectively and present data in written form (D3)
d3- Communicate using internet. (D4)
d4- Search for information from internet (D7)

Course Contribution in the Program ILO's

	ILO's		Program ILO's
A	Knowledge and understanding		A1,A5
B	Intellectual skills		B1, B2, B3, B11
C	Professional and practical skills		C1, C4
D	General and transferable skills		D3, D4, D7

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
Curve fitting and linear Approximation of a function.	6	4	
Interpolation			
polynomial interpolation and error estimation in the interpolation formula Lagrange interpolation	3	2	
Newton –interpolation	3	2	
Hermite interpolation.	3	2	
Numerical Integration			
Newton-Cotes formula, composite Newton-cotes formula	3	2	
Romberg – steifel integration method.	3	2	
Numerical solution of initial value problems	3	2	
numerical solution of first order methods Runge- Kutta methods	6	4	
multistep methods .	3	2	
Numerical solution of linear and non-linear equation, Gauss-Seidel method.	6	4	
Numerical solution of nonlinear equations the fixed point iteration method, Newton-Raphson method.	6	4	
Total hours	**45**	**30**	

4 - Teaching and Learning and Assessement methods:

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

d3	1											1	
d4		1										1	

5- Assessment Timing and Grading:

Asessement Method	Timing	Grade (Degrees)
Semister Work: quizzes assignments	Bi-Weekly	10
Mid-Term Exam	8-th Week	20
Written Exam	Sixteenth week	70
Total		100

6- List of references:

6-1 Course notes:
Osama El-Gayar Methods for Engineers, Modern Academy Press, Lecture Note, 2005.

6-2 Required books
Richavd L.Brude "Numerical Analysis",4th ed., Mc Graw Hill, 1995.
Amir Wadi Al-khafaji ,John R.Tooley "Numerical methods in Engineering Practice", U.S.A. New York,1990.

6-3 Recommended books: Non

6-4 Periodicals, Web sites, etc.
http://math.fullerton.edu/mathews/numerical.html

7- Facilities required for teaching and learning:
- Library
- Internet

Course coordinator: Dr. Nabela El-sawey
Head of the Department: Prof.Dr. Lila Soliman
Date: Septemper, 2015

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department

Course Specification

E414: Computer Architecture (I)

A- Affiliation

Relevant program: Computer Engineering and Information Technology BSc Program

Department offering the program: Computer Engineering and Information Technology Department

Department offering the course: Computer Engineering and Information Technology Department

Date of specifications approval: September 2015

B – Basic information

Title : Computer Architecture I   **Code :** E 414   **year / level:** 4th year

Teaching Hours :   **Lecture : 4   Tutorial : 2   Total : 6**

C - Professional information

1- Course learning objectives:

The main objective of this course is to make the students familiar with the Basic concepts of machine-level architecture, programming instruction formats and addressing modes as well as understanding the micro operations, memory organization and I/O units, arithmetic and logic unit operations (Addition, multipliers and division). Also be aware of vectored interrupt, direct memory access, Serial and parallel transfer.

2- Intended Learning Outcomes (ILOS)

By the end of this course the students should demonstrate the knowledge and understanding of the basic features, basic concepts of the micro computer 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).

Intended Learning Outcomes (ILOS)

a – Knowledge and understanding:

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

a1- Basic Structure of computers (A1,A2).

a2- Foundations of Computer Architecture (A3)

a3- Fundamentals of Arithmetic and logic units (A3,A4,A13).

a4- Different types of Addressing Modes (A5,A8).

a5- Different classifications of Secondary storage (A13).

a6- Architecture and organization of Memory unit (A8,A13,A15).

a7- Concepts of Operating system support (A1,A2,A13).

a8- Basic requirements for Programming the basic computer ((A15,A10)

b – Intellectual Skills:

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

b1- Investigate on the Computer Architecture (B6,B5).

b2- Create a systematic approaches of different addressing modes (B3,B4,B12)

b3- Analyze different components constituting the micro computer system (B13)

b4- Manipulate different organizations of memory units (B4,B5,B7,B17).

b5- Assess and evaluate the characteristics and performance of A.L.U. (B1,B2, B5)

b6- Investigate on the different techniques for Programming the basic computer (B3)

c - Professional and practical skills:

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On successful completion of the course, the student should be able to:
c1- recognize and identify the structure of computer architecture (C1, C2)
c2- Evaluate the performance of A.L.U and control unit (C2, C3)
c3- Use a wide range of analytical tools, techniques, and software packages pertaining for programming the basic computer (C6, C14, C15)
c4- Utilize computational facilities and techniques, to design different architectures of memories experiments. Then collect, analyze and interpret results (C4, C13).

d - General and transferable skills:
On successful completion of the course, the student should be able to:
d1- Work in a team and involve in group discussion and seminars(D1, D3,D6).
d2- Communicate effectively and present data and results orally and in written form(D3, D4).
d3- Use ICT facilities in presentations, and manage resources efficiently (D4, D5).
d4- Search for information's in references, journals and in internet(D7).
d5- Practice self-learning (D7, D9).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1,A2,A3,A4,A5,A8,A10,A13,A15
B	Intellectual skills	B1,B2,B3,B4,B5,B6,B7,B12,B13 ,B17
C	Professional and practical skills	C1,C2,C3,C4,C6,C13,C14,C15
D	General and transferable skills	D1,D3,D4,D5,D6,D7,D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
➢ Basic Structure of computers	6	2	
➢ Addressing Modes	8	4	
➢ Arithmetic and logic units	8	4	
➢ Memory unit	8	4	
➢ Secondary storage	8	4	
➢ Computer Architecture.	8	4	
➢ Operating system support	6	3	
➢ Programming the basic computer	4	4	
➢ Seminars	4	1	
Total hours	60	30	-

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods								Learning Methods			Assessment Method						
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments			Researches and Reports	Modeling and Simulation		Written Exam	Practical Exam	Quizzes	Term papers	Assignments		
Knowledge & Understanding	a1	1	1	1						1			1	1		1			
	a2	1											1	1	1	1			
	a3	1											1	1		1			
	a4	1	1	1	1	1				1			1	1	1	1			
	a5	1			1								1	1		1			
	a6	1			1					1			1		1	1			
	a7	1	1	1	1	1				1			1		1	1			
	a8	1																	
Intellectual Skills	b1	1			1								1	1		1			
	b2	1	1										1	1		1			
	b3	1		1	1					1			1			1			
	b4	1			1					1			1	1	1	1			
	b5	1	1		1	1				1			1	1	1	1			
	b6	1	1	1		1				1									
Applied Professional	c1	1			1	1							1	1	1				
	c2	1	1										1	1	1	1			
	c3	1		1		1				1					1	1			
	c4	1	1		1	1									1				
General Tran. Skills	d1			1		1				1					1				
	d2		1	1		1				1					1	1			
	d3	1	1							1						1			
	d4	1	1	1						1						1			
	d5			1						1						1			

5- Assessment Timing and Grading:

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

6- List of references:
6-1 Course notes: Lecture notes and handouts
Seham Ebrahim,Computer Architecture.Cairo :MAM Press
6-2 Required books
 William Stallings, (2010) COMPUTER ORGANIZATION AND ARCHITECTURE DESIGNING FOR PERFORMANCE, 8th edition, Prentice Hall.
 M.Mano, (1996),Computer System Architecture, Prentice Hall.
 Thomas C.Bartee, (1991),Computer Architecture and Logic Design , Mc Graw Hill, 1991.
6-3 Recommended books: Non
 6-4 Periodicals, Web sites, etc.:
 https://www.eecs.berkeley.edu/Courses/Data/188.html

http://www.GenLib.org/ .

7- Facilities required for teaching and learning:
- Computer Lab.
- Computer, Data show and Computer package.

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

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department

Course Specification
E421: Microprocessor Based-Systems I

A- Affiliation

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

Department offering the course:　Computer Engineering and Information Technology Department

Date of specifications approval:　　September 2015

B - Basic information

Title: Microprocessor Based-Systems I　**Code**: E421　　**Level**: 4th year(Comm.&Comp)
Credit Hours:　　　　　　　　　　**Lectures**: 3 hrs　　**Tutorial/Exercise**:2 hrs
　　　　　　　　　　　　　　　　　　Practical: 1 hrs　　　**Total**: 4 hrs

C - Professional information

1 – Course Learning Objectives:

By the end of this course, the students should demonstrate the knowledge and understanding the architecture of microprocessor. 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.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

On successful completion of the course, the student should demonstrate knowledge and understanding of:
a1- The architecture of microprocessor (A9, A15, A18).
a2- The assembly instructions for the Intel microprocessor (A5, A14).
a3- The memory architecture for the microprocessor (A4, A14).
a4- Physical, logical and effective addresses for Intel microprocessor (A4, A5, A9).
a5- Instruction pipeline technique for the microprocessor (A4, A14, A16).
a6- The addressing modes for the microprocessor (A4, A14).
a7- The Instruction formats for microprocessor (A4, A14).
a8- The memory interfacing with microprocessor (A4, A9, A14).
a9- The interfacing of different digital components with the microprocessor (A4, A14).

b - Intellectual skills:

On successful completion of the course, the student should be able to:
b1- Recognize between the architecture of different microprocessors (B2, B6, B9).
b2- Write assembly programs for the Intel microprocessor 8086 (B3, B4, B13).
b3- Analyze the characteristics of the Intel microprocessors (B1, B2, B11).
b4- Investigate the effect of different addressing modes for microprocessor 8086 (B5, B6).
b5- Solve engineering design based on the microprocessor 8086 (B12, B17).
b6- Recognize the connections between the microprocessor 8086 and 80286 (B11, B16).

c - Professional and practical skills:

On successful completion of the course, the student should be able to:
c1- Write assembly code for Intel microprocessor 8086 (C6, C14, C15).
c2- Check and Debug syntax errors in the assembly code (C12, C14, C15).
c3- Use software assembler to convert the assembly code to machine code (C5, C14, C15).

c4- Design systems for 8086 depend on software simulator program (C6, C14, C15).
c5- Use the hardware kit to check the validation for their designs (C5, C14, C15).

d - General and transferable skills:

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

d1- Work in a team for researching about microprocessor applications (D5, D7).
d2- Communicate effectively and present data and results in hard and soft copies (D3).
d3- Search for information in libraries and internet (D5, D7).
d4- Practice self-learning and preparing written reports (D7, D9).

Course Contribution in the Program ILO's

	ILO's	Program ILO's
A	Knowledge and understanding	A4, A5, A9, A14, A15, A16, A18
B	Intellectual skills	B1, B2, B3, B4, B5, B6, B9, B11, B12, B13, B16, B17
C	Professional and practical skills	C5, C6, C12, C14, C15
D	General and transferable skills	D3, D5, D7, D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
➤ The architecture of Intel microprocessor 8086.	3	2	1
➤ Assembly instructions for 8086.	12	8	5
➤ The memory segmentation and effective addresses for 8086.	6	4	1
➤ The instruction formats for 8086.	3	2	2
➤ The addressing modes for 8086	4	3	2
➤ The serial and parallel communications with 8086.	5	3	1
➤ The interface with external memories and PPI.	6	4	1
➤ The interface with input units (such as sensors, keypad …etc).	3	2	1
➤ The interface with output units (such as motors, monitors …etc)	3	2	1
Total hours	45	30	15

4 - Teaching and Learning and Assessment methods:

Course ILO's		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments	Researches and Reports	Modeling and Simulation	Written Exam	Practical Exam	Quizzes	Term papers	Assignments
Knowledge & Understanding	a1	1	1	1	1			1	1	1	1			1
	a2	1	1		1		1		1	1	1	1		1
	a3	1	1		1					1	1		1	1
	a4	1	1	1	1		1			1			1	1
	a5	1	1		1					1		1		1
	a6	1	1		1	1				1			1	1
	a7	1	1		1	1	1		1	1		1	1	1
	a8	1	1		1			1		1	1		1	1
	a9	1	1	1	1	1	1	1	1	1	1			1
Intellectual Skills	b1	1	1	1	1			1	1	1	1			1
	b2	1	1		1		1		1	1	1	1		1
	b3	1	1		1					1	1		1	1
	b4	1	1		1		1			1			1	1
	b5	1	1		1					1		1		1
	b6	1	1		1	1				1			1	1
Applied Professional Skills	c1	1	1			1	1	1	1		1			
	c2						1	1	1		1			
	c3	1				1	1	1	1		1			
	c4	1				1	1	1	1		1			
	c5						1		1		1			
General Tran. Skills	d1	1		1	1	1		1	1				1	
	d2	1				1		1					1	
	d3							1						
	d4					1		1					1	

5- Assessment Timing and Grading:

Assessment Method	Timing	Degrees
Semester Work: seminars, quizzes assignments and reports	By Weekly	15
Mid-Term Exam	6-th Week	15
Practical Exam	Fifteenth week	30
Written Exam	Sixteenth week	90
Total		150

6- List of references:

6-1 Course notes:

Assem B, The Microprocessor Based Systems I, lecture note, 2014

6-2 Required books:

Nilesh B. Bahadure, Microprocessors : 8086/8088, 80186/80286, 80386/80486 And The Pentium Family, PHI Learning Pvt. Ltd, 2012

6-3 Recommended books:

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

- Sir Phirozshah, Microprocessors and Interfacing Techniques, Navigator series, 2014

6-4 Periodicals, Web sites, etc.

> http://www.intel.com
> http://www.cpu-world.com
> http://8086-microprocessor-emulator.soft32.com/

7- Facilities required for teaching and learning:

- Hardware emulators and kits.
- Simulator software programs.
- Data show

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

Modern Academy for Engineering & Technology
Basic Sciences Department
Course Specification
B401:Environmental science and Technology

A- Affiliation

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

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

Department offering the course: Basic Scienc Department
Date of specifications approval: September, 2015

B - Basic information

Title: : Environmental science and   **Code:** B401   **Level:** Senior 1   **Semester**: 7th
Technology

Hours   **Total**   2 hrs   **Lectures**   2 hrs   **Tutorial**   -   **Practical** -

C - Professional information

1 – Course Learning Objectives:

By the end of this course the students should demonstrate the knowledge and understanding how to be familiar with Technology Transfer issues, physical technology principles of energy supply systems based on fossil, nuclear and renewable sources of energy and study of environmental pollutions, their causes, why they are of concern, and how we can control them.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

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

a1- The effective management and transfer of technology.(A9,A10)

a2- The sustainability problems associated with the use of fossil and nuclear fuels (A9,A10)

a3- Identification of the renewable sources that offer reduced environmental impact such as solar wind, wave and also bio fuels.(A9,A10)

a4- the major sources of environmental pollution.(A9,A10)

a5- The effects of air and water pollution.(A9,A10)

a6- The practice of noise control.(A9,A10)

a7- The major approaches to the prevention of pollution from the most common sources.(A9,A10)

a8- The preliminary Environment Impact Assessment for a development. (A9,A10)

b - Intellectual skills:

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

b1- Select the proper technology of environmental control in its applications to air, water (B4, B9)

b2- Analyze and give information on the basic causes of environmental disturbances.(B12)

c - Professional and practical skills:

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

c1- Collect and record data and information about the environmental (air, water…) quality and about nature resources. (C1)

d - General and transferable skills:

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

d1- Communicate effectively. (D1,D3,D7,D9)

Course Contribution in the Program ILO's

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

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
• Population Growth and the Environment	4	-	-
• Energy	2	-	-
• Technology Transfer	6	-	-
• Air Pollution	4		-
• Water Pollution	4	-	-
• Noise Pollution	4	-	-
• Environmental Impact Assessment and the Egypt law No.4 of 1994 on the Environment.	4	-	-
• Final Revision	2	-	-
Total hours	**30**	**-**	**-**

4 – Teaching, Learning and Assessement methods:

Course IL O's		Teaching Methods						Learning Methods		Assessement Method				
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments	Researches and Reports	Modeling and Simulation	Written Exam	Practical Exam	Quizes	Term papers	Assignments
Knowledge	a1	1	1	1	-			1		1		1	1	
	a2	1			-					1		1	1	1
	a3	1			-					1		1	1	1
	a4	1	1	1		1		1		1		1	1	1
	a5	1								1	1	1	1	1
	a6	1						1					1	1
	a7	1		1		1		1	1				1	
	a8	1								1				
Intellectual Applied	b1	1								1		1		1
	b2	1				1				1		1	1	1
	c1	1	1			1				1	1	1	1	1
General	d1			1		1		1					1	

5- Assessment Timing and Grading:

Asessement Method	Timing	Grade (Degrees)
Semister Work: seminars, quizes assignments and reports	Bi-Weekly	10
Mid-Term Exam	6-th Week	20
Practical Exam	Fifteenth week	-
Written Exam	Sixteenth week	70
Total		100

6- List of references:

6-1 Course notes

A. M. Abotaleb, Environmental science and Technology, Lecture notes, Modern Acadymy Press, 2010.

6-2 Required books:

Gwendolyn, Hand book of Environment management and technology, Wiley inter science, Canada, (2005)

Recommended books

None

6-4 Periodicals, Web sites, etc.

http:www.epa.gov
http:www. Eeao. Gov. eg

7- Facilities required for teaching and learning:

- Computer,
- Data show and Internet
- Libraries.

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

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department

Course Specification

E461: Operating Systems (II)

A- Affiliation

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

Date of specifications approval: September 2015

B - Basic information

Title: operating Systems II   Code: E 461   Year/level: 4th /1st semester
Teaching Hours: Lectures: 4   Tutorial: -
                                               Practical: 2   Total: 6

C - Professional information

1 – Course Learning Objectives:

A study of this course will enable the student to:

Know different operating system models , processes and threads, understand the multiple processor environment, file management systems activities, security in operating systems, and communication between processes.

2 - Intended Learning Outcomes (ILOS)

A - Knowledge and understanding:

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

    a1- The concepts of process and threads(A4,A8)
    a2- system calls and interrupts(A8,A14)
    a3- The concept of Inter-process communication(A3,A14,A15)
    a4- The concept of multiprocessor systems(A14,A15,A8)
    a5- The concept of Distributed systems(A14,A15,A4)
    a6- Client-server computing model(A17,A2)
    a7- File management systems(A1,A5)
    a8-   Security issues of operating systems(A14,A15)

B - Intellectual Skills:

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

    b1 – compare between various models of operating systems (B4,B9)
    b2 – decide for which inter-process communication technique.(B5,B13)
    b3 - distinguish between multiple processor systems.(B4,B9)
    b4- Identify the suitable techniques for multiprocessor and multi-computer scheduling(B17,B13)
    b6 – identify the organization and access method to files.(B2,B16)
    b7 – characterize threats to system components and identify various protection methods.(B6,B17)

C - Professional and practical skills:

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

    c1- build and run service modules for familiar OS's(C1,C4,C6)
    c2– identify the tasks of various OS routines(C1,C5)
    c3- develop/implement some functions/features of an open-source Operating System. (C15,C13,C3)

D - General and transferable skills
By the end of the course the student should be able to:
d1- Present problems arising due to multiprogramming (D1, D2, D3).
d2- Prepare analysis reports about performance of various algorithms (D4, D7)
d3- Demonstrating results of implementing algorithms (D8, D9)..

Course Contribution in the Program ILO's

	ILO's	Program ILO's
A	Knowledge and understanding	A4,A8,A14,A3,A15,A17,A2,A1,A5
B	Intellectual skills	B4,B9, B5,B13,B17
C	Professional and practical skills	C1,C4,C6, C5,C15,C13,C3
D	General and transferable skills	D1,D2,D3,D4,D7,D8,D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
• Processes, Threads and Multithreading	8		4
• System Calls and Interrupts	4		2
• Inter-process Communication	4		4
• Parallel computing	2		-
• Flynn 's classical Taxonomy			
• General features of Multiple Processor Systems	2		-
• Multiprocessor OS Types	4		2
• Multiprocessor Synchronization			
• Multiprocessor Scheduling	6		4
• Multi-computer systems			
• Distributed Systems and Networking (basic concepts)	4		-
• Distributed Systems Middleware	6		4
• Distributed File Systems	6		4
• Client-server computing	6		2
• System Security	8		4
Total hours	60		30

4 - Teaching and Learning and Assessment methods:

Course IL O's		Teaching Methods						Learning Methods			Assignment Methods			
		Lecture	Presentations & Movies	Discussions & Seminars	Tutorials	Problem solving	Laboratory & Experiments	Researches and Reports	Modeling and Simulation	Site Visits	Assignments	Quizzes & Presentations	Written Exam	Practical Exam
Knowledge	a1	1	1		1						1		1	
	a2	1			1						1		1	
	a3	1	1		1						1		1	
	a4	1	1		1						1		1	
	a5	1	1		1						1		1	
	a6	1	1		1						1		1	
	a7				1								1	
	a8		1		1									
Intellectual	b1				1								1	
	b2	1	1		1								1	1
	b3	1	1		1								1	1
	b4	1			1			1			1		1	1
	b5	1	1		1			1			1			1
	b6		1		1			1			1		1	1
	b7	1	1		1			1			1			
Applied	c1				1			1				1		
	c2		1		1						1	1		
	c3		1		1			1			1	1		1
General Tran.	d1							1		1	1			1
	d2		1					1		1	1	1		1
	d3		1					1		1	1	1		

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	20
Mid-Term Exam	6-th Week	10
Practical Exam	-	30
Written Exam	Sixteenth week	90
Total		150

6- List of references:

6-1 Course notes   :- Lecture Notes and Hand outs

6-2 Required books   :- Andrews. T. modern operating, print. Hulling

6-3 Recommended books :-

William Stallings, Operating Systems Internals and Design Principles, 3rdedition , Printec Hall 1998.

Abrahm. (2010) Operating system concepts. Delhi: Wiley.

6-4 Periodicals, Web sites, etc.

7- Facilities required for teaching and learning: Data show & laptop

Course coordinator: Dr. Adel Khedr , Dr. Khaled Morsy

Head of the Department: Prof. Dr. Said Gawish

Date: September 2015

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department

Course Specification
E451: Digital Image Processing

A- Affiliation

Relevant program:	Computer Engineering and Information Technology BSc. Preogram
Department offering the program:	Computer Engineering and Information Technology Department
Department offering the course:	Computer Engineering and Information Technology Department
Date of specifications approval:	September 2015

B - Basic information

Title: Digital Image Processing   **Code:** E451   **Year/level:** 4th Computer

Teaching Hours: **Lectures: 4**   **Tutorial: 3**

     Practical: -   **Total: 7**

C - Professional information

1 – Course Learning Objectives:

By the end of this course the students should demonstrate the knowledge and understanding of the digital Images processing and earn skills in dealing with images as well as the image processing based systems, the image acquisition, sampling, quantization, related problems, and basics of image processing (neighboring, statistics, and labeling). They should be able to use the image encoding techniques and methodologies to form compressed and effective storage for images with practical and theoretical coverage.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

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

a1- Digital image and main phases of a digital image processing based computer system.(A1,A2,A4,A12)

a2- various methods and techniques to enhance an image. (A15,A16)

a3- various methods to compress and encode images. (A16,A2)

a4- techniques to find out an object to segment an image. (A3,A5,A12)

a5- Image transformations using discrete Fourier transform and discrete cosine transform. (A1,A16)

a6- Boundary representation and distance metrics. (A1,A16)

a7- Morphology and features extraction techniques. (A15,A16)

b - Intellectual skills:

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

b1– Build and design of systems that includes software and hardware. (B1,B2,B12)

b2 – Analyze the problem decompositions. (B13,B15,B16)

b3 –Solve problems using transformers to suitable domain. (B7,B12,B17)

c - Professional and practical skills:

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

c1- Design and realize application software's to read and enhancement images of different formats (C1,C2,C3,C4)

c2 - Use compression and transformation programs to design and develop image system. (C5,C7,C13)

c3 – Use image Segmentations applications and familiarization with open CV. (C14,C15)

c4 - Solve limited operational problems related to the image transformation. (C7)

c5 - Calculate the object segmentations and features in software design and develop. (C7,C13,C15)

d - General and transferable skills:

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

d1- Communicate with others; work in a team and involvement in group discussion (D3,D4)

d2- Present data and results orally and in written form . (D4,D8,D9)

d3- Use ICT facilities in presentations (D3,D6)

d4- Differentiate between the alternatives methodologies of Digital Image Processing (D6,D7).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A2, A3,A5,A12,A15, A16
B	Intellectual skills	B1,B2, B7, B12, B13, B15, B16, B17
C	Professional and practical skills	C1, C2, C3,C4,C5, C7, C13, C14,C15
D	General and transferable skills	D3, D4,D6,D7,D8,D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
➢ Image , Digital image and image processing based systems	4	4	-
➢ Sampling and quantization	4	6	-
➢ Understanding Statistics on image matrix and image histogram.	8	4	-
➢ Images enhancement: Contrast stretching and histogram equalization.	6	6	-
➢ Spatial domain filters	8	4	-
➢ Frequency domain	8	4	-
➢ Image Encoding and compression	4	6	-
➢ Image segmentation techniques	12	6	-
➢ Morphology, features extraction, boundary description, and distance metrics.	6	5	-
Total hours	**60**	**45**	**-**

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods						Learning Methods		Assessment Method				
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments	Researches and Reports	Modeling and Simulation	Written Exam	Practical Exam	Quizzes	Term papers	Assignments
Knowledge & Understanding	a1	1	1	1				1		1		1	1	
	a2	1			1	1				1		1	1	1
	a3	1	1	1	1	1		1		1		1	1	1
	a4	١						١	١	1		1		
	a5	1		1	1	1		1		1		1	1	1
	a6									1			1	1
	a7	1	1	1	1	1		1	1	1			1	
Intellectual Skills	b1	1	1		1	1		1		1		1		1
	b2	1			1	1			1	1		1	1	1
	b3	1	1		1	1				1			1	
Applied Professional Skills	c1	1	1		1	1		1		1		1	1	1
	c2	1			1	1				1		1	1	1
	c3	1		1	1	1		1	1				1	1
	c4	1		1	1	1		1					1	1
	c5		1		1	1		1	1	1				
General Tran. Skills	d1	1	1	1				1					1	
	d2	1	1	1	1	1		1					1	
	d3				1	1		1					1	1
	d4		1					1						

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	20
Mid-Term Exam	6-th Week	30
Practical Exam	-	-
Written Exam	Sixteenth week	100
Total		150

6- List of references:

6-1 Course notes

Lectures Notes of Digital Image Processing

6-2 Required books

Rafael C. Gonzalez & Richard E. Woods,(2011) Digital Image Processing, Prentice Hall.

6-3 Recommended books

  Eveen and Andro Karlisson, (1996),Reuse a holistic approach, WileY.

6-4 Periodicals, Web sites, etc.

IEEE transactions on Software Engineering.

7- Facilities required for teaching and learning:

- Computer Labs Equipped with any UML software.

Course coordinator: Dr/ Abdellatief Hussein Aboudli

Head of the Department: Prof. Dr. Said Gawish

Date: September 2015

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department
Course Specifications
E 412: Information Systems

Relevant program: Computer Engineering and Information Technology BSc Program

                              Electronic Engineering and Communication Technology BSc Program

Depatment offering the program: Computer Engineering and Information Technology Department
Department offering the course: Computer Engineering and Information Technology Department

Date of specifications approval: September 2015

B – Basic information
Title: Information Systems   **Code:** E 412   **Year / level:** 4th year**(Comm&Comp)**
Teaching Hours: **Lecture:** 4   **Tutorial:** 2
                                   Practical: --   **Total:** 6

C - Professional information
1- Course learning objectives:
The main objective is to familiarize students with the benefits and types of information systems, as well as their components and business applications of information systems.

2- Intended Learning Outcomes (ILO'S)
a - Knowledge and understanding:
On successful completion of the course, the student should demonstrate knowledge and understanding of:
a1-Basic concept of information systems – types ..Architecture (A1,A2,A3,).

a2- Importance of IS for business (A7, A8,A18,A20)

a3- Components of information systems (A2,A4,,A9).

a4- Different types of Information Systems such as MIS, DSS, Expert Systems   (A8,A9).

a5- Information system development life cycle. (A8,A12).

a6- Transaction processing system TPS (A8,A19,A20).

a7- Basic concepts of internet-based applications in IS (A9,A2,A19).

b - Intellectual skills:
On successful completion of the course, the student should be able to:
b1-Investigate on the different approaches in Information Systems (B1,B2,B3,B19).

b2- Create a systematic approaches of IS analysis and design (B12,B19,B23)

b3- Analyze different Aspects of system's feasibility study (B12, B14,B18,B20)

b4- Manipulate different procedures of system development life cycle SDLC (B2,B3,B4,B19).

b5- Investigate on the different techniques for Internet-based Information systems (B1, B12,B22)

c - Professional and practical skills:
On successful completion of the course, the student should be able to:
c1- Apply knowledge of science, and IT to deal with Information Systems (C1,C2)

c2- Apply the life cycle and system approach techniques to analyze and design IS (C2,C3,C6)

c3- Use of analytical tools, techniques, and software packages for analysis and design of a real- world information system (C6,C14,C15,C17,C18)

c4- Use computational facilities and techniques for implementing real-world information system for some enterprise or organization (C4,C5, C6, C13,C18).

d - General and transferable skills:
On successful completion of the course, the student should be able to:
d1- Work in a team and involve in group project (D1, D3,D7).

d2- Communicate effectively and present data and results orally and in written form(D3,D4,D6).

d3- Use ICT facilities in presentations, and manage resources efficiently (D4,D5).

d4- Search for information's in references, journals and in internet(D7).

d5- Practice self-learning(D5, D7, D9).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A2,A3,A7,,A8, A 9, A12, A18,A19,A20
B	Intellectual skills	B1,B2, B3,B4,B12,B14 ,B18.B19,B20,B22,B23
C	Professional and practical skills	C1, C2,C3,C4,C5, C6,C13,C14,C15, C17,C18
D	General and transferable skills	D1, D3, D4, D5,D6,D7, D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
➢ Information systems concepts	4	2	
➢ System Approach of solving Business problems	4	2	
➢ System development Life Cycle:	4		
• System Analysis and design	4	2	
• Data Flow Diagrams	4	2	
➢ Databases systems	4	2	
➢ Information System for Business Operations	4		
• Marketing Information Systems	4	1	
• Manufacturing Information Systems	4	1	
• Human Resources Management Systems	4	1	
• Accounting Information Systems	4	1	
➢ Management Information Systems	4	2	
➢ Decisions support systems	2	2	
➢ Artificial Intelligence and Expert Systems	2	2	
➢ Internet-Based Information Systems	2	4	
➢ Case Study	6	6	
Total hours	60	30	

4 - Teaching and Learning and Assessment methods:

Course ILO's		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		
			Teaching Methods							Learning Methods			Assessment Method						
Knowledge & Understanding	a1	1	1	1						1			1		1		1		
	a2	1											1		1	1	1		
	a3	1											1		1		1		
	a4	1	1	1	1	1				1			1		1	1	1		
	a5	1		1	1					1	1		1		1	1	1		
	a6	1		1	1					1			1		1		1		
	a7	1	1	1	1	1				1	1		1		1	1	1		
Intellectual Skills	b1	1			1								1				1		
	b2	1	1										1				1		
	b3	1		1	1					1			1				1		
	b4	1			1					1			1				1		
	b5	1	1		1	1							1				1		
Applied Professional	c1	1			1	1							1		1	1	1		
	c2	1	1										1		1	1	1		
	c3	1		1		1				1	1					1	1		
	c4	1	1		1	1										1	1		
General Tran. Skills	d1	1	1	1		1				1							1		
	d2	1	1	1		1				1	1						1		
	d3		1	1						1							1		
	d4		1	1						1							1		
	d5		1	1						1	1						1		

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	20
Mid-Term Exam	7-th Week	20
Project (analysis, design and implementation of a real-world Information System)	Due : 12th week	10
Written Exam	Sixteenth week	100
Total		150

6- List of references:

6-1 Course notes: Non

6-2 Required books James A.O' Brine , "Introduction to Information Systems" 7th ed. Irwin, 1994.

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

6-3 Recommended books:

Kendall& Kendall, Introduction to Information Technology, Pearson Education Inc., 2005.

James A.O' Brine, Management Information System, International fourth edition, Mc Graw Hill, 1999.

Dryden Press, Information Systems and the Internet, fourth edition ,1990

Ralph Stairand George Reynolds, Fundamentals of *Information Systems*, Cengage Learning, 2013.

6-4 Periodicals, Web sites, etc. http://www.britannica.com/topic/information-system
http://www.journals.elsevier.com/information-systems/

7- Facilities required for teaching and learning:

- Computer, Data show and Computer programs

Course coordinator: Dr. Khaled Morsy

Head of the Department: Dr. Said Gawish

Date: September 2015

Modern Academy for Engineering & Technology
Computer Engineering and Information Technology Department
Course Specification
E 460: Software Engineering

A- Affiliation
Relevant program: Computer Engineering and Information Technology BSc Program
Department offering the program: Computer Engineering and Information Technology Department
Department offering the course: Computer Engineering and Information Technology Department
Date of specifications approval: September 2015

B - Basic information
Title: Software Engineering **Code:** E460 **Year/level:**4th /2nd semester
Teaching Hours: **Lectures: 3** **Tutorial: 2**
Practical:2 **Total:** 7

C - Professional information
1 – Course Learning Objectives:
A study of this course will includes how software production facility   runs and the different organization personnel roles and the relationships. Also, learn the different software   development models   with differentiation between models understanding and practice of software requirements engineering and software design and development. Beside management of software organization and software quality measures.

2 - Intended Learning Outcomes (ILOS)
a - Knowledge and understanding:
On successful completion of the course, the student should demonstrate knowledge and understanding of
a1- Selection measures and measure software quality of a given software.(A6,A3,A8).
a2- Software organization and what are the roles it contains and how they interact with each other's. (A3,A7, A8).
a3- Software requirement definition, requirement specification and non-functional requirement. (A13,A4).
a4- Software Development models and the selection criteria's between models. (A15,A18).
a5- Software design. (A12,A4).
a6- Software development models and suitability of a model to a specific cases. (A13,A4,A18).
a7- Planning software activities with dependencies and determine the overall period and the critical path and the critical activities. (A1,A18).

b - Intellectual skills:
On successful completion of the course, the student should be able to:
b1– Talking in objective manner to capture requirements (B1,B4).
b2 – Analyze the real problems by the software engineering (B7,B9,B14, B17).
b3 – Classify and compare the different ways of manage software (B2, B5).

c - Professional and practical skills:
On successful completion of the course, the student should be able to:
c1- Capture requirement from customers (C1,C4).
c2- Design Software based on requirement document (C2,C3,C13).
c3- Differentiates between software offers and determine the proper deliverables with each case (C9,C4,C10)
c4- Select of proper models and modify to a specific software development project. (C11,C9, C10).
c5- Perform systems analysis and design. (C14,C6, C12).
.
d - General and transferable skills:
On successful completion of the course, the student should be able to:
d1- Communicate with others; work in a team and involvement in group discussion (D1,D3,D6).
d2- Present data and results orally and in written form (D6,D4)
d3- Understanding of people and teams formation. (D7,D9)

d4- Practice self-learning (D7, D4)

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A3, A4, A6,A7,A8,A12,A13,A15,A18
B	Intellectual skills	B1,B2,B4,B5,B7,B9, B14,B17
C	Professional and practical skills	C1, C2, C4, C6, C9,C10,C11,C12, C13,C14
D	General and transferable skills	D1, D3, D4, D6, D7, D8, D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
• Introduction	2	2	
• Software quality Attributes	4	2	
• Roles in S/W organization	4	2	
• Software Development schemes	8	4	4
• Requirement Engineering	8	4	8
• Software Design	8	2	8
• Planning a S/W production	4	4	4
• Manage ment of people in S/W	3	4	2
• Software prototyping	2	4	
• Software testing	2	2	4
Total hours	**45**	**30**	**30**

4 - Teaching and Learning and Assessment methods:

Course ILO's		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
								Learning Methods						
Knowledge & Understanding	a1	1	1	1			1	1		1		1	1	
	a2	1			1	1	1			1		1	1	1
	a3	1	1	1	1	1		1		1		1	1	1
	a4	١	١	١			1	١		1		1	1	1
	a5	1		1	1	1	1	1		1	1	1	1	1
	a6									1		1	1	
	a7	1	1	1	1	1		1		1		1		
Intellectual Skills	b1	1	1		1	1		1		1		1		1
	b2	1			1	1				1		1	1	1
	b3	1	1		1	1	1			1	1	1		
Applied Professional Skills	c1	1	1		1	1	1	1		1	1	1	1	1
	c2	1			1	1	1			1		1	1	1
	c3	1		1	1	1	1	1			1		1	1
	c4	1		1	1	1	1	1			1		1	1
	c5		1		1	1	1	1		1	1			
General Skills	d1	1	1	1			1	1					1	
	d2	1	1	1	1	1		1					1	

d3			1	1					1							1	1		
d4	1		1		1				1			1	1						

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	10
Mid-Term Exam	6-th Week	20
Practical Exam	Fifteenth week	30
Written Exam	Sixteenth week	90
Total		100

6- List of references:

6-1 Course notes

    Lectures Notes of software engineering

6-2 Required books

 IAN Summerville, (2010),Software Engineering

 6-3 Recommended books

 Eveen and Andro Karlisson,(1996), Reuse a holistic approach, Wiley.

6-4 Periodicals, Web sites, etc.

    IEEE transactions on Software Engineering.

7- Facilities required for teaching and learning:

- Computer Labs Equipped with any UML software.

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

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department

Course Specification

E422: Microprocessor Based-SystemsII

A- Affiliation

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

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

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

Date of specifications approval: September 2015

B - Basic information

Title: Microprocessor Based-Systems II   **Code**: E422   **Level**: 4th year (Comm&Comp)

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

C - Professional information

1 – Course Learning Objectives:

By the end of this course, the students should demonstrate the knowledge and understanding the architecture of microcontroller MCS-51 family. In addition to recognize their addressing modes, binary decoding, assembly language programming. Besides, they must understanding the internal memories, internal registers, ports, interrupts, timers and serial port of the Intel microcontroller AT89C51. They should be able to design digital systems based on the microcontroller AT89C51.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

   On successful completion of the course, the student should demonstrate knowledge and understanding of:
 a1- The architecture of the Intel microcontroller MCS-51 family (A9, A15, A18).
 a2- The assembly instructions of the microcontroller MCS-51 family (A5, A14).
 a3- The memory architecture of the microcontroller AT89C51 (A4, A14).
 a4- The timers and counters for the Intel microcontroller AT89C51 (A5, A14, A16).
 a5- The serial port for the Intel microcontroller AT89C51 (A4, A14, A16).
 a6- The addressing modes for the microcontroller AT89C51 (A4, A14).
 a7- The different interrupt of the microcontroller AT89C51 (A4, A14).
 a8- The external memory interfacing with the microcontroller (A4, A9, A14).
 a9- The interfacing of different digital components with the microcontroller AT89C51 (A4, A14).

b - Intellectual skills:

   On successful completion of the course, the student should be able to:
 b1- Recognize between the architecture of microprocessors and microcontrollers (B4, B5, B9).
 b2- Write assembly programs for the Intel microcontroller AT89C51 (B3, B4, B13).
 b3- Analyze the characteristics of the Intel microcontrollers AT89C51 (B1, B2, B5).
 b4- Investigate the effect of different addressing modes for the microcontroller (B5, B6).
 b5- Solve engineering design based on the microcontrollers MCS-51 in mini-project (B12, B17).
 b6- Recognize the connections between the microcontroller and different digital component(B11, B16).

c - Professional and practical skills:

   On successful completion of the course, the student should be able to:
c1- Write assembly code for Intel microcontroller MCS-51(C5, C6, C14).
c2- Check and Debug syntax errors in the assembly code (C5, C6, C12).
c3- Use software assembler to convert the assembly code to machine code (C6, C14, C15).

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c4- Design systems (mini-project) for MCS-51 depend on software simulator program (C5, C14, C15).
c5- Use the hardware kit to check the validation for their designs (C5, C6, C14).

d - General and transferable skills:
   On successful completion of the course, the student should be able to:
d1- Work in a team and involve in group in mini-projects (D5, D7).
d2- Communicate effectively and present data and results in hard and soft copies (D3).
d3- Search for information in libraries and internet (D5, D7).
d4- Practice self-learning and preparing written reports (D7, D9).

Course Contribution in the Program ILO's

	ILO's	Program ILO's
A	Knowledge and understanding	A4, A5, A9, A14, A15, A16, A18
B	Intellectual skills	B1, B2, B3, B4, B5, B6, B9, B11, B12, B13, B16, B17
C	Professional and practical skills	C5, C6, C12, C14, C15
D	General and transferable skills	D3, D5, D7, D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
➢ The architecture of the microcontrollers MCS-51 family.	3	2	2
➢ The assembly instructions for MCS-51.	3	1	1
➢ The Addressing modes for MCS-51.	2	1	1
➢ The basic electric circuit for MCS-51.	2	1	1
➢ The microcontroller AT89C51's timers and counters.	3	2	2
➢ The interrupts and its priority of the microcontroller AT89C51.	3	2	2
➢ The serial and parallel communications of microcontroller AT89C51.	3	2	2
➢ The interface with external memories.	3	2	2
➢ The interface with input units (such as sensors, keypad …etc.).	3	1	1
➢ The interface with output units (such as motors, monitors …etc.)	3	1	1
➢ Task for a mini-project.	2	--	--
Total hours	30	15	15

4 - Teaching and Learning and Assessment methods:

Course ILO's		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		
		Teaching Methods								**Learning Methods**			**Assessment Method**						
Knowledge & Understanding	a1	1	1	1	1					1	1		1	1			1		
	a2	1	1		1		1				1		1	1	1		1		
	a3	1	1		1								1	1		1	1		
	a4	1	1	1	1		1						1			1	1		
	a5	1	1		1								1		1		1		
	a6	1	1		1	1							1			1	1		
	a7	1	1		1	1	1				1		1		1	1	1		
	a8	1	1		1					1			1	1		1	1		
	a9	1	1	1	1	1	1			1	1		1	1			1		
Intellectual	b1	1	1	1	1					1	1		1	1			1		
	b2	1	1		1		1				1		1	1	1		1		

		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
	b3	1	1		1					1	1		1	1
		Teaching Methods						Learning Methods		Assessment Method				
	b4	1	1		1		1			1			1	1
	b5	1	1		1					1		1		1
	b6	1	1		1	1				1			1	1
Applied Professional Skills	c1	1	1			1	1	1	1		1			
	c2					1		1	1		1			
	c3	1				1	1	1	1		1			
	c4	1				1	1	1	1		1			
	c5						1		1		1			
General Transferable Skills	d1	1		1	1	1		1	1				1	
	d2	1				1		1					1	
	d3							1						
	d4					1		1					1	

5- Assessment Timing and Grading:

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

6- List of references:

6-1 Course notes:
Assem B, The Microprocessor Based Systems ll, lecture note, 2014

6-2 Required books:
Rolin D. McKinlay, Janice G. Mazidi, Danny Causey and Muhammad Ali Mazidi, The 8051 Microcontroller, Prentice Hall, 2012

6-3 Recommended books:
Yogendra Gandole, A Text Book of Advanced Microprocessors and Microcontroller, Lambert Academic Publishing, 2012.

6-4 Periodicals, Web sites, etc.
http://www.intel.com
http://www.cpu-world.com
http://www.emu8086.com/
http://www.8052.com
http://www.keil.com/
http://www.mikroe.com/

7- Facilities required for teaching and learning:
- Hardware emulators and kits.
- Simulator software programs.
- Data show

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

Modern Academy for Engineering & Technology
Electronic Engineering and Communications Technology Department
Course Specification
E432: Electronic Measurements

A- Affiliation
Relevant program: Computer Engineering and Information Technology BSc Program
Electronic Engineering and communication Technology BSc Program

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

Department offering the course: Electronic Engineering and Communications Technology Department

Date of specifications approval: September 2015

B - Basic Information
Title: Electronic Measurements   **Code: E432**   **Year/level:** Fourth, 2nd semester
Teaching Hours: **Lectures:** 2   **Tutorial: 0**
Practical: 4   **Total:** 6

C - Professional information

1 – Course Learning Objectives:
- Understand the measurement techniques using different equipment
- Be familiar with the oscilloscope & use it to measure phase, voltage & frequency
- Understand the principle of operation of digital measuring equipment.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:
On successful completion of the course, the student should demonstrate knowledge and understanding of:
a1- The different types of oscilloscopes & electronic analog voltmeters. (A5, A15)
a2- The digital voltmeters circuits. (A5, A15)
a3- The digital frequency meter circuits. (A15)
a4- The distortion meter & spectrum analyzer. (A10, A15)
.

b - Intellectual skills:
On successful completion of the course, the student should be able to.
b1- Analyze the technical problems and find a suitable solutions. (B3)
b2- Think in a scientific way to reach a certain imagination and new innovation. (B3)
b3- Give the correct decision and test his solutions. (B2)
b4- Create new ideas. (B12)

c - Professional and practical skills:
On successful completion of the course, the student should be able to:
c1- Design the special measuring circuits. (C20)
c2- Test electronic circuits using laboratory information. (C12, C15)
c3- Develop a system to get a better efficiency. (C3, C12)

d - General and transferable skills:
   On successful completion of the course, the student should be able to:
   d1-Search for information's from references, journals and internet. (D7)
   d2-Write technical reports and prepare convenient presentations. (D4)
   d3-Use the Email for communication. (D6)
   d4- Effectively manage tasks, time, and resources. (D6)

Course Contribution in the Program ILO's

	ILO's	Program ILO's
A	Knowledge and understanding	A5,A10,A15
B	Intellectual skills	B2, B3 ,B12
C	Professional and practical skills	C3, C12 , C15, C20
D	General and transferable skills	D4 ,D6 ,D7

3-Contents:

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

4 - Teaching, Learning and Assessment methods:

Course ILO's		Teaching Methods						Learning Methods			Assessment Method				
		Lecture	Presentations & Movies	Discussions & Seminars	Tutorials	Problem solving	Laboratory & Experiments	Brain storming	Self Learning	Researches and Reports	Midterm	Quizzes	Assignments	Written Exam	Practical Exam
Knowledge & Understanding	a1	1	1	1	1		1			1	1		1	1	1
	a2	1	1	1	1	1	1	1			1	1		1	1
	a3	1	1		1	1	1	1					1	1	1
	a4	1	1		1		1		1			1		1	1
Intellectual Skills	b1	1	1	1	1	1	1		1	1	1		1	1	1
	b2	1	1	1	1	1	1	1			1	1		1	1
	b3	1			1		1	1	1				1	1	1
	b4	1			1		1		1			1		1	1
Applied Profession al Skills	c1	1		1	1	1	1	1		1	1		1	1	1
	c2	1		1	1	1	1	1			1	1		1	1
	c3	1			1		1		1				1	1	1
General Tran. Skills	d1						1		1						
	d2	1		1			1			1	1		1	1	1
	d3	1		1			1				1	1		1	1
	d4						1		1						

2- Assessment Timing and Grading:

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

6- List of references:
6-1 Course notes
   1- Electronic Measurements "*Theoretical part*"

   2- Electronic Measurements "*Practical part*"

6-2 Required books

David A. Bell ,*Instrumentation & Measurement*, 2nd edition , 1994.

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

6-3 Recommended books

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

6-4 Recommended Web Site

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

7- Facilities required for teaching and learning:

- Lectures room equipped with OHP and data show facility.

- Computer Lab. Installed with MATLAB program.

- Complete Lab for Electronic Measurements.

Course coordinator: *Prof. Dr. Hany Tawfik*

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

Date: August 2015

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department

Course Specification
E 462 :Computer Graphics

A- Affiliation

Relevant program: Computer Engineering and Information Technology BSc Progra

Department offering the program: Computer Engineering and Information Technology Department

Department offering the course: Computer Engineering and Information Technology Department

Date of specifications approval: September 2015

B - Basic information

Title: Computer Graphics   code :E462   **Year/level:**4th /2nd semester

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

                                         Practical: 4   Total: 7

C - Professional information

1 – Course Learning Objectives:

During this course the student will learn how to generate computer picture through the following phases. First, understanding and realization of computer generated picture elements .Second, drawing 2d pictures. Third, mapping 3d-image to 2d image .Fourth, Apply different transformation on a computer generated pictures .Fifth   , lighting and shading a second .Finally, contentment and clipping techniques.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

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

a1- Comparing between the computer generated pictures and raster images (A1, A2)

a2- Realization of Application programs contains computer generated pictures(A4, A5).

a3- Projection of 3-D views on 2-D plane using parallel projection. (A4, A5,A12)

a4- Projection of 3-D views on 2-D plane based on perspective projection. (A4, A5, A12, A16).

a5- The lighting to a seen based on local reflection model. (A8, A16).

a6- The OPENGL to perform graphics based applications(A15, A16).

a7- The 2-D and 3-D transformations to objects (A8, A4).

b - Intellectual skills:

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

b1– Apply Transformations to shapes (B3, B2)

b2 – Analyze and problem decompositions (B1,B3, B7,B8)

b3 – Solve complex computation problems with less computational approaches (B10, B13).

c - Professional and practical skills:

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

c1- Draw graphics based applications in 2D. (C1,C2,C3)

c2- Using of OPENGL for graphics based applications. (C5, C6,C15)

c3- Draw graphics based applications that has 3D views. (C4,C5, C13)

c4- Applying the transformations and its inverse to the 2D, and 3D pictures (C5,C7, C11).

c5- Analyze the Computer Graphic systems (C6, C7).

d - General and transferable skills:

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

d1- Communicate with others work in a team and involvement in group discussion (D1,D3, D8).

d2- Present data and results in soft and hard copy (D4, D6).

d3- Search for information in Computer Graphics and Man-Machine Interfacing. (D7, D9)

d4- Practice self-learning. (D7, D4)

Course Contribution in the Program ILO's

	ILO's	Program ILO's
A	Knowledge and understanding	A1, A2, A4,A5,A8, A12, A15, A16
C	Intellectual skills	B1,B2, B3, B7, B8, B10,B13
B	Professional and practical skills	C1, C2, C3,C4, C5,C6,C7, C11,C13, C15
D	General and transferable skills	D1, D3, D4, D6, D7, D8, D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
• Introduction and basic concepts of graphics	4	2	8
• Drawing basic elements of Computer generated picture	4	2	16
• 2D picture drawing	4	3	12
• 3D Graphic picture	4	2	
• Scaling, rotation, motion ,animation, compos if transforms	4	2	8
• Mapping 3D seen into 2D graphic picture	4	2	8
• Shadings and lightening	4	2	8
• Clipping and cantonment in 3D volume	2		
Total hours	**30**	**15**	**60**

4 - Teaching and Learning and Assessment methods:

Course ILO's		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		
		Teaching Methods								Learning Methods			Assessment Method						
Knowledge & Understanding	a1	1	1	1			1			1			1		1	1			
	a2	1			1	1							1		1	1	1		
	a3	1	1	1	1	1				1	1		1		1	1	1		
	a4	1	1	1		1							1		1	1	1		
	a5	1		1	1	1	1			1	1		1	1	1	1	1		
	a6						1									1	1		
	a7	1	1	1	1	1	1			1	1					1			
Intellectual Skills	b1	1	1		1	1	1			1			1		1		1		
	b2	1			1	1							1		1	1	1		
	b3	1	1		1	1	1						1	1		1			
Applied Professional	c1	1	1		1	1	1			1			1	1	1	1	1		
	c2	1			1	1							1		1	1	1		
	c3	1		1	1	1				1	1					1	1		
	c4	1		1	1	1				1	1			1		1	1		
	c5		1		1	1	1			1	1			1					
General Tran. Skills	d1	1	1	1						1						1			
	d2	1	1	1	1	1				1						1			
	d3		1	1	1	1	1			1						1	1		
	d4		1				1			1							1		

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	30
Mid-Term Exam	6-th Week	20
Practical Exam	Fifteenth week	-
Written Exam	Sixteenth week	100
Total		150

6- List of references:

6-1 Course notes

 Lectures Notes of Computer Graphics and Man-Machine Interface

6-2 Required books

 Peter Shirley, Fundamentals of computer graphics, 2004

6-3 Recommended books

- o JAMES D. FOLEY,(1999), Introduction to computer graphics, Addison-wesley.
- o Eric Lengyel,(2012), Mathematics for 3D Game Programming and Computer Graphics, Cengage Learning.
- o 6-4 Periodicals, Web sites, etc.

 IEEE transactions on computer Graphics.

7- Facilities required for teaching and learning:

- Computer Labs Equipped with OPENGL software.
- Data show

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

Modern Academy for Engineering & Technology

Basic Sciences Department

Course Specification

B412: International Business Management

A- Affiliation

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

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

Department offering the course: Basic Science Department
Date of specifications approval: September, 2015

B - Basic information

Title: International Business Management **Code:** B 412   **Level:**4th year   **Semester**: Second.
Hours   Total: 3hrs   **Lectures:** 3 hrs   **Tutorial:**   **Practical:**

C – Professional information

A study of this course will enable the student to:
- Explain what a manager is?, Basic management functions and management process
- Describe what an organization is and how that concept of an organization has changed. Managing in a Global Environment.
- Identify the three different attitudes toward global business
- Describe the typical stages by which organization go global

2 - Intended Learning Outcomes (ILOS)

A - Knowledge and understanding:
By the end of the course the student should gain the following knowledge and understanding:
a1- the basic Skills, functions, style, and roles of any manager(A4, A5)
a2- organization of any work in the organization structure.(A7, A8)
a3- definition of business and Globalization.(A10, A12)
a4- regional trading alliances.

b - Intellectual skills:
On successful completion of the course, the student should be able to.
b1- present himself as an effective manager(B7)
b2- strive for as he manages his career(B7)
b3- manage globally(B7)
C - Professional and practical skills:
By the end of the course the student should be able to:
c1- take decisions in the development corporate strategy.(C2, C6)
c2- prepare the different general business strategies and their relationship to business marketin.(C9)
c3- create a successful future.(C8)

d - General and transferable skills:
On successful completion of the course, the student should be able to:
d1- work in a team and involve in group discussion and seminars(D1, D3).

d2- search for information's in internet and books (D7, D8).

d3- practice self-learining (D2, D7, D9).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A4, A5, A7, A8, A10, A12
B	Intellectual skills	B7
C	Professional and practical skills	C2, C6, C8, C9
D	General and transferable skills	D1, D2, D3,D7, D8, D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Presentation of student Research
• Interdiction to Management and organizations	7	-	-
• Today Management current trends and issues.	7	-	-
• Organizational culture and Environment: Constraints.	7	-	-
• Decision making- the Essence of the manager's job	5	-	-
• International Business an overview	13	-	-
• Strategic Management	3	-	-
• Final Revision	3	-	-
Total hours	45	-	-

4 – Teaching, Learning and Assessementmethods:

Course IL O's		Teaching Methods						Learning Methods		Assessement Method				
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments	Researches and Reports	Modeling and Simulation	Written Exam	Practical Exam	Quizes	Term papers	Assignments
Knowledge	a1	1		1		1		1		1		1	1	1
	a2	1	1	1						1		1	1	1
	a3	1		1		1		1		1		1	1	
	a4	1		1		1		1		1				1
Applied Intellectual	b1	1								1		1	1	1
	b2	1				1				1		1	1	1
	b3	1	1	1				1		1			1	1
	c1	1				1		1		1				
	c2	1						1		1				1
	c3	1				1		1		1				1
General	d1	1		1		1							1	1
	d2			1		1							1	1
	d3			1									1	1

5- Assessment Timing and Grading:

Asessement Method	Timing	Grade (Degrees)
Semister Work: seminars, quizes assignments and reports	Bi-Weekly	20
Mid-Term Exam	Six week	10
Written Exam	Sixteenth week	70
Total		100

6- List of references:
6-1 **Course notes**:
Dr.M.Abotaleb , International Business Management,lecture notes presentation, Modern Acadymy Press, 2012.

6-2 Required books:
Thomas s. bat,Management the new competitive Landscape, Six Edition- Mc-Graw hill, USA, 2004
William O. Be, Maeketing Principles And Perspectives, Mc-Graw Hill, USA, 2004
6-3 Recommended books: non

6-4 Periodicals, Web sites, etc.

www.hrdiscssion.com, www.islammemo.com, www.saaid.net

7- Facilities required for teaching and learning:
- Computer
- Data show
- Library and projector.

Course coordinator: Dr Shimaa Lotfy
Head of the Department: Professor Dr Laila Soliman
Date: September 2015

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department

Course Specification

E400: Summer Training

A- Affiliation

Relevant program: Computer Engineering and Information Technology BSc Program

  Department offering the program: Computer Engineering and Information Technology Department

  Department offering the course: Computer Engineering and Information Technology Department

Date of specifications approval: September 2015

B - Basic information

Title: Summer Training   **Code:** E400   **Year/level:** 4th

Teaching Hours: **Lectures:--**   **Tutorial:--**

                                      Practical:--   **Total:** --

- Professional information

1 – Course Learning Objectives:

Give the student a chance to practice his knowledge in a practical field, know the practical problems ,and choose the field to continue in. also help him to choose his project of graduation .The students are carrying out their training in one of the national companies or industrial factories working in the computer engineering and information technology field. The training plan should be approved by a special committee headed by the chairman of the training department. The progress training of student is evaluated by the accreditation committee.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:

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

a1- Attaining knowledge of operational practice, engineering codes and design techniques relevant to the computer subjects (A5, A6, A7, A13, A15, A16, A17).

a2- Gaining the knowledge and experience of applying the different principles and techniques introduced in the program of study (A5, A6, A14, A16).

b - Intellectual skills:

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

b1- Enrich their practical learning experience (B3, B4,B6, B8, B10, B12, B17).

b2- Enrich their ability to work within defined constraints (B3, B7, B10,B13, B14, B17).

b3- Enhance their practical think (B1,B2,B4,B7,B11,B17).

c - Professional and practical skills:

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

c1- Confirm their ordinary courses by practical cases (C1, C2, C7, C11).

c2- Investigate the working rules in the companies and corporations (C5, C8, C9, C10, C11, C13, C16).

c3- Identify the hardware/software production cycles (C9, C10, C11, C13, C14).

d - General and transferable skills:

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

d1- Communicate with others; work in a team and involvement in group discussion (D1,D2,D3,D4)

d2- Present data and results orally and in written form . (D4,D8,D9)

d3- Use ICT facilities in presentations (D3,D6)

d4- Identify the practical up to date techniques and technologies (D2, D3, D4, D6, D7, D9).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A5, A6, A7, A13, A14, A15, A16, A17
B	Intellectual skills	B1, B2, B3, B4, B6, B7,B8, B10, B11, B12, B13, B14,B17
C	Professional and practical skills	C1, C2, C5, C7, C8,C9, C10, C11, C13, C14, C16
D	General and transferable skills	D1,D2, D3, D4, D6, D7, D8, D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
According to the training course of the national companies or industrial factories. At end of training, student should submit a report with the following informations: • Profile of the industry • Organization structure • Machine, equipment, devices • Personal welfare scheme • Details of the training undergo • Project undertaken during the trining			
Total hours	-	-	-

4 - Teaching and Learning and Assessement methods:

Course ILO's		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments				Researches and Reports	Modeling and Simulation		Written Exam	Practical Exam	Quizes	Report	Assignments		
Knowledge & Understanding	a1		1				1										1			
	a2		1				1										1			
Intellectual Skills	b1		1				1										1			
	b2		1				1										1			
	b3		1				1										1			
Applied Professional Skills	c1		1				1										1			
	c2		1				1										1			
	c3		1				1										1			
General Tran. Skills	d1		1				1										1			
	d2		1				1										1			
	d3		1				1										1			
	d4		1				1										1			

5- Assessment Timing and Grading:

Asessement Method	Timing	Grade (Degrees)
Report from student	Year work	30
Practical	At the end of the training period	20
Total		50

6-1 Course notes: Non
6-2 Required books: Non
6-3 Recommended books: Non
6-4 Periodicals, Web sites, etc.
www.mcit.gov.eg/Ar/Training/Affiliate/12
www.cisco.com/web/ME/ar/learn_events/
http://www-304.ibm.com/services/learning/ites.wss/eg/en?pageType=page&c=V087174W21666K25

7- Facilities required for teaching and learning:
The tools applied by the training company (software courses or hardware practicing)
Course coordinator: Members committee of accreditation
                               company
Head of the Department: Prof. Dr. Said Gawish
Date: September 2015

Modern Academy for Engineering & Technology
Manufacturing Engineering and Production Technology Department

M561: Engineering Economy
Course Specifications

A- Affiliation

Relevant program:	Manufacturing Engineering and Production Technology BSc Program
	Electronic Engineering and Communication Technology BSc Prograr
	Computer Engineering and Information Technology BSc Program
Department offering the program:	Electronic Engineering and Communications Technology Department
	Computer Engineering and Information Technology Department
	Manufacturing Engineering and Production Technology Department
Department offering the course:	Manufacturing Engineering and Production Technology Department
Date of specifications approval:	September 2015

B - Basic Information

Title: Engineering Economy   **Code:** M561   **Year/level:** 5th year / 1st Term
Teaching Hours: **Lectures: 2**   **Tutorial: 2**
                     Practical: --   **Total: 4**

C - Professional Information

1 – Course Learning Objectives
This course provides the student with the essential mathematics of money investment, and understanding of the comparing different variants of solutions and choosing the best of them according to a certain criterion. In addition, the course focused on pointing out on the effect of both depreciation and taxes on comparison of variants.

2 - Intended Learning Outcomes (ILOS)

A - Knowledge and understanding
By the end of the course the student should gain the following knowledge:
a1- The major capabilities and limitations of cash flow analysis for evaluating proposed capital investments. (A1, A2)
a2- Mathematics, economics, and engineering principles necessary for analyzing benefit - cost problems. (A1, A5)
a3- The basics to the mechanics of time-value calculations and comparisons of alternatives based on their equivalent annual worth, present worth, and rate of return. (A2)
a4- The role of accounting besides the effects of both depreciation and taxes as well on economic evaluations. (A7)

B - Intellectual skills
By the end of the course the student should be able to:
b1- Apply knowledge of mathematics, economics, and engineering principles to identify, formulate, analyze, and solve engineering economic problems. (B1)
b2- Use basics to the mechanics of time-value calculations and comparisons of alternatives based on the equivalent annual & present worth and rate of return. (B2)

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b3- Develop an understanding of managerial accounting and economic principles. (B7, B8)

b4- Carry out role of accounting and the effects of depreciation and taxes on economic evaluations in extensively treatment. (B1)

C - Professional and practical skills

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

c1- Use appropriate techniques, skills, and tools to identify, formulate, analyze, and solve engineering economic problems. (C1)

c2- Communicate results of the modeling process to management and other non-specialist users of engineering analyses. (C7)

c3- Use of benefit-cost analysis for public projects. (C9)

c4- Use modern computer tools, such as spreadsheets, in financial realities from the business world including both opportunities and restrictions- that influence economic decisions. (C5)

c5- Writing clearly using graphics effectively for justifying solutions to engineering economics problems. (C6)

D - General and transferable skills

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

d1- Work in stressful environment and within constraints. (D2)

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

d3- Work in a team and involve in group discussion and seminars (D1, D3).

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

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A2, A5, A7
B	Intellectual skills	B1,B2,B7,B8
C	Professional and practical skills	C1,C5,C6, C7,C9
D	General and transferable skills	D1, D2, D3, D7, D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
Cash Flow	2	2	
Simple &Compound Interest-Types of payments	6	6	
Time Value of Money	2	2	
Nominal and Effective Interest	2	2	
Equivalence	4	4	
Engineering Problem Analysis:	6	6	
Depreciation	4	4	
Taxes Effect	4	4	
Total hours	**30**	**30**	

4 - Teaching and Learning and Assessment methods:

	Course ILO's	Lecture	Presentations & Movies	Discussions &seminars	Tutorials	Problem solving	Laboratory & Experiments	Projects	Researches and Reports	Modeling and Simulation	Site Visits	Discovering	Written Exam	Practical Exam	Quizzes	Term papers	Assignments
Knowledge	a1	1	1	1									1		1		
	a2	1			1	1				1			1		1		
	a3	1	1	1	1	1				1			1		1	1	
	a4	1	1	1						1			1		1	1	
Intellectual	b1	1	1		1	1							1		1		
	b2	1			1	1							1		1		
	b3	1	1		1	1											
	b4	1	1		1	1							1		1		
Applied	c1	1	1		1	1				1			1		1	1	
	c2	1			1	1				1			1		1		
	c3	1		1	1	1				1			1		1	1	
	c4	1		1	1	1				1			1		1	1	
	c5		1		1	1				1							1
General Tran	d1	1	1	1							1		1		1	1	
	d2		1	1					1								1
	d3		1	1					1								1
	d4		1	1					1	1							1

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	15
Mid-Term Exam	6-th Week	-
Practical Exam	-	-
Written Exam	Sixteenth week	35
Total		50

6- List of References

6.1 Course notes
Lecture notes and handouts.

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

6.3 Recommended books
Sullivan W. G., Wicks E. M., and Luxhoj J. t., Engineering Economy, 12th ed., Prentice Hall, 2003.
Barish N. B., Economic Analysis for Engineering and Managerial Decision Making, McGraw- Hill,1982

6.4 Periodical, Web sites, etc.
- http://www.isr.umd.edu/~austin/ence202.d/economics.html
- http://mysite.du.edu/~jcalvert/econ/enecon.htm
- http://www.slideshare.net/ngduyquang1001/basics-of-engineering-economy

7- Facilities Required for Teaching and Learning
Students are required to use own PCs, Educational Software is given

Course Coordinator: Dr. Abdelmagid Abdalla
                                         Dr. Metwally H. Metwally
Head of the Department: Dr. Abdelmagid Abdalla
Date: September 2015

Modern Academy for Engineering & Technology
Computer Engineering and Information Technology Department
Course Specification
E 512 : Computer Architecture(II)

A- Affiliation
Relevant program: Computer Engineering and Information Technology BSc Program
Department offering the program: Computer Engineering and Information Technology Department

Department offering the course: Computer Engineering and Information Technology Department

Date of specifications approval: September 2015

B - Basic information
Title: Computer Architecture (II)   Code:E 512   Year/Level: 5th year/1st Semister
Teaching Hours: Lectures: 4   Tutorial/Exercise:2   Practical: -
                                           Total 6

C - Professional information
1 – Course Learning Objectives:

By the end of this course the students should demonstrate the knowledge and understanding of the basic computer architecture and structure, the basic computer addressing   modes and instruction formats, the basic design issues/ parameters required for hardwired control of a vector processors and arrays-principles. They should be able to investigate the different aspects of multiprocessors and memory hierarchy.

2 - Intended Learning Outcomes (ILOS)
a - Knowledge and understanding:
On successful completion of the course, the student should demonstrate knowledge and understanding of:
a1 – The attributes of Parallel systems Structure and pipelining (A1,A3,A4,A13)
a2-The attributes of vector processor and knowing the main principles of array processing (A1,A4.A13)
a3- Describing computer input-output organization and interfaces(A15-A13)
a4- The concept of Priority interrupt and its circuit design(A12,A13)
a5- Different hierarchy of memory and their design(A13,A15)

b - Intellectual skills:
On successful completion of the course, the student should be able to:
b1-Discuss Parallel systems structure and pipelining(B2,B3)
b2- Formulate speedup ratio for different pipelining (B2,B3)
b3- Implement computer Input-Output organization and interface(B2,B3,B4)
b4- Design multiprocessor-loosely and tightly coupled systems(B2,B3,B7,B6)
b5- Evaluate the proper design of memory hierarchy (B15)

c - Professional and practical skills:
On successful completion of the course, the student should be able to:
c1- Construct vector processor and arrays-principles to vast number of computations (C1,C3,C4)
c2- Construct different circuits for achieving Priority interrupts (C1,C3,C4))
c3- Demonstrate different architecture of multiprocessors systems(C11,C9)

d - General and transferable skills:
On successful completion of the course, the student should be able to:
d1- Work in a team and involve in group project (D1, D3,D6).
d2- Communicate effectively and present data and results orally and in written form(D3,D4).

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

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A3,A4,A12,A13, A15
B	Intellectual skills	B2, B3,B4,B6,B7,B15
C	Professional and practical skills	C1,C3,C4,C9,C11
D	General and transferable skills	D1, D3, D4, D5,D6, D7

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical Hours
- Storage Hierarchy: Internal Memory Technology	4	2	--
- Cache Memory	6	4	--
- External Memory	2	2	--
- Peripheral devices, Input Output Interface	6	4	--
-Asynchronous serial transfer, Modes of transfer	4	2	--
- Priority interrupt	6	2	--
- Pipelining Basic Concepts, Arithmetic Pipeline	4	2	--
-Instruction level Parallelism	6	2	--
-Vector and Array Processors	6	4	--
- Floating point arithmetic operation,(for array and vector processor)	6	2	-
- Characteristic of multiprocessors	4	2	--
- Multiprocessor Interconnection Structures	6	2	--
Total	60	30	--

4- Teaching and Learning and Assessment methods:

Course ILO's		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments	Researches and Reports	Modeling and Simulation	Written Exam	Class Project	Quizzes	Term papers	Assignments
Knowledge & Understanding	a1	1	1	1		1		1		1		1		1
	a2	1				1				1		1	1	1
	a3	1			1	1				1		1	1	1
	a4				1	1				1		1	1	
	a5	1		1	1	1		1		1		1	1	1
Intellectual Skills	b1	1			1	1		1		1		1		
	b2	1	1		1	1		1		1	1	1	1	1
	b3	1		1	1	1		1		1		1	1	
	b4	1			1	1		1		1		1	1	
	b5	1	1		1	1		1		1		1	1	1
Applied Professional Skills	c1	1			1	1		1		1		1	1	1
	c2	1	1		1	1		1		1		1	1	1
	c3	1		1		1		1		1			1	1
General Tran. Skills	d1	1	1	1		1		1					1	
	d2	1	1	1	1			1					1	
	d3		1	1	1	1		1					1	

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: seminars, quizzes assignments , class project and reports	Bi-Weekly	30
Mid-Term Exam	7th Week	20
Written Exam	Sixteenth week	100
Total		150

6- List of references:

6-1 Course notes:

Lecture notes and handouts

6-2 Required books

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

Kumar, Amit. (2011) Computer architecture & organization. Delhi: Katson.

6-3 Recommended books

- William Stallings Computer Organization and Architecture, designing for preference, Prentice hall, 2010.
- Donald Hearn and others, Parallel computer architecture, 1999.
- Subrata Ghoshal, Computer Architecture and Organization: From 8085 to core2Duo & beyond, Pearson Education India, 2011.

6-4 Periodicals, Web sites, etc.: http://ocw.mit.edu/ https://www.coursera.org

7- Facilities required for teaching and learning:
- Computer, Data show and Computer package.

Course coordinator:	Dr. Sabry Abd al-motete
Head of the Department:	Dr. Said Gawisha
Date:	September 2015

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department
Course Specification
E 515 Advanced Computer Systems

A- Affiliation
    Relevant program   Computer Engineering and information Technology BSc Program
    Department offering the program   Computer Engineering and Information Technology Department

    Department offering the course   Computer Engineering and Information Technology Department

    Date of specifications approval   September 2015

B — Basic information
    Title: Advanced Computer Systems   **Code**: E515   **Year/ Level**: 5th year/1st semester
    Teaching hours: **Lectures**: 4   **Tutorials**: 2
                                          Practical: 0   **Total**:   6

C - Professional information
    1- Course Learning Objectives:

      The main objective of this course is to introduce the basic concepts and theory of compiler and the implementation of computer language, Grammar and parsers. The advantage of applying the structure and principles of the compiler in other advanced computer problem solutions.
    2- Intended Learning Outcomes (ILOS)
    a - Knowledge and understanding:
  On successful completion of the course, the student should demonstrate knowledge and understanding of:
    a1- Principals of computer text languages (A3, A8.A13).
    a2- Requirements for development of computer Languages (A1,A3,A5).
    a3- Prolog programming language (A8).
    a4- Scope of Character Scanning and lexical analysis (A8,A17).
    a5- Concepts of Universal representation (A2).
    a 6- Object oriented programming principals and theory (A15).
    a7- The code optimization techniques and heap allocations (A5).

    b - Intellectual skills:
    On successful completion of the course, the student should be able to:
    b1– Build and design of systems that include complex analysis like languages (B1, B2, B13).
    b2 – Analyze of deferent Computer Language (B5, B9, B14).
    b3 – Solve problem using grammars and setup of production rules (B2,B5,B3).
    c - Professional and practical skills:
    On successful completion of the course, the student should be able to:
    c1- Design and realize smart applications using Prolog program (C5).
    c2 – Investigate program structure and select best way to do it (C6,C7).
    c3 – Use experimental facilities to investigate the given compilé performance (C12, C16, C14).
    c4 – Design proper parser suitable for a given computer language (C5).
    c5 – Design and implementation of interpreter (C5).
d - General and transferable skills:
On successful completion of the course, the student should be able to:
d1- Communicate with others; work in a team and involvement in group discussion and seminars (D3,D4).
d2- Write technical reports and prepare convenient presentations (D4,D7).
d3- Practice self-learning (D7, D9)

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1,A2, A3, A5, A8, A13,A15,A17
B	Intellectual skills	B1, B2,B3, B5, B9, B13, B14
C	Professional and practical skills	C5, C6, C7,C12,C14, C16
D	General and transferable skills	D3, D4, D7, D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
Introduction to compiler	4	2	-
Compiler structure	4	2	-
Forming a Grammar	4	2	-
Parsing tree	4	2	-
Lexical analysis	6	2	-
Syntax Analyzer	4	2	-
Top-Down Parsing	4	2	-
Bottom-Up Parsing	4	2	-
Syntax-Directed Translation	4	2	-
Type Checking	4	2	-
Intermediate Code Generation	4	2	-
Interpreter	4	2	-
Control Instruction (If, While, Loop, For, Do, and Break)	6	2	-
Boolean Expression	4	2	-
Total	60	30	-

4 - Teaching and Learning and Assessment methods:

Course ILO's		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments			Researches and Reports	Modeling and Simulation		Written Exam	Practical Exam	Quizzes	Term papers	Assignments		
Knowledge & Understanding	a1	1	1	1						1			1		1	1			
	a2	1			1	1							1		1	1	1		
	a3	1	1	1	1	1				1			1		1	1	1		
	a4	١	١	١						١			1		1	1	1		
	a5	1		1	1	1				1			1		1	1	1		
	a6															1	1		
	a7	1	1	1	1	1				1						1			
Intellectual Skills	b1	1	1		1	1				1			1		1		1		
	b2	1			1	1							1		1	1	1		
	b3	1	1		1	1							1			1			
Applied Professional Skills	c1	1	1		1	1				1			1		1	1	1		
	c2	1			1	1							1		1	1	1		
	c3	1		1	1	1				1						1	1		
	c4	1		1	1	1				1						1	1		
	c5		1		1	1				1									
General Tran. Skills	d1	1	1	1						1						1			
	d2	1	1	1	1	1				1						1			
	d3				1	1				1						1	1		

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	20
Mid-Term Exam	6-th Week	30
Practical Exam	-	-
Written Exam	Sixteenth week	100
Total		150

6- List of references:

6-1 Course notes

Lectures Notes of Advanced Computer System,Cairo:MAM press

6-2 Required books

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

6-3 Recommended books

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

6-4 Periodicals, Web sites, etc.

Engineering a Compiler-Cooper & Linda, Elsevier.

7- Facilities required for teaching and learning:

- Computer Labs Equipped with Prolog Compiler.

Course coordinator: Prof. Dr. Abdellatief Hussien Abouali

Head of the Department: Prof. Dr. Saed Gawish

Date: September 2015

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department
Course Specification
E521: 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
Academic year/level: 5^{th}year (Computer), 1st semester
Date of specifications approval: September 2015

B. Basic information
Title: Distributed Computer systems   **Code:** E521   **Year/level:** 5th year/1st semester
Teaching Hours: **Lectures:** 2   **Tutorial:** 2
                                  Practical: 2   **Total:**   6

C. Professional information
1 – Course Learning Objectives:

By the end of this course the students should demonstrate the knowledge and understanding of the principles and concepts of Distributed Computer systems, the details of the software architecture and communications support required, the commercial Distributed Computer systems. They should be able to operate, maintain, design, calculate and analyze the performance of the Distributed Computer systems.

2 - Intended Learning Outcomes (ILOS)

a – Knowledge and understanding:

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

a1- various examples of distributed systems, and to find an appropriate paradigm for the architecture of a complex distributed application. (A2, A3, A8,A17)

a2 - Fundamental concepts of distributed systems (A3, A5,A13)

a3 - Distribution of files, processing, databases, and operating systems (A12,A14, A15)

a4 – The middleware (A14, A15, A17)

a5 - Current Internet research efforts in order to perform research in networking (A15, A17).

b – Intellectual Skills:

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

bl - Gain hands-on experience on client-server programming and applications (B4,B6, B17)

b2 - Appreciate Problem selection, Solution & research methodology and Presentation (B2, B3, B4,B13)

b3 - Design approaches, implementation, analysis and evaluation of networked systems (B4, B5,B21)

b4 - Develop a working knowledge of the infrastructure required to support distributed systems (B2, B3, B14).

   b5 – Define Inter-process communication and remote invocation (B5, B13).

c - Professional and practical skills:

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

cl - Examine the algorithms for both client and server components of a distributed program and apply the different implementation techniques (C1, C2, C3, C14,)

c2 - Connect users and resources (C5, C6, C17,)

c3 - Apply the synchronization technique (C14, C16).

d - General and transferable skills:

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

d1- Work in a team and involve in group discussion (D1, D3,D6).

d2- Communicate effectively and present data and results orally and in written form(D3,D4).

d3- Use ICT facilities in presentations, and manage resources efficiently (D4,D5).

d4- Search for information's in references in internet(D7).

d5- Practice self-learning (D7, D9).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A2,A3, A5, A8,A12, A13,A14, A15, A17
B	Intellectual skills	B2, B3,B4,B5,B6,B13, B14, B17,B21
C	Professional and practical skills	C1, C2,C3,C5, C6, C14,C16,C17
D	General and transferable skills	D1, D3, D4, D5,D6,D7, D9

3 – Contents

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

4 - Teaching and Learning and Assessment methods:

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

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	10
Mid-Term Exam	6-th Week	20
Practical Exam	Fifteenth week	20
Written Exam	Sixteenth week	100
Total		150

6- List of references:

   6-1 Course notes
       Lecture and Lab notes
6-2 Required books
Tanenbaum and Marten van Steen, (2007),Distributed system: Principles and Paradigms Handouts, 2nd edition, prentice hall.

6-3Recommended books
George Coulouris, Jean Dollimore and Tim Kind berg,(2005), Distributed Systems, 3rd edition, Addison Wesley.
   .
   6-4 Periodicals, Web sites, etc
http://www.prenhall.com/panko/index.httml
7- Facilities required for teaching and learning:

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

Modern Academy for Engineering & Technology
Computer Engineering and Information Technology Department
Course Specification
E530: Data Transmission and Computer Networks (I)

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
Academic year/level: 5th year (Computer), 1st semester
Date of specifications approval: September 2015

B- Basic information
Title: Data Transmission and Computer Networks(I) **Code:** E530 **Year/level:** 5th year/1st semester
Teaching Hours: **Lectures:** 3 **Tutorial:** 1
Practical: - **Total:** 4

C- Professional information
1 – Course Learning Objectives:
A study of this course will enable the student to:

Be familiar with Digital transmission speeds, sampling theorem, Shannon low, Nyquest low, bit rates and baud rates.Know Propagation effects, Types of transmission media . Study Basic physical layer transmission concepts, such as serial versus parallel transmission and half-duplex versus full-duplex transmission.Discuss the following concepts and their relationships: internets, the Internet, subnets, intranets, and extranets. Distinguish between switches and routers.

2 - Intended Learning Outcomes (ILOS)
a – Knowledge and understanding:
By the end of this course the student should have the following Knowledge of:
a1 - Basic networking concepts in wide use today (A1, A2, A17).
a2 - The Analog, digital, and binary transmission (A1, A2, A6).
a3- The multiplexing technique (A1, A2, A4).
a4 - Circuit switching versus packet switching (A1, A2, A15).
a5- Comparison between LANs versus WANs (A1, A2, A17,A8).
a6- Congestion and latency quality of service guarantees for speed (A1, A2, A6).
a7 - Quality of service guarantees for reliability (A1, A2, A6,A17).
a8- Terminal-host system, file server program access, and client/server processing. (A1, A2, A12).
a9- Elements of the Internet and the Internet standards used when you dial into the Internet from home or on the road in order to access a World Wide Web server (web server) (A1, A2, A18,A20).
al0- The needs for quality of service guarantees and improved Security (A1, A6, A20).
al1 -The operation of modems and other translation devices (A1, A2, A5).
a12- Description of the major functions of link layer and explain the principles of LANs. (A1, A2, A17).
a13 - Description of internetworking works and explain the principles of packet forwarding by routers. (A3, A17, A19)

b – Intellectual Skills:
On successful completion of the course, the student should be able to:
bl - Connect the computer network (B1, B4, B5,B21).
b2- Explain Data and network distribution for data processing (B1, B4, B5, B17).
b3- Evaluate telephone modems compared to ISDN, DSL, and cable modems (B1, B4, B5, B14).

b4 - Setup of common protocols (B1, B4, B5, B21).

b5- Share the folder & files. (B1, B4, B5).

b6-Connect peer to peer and server based. (B1, B4, B5).

c - Professional and practical skills:

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

    cl – Install networks components (C1,C5,C6,C19).

    c2- Follow all software and hardware steps to connect computers to networks (C2,C3,C10,C11).

    c3- Set up the common protocols (C1 ,C2,C10,C11).

d - General and transferable skills:

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

d1- Work in a team and involve in group discussion (D1, D3,D6).

d2- Communicate effectively and present data and results orally and in written form (D3, D4).

d3- Use ICT facilities in presentations, and manage resources efficiently (D4, D5).

d4- Search for information's in references in internet (D7).

d5- Practice self-learning (D7, D9).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1, A2,A3 A5, A6,A8, A12, A15,A17,A19,A20
B	Intellectual skills	B1, B4,B5,B7, B14, B17, B21
C	Professional and practical skills	C1,C2,C3, C5,C6,C10,C11, C19,
D	General and transferable skills	D1, D3, D4, D5,D6,D7, D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
➢ Introduction. -Fundamentals of comp networks.	5	1	
➢ Media of network –Types of network.	5	2	
➢ Topology of networks. -protocols of networks.	5	2	
➢ OSI Model.-Digital communication overview.	5	1	
➢ Information theory and source coding.	5	1	
➢ Queuing theory for packet networks	5	2	
➢ Protocols of network.	5	2	
➢ Public networks, Integrated Services, and Digital Network (ISDN)	6	2	
➢ Digital communication over view.	4	2	
Total hours	45	15	

4 - Teaching and Learning and Assessment methods:

Course ILO's		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments				Researches and Reports	Modeling and Simulation		Written Exam	Practical Exam	Quizzes	Term papers	Assignments
Knowledge & Understanding	a1	1	1	1							1			1		1		1
	a2	1				1								1		1	1	1
	a3	1				1								1		1		1
	a4	1	1	1	1	1					1			1		1	1	1
	a5	1			1									1		1		1
	a6	1			1	1					1			1			1	1
	a7	1	1	1	1	1					1			1			1	1
	a8	1		1							1			1				1
	a9		1	1	1						1			1				1
	a10	1	1			1					1			1				
	a11	1	1											1				
	a12	1	1		1									1			1	
	a13	1	1	1							1			1				
Intellectual Skills	b1	1		1	1						1			1	1			1
	b2	1	1											1	1			1
	b3	1		1	1						1			1			1	1
	b4	1		1	1						1			1	1		1	1
	b5	1	1		1	1								1	1			1
	b6		1															
Applied Professional Skills	c1	1			1	1								1	1	1		
	c2	1	1											1	1	1	1	
	c3	1		1		1					1						1	
General Tran. Skills	d1			1		1					1						1	
	d2		1	1	1						1						1	
	d3	1	1								1						1	
	d4	1	1	1	1						1						1	
	d5		1								1			1		1	1	1

5- Assessment Timing and Grading:

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

6- List of references:

6-1 Course notes:

Data Transmission and Computer Network, Cairo: MAM Press

6-2 Required books
- Jerry Fitzgerald and Alan Dennis (2005), Business Date Communications and Networking, John Wiley,
- Behrouz A Forouzan (2003), Data Communications and Networking, Mc Grew Hil.
- William Stallings (1991) , Computer Networks, Prentice Hall,

6-3 Recommended books:
- Raymond and R. Panko, Business Data Networks and Telecommunications, Prentice Hall, 8th edition,2010

6-4 Periodicals, Web sites, etc.:
http://www.prenhall.com/panko/index.httml .

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

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department
Course Specification
E 538 (c): Neural Networks

A- Affiliation

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

Department offering the course: Computer Engineering and Information Technology Department

Date of specifications approval: September 2015

B- Basic information

Title: Neural Networks **Code:** E 538 (c)   **Year/level:** 5th year/1st semester

Teaching Hours: **Lectures:** 4   **Tutorial:** 2 **Practical: - Total:** 6

C- Professional information

1 – Course Learning Objectives:

1 – Course Learning Objectives:

By the end of this course the students should demonstrate the knowledge and understanding of the basic knowledge about neuron models, different architectures of artificial neural networks ANN and pattern recognition. They should be able to introduce the concepts and training algorithms for different aspects of ANN paradigm.

2 - Intended Learning Outcomes (ILOS):

A - Knowledge and understanding:

1 – Course Learning Objectives:

By the end of this course the students should demonstrate the knowledge and understanding of the basic knowledge about neuron models, different architectures of artificial neural networks ANN and pattern recognition. They should be able to introduce the concepts and training algorithms for different aspects of ANN paradigm.

Intended Learning Outcomes (ILOS)

a – Knowledge and understanding:

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

a1 – Basic concepts and Definitions of pattern and artificial neural network ANN (A1,A2)

a2 –The analogy between human brain cell and artificial neuron (A3)

a3 –The different architectures of artificial neural networks (A4)

 a4 - Mathematical basis of training different network architectures (A1,A2)

 a5- The Neuron Models. – Mclluph-Pitts model (A13,A15)

 a6- Basic architecture of Single-Layer Neurons.- Multi-layer Neurons (A4,A5)

 a7 –The different algorithms used to learn different ANN (A11,A12)

 a8- Basic principles of Back propagation algorithm (A1,A2,A3)

 a9- ANN.-Pattern recognition using neural networks (A11,A17)

b – Intellectual Skills:

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

b1-Investigate on the different architectures of artificial neural networks (B1,B2, B3).

b2- analyze and manipulate Neuron Models. – Mclluph-Pitts model, Single-Layer Neurons and Multi-layer neurons (B4, B5,B7).

 b3- Discuss the single-Layer Neurons.- Multi-layer Neurons, and perceptrons. Then deduce their mathematical model, then perform the suitable program to solve (B8, B13, B14).
 b4- Investigate on different algorithms used to learn different ANN including Back propagation algorithm deduce its mathematical model, then perform the suitable program to solve (b8,B13,B15).
 b5- Classify the pattern recognition using neural networks (B5,B7,B11)

c - Professional and practical skills:
On successful completion of the course, the student should be able to:
c1- Apply IT knowledge based for ANN architectures (C1,C2)
c1- Use of different numerical modeling methods, matrix operations, array operations, and recursion rules for manipulating Back propagation algorithm (C1,C2)
c2- Produce graphics in two and three dimension to manipulate multilayer feed-forward ANN (C5,C14)
c3 – Develop different programs to simulate and solve different Single-Layer Neurons.- Multi-layer Neurons (C6,C7,C14).
c5-Solve different operational problems related to Pattern recognition using neural networks (C6,C7,C15).

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

Course Contribution in the Program ILO's

	ILO's	Program ILO's
A	Knowledge and understanding	A1, A2, A3, A4,A5, A11,A12, A13,A15,A17
B	Intellectual skills	B1, B2, B3,B4,B5,B7, B8,B11,B13, B14,B15
C	Professional and practical skills	C1, C2,C5, C6, C7,C14,C15
D	General and transferable skills	D1, D3, D4, D5,D7, D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
• Introduction to neural networks	6	3	
• McClluph Pitts model	6	3	
• Learning Processes, Supervised learning	6	3	
• Unsupervised learning	6	3	
• Single layer perceptron model, perceptron learning	6	3	
• Multi-layer models, Backpropagation algorithm	6	3	
• Pattern recognition	6	3	
• Khonen neural networks	6	3	
• Hopfield nets	6	3	
• Associative memories	6	3	
Total	60	30	

4 - Teaching and Learning and Assessment methods:

Course ILO's		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments	projects	Researches and reports	Modeling and simulation	Researches and Reports	Modeling and Simulation	Site visits	discovering	Written Exam	Practical Exam	Quizzes	Term papers	Assignments
		Teaching Methods									Learning Methods				Assessment Method				
Knowledge & Understanding	a1	1	1	1								1			1		1		1
	a2	1										1			1		1	1	1
	a3	1							1			1			1		1		1
	a4	1	1	1	1	1					1	1	1		1		1	1	1
	a5	1		1	1	1					1	1	1		1		1	1	1
	a6	1		1	1	1			1		1				1			1	1
	a7	1	1	1	1	1					1	1	1		1			1	1
	a8	1		1		1					1	1	1		1				
	a9	1		1		1					1	1			1				
Intellectual Skills	b1	1			1				1						1		1		1
	b2	1	1									1			1		1		1
	b3	1		1	1						1	1			1				1
	b4	1			1						1				1	1	1		1
	b5	1	1		1	1									1	1	1		1
Applied Professional Skills	c1	1			1	1							1		1		1		
	c2	1	1										1		1		1		
	c3	1		1		1					1	1	1						
	c4	1	1		1	1													
	c5	1	1		1														
General Tran. Skills	d1			1		1					1								
	d2		1	1							1	1							
	d3	1	1								1								
	d4	1	1	1							1								
	d5			1							1	1							

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	20
Mid-Term Exam	6-th Week	30
Practical Exam	-	-
Written Exam	Sixteenth week	100
Total		150

6- List of references:

6-1 Course notes:

   Lecture notes and handouts

6-2 Required books

D, Kelton , second edition.Simulation Modeling and Analysis, Averill M. L, W, , McGraw-Hill, Inc.1998.

Derry Banks , John S. Carson, Barry L. Nelson David M. Nicol , Discrete-event System Simulation, person education,2005.

M.M. Wooltson ,G J. Pert, An Introduction to Computer Simulation, Oxford University Press,1999

6-3 Recommended books:
C. M Harris, Ross D., second edition, Fundamental of Queuing Theory, John Wiley. 1990**.**

6-4 Periodicals, Web sites, etc.: Non
http://www.howstuffworks.com/ .
http://www.GenLib.org/ .
http://www.talkthecold.com/bizgoogle/ .
http://www.SCI-hub.org/ .
http://www.scrius.com/ .
http://www.Merlot.org/ .
http://www.Vlab.co.in/ .
http://www.W3schools.com/

7- Facilities required for teaching and learning:
- Computer Lab.
- Computer, Data show and Computer package.

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

Modern Academy for Engineering & Technology
Basic Sciences Department
Course Specification
التشريعات والقوانين الهندسية:**B 512**

A- Affiliation

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

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

Department offering the course: Basic Scienc Department
Date of specifications approval: September, 2015

B - Basic information

Title:التشريعات والقوانين الهندسية   **Code:B 512**   **Level:** 5th year → **Level:** 5th year   **Semester**: 2nd Term
Total Hours 2 hrs   **Lectures** 2 hrs   **Tutorial** -   **Practical** -

C - Professional information

1 – Course Learning Objectives:

مع نهاية هذا المقرر يكون الطالب قد تمكن من فهم وتحليل وتطبيق المصــطلحات والمفاهيم القانونية و التشــريعات الصــناعية المصــرية - قوانين وتشريعات اعمال البناء والتخطيط العمرانى و قوانين وتشريعات بيئية لحماية البيئة المصرية و المناقصات والعطاءات- قانون تنظيم المناقصات والعطاءات و العقود الهندسية الدولية و العقود الهندسية المحلية و المطالبات والتحكيم.

2 - Intended Learning Outcomes (ILOS)

a - Knowledge and understanding:
On successful completion of the course, the student should demonstrate knowledge and understanding of:
a1- منهجيات حل المشاكل الهندسية ، وجمع البيانات وتفسيرها (A5)
a2-نظم ضمان الجودة ، ومدونات الممارسات والمعايير ومتطلبات الأمن الصناعي والقضايا البيئية (A6)
a3- أخلاقيات المهنة والآثار المترتبة على الحلول الهندسية على المجتمع والبيئة (A9, A10, A11)
a4- اللغة التقنية وكتابة التقارير الهندسية (A10)

b - Intellectual skills:
On successful completion of the course, the student should be able to.
b1- انيفكر بطريقة خلاقة ومبتكرة في حل المشكلات القانونية (B3, B9, B12)
b2- ان يدمج ويستبدل ويقيم مختلف الأفكار والآراء من وجه النظر القانونية (B4, B9)
b3- تخطيط وإجراءوكتابةتقريرعنمشروعأو تكليف (B12)

C: Professional and practical skills:
On successful completion of the course, the student should be able to:
c1- أن يعرض ويحل أحد المشاكل القانونية فى احد الشركات (C1, C5)

d - General and transferable skills:
On successful completion of the course, the student should be able to:
d1- Work in a team and involve in group discussion(D1, D3).
d2- Search for information's in references and in internet (D7).
d3- Practice self-learning (D7, D9).

ILO's		Program ILO's
A	Knowledge and understanding	A5, A6, A9, A10, A11
B	Intellectual skills	B3, B4, B9, B12
C	Professional and practical skills	C1,C5
D	General and transferable skills	D1, D3, D7, D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
مصطلحات ومفاهيم قانونية	4		
التشريعات الصناعية المصرية - قوانين وتشريعات اعمال البناء والتخطيط العمرانى	8		
قوانين وتشريعات بيئية لحماية البيئة المصرية	6		
المناقصات والعطاءات. - قانون تنظيم المناقصات والعطاءات	6		
العقود الهندسية المحلية - العقود الهندسية الدولية- المطالبات والتحكيم	6		
Total hours	**30**		

4 - Teaching and Learning and Assessement methods:

Course ILO's		Teaching Methods								Learning Methods		Assessement Method					
		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments			Researches and Reports	Modeling and Simulation	Written Exam	Practical Exam	Quizes	Term papers	Assignments	
Knowledge & Understanding	a1	1	1	1						1		1		1			
	a2	1				1						1		1		1	
	a3	1		1						1		1				1	
	a4	1		1						1		1					
Intellectual Skills	b1	1										1		1		1	
	b2	1				1						1		1		1	
	b3	1	1	1						1		1					
Proffe ssional	c1	1	1							1				1		1	
General Tran Skills	d1	1		1		1				1							
	d2	1	1	1													
	d3	1	1													1	

5- Assessment Timing and Grading:

Asessement Method	Timing	Grade (Degrees)
quizes assignments	Bi-Weekly	10
Mid-Term Exam	6-th Week	5
Written Exam	Sixteenth week	35
Total		50

6- List of References
6-1 Course notes

د شعبان رجب جودة ، قوانين وتشريعات هندسيه، الأكاديمية الحديثه للهندسة و التكنولوجيا، ٢٠١٠.

6-2 Required books

6-3 Recommended books

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

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

7- Facilities required for teaching and learning:
- Library
- Internet

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

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department
Course Specification
E 504: Artificial Intelligence

A- Affiliation

Relevant program:	Computer Engineering and Information Technology BSc Program
Department offering the	Computer Engineering and Information Technology Department
Department offering the course:	Computer Engineering and Information Technology Department
Date of specifications approval:	September 2015

B – Basic Information

Title: Artificial Intelligence
Teaching hours:

Code: E 504	**Year/ Level: 5th year**
Lectures: 4	**Tutorials:** 2
Practical: -	**Total:** 6

C – Professional Information

1- Course Learning Objectives:

The objective of this course is to acquaint students of the types and principles of artificial intelligence and search strategies as well as the components of AI agents and the problem solving using AI.

a - Knowledge and understanding:

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

a1 - Different artificial intelligent system components. (A1,A3,A5)
a2 - The models used in searching techniques. (A13,A14,A15)
a3 - The components of semantic network and how to use it in solving the AI problems. (A3,A5,A13,A15)
a4 - The categories and components of 'expert system' systems. (A13,A14,A15)
a5 - The roles in expert system development. (A3,A5,A14,A15)
a6 - The principal benefits of expert systems. (A3,A5,A13,A15)
a7 - The possible uses of the neural network types in different areas. (A3,A5,A13)

b - Intellectual skills:

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

b1 - Build a simple artificial intelligent system. (B2,B3,B4,B14)
b2 - Build the successor function for different AI problems. (B2,B3,B4,B14)
b3 - Develop the searching models used in AI. (B4,B14,B16)
b4 - Solve problems using different artificial intelligent techniques. (B2,B4,B14,B16)
b5 - Build an Expert System. (B3,B4,B16)
b6 - Develop the roles in an expert system. (B3,B14,B16)
b7 - Build neural networks for solving AI problems. (B3,B4,B14,B16)
b8 - Build different machine learning algorithms. (B3,B4,B14,B16)
b9 - Build different neural network for different applications. (B3,B4,B14,B16)
b10 - Build all logic gates using neural networks. (B3,B4,B14).

c - Professional and practical skills:

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

c1 - Collect and analyze different types of AI problems. (C3,C11,C13)
c2 - Collect training vectors for neural network training process. (C3,C11,C14)
c3 - Use the neural network and expert system for practical systems. (C12,C13,C14)
c4 - Form intelligent agents systems. (C11,C12,C13,C14)

d - General and transferable skills:

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

d1- Work in a team and involve in group discussion and seminars (D1, D3).
d2- Communicate effectively and present data and results orally and in written form (D3).
d3- Use ICT facilities in presentations (D4).
d4- Search for information's in references and in internet (D7).

d5- Practice self-learning (D7, D9).

Course Contribution in the Program ILO's

ILO's		Program ILO's
A	Knowledge and understanding	A1,A3, A5, A13, A14, A15
B	Intellectual skills	B2,B3,B4,B14,B16
C	Professional and practical skills	C3, C11, C12, C13, C14
D	General and transferable skills	D1, D3, D4, D7, D9

3 – CONTENTS

Topic	Lecture hours	Tutorial hours	Practical hours
Artificial intelligent Concepts	4	2	--
Fundamentals of neural network	4	2	
Learning algorithms used in neural network training, Different practical applications using neural network (logic gates)	6	2	--
Solving problems using searching techniques	4	2	--
Non-heuristic techniques, Depth first, breadth first search, uniform cost search	4	2	--
Non-heuristic techniques, depth limited search, iterative deepening depth first search, bi-directional search, comparing searching techniques	6	4	--
Heuristic techniques, Greedy best first search, memory bounded heuristic search	4	2	--
Heuristic techniques, recursive best first search, learning to search better, Heuristic functions	4	2	--
Expert system architecture	4	2	--
Expert system, non-production system architecture	4	2	--
Semantic network basics and components	4	2	--
Semantic network and optimal search	4	2	--
Machine learning, frame work for symbol based learning, version space search,	4	2	--
Elimination algorithm, decision tree (induction algorithm)	4	2	--
Total	**60**	**30**	**--**

4 - Teaching and Learning and Assessment methods:

Course ILO's		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments				Researches and Reports	Modeling and Simulation		Written Exam	Practical Exam	Quizes	Term papers	Assignments			
Knowledge & Understanding	a1	1	1	1	1						1			1		1	1				
	a2	1			1									1		1	1	1			
	a3	1			1									1		1	1	1			
	a4	1	1	1	1	1					1			1		1	1	1			
	a5	1												1		1	1	1			
	a6	1	1	1	1						1			1		1	1	1			

Course ILO's		Lecture	Presentations and	Discussions and	Tutorials	Problem solving	Laboratory &	Researches and	Modeling and	Written Exam	Practical Exam	Quizes	Term papers	Assignments
	a7	1	1	1	1			1		1		1	1	
		Teaching Methods						**Learning Methods**		**Assessment Method**				
Intellectual Skills	b1	1			1					1	1			1
	b2	1			1	1				1	1	1		1
	b3	1	1	1	1			1		1		1		
	b4	1	1		1			1		1	1	1		1
	b5	1			1					1		1		1
	b6	1			1	1				1	1	1		1
	b7	1			1					1		1		1
	b8	1			1	1				1	1	1		1
	b9	1	1	1	1			1		1		1		
	b10	1	1		1			1		1	1	1		1
Applied Professional Skills	c1	1	1	1	1			1		1		1		
	c2	1			1					1	1	1		1
	c3	1			1					1	1	1		1
	c4	1	1	1	1	1		1		1	1	1		1
General Tran. Skills	d1			1		1		1				1		
	d2		1	1				1	1			1		
	d3	1	1					1				1	1	
	d4	1	1	1				1						
	d5							1	1			1		

5- Assessment Timing and Grading:

Asessement Method	Timing	Grade (Degrees)
Semister Work: seminars, quizes assignments and reports	Bi-Weekly	30
Mid-Term Exam	6-th Week	20
Written Exam	Sixteenth week	100
Total		150

6- List of references:

6-1 Course notes: None

6-2 Required books

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

6-3 Recommended books:
- Russell, P,(2003). Nerving Artificial Intelligence, A Modern Approach, second ed.T. Prentice hall.
- Stuart Jonathan Russell and Peter Norvig,(2011) *Artificial Intelligence*: A Modern Approach.

6-4 Periodicals, Web sites, etc.
http://aima.cs.berkeley.edu/WWW

7- Facilities required for teaching and learning:
   Computer, Data show and Computer programs.

Course coordinator: Dr. Sabry. M Abdul-Moetty
Head of the Department: Prof.Dr. Saied Gawish

Date: September 2015

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department
Course Specification
E531: Data Transmission and Computer Networks (II)

A- Affiliation Relevant program: Computer Engineering and Information Technology BSc. Program
Department offering the program: Computer Engineering and Information Technology Department
Department offering the course: Computer Engineering and Information Technology Department
Date of specifications approval: September 2015

B – Basic Information
Title:Data Transmission and Computer Networks (II)
Teaching hours: **Code: E 531**   **Year/ Level: 5th year**
                                    Lectures: 3   **Tutorials:** 2
                     Practical: 2   **Total:** 7

C – Professional Information
1- Course Learning Objectives:
    A study of this course will enable the student to:
Recognize the major components of computer networks, and explain how these components work together to achieve data communications and set software and hardware steps to connect computer networks
2- Intended Learning Outcomes (ILOS)
A-Knowledge and understanding:
By the end of this course the student should be able to:
a1 – Know how to use the Windows XP, VISTA to connect the more than one Computer in peer to peer configuration (A2,A3,A19).
a2- Use the core of Window 2003 server to connect server based network and make addressing (IP address) of networks (A20,A17).
a3- Install the common protocols TCP/IP(A4,A8).
a4- Explain how data bits can be sent in signals via local and long-distance communication interfaces and links (A1,A4).
a5- Describe the major functions of link layer and explain the principles of LANs(A3,A19).
a6- Describe how internet workings work and explain the principles of packet forwarding by routers (A3,A19,A4).
a7- Explain the principles of transport layer protocols(A3,A2).
a8- Explain the working principles of network applications in communicating with each other by using application layer protocols(A2,A3,A4).
a9- network and internetworking :security including network security and cryptography, cryptographic protocols, inter-networking security mechanisms, private and public key encryption, VPN, and IPSEC-Internet Protocol security architecture (A6,A15,A19,A20).
a10-Explan data and net work security incloding network security and cryptography, cryptographic, protocols, inter-networking security mechanism ,private and public key encryption ,VPN ,and IPSEC-internet Protocol security architecture (A6,A15,A20).
B – Intellectual skills:
By the end of this course the student should be able to:
b1 -Connect the computer network (B1,B4,B5,B21)
b2 - Set up the common, protocols(B1,B4,B5,B21
b3 - Share the folder & files(B1,B4,B5).
b4 - Connect RJ 45 with UTP (peer to peer and server based)(B1,B4,B5).
C – Professional and practical skills:
By the end of this course the student should be able to:
c1 - Make broad casting of information in network (C2,C16)
c2 - Make Analysis and design of computer network (C2,C3,C4,C13)
c3- Connect LANs to WANs such as the Internet (C1,C2.C3,C16)
c4- Secure computer network at network and application layers (C8,C19)
D – General and transferable skills:

By the end of this course the student should be able to:
d1 – Know the installation of network (D4,D6,D7)
d2 – Know all software steps &Hardware steps to Connect computer networks (D7,D8,D9).
d3 – Set up the common protocols (D4,D6,D7,D8).

Course Contribution in the Program ILO's

	ILO's		Program ILO's
A	Knowledge and understanding		A1,A2,A3,A4,A6,A8,A15,A17,A19,A20
B	Intellectual skills		B1,B4,B5,B21
C	Professional and practical skills		C1,C2,C3,C4,C8,C13,C16,C19
D	General and transferable skills		D4,D6,D7,D8,D9

3 – CONTENTS

	TOPIC	lecture hours	toutorial hours	practical hours
1	Digital Transmission overview	3	2	2
2	Basic Concepts and Principles of Computer Networking	6	4	2
3	Physical Layer Concept	5	4	4
4	Small PC Network	6	4	6
5	Small Ethernet IANs	6	4	4
6	Larger Site Networks	6	4	4
7	Wide Area Networking	6	4	4
8	Network Security	6	4	4
	TOTAL HOURS	**45**	**30**	**30**

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods						Learning Methods			Assingment method			
		Lecture	Presentations & Movies	Discussions & Seminars	Tutorials	Problem solving	Laboratory & Experiments	Researches and Reports	Modeling and Simulation	Site Visits	Assignments	Quizzes & Presentations	Written Exam	Practical Exam
1Knowledge	a1	1	1	1			1	1		1	1	1	1	1
	a2	1				1	1	1		1	1		1	1
	a3	1				1	1	1		1	1		1	1
	a4	1	1	1	1	1					1	1	1	
	a5	1			1						1		1	
	a6	1			1	1	1				1	1	1	1
	a7	1	1	1	1	1	1				1	1	1	1
	a8	1		1			1	1		1	1	1	1	1
	a9		1	1	1		1	1		1	1	1	1	1
	a10	1	1			1	1	1		1	1	1	1	1
Intellectual	b1	1		1	1		1				1	1	1	1
	b2	1	1				1	1		1				1
	b3	1		1	1		1				1	1		1
	b4	1		1	1		1	1		1		1	1	1
Applied	c1	1			1	1					1		1	
	c2	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
General Tran.	d1		1					1		1				1
	d2		1					1		1				1
	d3							1		1				1

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	20
Mid-Term Exam	6-th Week	10
Practical Exam	14-th Week	20
Written Exam	Sixteenth week	100
Total		150

6- List of references:

6-1 Course notes:

Data Transmission and Computer Network, Cairo: MAM Press

6-2 Required books

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

6-3 Recommended books:

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

6-4 Periodicals, Web sites, etc.:

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

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

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department
Course Specification
E534: Computer Performance Evaluation

A- Affiliation Relevant program: Computer Engineering and Information Technology BSc. Program
Department offering the program: Computer Engineering and Information Technology Department
Department offering the course: Computer Engineering and Information Technology Department
Date of specifications approval: September 2015

B – Basic Information
Title: Computer Performance Evaluation
Teaching hours: **Code: E534**   **Year/ Level: 5th year**
                                     Lectures: 2   **Tutorials:** 2
                                     Practical: 2   **Total:** 6

C – Professional Information
1- Course Learning Objectives:
   Understand the quantitative system performance and the technical foundation for the work by defining a number of quantities of interest, introducing the notation to these quantities and deriving various relationships among these quantities.

   a - Knowledge and understanding:
   On successful completion of the course, the student should demonstrate knowledge and understanding of:
   a1- Basic concept of computer performance evaluation (A2,,A15).
   a2- Different performance measures and parameters (A5, A9,A13)
   a3- Performance evaluation methodology and techniques. (A2, A9).
   a4- Machine performance computation (A1,A14,A16).
   a5- Main characteristic , parameters and fundamental laws of queuing network models (A9,A12,A15).
   a6- Computer workload and performance evaluation benchmarks (A2,A3,A15,A16).
   b - Intellectual skills:
   On successful completion of the course, the student should be able to:
   b1-Investigate on the different approaches in performance evaluation (B1,B2,B3 B5, ,B18).
   b2- Follow on a systematic approaches to performance evaluation (B12,B5,B18)
   b3- Select the appropriate mathematical tools, computing methods, design techniques for modeling and analyzing computer systems (B13, B14,B21)
   b4- Manipulate different fundamental laws of queuing network models (B1,B11,B18).
   b5- Investigate on the different techniques for performance benchmarks (B8,B13,B14)
   b6 – investigate on the quantitative approaches of machine and CPU performance (B1,B2,B3,B5,B20)
   b7 - Investigate the reliability of components, systems, and processes. (B6, B9)
   c - Professional and practical skills:
   On successful completion of the course, the student should be able to:
   c1- Apply knowledge of science, and IT to deal with Computer performance (C1,C2,)
   c2- Analyze and measure computer performance parameters   (C2,C3,C19)
   c3- Use a wide range of analytical tools, techniques, and software packages for   Computer performance evaluation (C6,C14,C15,C19,C20)
   c4- Use computational facilities and techniques, for analysis of queuing network models (C4,C5, C6, C13 C20).
   d - General and transferable skills:
   On successful completion of the course, the student should be able to:
   d1- Work in a team and involve in group project (D1, D3).
   d2- Communicate effectively and present data and results orally and in written form(D3,D4).
   d3- Use ICT facilities in presentations, and manage resources efficiently (D4,D5).
   d4- Search for information's in references, journals and in internet(D7).
   d5- Practice self-learning(D7, D9).

Course Contribution in the Program ILO'

ILO's		Program ILO's
A	Knowledge and understanding	A1, A2,A3,,A8, A 9, A12,A13,A14,A15,A16
B	Intellectual skills	B1,B2, B3,,B5,B6,B8,B11,B12, B13 ,B14,B18,B19,B21
C	Professional and practical skills	C1, C2,C3,C4,C5, C6,C13,C14,C15,C19,C20
D	General and transferable skills	D1, D3, D4, D5,D7, D9

3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
➢ Introduction to Performance Measurement and evaluation	2	2	2
• Case Study (1)	2	2	2
➢ Selection of evaluation techniques and metrics	4	4	4
• Case Study (2)	2	2	2
➢ Quantitative approach of machine performance	4	4	4
➢ An Overview of Queuing network modeling	4	4	4
➢ Fundamental Laws of Queuing network modeling	4	4	4
➢ Workload and benchmarking	4	4	4
➢ Queuing Modeling Tools (Java Modeling Tools)	4	4	4
Total hours	30	30	30

4 - Teaching and Learning and Assessment methods:

Course ILO's		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments			Researches and Reports	Modeling and Simulation		Written Exam	Practical Exam	Quizzes	Term papers	Assignments		
Knowledge & Understanding	a1	1	1	1	1		1			1			1		1	1	1		
	a2	1			1		1						1		1		1		
	a3	1			1								1	1	1		1		
	a4	1	1	1	1	1							1	1	1		1		
	a5	1		1	1	1	1				1		1	1	1		1		
	a6	1		1	1		1			1			1	1	1	1	1		
Intellectual Skills	b1	1			1								1	1			1		
	b2	1	1				1						1	1			1		
	b3	1		1	1		1			1			1	1			1		
	b4	1			1					1			1	1			1		
	b5	1	1		1	1	1						1	1			1		
	b6	1																	
	b7	1																	
Applied Professional Skills	c1	1			1	1							1		1	1	1		
	c2	1	1										1		1	1	1		
	c3	1		1		1				1	1				1	1			
	c4	1	1		1	1									1	1			
General Tran. Skills	d1	1	1	1		1				1					1				
	d2	1	1	1		1				1	1				1				
	d3		1	1						1					1				
	d4		1	1						1					1				
	d5		1	1						1	1				1				

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	15
Mid-Term Exam	6-th or 7th Week	15
Written Exam	Sixteenth week	70
Total		100

6- List of references:

6-1 Course notes: Lecture notes and handouts

6-2 Required books

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

6-3 Recommended books:

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

6-4 Periodicals, Web sites, etc.

- ■ None.

7- Facilities required for teaching and learning:

- Computer, Data show and Computer programs

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

Modern Academy for Engineering & Technology
Computer Engineering and Information Technology Department
Course Specification
E 538(b): Modeling and Simulation

A- Affiliation

Relevant program:	Computer Engineering and Information Technology BSc Program
Department offering the program:	Computer Engineering and Information Technology Department
Department offering the course:	Computer Engineering and Information Technology Department
Date of specifications approval:	September 2015

B – Basic Information

Title: Modeling and Simulation

Teaching hours: **Code: E 538(b) Year/ Level: 5th year**

Lectures: 4 **Tutorials:** 2

Practical: - **Total:** 6

C – Professional Information

1- Course Learning Objectives:

Able Identify the types of Systems used in practical life, specify the elements of modeling and simulation and develop their mathematical models.

2- Intended Learning Outcomes (ILOS)

A-Knowledge and understanding:

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

a1- Different mathematical theories (A1, A2).

a2 - The queuing theory and its application areas. (A4,A5).

a3 - Building mathematical models for different practical problems. (A1,A3,A13)

a4 - Different probability distributions continuous and discrete. (A1,A5

a5 - The algorithms for generating random numbers. (A5)

a6 - Different algorithms for checking the simulation results. (A1)

a7- Solving problems using simulation.(A2)

B – Intellectual skills:

b1- Differentiate between different types of models.(B1)

b2 - Chooseappropriate solutions using simulation. (B3)

b3 - Build suitable random number generators.(B2)

b4 - Collect and analyze different types of problems(B8).

b5 - Use the simulation for solving practical problems.(B7)

C – Professional and practical skills:

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

c1 - Build algorithm to check the simulation results.(C1)

c2 - Build approach for developing valid and credible simulation model.(C2)

c3 - Build statistical procedures for comparing real world observation (C6)

c4 - Collect statistical data for building simulation.(C7)

c5 - Form simulation for different random numbers generators (C5)

d - General and transferable skills:

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

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

d2- Communicate effectively and present data and results orally and in written form(D3,D4).

d3- Use ICT facilities in presentations, and manage resources efficiently (D4,D5).

d4- Search for information's in references, journals and in internet(D7).

d5- Practice self-learning(D7, D9).

Course Contribution in the Program ILO's

	ILO's	Program ILO's
A	Knowledge and understanding	A1,A2,A3,A4,A5,A13
B	Intellectual skills	B1,B2,B3,B8,B7
C	Professional and practical skills	C1,C2,C5,C6,C7
D	General and transferable skills	D1,D3,D4,D5,D7,D9

3 – CONTENTS

Topic	Lecture hours	Tutorial hours	Practical hours
Systems, models and simulation – Steps in Simulation Study- Other Types of simulation,-advantages of Simulation- disadvantages of Simulation- Stochastic Model, Discrete-Event Simulation.	4	2	--
Review of basic probabilities and Statistics	4	2	
Simulation of Single – Server Queuing System, Case study 1, single server queue	4	2	--
Selecting Input Probability Distributions- continuous probability distributions	4	2	--
Estimation Of Means, Variance And Correlation	4	2	--
Mont Carlo simulation- Case Study 3,	4	2	--
Selecting Input Probability Distributions, continuous probability distributions	5	4	--
Discrete probability distributions, case study 4	5	2	--
Building Valid and Credible Simulation Models	5	2	--
Sensitivity Analysis, Inspection Approach, Confidence Interval Approach Based On Independent Data, Testing Null Hypothesis, Paired t Approach, case study 5	5	2	--
Random Number Generators, Mid Square Method, case study 6	4	2	--
Linear Congruential Generators (LCG), Mixed Generator, Multiplicative Generator	4	2	--
Total	**60**	**30**	**--**

4 - Teaching and Learning and Assessment methods:

Course ILO's		Lecture	Presentations and Movies	Discussions and seminars	Tutorials	Problem solving	Laboratory & Experiments			Researches and Reports	Modeling and Simulation	Site visits	Written Exam	Practical Exam	Quizzes	Term papers	Assignments		
							Teaching Methods				Learning Methods				Assessment Method				
Knowledge & Understanding	a1	1	1	1	1					1			1		1		1		
	a2	1			1								1		1	1	1		
	a3	1			1						1	1	1		1		1		
	a4	1	1	1	1						1								
	a5	1			1	1					1		1		1		1		
	a6	1			1	1				1	1	1	1			1	1		
	a7	1	1	1	1	1				1	1	1	1			1	1		
Intellectual Skills	b1	1			1						1		1		1		1		
	b2	1	1		1						1		1		1		1		
	b3	1		1	1					1	1	1	1				1		

		Teaching Methods								Learning Methods			Assessment Method						
		Lecture	Presentations and	Discussions and	Tutorials	Problem solving	Laboratory &			Researches and	Modeling and	Site visits	Written Exam	Practical Exam	Quizzes	Term papers	Assignments		
	b4	1			1					1		1	1		1		1		
	b5	1	1		1	1					1		1		1		1		
Applied Professional Skills	c1	1			1	1					1		1		1				
	c2	1	1										1		1				
	c3	1		1		1				1	1	1							
	c4	1	1		1	1					1	1							
	c5	1	1		1							1							
General Tran. Skills	d1			1		1				1									
	d2		1	1						1	1								
	d3	1	1							1									
	d4	1	1	1						1									
	d5			1						1	1								

5- Assessment Timing and Grading:

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

6- List of references:
6-1 Course notes   Lecture notes and handouts
6-2 Required books:
 D, Kelton , second edition.Simulation Modeling and Analysis, Averill M. L, W, , McGraw-Hill, Inc.1998.
Derry Banks , John S. Carson, Barry L. Nelson David M. Nicol , Discrete-event System Simulation, person education,2005.
M.M. Wooltson ,G J. Pert, An Introduction to Computer Simulation, Oxford University Press,1999

6-3 Recommended books:
 C. M Harris, Ross D.,second edition, Fundamental of Queuing Theory, John Wiley. 1990**.**
6-4 Periodicals, web sites, etc. --
http://www.howstuffworks.com/ .
http://www.GenLib.org/
http://www.talkthecold.com/bizgoogle/ .
http://www.SCI-hub.org/ .
http://www.scrius.com/ .
http://www.Merlot.org/ .
http://www.Vlab.co.in/ .
http://www.W3schools.com/

 7- Facilities required for teaching and learning:
- Computer Lab.
- Computer, Data show and Computer package.

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

Modern Academy for Engineering & Technology

Computer Engineering and Information Technology Department
Course Specification
E 599: Project

A- Affiliation

Relevant program:	Computer Engineering and Information Technology BSc Program
Department offering the program:	Computer Engineering and Information Technology Department
Department offering the course:	Computer Engineering and Information Technology Department
Date of specifications approval:	September 2015

B – Basic Information

Title: Project   code: E 599   Year/ Level: 5th year

Teaching hours   Lectures: -   Tutorials --   Practical: 4   Total: 4

C – Professional Information

1- Course Learning Objectives:

Developing the following skills:

Specify the problem and analyses it to propose solution and then design and implement the project of computer engineering or information technology project.

2- Intended Learning Outcomes (ILOS)

A - Knowledge and understanding:

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

a1- about planning methods (A4, A5, A14)

a2- organizational skills(A6, A8).

a3- Personal leadership skills (A4, A5, A14)

a4- Economical aspects (A4 ,A5, A14).

B – Intellectual skills:

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

b1- Develop imaginative and design abilities (B3, B5, B7, B12, B13)

b2-Conceptualize reasonable ideas (B2, B5, B7, B9, B10, B15).

b3- Converte concepts to real entities (B4, B5, B7, B11).

b4-Integrate the results of a project (B6).

C – Professional and practical skills:

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

c1-Appreciate elements of electronic circuit design. (C1, C2, C3, C7, C8, C11, C13, C15).

c2- Practice the setup of circuitry. (C9, C10, C11, C14).

c3- Test and correcting circuit operation (C4, C5, C6, C14, C15).

D – Genera and transferable skills:

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

d1- Presenting (D1, D3).

d2- Demonstrating (D1).

d3- Explaining project (D7).

Course Contribution in the Program ILO's

	ILO's	Program ILO's
A	Knowledge and understanding	A4,A5.A6, A8, A14
B	Intellectual skills	B2, B3, B5, B7,B9, B10,B11 ,B12, B13, B15

C	Professional and practical skills	C1, C2, C3, C7, C8, C9, C10, C11, C13, C14 ,C15
D	General and transferable skills	D1, D3, D7

3 – CONTENTS

	TOPIC	LECTURE HOURS	TOUTORIAL HOURS	PRACTICAL HOURS
1	Project background			6
2	Project activities planning			6
3	Practical implementation			12
4	Production of final product			20
5	Testing and correcting output			8
6	Preparing for project presentation			8
	TOTAL HOURS			**60**

4 - Teaching and Learning and Assessment methods:

Course ILO's		Teaching Methods						Learning Methods			Assessment Method				
		Lecture	Presentations & Movies	Discussions & Seminars	Tutorials	Problem solving	Laboratory & Experiments	Researches and Reports	Modeling and Simulation	Site Visits	Assignments	Quizzes & Presentations	Assignments	Written Exam	Practical Exam
Knowledge	a1						1								1
	a2						1								1
	a3						1								1
	a4						1								1
Intellectual	b1						1								1
	b2						1								1
	b3						1								1
	b4						1								1
Applied	c1						1								1
	c2						1								1
	c3						1								1
General Tran.	d1						1								1
	d2						1								1
	d3						1								1

5- Assessment Timing and Grading:

Assessment Method	Timing	Grade (Degrees)
Semester Work: seminars, quizzes assignments and reports	Bi-Weekly	100
Practical Exam	Sixteenth week	100
Total		200

6- List of references: Library books according to project subject

7- Facilities required for teaching and learning:
Hard-ware labs and computer labs
Course coordinator: Stuff Member
Head of the Department: Prof. Dr. Said Gawish
Date: September 2015

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Appendix 3

Regulations of program progression

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قواعد حساب التقديروالتيسير للجان رصد الدرجات

تنفيذا للقرارالوزارى رقم ٩٧٠ بتاريخ ٢٠٠٥/٤/١٠ بشأن قواعدالتيسيرلطلاب المعاهد الخاصة الخاضعة لوزارة التعليم العالى وقرارلجنة قطاع المعاهدالصناعية والهندسية بجلستها يوما لخميس الموافق ٢٠٠٩/٠١/٢٩ والتي أعتمدت من السيدالأستاذ الدكتور الوزير بتاريخ ٢٠٠٩/٠٢/٠٦ يتم منح درجات التيسيركما يلى.

أولا: نص القرار

مادة (١):يخصص للطالب درجات تعادل ٢% من مجموع النهايات العظمى لمجموع المواد التى تدرس فى العام الدراسى ويتم تطبيق قواعد التيسيرفى امتحان نهاية العام (مايو) ويستفيد الطالب من هذه الدرجات لتغييرحالته من راسب إلى ناجح فى أى عدد من المواد أو لرفع تقديره فى المجموع الكلى أوللتخفيف فى مواد الرسوب. وتستخدم هذه الدرجات فى الحدودالتالية:

أ‌- أن لايجاوزما يمنح للطالب فى المادة الواحدة عن ٥% من النهاية العظمى للمادة الواحدة وفى أى عدد من المواد ، ويجبركسرالدرجة لصالح الطالب.

ب‌- فى حالة تغيير حالته من راسب إلى ناجح أو منقول بمادة أومادتين أو تخفيف عدد مواد الرسوب.

مادة (٢):يمكن أن يستفيد الطالب من هذا المجموع فى أى عدد من مواد الرسوب وفقا للحدود المبينة بعاليه ، وفقا لصالح الطالب و وفقا للأولويات التالية:

- مواد التخلف
- المواد الأقرب للنجاح
- المواد المساعدة

مادة (٣):يمنح الطالب المعرض للقيد من الخارج أوالفصل لاستنفاذ مرات الرسوب ٣% من المجموع الكلى للنهايات العظمى للمواد إذا أدى ذلك لتغيير حالته و بما لا يزيد فى المادةعن ١٠% من الدرجة النهائية للمادة ويمكن إن يحصل الطالب على هذه الدرجات فى أى عدد من المواد.

مادة (٤):الطالب الراسب فى مادتين وإحداهما داخل قواعد التيسيير يمكن أن يستفيد الطالب من هذه القواعد و يعتبر متخلفا فى مادة واحدة بدلا من مادتين.

مادة (٥):يضاف ١% من المجموع الكلى الذى حصل عليه الطالب إذا أدى ذلك إلى رفع التقدير العام للطالب بالفرقة وذلك فى حدود المتبقى من درجات التيسيير.

مادة (٦):يحسب للطالب الذى ينجح فى مادة التخلف أعلى درجة من تقديرمقبول ما لم يكن قد حصل على أقل من ذلك.

مادة (٧):يطبق المجموع التراكمى على الطلاب الذين كانوا مقيدين بالفرقة الأولى فى العام ٩٥ / ١٩٩٦ بالمعاهد العالية وعام ٩٧ / ٩٨ بالنسبة للمعاهد المتوسطة.

مادة (٨):تطبق قواعد التيسيير فى نهاية العام الدراسى وتعلن نتيجة الفصل الدراسى الأول فى المعاهد التى تطبق نظام الفصلين بالتقدير بدون تطبيق قواعد التيسيير.

مادة (٩):لاتطبق قواعد التيسيير السابقة على المواد العملية و التى لا يدخل فى امتحانه اجزء تحريرى مثل المشروع أو التدريب الميدانى وكذا المواد التى لاتدخل درجاتها ضمن المجموع الكلى للمواد .

مادة (١٠):يعتبر دور نوفمبر بالنسبة للسنوات النهائية دورا مستقلا ويطبق عليه القواعد السابقة وإذا كان الطالب ناجحاً في أعمال السنة تؤخذ الدرجات الحاصل عليها الطالب دون تعديل. أما إذا كان

الطالب راسباً في أعمال السنة فيؤخذ بدرجة التحريري إذا كان الطالب ناجحاً في التحريري معتنسيب الدرجة لتشمل أعمال السنة.

مادة (١١):على جميع الجهات المختصة تنفيذ هذا القرار

ثانيا: التعليمات التفصيلية لمنح درجات التيسير

لجان رصد الدرجات تلتزم برصد الدرجات المسلمة اليها بكشوف الرصد من واقع

- درجة التحريرى المسجلة على ورقة الامتحان
- درجة أعمال السنة والامتحان العملى أو الشفهى المسجلة بالكشوف المقدمة من أستاذ المادة وموقع على جميع صفحاتها منه معا لتأكد من التوقيع قرين أى كشط أو تعديل فى الدرجة
- قرارات التأديب ولجان الممتحنين وأى قرارا تأخرى لمجلس تعليم الأكاديمية إن وجدت.

أولا:تطبق القواعد التالية على الطلبة الجدد والباقون للإعادة ودور نوفمبر:

١- الحد الأقصى لدرجات التيسير:

٣٠ درجة	السنة الأولى
٣٠ درجة	السنة الثانية
٢٨ درجة	السنة الثالثة عدا العمارة
٣٠ درجة	السنة الثالثة عمارة
٢٩ درجة	السنة الرابعة عدا العمارة والتصنيع
٣٠ درجة	السنة الرابعة عمارة و تصنيع
٢٦ درجة	السنة الخامسة عدا العمارة
٢٤ درجة	السنة الخامسة عمارة
٢٦ درجة	دور نوفمبر عدا العمارة
٢٤ درجة	دور نوفمبر العمارة

٢- الحد الأقصى لدرجة التيسير التى تمنح للمادة:

الدرجة القصوى للمادة	٥٠	٧٥	١٠٠	١٥٠	٢٠٠	٢٥٠
الحد الأدنى للدرجة للسماح بالتيسير	٢٢,٥	٣٣,٧٥	٤٥	٦٧,٥	٩٠	١١٢,٥
الحد الأقصى لدرجة لتيسير التى تمنح	٣	٤	٥	٨	١٠	١٣

أولوية المواد الخاضعة للتيسير:

أولوية أولى: مواد التخلف التى تحتاج لدرجات أقل للنجاح فالأعلى

أولوية ثانية: المواد الأساسية الأقرب للنجاح (التى تحتاج لأقل درجات للنجاح فالأعلى)

أولوية ثالثة: المواد الانسانية التى تحتاج لدرجات أقل للنجاح فالأعلى

١- الحد الأقصى لدرجات التيسير لرفع التقدير الكلى للسنة وذلك فى حدود المتبقى من درجات التيسير ولا يسرى هذا التيسير على المجموع التراكمى:

١٥ درجة	السنة الأولى
١٥ درجة	السنة الثانية
١٤ درجة	السنة الثالثة عدا العمارة
١٥ درجة	السنة الثالثة عمارة
١٥ درجة	السنة الرابعة عدا التصنيع
١٤ درجة	السنة الرابعة تصنيع
١٣ درجة	السنة الخامسة عدا العمارة
١٢ درجة	السنة الخامسة عمارة
١٣ درجة	دور نوفمبر عدا العمارة
١٢ درجة	دور نوفمبر عمارة

ثانيا: تطبق القواعد التاليةعلى الطالب المتقدم من الخارج والمعرض للقيد من الخارج أو الفصل لاستنفاذ مرات الرسوب:

١- الحد الأقصى لدرجات التيسير:

٤٥ درجة	السنة الأولى
٤٥ درجة	السنة الثانية
٤٢ درجة	السنة الثالثة عدا العمارة
٤٥ درجة	السنة الثالثة عمارة
٤٤ درجة	السنة الرابعة عدا العمارة و التصنيع
٤٥ درجة	السنة الرابعة عمارة
٤٢ درجة	السنة الرابعة تصنيع
٣٩ درجة	السنة الخامسة عدا العمارة
٣٦ درجة	السنة الخامسة عمارة
٣٩ درجة	دور نوفمبر عدا العمارة
٣٦ درجة	دور نوفمبر العمارة

٢- الحد الأقصى لدرجة التيسير التى تمنح للمادة:

الدرجة القصوى	٥٠	٧٥	١٠٠	١٥٠	٢٠٠	٢٥٠
الحد الأدنى للدرجة للسماح بالتيسير	٢٠	٣٠	٤٠	٦٠	٨٠	١٠٠
الحد الأقصى لدرجة التيسير التى تمنح	٥	٨	١٠	١٥	٢٠	٢٥

ثالثا: أقصى درجة تسجل لمواد التخلف:

الدرجة القصوى لمادة التخلف	٥٠	٧٥	١٠٠	١٥٠	٢٠٠	٢٥٠
الحد الأقصى لدرجة النجاح التى تسجل (وتسجل الدرجة الفعلية إذا كانت أقل)	٣٢	٤٨	٦٤	٩٦	١٢٨	١٦٠

رابعا: حالة الغياب بعذر

الطالب المحمل بمادة تخلف (غياب بعذر) بقرارمجلس الأكاديمية وموافقة الوزارة يمنح درجته كاملة مالم يكن قد سبق له الرسوب فى هذه المادة.

خامسا: التقدم للامتحان من الخارج

حالات التقدم من الخارج ينظمها القرار الوزارى رقم ٤٧٩ بتاريخ ١٩٩٤/٤/١٧ بشأن تعديل بعض أحكام لائحة المعاهد العليا التابعة و الخاضعة لوزارة التعليم العالى.

			موقف الطالب				السنة الدراسية بالأكاديمية
		متقدم من الخارج للمرة ثالثة	متقدم من الخارج للمرة الثانية	متقدم من الخارج للمرة الأولى	باق للإعادة	مستجد	
		يفصل نهائى لاستنفاذ مرات الرسوب					**الأولى**
	يفصل نهائى			من الخارج			**الثانية**
							الثالثة
يفصل نهائى					دراسة منتظمة	دراسة منتظمة	**الرابعة**
يفصل نهائى إذا رسب فى اكثر من نصف المواد وفى حالة النجاح فى نصف المقررات يرخص له بالامتحان حتى يتم نجاحه		من الخارج					**الخامسة**

سادسا: تقديرات المواد والسنوات والتخرج

١- يحتسب تقدير المادة على أساس النسبة المئوية التى حصل عليها الطالب فى المادة و طبقا للجدول أدناه.

٢- يحتسب تقدير النجاح فى العام الدراسى للطالب فى حالة النجاح بدون مواد تخلف من العام الحالى أو سنوات سابقة. يحتسب التقدير على أساس النسبة المئوية لمجموع الدرجات التى حصل عليها الطالب فى مواد نفس العام . ولا يدخل فى حساب التقدير أى مواد تخلف وطبقا للجدول أدناه.

٣- فى حالة النجاح فى مواد التخلف فإنها تدخل فى حساب تقدير عامها الأصلى.

٤- يحتسب تقدير التخرج على أساس النسبة المئوية للمجموع التراكمى للخمس سنوات و طبقاللجدول أدناه.

الدرجة	أقل من ٣٠%	من ٣٠% إلى أقل من ٥٠%	من ٥٠% إلى أقل من ٦٥%	من ٦٥% إلى أقل من ٧٥%	من ٧٥% إلى أقل من ٨٥%	٨٥% فأكثر
التقدير	ض ج ضعيف جدا	ض ضعيف	ل مقبول	ج جيد	ج ج جيد جدا	م امتياز

سابعا: مرتبة الشرف

يحصل الطالب على مرتبة الشرف عند التخرج إذا حقق الشروط الآتية:

١- أن يحصل على تقدير امتياز أوجيد جدا فى المجموع التراكمى للخمس سنوات

٢- ألايقل تقديره فى أى عام من أعوام الدراسة عن جيد جدا عدا السنة الأولى