



Faculty of Computers and Information
Information Technology Department
Menoufia University

BACHELOR OF COMPUTERS AND INFORMATION
(Information Technology)

Program and Courses Specification

2024 – 2025



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BACHELOR OF COMPUTERS AND INFORMATION
(Information Technology)

Teaching Institution:	Faculty of Computers and Information Menoufia University, Menoufia, Egypt
Awarding Institution:	Menoufia University
Degree Award:	Bachelor of Computers and Information (Information Technology)
Length and Mode:	4 years / Full semester time
Program Coordinator:	Prof. Noura Semary
Assistant Coordinator:	Eng. Nasser Abdellatif

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PROGRAM SPECIFICATIONS



Program Specification

A- Basic Information

1- Program title:	Information Technology
2- Program type:	Single
3- Department (s):	Information Technology
4- Coordinator:	Prof. Noura Semary
5- External evaluator(s):	Not assigned yet
6- Program specifications approval:	/ / 2025

B- Professional Information

1- Program aims

1. To provide students with the best education that prepares them to engineer, design, develop, support, and maintain technical software applications and integrated computer-based systems.
2. To give students a clear understanding of computer programming paradigms and languages, a solid foundation in the principles of developing robust, maintainable, efficient software, and the skills to effectively apply that understanding in the various roles of medium to large software projects.
3. To infuse in them a solid understanding of the principles of information technology and the related skills that enable them to be productive in developing software and networked computer systems of superior quality and robustness.
4. To give students a good understanding of the principles of data processing systems and the skills to help design, implement, manage, and maintain such systems. Especially to help them integrate multimedia elements.
5. To give students a mechanism for integrating knowledge and experience in other domains with skills in applying the computer in that domain.
6. To provide a broad foundation that will allow them to continue to learn and progress in their careers and education through research activities.
6. To give the student an understanding of the electronic properties of semiconductors and other materials used in optoelectronic devices, the analysis and design of active electronic

circuits the importance of power electronic devices in electrical systems by studying their characteristics, operation and application the single and simple multistage linear circuits using bipolar transistors.

7. To give the student an Understanding of the means of multimedia and how to use it, the multimedia components formats and processing operation, the problems of multimedia sources transmission, and the need to compression, the different types of compression.
8. To provide the student with an Understanding of the principles of image formation and capture, the principles of colors and color models transformations, the principles image filtering using Fast Fourier Transform, Differentiate between different types of noises in images, apply the algorithms used in basic image processing, the concept of edge detection, image segmentation, the basic geometric operations, perform computer programs to digital images, write Software for image processing, edge detection and image object recognition.
9. To give the student the ability to define the basic concept of traffic analysis, the principles of queuing, Differentiates between M/G/1 and G/M/1, the Fluid analysis, Effective bandwidth theory.
10. To give the student the skills to work with the digital network services and understands the network principles, the difference between circuit switching and packet switching, Explain the principles of coding and coding techniques, the structure of network and network Hierarchy, the principles of transmission techniques, the basics of trunk access networks, the principles of network intelligence and network management, the principles of signaling on digital networks, the principles of Dial up technology and Voice over IP
11. To give the student the skills to apply the principles of methods used to analyze and interpret data, the methods of parameter estimation and testing hypothesis about these parameters, the principles of testing the goodness of fit, the principles of calculating and testing multiple regression, the principles of random variables and how to calculate their parameters
12. To give the student an Understanding of the main concepts of data mining and knowledge discovery, the principles, algorithms, implementations, and some applications of data mining, how to apply data mining principles to real-world problems and datasets in web mining, web-based recommendation systems, etc.
13. To give the student an Understanding of the key concepts in information storage and retrieval systems, computing applications to store and retrieve information in an effective and efficient manner, understanding of issues related to user interaction with information retrieval systems, various models of information storage and retrieval, emerging trends in information storage and retrieval
14. To give the student an Understanding of the principles of Mobile Communication Systems , the different Multiple Access Technologies for Mobile communication systems, the Satellite systems, Mobile network and transport layers, the design and operation of Telecommunication systems GSM, DECT, TETRA, GPS, UTMS
15. To give the student an Understanding and skills of the fundamentals of pattern recognition, the neural network algorithms and applications, the classification and discriminate functions
16. To give the student an Understanding and the skills of the principles and operations of digital signal processing, and some interesting and useful practical applications of DSP, use various DSP algorithms
17. To offer the student the principles and operations of speech recognition, the components of speech recognition system, the Linear Predictive Coding Model for Speech Recognition

18. Understand the field of computer graphics main concepts and algorithms, computer graphics programs using OpenGL, solve problems related to image synthesis, modeling, and animation, the powerful advantage of modelers in image synthesis
19. To learn fundamental concepts of Artificial Intelligence, the Artificial Intelligence searching Techniques, experience with programming techniques for Artificial Intelligence, background for applied applications of Artificial Intelligence.
20. Learn fundamentals of cryptography, Understand network security threats and countermeasures, Gain hands-on experience with programming techniques for security protocols, Obtain background for original research in network security
21. Know and understand the basic definitions of digital network evaluation, Familiarity digital network services, Be aware of different coding techniques, understand the different transmission techniques, Know the structure of digital network, Describe the principles of signaling, Describe the basics of dial up technology and Voice over IP

An IT graduate must therefore acquire a skill set that enables him or her to successfully perform integrative tasks, including the ability to:

- (a) Use and apply current technical concepts and practices in the core information technologies;
- (b) Analyze, identify and define the requirements that must be satisfied to address problems or opportunities faced by organizations or individuals;
- (c) Design effective and usable IT-based solutions and integrate them into the user environment;
- (d) Assist in the creation of an effective project plan;
- (e) Identify and evaluate current and emerging technologies and assess their applicability to address the users' needs;
- (f) Analyze the impact of technology on individuals, organizations and society, including ethical, legal and policy issues;
- (g) Demonstrate an understanding of best practices and standards and their application;
- (h) Demonstrate independent critical thinking and problem solving skills;
- (i) Collaborate in teams to accomplish a common goal by integrating personal initiative and group cooperation;
- (j) Communicate effectively and efficiently with clients, users and peers both verbally and in writing, using appropriate terminology;
- (k) Recognize the need for continued learning throughout their career.

2- Intended learning outcomes (ILOs)

a- Knowledge and understanding:

a1-	Students will demonstrate knowledge and understanding of the essential core content of the discipline of Information technology, and demonstrate the ability to apply content-knowledge in the specification, analysis, design, implementation and testing of a software solution.
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a2-	Students will demonstrate the ability to effectively communicate Information technology concepts both orally and in writing or as members of a project team, Students will demonstrate an acceptance of the ethical standards
a3-	The student will understand and differentiate methods of data analysis, parameters estimation, and testing.
a4-	Students will exhibit and demonstrate abilities in the fields of computer networks, Multimedia, and computer processing.
a5-	Students will demonstrate the operation and maintenance of components of a standard PC and PC peripherals.
a6-	The student will know and understand the basic definitions and components of computer networks, network evaluation, and security.
a7-	The student will be able to explain the fundamentals of digital networks and telecommunications systems.
a8-	Understanding the principles of multimedia, signal and image processing and applications.
a9-	The student will understand the application of the basic computer graphics and animation techniques.
a10-	The student will be able to distinguish between data and information, data analysis and retrieval and the principles of knowledge discovery and mining, The student will demonstrate a clear understanding of Artificial Intelligence

b- Intellectual skills

b1-	Analyze the methods of parameters estimation, the method of hypothesis testing, the methods used for data analysis to any statistical data, Solve the problem of analyzing and interpreting random variables.
b2-	Analyze different information technology problems and be able to implement algorithms to solve the problems.
b3-	Be able to implement computer networks solutions, analyze the network traffic, explain different protocols used in the network, capable of describing the network services, and analysis of computer security problems
b4-	Students will demonstrate the operation and maintenance of components of a standard PC and PC peripherals.
b5-	Develop the components of signal and image processing, multimedia system, multimedia applications, computer animation and graphics.
b6-	Will demonstrate creative thinking in preprocessing the data, analysis, generalize and summarize the data, analyze and contrast different mining association rules, able to mine complex types of data, data and information retrieval.
b7-	Demonstrates clear understanding of digital networks and wireless communications systems and their future evolution.
b8-	Understanding Artificial Intelligence concepts and applications
b9-	Students will exhibit the ability to learn and understand new technologies as they are developed.

c- Professional and practical skills

c1-	Students will demonstrate the ability to effectively manage Information technology problems and solutions and apply content-knowledge in the specification, analysis, design, implementation and testing of a software solution.
c2-	Promote new uses of information technology within the institution through the support for exploratory and innovative applications.
c3-	Analyze and interpret statistical data, Apply methods of parameter estimation and

	implement method o hypothesis testing, design and implement practical programs to estimate statistical parameters and apply different analysis techniques.
c4-	Provide effective technology support for audio/visual, computer, multimedia, voice, video, graphics, animation and web based applications and services to all areas.
c5-	Develop, enhance, and manage computer networks to provide high speed, transparent, and highly functional connectivity among all information resources, implement programs to evaluate network traffic and security.
c6-	Facilitate the collection, storage, security and integrity of electronic; apply a data mining methodology to real data, ability to retrieve and presenting information, programming Intelligence Searching techniques.
c7-	Grasp key technical issues of current digital and wireless communications systems, Specify and design key parts of a communication system operating within an existing standard
c8-	Programming Intelligence Searching techniques, Design and building Intelligent Agent applications, Analysis Neural, fuzzy and Genetic systems as a new intelligent paradigms.

d- General and transferable skills

d1-	Explain the IT problems and their solutions, and effective skills in management of IT projects. Demonstrate a range of basic skills required to work effectively in communications and IT industry, understand the need for continuing professional development and lifelong learning in order to cope with rapidly changing communications technology
d2-	Provide effective technology explanations for audio/visual, computer, multimedia, voice, video, and web based applications and services to all areas of the college,
d3-	Explain the use of mathematical modeling to predict the behavior of a physical system, develop an analytical approach to understanding complex systems
d4-	Describe how computer vision is implemented, Explain the characteristics of signal and image processing algorithms, computer animation, the ability to apply algorithms and approaches of pattern recognition for real application
d5-	Explain the qualities of the software and software documentation
d6-	Describe the computer network structures, protocols and services, traffic analysis,
d7-	Describe the explain the digital network structure and services,
d8-	Describe and explain how parameters of statistical data are calculated and tested, the methods of statistical data analysis, solving problems associated with statistical data.
d9-	Group working to apply data mining techniques to simple and complex problems, Use of technological tool to preprocess and prepare data for knowledge discovery, Use of technological tool to clean, integrate, transform, and reduce data, Use of technological tool to design graphical user interfaces based on a data mining query language
d10-	Demonstrate and explain concepts of Artificial Intelligence, analysis of searching techniques, basic knowledge of genetic algorithms and neural networks basic idea.

3- Academic standards

3a. External references for standards (Benchmarks)

We referred to ACM and IEEE Computing curricula recommendations.

3b. Comparison of provision to external references

Owing to lack of national academic reference standards, we referred to ACM and IEEE Computing curricula recommendations. These standards include several knowledge and understanding, intellectual, professional, practical skills and general and transferable skills besides different methods of teaching and learning of student assessment. This section provides a comparative view of the performance capabilities expected of the graduates of each degree program. Tables H.1, H.2 in annex (A) list nearly 60 performance capabilities across 11 categories. For each capability, each discipline is assigned a value from 0 to 5. The value 0 represents no expectation whatsoever, while 5 represents the highest relative expectation. As with the values of Tables H.1 and H.2 in annex (A), these values are fuzzy numbers. Table H.3 in annex (A) shows that Information Technology professionals should be able to work effectively at planning, implementation, configuration, and maintenance of an organization's computing infrastructure; as we have seen, information technology has its own character.

Any reputable computing degree program should include each of the following elements.

- 1) Essential and foundational underpinnings of its discipline. These may be abstract, for example, formal theory rooted in mathematics, or they may address professional values and principles. Regardless of their form or focus, the underpinnings must highlight those essential aspects of the discipline that remain unaltered in the face of technological change. The discipline's foundation provides a touchstone that transcends time and circumstance, giving a sense of permanence and stability to its educational mission. Students must have a thorough grounding in that foundation.

- 2) A foundation in the concepts and skills of computer programming. The foundation has five layers:

- a) An intellectual understanding of, and an appreciation for, the central role of algorithms and data structures.
- b) an understanding of computer hardware from a software perspective, for example, use of the processor, memory, disk drives, display, etc.
- c) Fundamental programming skills to permit the implementation of algorithms and data structures in software.
- d) Skills that are required to design and implement larger structural units that utilize algorithms and data structures and the interfaces through which these units communicate.
- e) Software engineering principles and technologies to ensure that software implementations are robust, reliable, and appropriate for their intended audience.

3) Understanding of the possibilities and limitations of what computer technology (software, hardware, and networking) can and cannot do. There are three levels:

- a) An understanding of what current technologies can and cannot accomplish.
- b) An understanding of computing limitations, including the difference between what computing is inherently incapable of doing vs. what may be accomplished via future science and technology.
- c) The impact on individuals, organizations, and society of deploying technological solutions and interventions.

4) Understanding of the concept of the lifecycle, including the significance of its phases (planning, development, deployment, and evolution), the implications for the development of all aspects of computer-related systems (including software, hardware, and human computer interface), and the relationship between quality and lifecycle management.

5) Understanding of the essential concept of process, in at least two meanings of the term:

- a) Process as it relates to computing especially program execution and system operation;
- b) Process as it relates to professional activity especially the relationship between product quality and the deployment of appropriate human processes during product development.

6) Study of advanced computing topics that permit students to visit and understand the frontiers of the discipline. This is typically accomplished through inclusion of learning experiences that lead students from elementary topics to advanced topics or themes that pervade cutting-edge developments.

7) The identification and acquisition of skill sets that go beyond technical skills. Such skill sets include interpersonal communication skills, team skills, and management skills as appropriate to the discipline. To have value, learning experiences must build such skills (not just convey that they are important) and teach skills that are transferable to new situations.

8) Exposure to an appropriate range of applications and case studies that connect theory and skills learned in academia to real-world occurrences to explicate their relevance and utility.

9) Attention to professional, legal, and ethical issues so that students acquire, develop, and demonstrate attitudes and priorities that honor, protect, and enhance the profession's ethical stature and standing.

10) Demonstration that each student has integrated the various elements of the undergraduate experience by undertaking, completing, and presenting a capstone project.

For general standards and their relationship to the reference standards. The Faculty council in accordance with QAAP management team decided to take ACM and IEEE as a reference academic standards since no national academic standards were developed yet. The general standards are attached as annex (A-2) of this report. The programme standards extracted from these reference standards with a slight modification in the non computing topics. A selection based on necessity and importance of courses to community needs was implement on computing topics to convey the available time schedule of maximum 14 weeks per semester in five topics

4- Curriculum Structure and Contents

4.a- Program duration Four Years

4.b- Program structure

- i. No. of hours per week: Lectures Lab./Exercise total
- ii. No. of hours: Compulsory Elective Optional
- iii. No. of hours of basic sciences courses: No. %
- iv. No. of hours of courses of social sciences and humanities: No. %
- v. No. of hours of specialized courses: No. %
- vi. No. of hours of other courses: No. %
- vii. Practical/Field Training: Programming & application skills
- viii. Program Levels (in credit-hours system):

5- Program Courses

5.1- 1st year Semester 1

a- Compulsory

Code No.	Course Title	No. of hours /week			Program ILOs Covered (By No.)
		Lecture	Practical	Credit Hours	
GN170	Scientific & Technical Report Writing	3	-	3	General
MA111	Mathematics-1	2	2	3	a2,a3,a5,b1,b3,d1,d5
OD111	Discrete Mathematics	2	2	3	a2,a6,b2,c2,c4
CS110	Semiconductors	2	2	3	a1-a10,b1-b9,c8,d1,d10
CS101	Computer Introduction	2	2	3	a2, c8, d7, d8
GN160	Fundamentals of quality	1	-	-	General
Total No. of hours /week		12	8	15	

b- Elective – number required (1)

Code No.	Course Title	No. of hours /week			Program ILOs Covered (By No.)
		Lecture	Practical	Credit Hours	
GN180	General Elective - Professional Ethics	3	-	3	General
Total No. of hours /week		3	-	3	

c- Optional – number required

Code No.	Course Title	No. of hours /week			Program ILOs Covered (By No.)
		Lecture	Practical	Credit Hours	
None					

5.2- 1st year Semester 2

a- Compulsory

Code No.	Course Title	No. of hours /week			Program ILOs Covered (By No.)
		Lecture	Practical	Credit Hours	
IT181	Logic Design-1	2	2	3	b1,b2,c6,c8,d4,d8
MA112	Mathematics-2	2	2	3	a2, a3, a5,a6,b1,b3, c1
GN112	Fundamentals of Management	3	-	3	General
PH111	Fundamentals of Programming	2	2	3	a2,a4,b2,b7,c5,d1,d2,d3, d6,d7
IS111	Introduction to IS	2	2	3	a1, a2, a6, b1, b3, b4, c1, c3, c4, d2
ST190	Statistics & Probabilities	2	2	3	a2, a3, a4, a6,b1,c4, c5, d1 ,d5
HM110	Human Rights	1	-	-	General
Total No. of hours /week		14	10	18	

b- Elective – number required

Code No.	Course Title	No. of hours /week			Program ILOs Covered (By No.)
		Lecture	Practical	Credit Hours	
None					

c- Optional – number required

Code No.	Course Title	No. of hours /week			Program ILOs Covered (By No.)
		Lecture	Practical	Credit Hours	
None					

5.3- 2nd year Semester 1

a- Compulsory

Code No.	Course Title	No. of hours /week			Program ILOs Covered (By No.)
		Lecture	Practical	Credit Hours	
IS251	Web Design and Development	2	2	3	a4,b1,b4,b5,d1,d2,d3,d9
CS231	Computer Programming - 1	2	2	3	a2,a4,b1,b2,b7,c5,d1,d2,d3,d6,d7,d10
CS211	Computer Architecture	2	2	3	a3,a5,b2,b4,c8,d2
CS212	Data Structure	2	2	3	a2,b1,b2,b6,c5,d1,d2,d3,d10
IT261	Multimedia-1	2	2	3	a1,a2,a4,a8,b2,b5,b9,c1,c2,c4,d1,d2,d9
OD213	Introduction to Operation Research & Decision Support	2	2	3	a1,a2,a5,b1,b2,c4,c5, d4
Total No. of hours /week		12	12	18	

b- Elective – number required

Code No.	Course Title	No. of hours /week			Program ILOs Covered (By No.)
		Lecture	Practical	Credit Hours	
None					

c- Optional – number required

Code No.	Course Title	No. of hours /week			Program ILOs Covered (By No.)
		Lecture	Practical	Credit Hours	
None					

5.4- 2nd year Semester 2

a. Compulsory

Code No.	Course Title	No. of hours /week			Program ILOs Covered (By No.)
		Lecture	Practical	Credit Hours	
CS261	Operating Systems-1	2	2	3	a4,b1,b2,b7,c5,c8,d1,d2
CS233	Computer Programming-2	2	2	3	a2,a4,b1,b2,b4,b7,c5,d1,d2,d3,d6,d7,d9
OD342	Modeling & Simulation	2	2	3	a1,a2,a7,a10,a6,b1,b2,b6,c1,c3,c6,c8,d5,d8,d9
IT211	Computer Networks-1	2	2	3	a1,a4,a5,a6,a7,b2,b3,b4,b7,b9,c1,c2,c5,c6,c7,d1,d6,d7
IS212	System Analysis-1	2	2	3	a2,a3,b2,b3,b4,c1,c2,c3,c7,d1,d2,d7,d8
Total No. of hours /week		10	10	15	

b- Elective – number required (1)

Code No.	Course Title	No. of hours /week			Program ILOs Covered (By No.)
		Lecture	Practical	Credit Hours	
MA213	College Elective 1 - Mathematics-3	2	2	3	a2, a3, a5,a6,b1,b3, c1
Total No. of hours /week		2	2	3	

c- Optional – number required

Code No.	Course Title	No. of hours /week			Program ILOs Covered (By No.)
		Lecture	Practical	Credit Hours	
None					

5.5- 3rd year Semester 1

a. Compulsory

Code No.	Course Title	No. of hours /week			Program ILOs Covered (By No.)
		Lecture	Practical	Credit Hours	
CS251	Software Engineering-1	2	2	3	a4,b1,b4,b5,d1,d2,d3,d9
IS221	Database Systems-1	2	2	3	a1,a2,a3,b1,b2,b3,b4,c1,c2,c3,d1,d2,d3,d9
IT371	Digital Signal Processing	2	2	3	a1,a2,a3,a4,a8,a10,b1,b2,b5,b6,c1,c3,c4,c7,c8,d1,d2,d3,d4,d8,d9
IT312	Computer Networks-2	2	2	3	a1,a4,a5,a6,a7,b2,b3,b4,b7,b9,c1,c2,c5,c6,c7,d1,d6,d7
CS321	Artificial Intelligence	2	2	3	a3,a4,a10,b1,b6,b8,b9,c8,d10
Total No. of hours /week		10	10	15	

b- Elective- number required (1)

Code No.	Course Title	No. of hours /week			Program ILOs Covered (By No.)
		Lecture	Practical	Credit Hours	
IS435	College Elective 2 - Cloud Computing	2	2	3	a1,a6,b3,b6,c6,d1
Total No. of hours /week		2	2	3	

c- Optional number required

Code No.	Course Title	No. of hours /week			Program ILOs Covered (By No.)
		Lecture	Practical	Credit Hours	
None					

5.6- 3rd year Semester 2

a. Compulsory

Code No.	Course Title	No. of hours /week			Program ILOs Covered (By No.)
		Lecture	Practical	Credit Hours	
IT321	Image Processing	2	2	3	a1,a2,a8,b1,b2,b6,b9,c1,c3,c4,c7,c8,d1,d2,d3,d4,d8,d9,d10
IT341	Computer Graphics-1	2	2	3	a1-a9,b1-b6,c1-c5,d1-d5
IT472	Speech Recognition-1	2	2	3	a1,a2,a4,a8,b2,b3,b5,b7,c1,c3,c4,c7,c8,d1,d2,d3,d4,d8,d9
IT313	Computer Networks-3	2	2	3	a1,a4,a5,a6,a7,b2,b3,b4,b7,b9,c1,c2,c5,c6,c7,d1,d6,d7
IT417	Network Programming	2	2	3	a1,a4,a6,a7,a8,b2,b3,b6,b7,c1,c2,c5,c6,c7,d1,d2,d3,d6,d7,d8,d9
Total No. of hours /week		10	10	15	

b- Elective- number required (1)

Code No.	Course Title	No. of hours /week			Program ILOs Covered (By No.)
		Lecture	Practical	Credit Hours	
CS313	College Elective 2 - Analysis and Design of Algorithms	2	2	3	a2,a3,b2,b3,b4,c1,c2,c3,c7,d1,d2,d7,d8
Total No. of hours /week		2	2	3	

c- Optional number required

Code No.	Course Title	No. of hours /week			Program ILOs Covered (By No.)
		Lecture	Practical	Credit Hours	
None					

5.7- 4th year Semester 1

a. Compulsory

Code No.	Course Title	No. of hours /week			Program ILOs Covered (By No.)
		Lecture	Practical	Credit Hours	
IT444	Virtual Reality	2	2	3	a1-a4,b1-b3,c1-c3,d1-d3
IT431	Pattern Recognition	2	2	3	a1,a2,a4,a8,b2,b3,b5,b7,c1,c3,c4,c7,c8,d1,d2,d3,d4,d8,d9
IT418	Network Security	2	2	3	a1,a2,a4,a6,a7,a10,b2,b3,b4,b5,b7,c1,c2,c5,c6,c8,d1,d2,d3,d5,d7,d8,d9
IT486	Project	1.5	3	3	a1-a3,b1-b4,c1-c3,d1-d4
Total No. of hours /week		7.5	9	12	

b- Elective- number required (2)

Code No.	Course Title	No. of hours /week			Program ILOs Covered (By No.)
		Lecture	Practical	Credit Hours	
IT362	Elective 2 - Multimedia-2	2	2	3	a1,a2,a4,a8,b2,b5,b9,c1,c2,c4,d1,d2,d9
IT487	Elective 2 - Information Technology Applications	2	2	3	a1,a2,a3,b1,b2,b3,b4,c1,c2,c3,d1,d2,d3
Total No. of hours /week		4	4	6	

c- Optional- number required

Code No.	Course Title	No. of hours /week			Program ILOs Covered (By No.)
		Lecture	Practical	Credit Hours	
None					

5.8- 4th year Semester 2

a. Compulsory

Code No.	Course Title	No. of hours /week			Program ILOs Covered (By No.)
		Lecture	Practical	Credit Hours	
IT416	Wireless and Mobile Networks	2	2	3	a1,a4,a6,a7,a8,b2,b3,b6 ,b7,c1,c2,c5,c6,c7,d1,d2 ,d3,d6,d7,d8,d9
IT422	Computer Vision	2	2	3	a1-a9,b1-b6,c1-c5,d1-d5
IT435	Advanced Web Development	2	2	3	a4,b1,b4,b5,d1,d2,d3,d9
IT486	Project	1.5	3	3	a1-a3,b1-b4,c1-c3,d1-d4
Total No. of hours /week		7.5	9	12	

b- Elective- number required (2)

Code No.	Course Title	No. of hours /week			Program ILOs Covered (By No.)
		Lecture	Practical	Credit Hours	
IT485	Elective 2 - Selected Topics in IT - 1	2	2	3	a1,a2,a3,b1,b2 ,b3,b4,c1,c2,c3,d1,d2,d3
IT315	Elective 2 - Network Management and Analysis	2	2	3	a1-a6,b1,b2,c1,c2, d1,d2
Total No. of hours /week		4	4	6	

c- Optional number required

Code No.	Course Title	No. of hours /week			Program ILOs Covered (By No.)
		Lecture	Practical	Credit Hours	
None					

6- Program admission requirements

The program accepts students with a General Secondary School Certificate in either Mathematics major, with a minimum score of 83.41% or Science major, with a minimum score of 88.53%. Equivalent certificates from recognized foreign institutes are also accepted. International students are admitted according to the regulations set by the Supreme Council of Universities, which include equivalency and language proficiency requirements.

The program completed in 192 hours (equivalent to 144 credit hours) in eight semesters: 84 basic science hours, 88 specialized hours, 11 sciences and humanities hours, and 9 other hours. The program does not currently offer optional courses as part of its curriculum.

7- Regulations for progression and program completion

A- Progression Between Levels:

To progress from one level to the next, students must successfully complete the required credit hours:

Level 2: Completion of 30 credit hours.

Level 3: Completion of 66 credit hours.

Level 4: Completion of 102 credit hours.

Students are allowed to register for advanced courses if they meet the prerequisites for those courses. Advisors will assist students in selecting the appropriate courses to ensure timely progress toward graduation. Advisors will conduct regular reviews of student performance and provide guidance to ensure alignment with program requirements and graduation timelines.

B- Resitting Failed Courses:

Students who fail a course can retake it in the next semester or when the course is offered again. The highest grade achieved in the resit will be recorded on the student's transcript, replacing the previous grade. Students are encouraged to seek academic support, such as tutoring or workshops, to improve performance in retaken courses.

C- Academic Probation:

If a student's cumulative GPA falls below the minimum acceptable level (e.g., 2.0 out of 4.0), they will be placed on academic probation to raise their GPA to at least 2.0 within two consecutive semesters to avoid dismissal from the program.

D- Graduation Requirements:

To graduate from the Information Technology program, a student must successfully complete the following:

- A total of 144 credit hours, including general, college, and specialization requirements, distributed over four academic levels (eight regular semesters). An optional summer

semester may be introduced, lasting eight weeks (including lectures, practical sessions, and examinations), subject to approval by the Faculty Council.

- A project worth 6 credit hours, undertaken during the fourth academic level, after completing at least 102 credit hours.

- A practical summer training program lasting four weeks after completing at least 50% of the total credit hours. The Faculty Council sets the rules for training, including fields, locations, monitoring, and evaluation.

8- Assessment of program attendees

A- Assessment methods

The program employs a variety of assessment methods to evaluate students learning outcomes and progress, including:

Written Exam: To assess the students' knowledge and understanding of theoretical concepts.

Practical Exam: To evaluate students' practical skills and their ability to apply knowledge in real-world scenarios.

Oral Exam: To test students' communication skills, ability to explain concepts, and to assess intellectual skills.

B- Matrix alignment of measured ILOs

The following matrix shows how each assessment method aligns with the intended learning outcomes (ILOs) of the program:

Assessments methods	Measures ILOs			
	a) knowledge and understanding	b) Intellectual skills	c) Professional and practical skills	d) General and transferable skills
Written exam	✓	✓		
Practical exam		✓	✓	
Oral exam		✓		✓

9- Evaluation of program intended learning outcomes

The program employs various methods to evaluate its effectiveness and the extent to which it meets its goals. The following are the evaluators and evaluation methods:

Evaluators	Methods	Sample Size
1- Senior students	Feedback Form	100-200 students from final year
2- Alumni	Alumni Survey	10-20 alumni
3- Stakeholders (Employers)	Employer Survey	5-10 employers

4-External Evaluator(s) (External Examiner(s))	Review Report	1-2 evaluators
5- Other	None	None

Annex A: Academic Standards

The following Figures Illustrates the Faculty programs Academic Standards compared with the IEEE& ACM 2005 Reference Standards. The programs Bench Marks could be concluded through the margins between both the standards

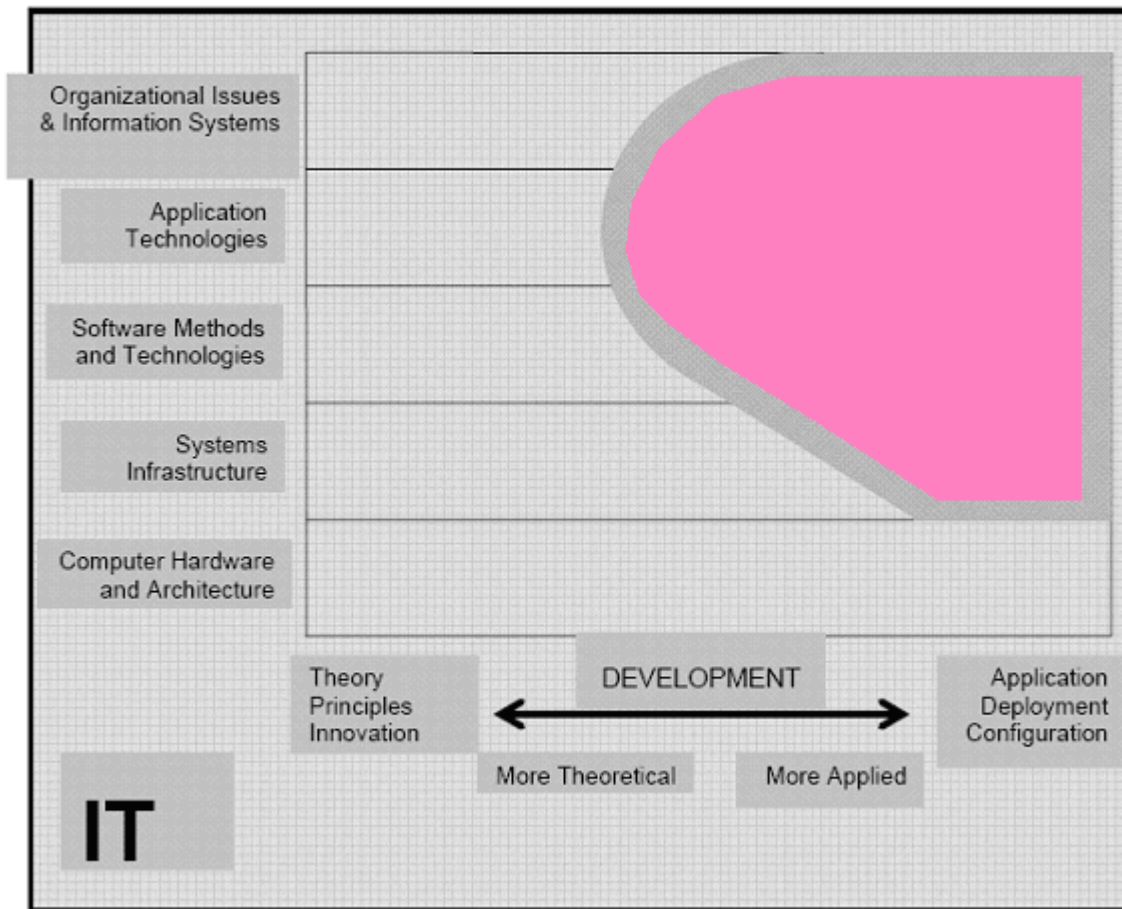


Figure H-1. Information Technology Program



Reference standards



Program Academic standards

Table H.1: Comparative weight of computing topics across the five kinds of degree programs

Knowledge Area	CS		IS		IT		OR	
	<i>min</i>	<i>max</i>	<i>min</i>	<i>max</i>	<i>min</i>	<i>max</i>	<i>min</i>	<i>max</i>
Programming Fundamentals	4	5	2	0	0	4	5	5
Integrative Programming	1	3	2	0	2	5	1	3
Algorithms and Complexity	4	5	1	0	1	2	3	4
Computer Architecture and Organization	2	4	1	0	0	2	2	4
Operating Systems Principles & Design	3	5	1	0	2	2	3	4
Operating Systems Configuration & Use	2	4	2	0	1	5	2	4
Net Centric Principles and Design	2	4	1	0	0	4	2	4
Net Centric Use and configuration	2	3	2	0	2	5	2	3
Platform technologies	0	2	1	0	1	4	0	3
Theory of Programming Languages	3	5	0	0	0	1	2	4
Human-Computer Interaction	2	4	2	0	2	5	3	5
Graphics and Visualization	1	5	1	0	1	1	1	3
Intelligent Systems (AI)	2	5	1	0	0	0	0	0
Information Management (DB) Theory	2	5	1	0	2	1	2	5
Information Management (DB) Practice	1	4	4	0	1	4	1	4
Scientific computing (Numerical methods)	0	5	0	0	0	0	0	0
Legal / Professional / Ethics / Society	2	4	2	0	2	4	2	5
Information Systems Development	0	2	5	0	1	3	2	4
Analysis of Business Requirements	0	1	5	0	0	2	1	3
E-business	0	0	4	0	2	2	0	3
Analysis of Technical Requirements	2	4	2	0	1	5	3	5
Engineering Foundations for SW	1	2	1	0	0	0	2	5
Engineering Economics for SW	0	1	1	0	2	1	2	3
Software Modeling and Analysis	2	3	3	0	1	3	4	5
Software Design	3	5	1	0	0	2	5	5
Software Verification and Validation	1	2	1	0	2	2	4	5
Software Evolution (maintenance)	1	1	1	0	1	2	2	4
Software Process	1	2	1	0	0	1	2	5
Software Quality	1	2	1	0	2	2	2	4

Comp Systems Engineering	1	2	0	0	1	0	2	3
Digital logic	2	3	1	0	0	1	0	3
Embedded Systems	0	3	0	0	2	1	0	4
Distributed Systems	1	3	2	0	1	3	2	4
Security: issues and principles	1	4	2	0	0	3	1	3
Security: implementation and mgt	1	3	1	0	2	5	1	3
Systems administration	1	1	1	0	1	5	1	2
Optimization	0	2	0	0	0	2	4	6
Decision analysis	0	1	0	0	2	1	4	6
Support system	0	0	0	0	1	0	5	8
Simulation and modeling	0	2	0	0	0	2	3	5
Risk analysis	0	1	0	0	2	1	3	7
Multi objective decision making	0	0	0	0	1	0	4	8
Management of Info Systems Org.	0	0	3	0	0	0	0	0
Systems integration	1	2	1	0	2	5	1	4
Digital media development	0	1	1	0	1	5	0	1
Technical support	0	1	1	0	0	5	0	1

Table H.2: Comparative weight of non-computing topics across the five kinds of degree programs

Knowledge Area	CS		IS		IT		OR	
	<i>min</i>	<i>max</i>	<i>min</i>	<i>max</i>	<i>min</i>		<i>max</i>	
Organizational Theory	0	0	1	4	1	2	0	0
Decision Theory	0	0	3	3	0	1	0	0
Organizational Behavior	0	0	3	5	1	2	0	0
Organizational Change Management	0	0	2	2	1	2	0	0
General Systems Theory	0	0	2	2	1	2	0	0
Risk Management (Project, safety risk)	1	1	2	3	1	4	2	4
Project Management	1	2	3	5	2	3	4	5
Business Models	0	0	4	5	0	0	0	0
Functional Business Areas	0	0	4	5	0	0	0	0
Evaluation of Business Performance	0	0	4	5	0	0	0	0
Circuits and Systems	0	2	0	0	0	1	0	0
Electronics	0	0	0	0	0	1	0	0
Digital Signal Processing	0	2	0	0	0	0	0	2
VLSI design	0	1	0	0	0	0	0	1
HW testing and fault tolerance	0	0	0	0	0	2	0	0
Mathematical foundations	4	5	2	4	2	4	3	5
Interpersonal communication	1	4	3	5	3	4	3	4

Table H.3. Relative performance capabilities of computing graduates by discipline

Area	Performance Capability	CS	IS	IT	OR
Algorithms	Prove theoretical results	5	1	0	3
	Develop solutions to programming problems	5	1	1	3
	Develop proof-of-concept programs	5	3	1	3

Application programs	Determine if faster solutions possible	5	1	1	3
	Design a word processor program	4	1	0	4
	Use word processor features well	3	5	5	3
	Train and support word processor users	2	4	5	2
	Design a spreadsheet program (e.g., Excel)	4	1	0	4
	Use spreadsheet features well	2	5	5	3
	Train and support spreadsheet users	2	4	5	2
Computer programming	Do small-scale programming	5	3	3	5
	Do large-scale programming	4	2	2	5
	Do systems programming	4	1	1	4
	Develop new software systems	4	3	1	5
	Create safety-critical systems	3	0	0	5
	Manage safety-critical projects	2	0	0	5
Hardware and devices	Design embedded systems	1	0	0	1
	Implement embedded systems	2	1	1	3
	Design computer peripherals	1	0	0	1
	Design complex sensor systems	1	0	0	1
	Design a chip	1	0	0	1
	Program a chip	1	0	0	1
	Design a computer	1	0	0	1
Human-computer interface	Create a software user interface	4	4	5	4
	Produce graphics or game software	5	0	0	5
	Design a human-friendly device	2	0	1	3
Information systems	Define information system requirements	2	5	3	4
	Design information systems	3	5	3	3
	Implement information systems	3	4	3	5
	Train users to use information systems	1	4	5	1
	Maintain and modify information systems	3	5	4	3
Information management (Database)	Design a database mgt system (e.g., Oracle)	5	1	0	4
	Model and design a database	2	5	5	2
	Implement information retrieval software	5	3	3	4
	Select database products	3	5	5	3
	Configure database products	2	5	5	2
	Manage databases	2	5	5	2
	Train and support database users	2	5	5	2
IT resource planning	Develop corporate information plan	0	5	3	0
	Develop computer resource plan	2	5	5	2
	Schedule/budget resource upgrades	2	5	5	2
	Install/upgrade computers	3	3	5	3
	Install/upgrade computer software	3	3	5	3
Intelligent systems	Design auto-reasoning systems	4	0	0	2
	Implement intelligent systems	4	0	0	4
Networking and communications	Design network configuration	3	3	4	2

	Select network components	2	4	5	2
	Install computer network	1	3	5	2
	Manage computer networks	3	3	5	3
	Implement communication software	4	1	1	4
	Manage communication resources	0	3	5	0
	Implement mobile computing system	3	0	1	3
	Manage mobile computing resources	2	2	4	2
Systems Development Through Integration	Manage an organization's web presence	2	4	5	2
	Configure & integrate e-commerce software	3	4	5	4
	Develop multimedia solutions	3	4	5	3
	Configure & integrate e-learning systems	2	5	5	3
	Develop business solutions	2	5	3	2
	Evaluate new forms of search engine	4	4	4	4

2- General standards

قواعد النظام الكودي لأرقام المقررات

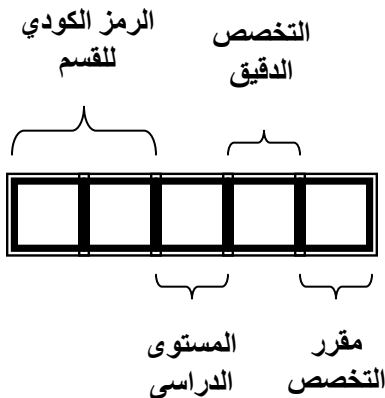
1- يتكون كود أى مقرر من الرمز الكودي للقسم يلى ذلك عدد مكون من ثلاثة أرقام

تفصيلها كالآتي :

(أ) الرقم أقصى اليسار يمثل المستوى الدراسى

(ب) الرقم فى خانة العشرات يمثل التخصص الدقيق للمقرر داخل التخصص العام للقسم

(ج) رقم الأحاد يستخدم لتمييز مقررات التخصص الدقيق والتي تدرس لنفس التخصص العام



2- الرمزي للنظام الأقسام العلمية

الرمز	القسم	مسلسل
CS	علوم الحاسب	1
IT	تكنولوجيا المعلومات	2
IS	نظم المعلومات	3
OD	بحوث العمليات ودعم القرار	4

3- الرمزي للنظام مقررات الرياضيات والإحصاء والعلوم الانسانية

الرمز	المقرر
MA	رياضيات
ST	إحصاء
HM	علوم إنسانية
GN	مقررات عامة

4- اكواد المستويات الدراسية

الكود	المستوى الدراسي
1	الأول
2	الثاني
3	الثالث
4	الرابع

ثالثا : مقررات مرحلة البكالوريوس

المستوي الأول

الفصل الدراسي: الأول							
التخصص : عام		الدرجة		عدد الساعات الدراسية أسبوعيا		اسم المقرر	Course Name
النهائية العظمى	للدرجات	أعمال فصل	عملية وشفهي	تحرير	محاضرة		
٦٠	-	٤٠	٣	-	٣	صياغة التقارير العلمية والفنية	GN170
٦٠	٢٠	٢٠	٣	٢	٢	رياضيات-١	MA111
٦٠	٢٠	٢٠	٣	٢	٢	تراكيب محددة	OD111
٦٠	-	٤٠	٣	-	٣	اختياري - متطلبات عامة	GNxx
٦٠	٢٠	٢٠	٣	٢	٢	أشباه الموصلات	CS110
٦٠	٢٠	٢٠	٣	٢	٢	مقدمة في الحاسبات	CS111
١٥	-	٥	-	-	١	اساسيات الجودة	GN160
		١٨	٨	١٥	إجمالي عدد الساعات الأسبوعية :		

الفصل الدراسي: الثاني							
التخصص : عام		الدرجة		عدد الساعات الدراسية أسبوعيا		اسم المقرر	Course Name
النهائية العظمى	للدرجات	أعمال فصل	عملية وشفهي	تحرير	محاضرة		

		محاضرة	تمارين / عملى	عدد الساعات المعتمدة	أعمال فصل	عملى وشفهى	تحريرى
IT181	تصميم منطقي - ١	٢	٢	٣	٢٠	٢٠	٦٠
MA112	رياضيات-٢	٢	٢	٣	٢٠	٢٠	٦٠
GN112	مبادئ إدارة	٣	-	٣	٤٠	-	٦٠
PH111	مبادئ برمجة	٢	٢	٣	٢٠	٢٠	٦٠
IS111	مقدمة نظم معلومات	٢	٢	٣	٢٠	٢٠	٦٠
ST190	إحصاء واحتمالات	٢	٢	٣	٢٠	٢٠	٦٠
HM110	حقوق إنسان	١	-	-	٥	-	١٥
	إجمالي عدد الساعات الأسبوعية :	١٤	١٠	١٨			

المستوي الثاني

الفصل الدراسي: الأول							
التخصص : عام							
اسم المقرر		Course Name		عدد الساعات الدراسية أسبوعيا		النهاية العظمى للدرجات	
				محاضرة	تمارين / عملى	عدد الساعات المعتمدة	أعمال فصل
IS251	تصميم وتطوير الويب	Web Design and Development		٢	٢	٣	٢٠
CS231	برمجة حاسبات - ١	Computer Programming – 1		٢	٢	٣	٢٠
CS211	تنظيم الحاسبات	Computer Architecture		٢	٢	٣	٢٠
CS212	هياكل البيانات	Data Structure		٢	٢	٣	٢٠
IT261	وسائط متعددة - ١	Multimedia-1		٢	٢	٣	٢٠
OD213	مقدمة فى بحوث العمليات ودعم القرار	Introduction to Operation Research & Decision Support		٢	٢	٣	٢٠

١٨	١٢	١٢	إجمالي عدد الساعات الأسبوعية :
----	----	----	--------------------------------

الفصل الدراسي: الثاني									
التخصص : عام									
اسم المقرر		Course Name		عدد الساعات الدراسية أسبوعيا			النهاية العظمى للدرجات		
				محاضرة	تمارين / عمل	عدد الساعات المعتمدة	أعمال فصل	عمل وشفهي	تحريري
CS261	نظم تشغيل - ١	Operating Systems-1		٢	٢	٣	٢٠	٢٠	٦٠
CS233	برمجة حاسبات - ٢	Computer Programming-2		٢	٢	٣	٢٠	٢٠	٦٠
OD342	النمذجة والمحاكاة	Modeling & Simulation		٢	٢	٣	٢٠	٢٠	٦٠
	اختياري - ١	Selected - 1		٢	٢	٣	٢٠	٢٠	٦٠
IT211	شبكات الحاسب - ١	Computer Networks-1		٢	٢	٣	٢٠	٢٠	٦٠
IS212	تحليل نظم - ١	System Analysis-1		٢	٢	٣	٢٠	٢٠	٦٠
إجمالي عدد الساعات الأسبوعية :				١٢	١٢	١٨			

المستوي الثالث : تخصص تكنولوجيا المعلومات

الفصل الدراسي: الأول									
التخصص : تكنولوجيا المعلومات									
اسم المقرر		Course Name		عدد الساعات الدراسية أسبوعيا			النهاية العظمى للدرجات		
				محاضرة	تمارين / عمل	عدد الساعات المعتمدة	أعمال فصل	عمل وشفهي	تحريري

٦٠	٢٠	٢٠	٣	٢	٢	Software Engineering-1	هندسة البرمجيات - ١	CS251
٦٠	٢٠	٢٠	٣	٢	٢	Database Systems-1	نظم قواعد البيانات - ١	IS221
٦٠	٢٠	٢٠	٣	٢	٢	Selected - 2	اختياري - ٢	
٦٠	٢٠	٢٠	٣	٢	٢	Digital Signal proc.	معالجة الاشارات الرقمية	IT371
٦٠	٢٠	٢٠	٣	٢	٢	Computer Networks-2	شبكات الحاسب - ٢	IT312
٦٠	٢٠	٢٠	٣	٢	٢	Artificial Intelligence	الذكاء الاصطناعي	CS321
			١٨	١٢	١٢	إجمالي عدد الساعات الأسبوعية :		

الفصل الدراسي: الثاني								
التخصص : تكنولوجيا المعلومات								
النهاية العظمى للدرجات			عدد الساعات الدراسية أسبوعيا			اسم المقرر	Course Name	
تحريرى	عملى وشفهى	أعمال فصل	عدد الساعات المعتمدة	تمارين / عملى	محاضرة			
٦٠	٢٠	٢٠	٣	٢	٢	Image Processing	معالجة الصور	IT321
٦٠	٢٠	٢٠	٣	٢	٢	Computer Graphics-1	الرسم بالحاسب - ١	IT341
٦٠	٢٠	٢٠	٣	٢	٢	Speech Recognition-1	التعرف على الكلام - ١	IT472
٦٠	٢٠	٢٠	٣	٢	٢	Computer Networks-3	شبكات الحاسب - ٣	IT313
٦٠	٢٠	٢٠	٣	٢	٢	Network Programming	برمجة شبكات الحاسب	IT417
٦٠	٢٠	٢٠	٣	٢	٢	Selected - 2	اختياري تخصصي - ٢	
			١٨	١٢	١٢	إجمالي عدد الساعات الأسبوعية :		

المستوي الرابع : تخصص تكنولوجيا المعلومات

الفصل الدراسي: الأول								
التخصص : تكنولوجيا المعلومات								
النهاية العظمى للدرجات			عدد الساعات الدراسية أسبوعياً			اسم المقرر	Course Name	
تحريرى	عملى وشفهى	أعمال فصل	عدد الساعات المعتمدة	تمارين / عملى	محاضرة			
٦٠	٢٠	٢٠	٣	٢	٢	الواقع الافتراضي	Virtual Reality	IT444
٦٠	٢٠	٢٠	٣	٢	٢	التعرف على الانماط	Pattern Recognition	IT431
٦٠	٢٠	٢٠	٣	٢	٢	تأمين الشبكات	Network Security	IT418
٦٠	٢٠	٢٠	٣	٢	٢	اختياري تخصصي - ٢	Selected - 2	
٦٠	٢٠	٢٠	٣	٢	٢	اختياري تخصصي - ٢	Selected - 2	
	٦٠	٤٠	٣	3	1.5	المشروع	Project	IT486
			١٨	13	11.5	إجمالي عدد الساعات الأسبوعية :		

الفصل الدراسي: الثاني								
التخصص : تكنولوجيا المعلومات								
النهاية العظمى للدرجات			عدد الساعات الدراسية أسبوعياً			اسم المقرر	Course Name	
تحريرى	عملى وشفهى	أعمال فصل	عدد الساعات المعتمدة	تمارين / عملى	محاضرة			

٦٠	٢٠	٢٠	٣	٢	٢	Wireless and Mobile Networks	الشبكات اللاسلكية والمحمولة	IT416
٦٠	٢٠	٢٠	٣	٢	٢	Computer Vision	الرؤية بالحاسب	IT422
٦٠	٢٠	٢٠	٣	٢	٢	Advanced Web Development	التطوير المتقدم للويب	IT435
٦٠	٢٠	٢٠	٣	٢	٢	Selected - 2	اختياري تخصصي - ٢	
٦٠	٢٠	٢٠	٣	٢	٢	Selected - 2	اختياري تخصصي - ٢	
	٦٠	٤٠	٣	3	1.5	Project	المشروع	IT486
			١٨	13	11.5	إجمالي عدد الساعات الأسبوعية :		

يختار الاختيارية المقررات أما بالكلية، الأخرى الأقسام مقررات بين من كلية اختياري مقرر الطالب
اتالساء ولا المادة ساعات بإجمالي ذلك يخل ولا ، التالي الجدول من اختيارها فيتم التخصصية
الأسبوعية.

اسم المقرر	Course Name	عدد الساعات الدراسية أسبوعيا			النهاية العظمى للمقررات		
		محاضرة	تمارين / عملية	عدد الساعات المعتمدة	أعمال فصل	عملية وشفهي	تحريرى
IT342	Computer Graphics-2 الرسم بالحاسب-٢	٢	٢	٣	٢٠	٢٠	٦٠
IT362	Multimedia-2 المتعددة الوسائط-٢	٢	٢	٣	٢٠	٢٠	٦٠
IT314	Network Operating Systems نظم تشغيل الشبكات	٢	٢	٣	٢٠	٢٠	٦٠
IT343	Animations الرسوم المتحركة	٢	٢	٣	٢٠	٢٠	٦٠
IT315	Network Management and Analysis إدارة وتحليل الشبكات	٢	٢	٣	٢٠	٢٠	٦٠
IT485	Selected Topics in IT-1 موضوعات مختارة-١	٢	٢	٣	٢٠	٢٠	٦٠
IT486	Digital Signal Systems نظم الإشارات الرقمية	٢	٢	٣	٢٠	٢٠	٦٠
IT487	Information Technology Applications تطبيقات تكنولوجيا المعلومات	٢	٢	٣	٢٠	٢٠	٦٠