



الهيئة القومية
لضمان جودة التعليم والاعتماد
بالتعليم العالي

Program Specification

1. Basic Information

Program Name (as per official regulations):	Information Technology
Total Credit Hours/Units for the Program:	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.
Number of Years/Study Levels (expected duration to complete the qualification):	Four Years
Participating Department(s) (if any):	Department of Information Technology
Faculty/Institute:	Faculty of Computers and Information
University/Academy:	Menoufia University
Specializations/Tracks in the Final Year (if applicable):	
Partnerships with External Organizations & Nature of Partnership (if applicable):	
Program Coordinator Name (attach appointment letter):	Prof. Noura Semaary
Program Description Approval	/ / 2025

Date:	
Approving Authority (attach governing council decision/minutes):	



1. Program Aims (Brief description of the overarching purpose or intended outcome the program seeks to achieve)

- 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.
- 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.
- 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.
- 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.
- To give students a mechanism for integrating knowledge and experience in other domains with skills in applying the computer in that domain.
 - To provide a broad foundation that will allow them to continue to learn and progress in their careers and education through research activities.
- 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.
- 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.
- 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
process

ing, 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.

- 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.
- 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
- 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
- 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.
- 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
- 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
- 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
- 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
- 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
- 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
- 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.
- 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
- 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.

Program Structure (Curriculum)

• Program Components

Percentage of Total Credits	Credit Hours/Units	Number of Courses	Type of Requirement
			University Requirements
			Faculty Requirements (if any)
			Program Requirements
			Specialization/Track Requirements (Final Year, if applicable)
			Field Training
			Graduation Project
			Mandatory Training Year
			Other (Specify)
	١٦١		Total Compulsory Courses
	٣١		Elective Courses
			Grand Total

• Program Courses According to the Expected Study Plan

No. of hours /week			Credit Hours	Requirement Type	Course Type (Compulsory / Elective)	Course Title	Code No.	Academic Semester	Academic Level / Study Year
Lecture	Practical	Other							
3	-		3	-	Compulsory	Scientific & Technical Report Writing	GN170	Semester 1	1st year

No. of hours /week			Credit Hours	Requirement Type	Course Type (Compulsory / Elective)	Course Title	Code No.	Academic Semester	Academic Level / Study Year
Lecture	Practical	Other							
2	2		3	-	Compulsory	Mathematics-1	MA111	Semester 1	1st year
2	2		3	-	Compulsory	Discrete Mathematics	OD111	Semester 1	1st year
2	2		3	-	Compulsory	Semiconductors	CS110	Semester 1	1st year
2	2		3	-	Compulsory	Computer Introduction	CS101	Semester 1	1st year
1	-		-	-	Compulsory	Fundamentals of quality	GN160	Semester 1	1st year
3	-		3	-	Elective	General Elective - Professional Ethics	GN180	Semester 1	1st year
2	2		3	Semiconductors CS110	Compulsory	Logic Design-1	IT181	Semester 2	1st year
2	2		3	Mathematics -1 MA111	Compulsory	Mathematics-2	MA112	Semester 2	1st year
3	-		3	-	Compulsory	Fundamentals of Management	GN112	Semester 2	1st year
2	2		3	-	Compulsory	Fundamentals of Programming	PH111	Semester 2	1st year
2	2		3	-	Compulsory	Introduction to IS	IS111	Semester 2	1st year
2	2		3	Mathematics-1 MA111	Compulsory	Statistics & Probabilities	ST190	Semester 2	1st year

No. of hours /week			Credit Hours	Requirement Type	Course Type (Compulsory / Elective)	Course Title	Code No.	Academic Semester	Academic Level / Study Year
Lecture	Practical	Other							
2	2		3	-	Compulsory	Human Rights	HM110	Semester 2	1st year
2	2		3	Computer Programming-1 CS132	Compulsory	Web Design and Development	IS251	Semester 1	2nd year
2	2		3	Fundamentals of Programming CS131	Compulsory	Computer Programming – 1	CS231	Semester 1	2nd year
2	2		3	Logic Design -1 IT181	Compulsory	Computer Architecture	CS211	Semester 1	2nd year
2	2		3	Computer Programming-2 CS132	Compulsory	Data Structure	CS212	Semester 1	2nd year
2	2		3	Computer Programming1 CS132	Compulsory	Multimedia-1	IT261	Semester 1	2nd year
2	2		3	Mathematics-2 MA112	Compulsory	Introduction to Operation Research & Decision Support	OD213	Semester 1	2nd year
2	2		3	Computer Programming-1 CS132	Compulsory	Operating Systems-1	CS261	Semester 2	2nd year
2	2		3	Computer Programming-1 CS132	Compulsory	Computer Programming-2	CS233	Semester 2	2nd year
2	2		3	Introduction to Operation Research & Decision Support OD213	Compulsory	Modeling & Simulation	OD342	Semester 2	2nd year

No. of hours /week			Credit Hours	Requirement Type	Course Type (Compulsory / Elective)	Course Title	Code No.	Academic Semester	Academic Level / Study Year
Lecture	Practical	Other							
2	2		3	Introduction to Operation Research & Decision Support OD213	Compulsory	Computer Networks-1	IT211	Semester 2	2nd year
2	2		3	Introduction to IS IS111	Compulsory	System Analysis-1	IS212	Semester 2	2nd year
2	2		3	Mathematics-2 MA112	Elective	College Elective 1 - Mathematics-3	MA213	Semester 2	2nd year
2	2		3	Computer Programming-2 CS233	Compulsory	Software Engineering-1	CS251	Semester 1	3rd year
2	2		3	Data Structure CS212	Compulsory	Database Systems-1	IS221	Semester 1	3rd year
2	2		3	Mathematics-2 MA112	Compulsory	Digital Signal Processing	IT371	Semester 1	3rd year
2	2		3	Computer Networks-1 IT211	Compulsory	Computer Networks-2	IT312	Semester 1	3rd year
2	2		3	Computer Programming – 2 CS233	Compulsory	Artificial Intelligence	CS321	Semester 1	3rd year
2	2		3	Operating Systems-1 CS261	Elective	Cloud Computing	IS435	Semester 1	3rd year
2	2		3	Digital Signal Processing IT371	Compulsory	Image Processing	IT321	Semester 2	3rd year
2	2		3	Mathematics-2 MA112	Compulsory	Computer Graphics-1	IT341	Semester 2	3rd year

No. of hours /week			Credit Hours	Requirement Type	Course Type (Compulsory / Elective)	Course Title	Code No.	Academic Semester	Academic Level / Study Year
Lecture	Practical	Other							
2	2		3	Digital Signal Processing IT371	Compulsory	Speech Recognition-1	IT472	Semester 2	3rd year
2	2		3	Computer Networks-2 IT312	Compulsory	Computer Networks-3	IT313	Semester 2	3rd year
2	2		3	Computer Networks-1 IT211	Compulsory	Network Programming	IT417	Semester 2	3rd year
2	2		3		Elective	Analysis and Design of Algorithms	CS313	Semester 2	3rd year
2	2		3	Computer Graphics-1 IT341	Compulsory	Virtual Reality	IT444	Semester 1	4th year
2	2		3	Image Processing-1 IT321	Compulsory	Pattern Recognition	IT431	Semester 1	4th year
2	2		3	Computer Networks-2 IT312	Compulsory	Network Security	IT418	Semester 1	4th year
1.5	3		3	-	Compulsory	Project	IT486	Semester 1	4th year
2	2		3	Multimedia-1 IT261	Elective	Multimedia-2	IT362	Semester 1	4th year
2	2		3	Image Processing-1 IT321	Elective	Information Technology Applications	IT487	Semester 1	4th year
2	2		3	Computer Networks-2 IT312	Compulsory	Wireless and Mobile Networks	IT416	Semester 2	4th year
2	2		3	Pattern Recognition-1 IT431	Compulsory	Computer Vision	IT422	Semester 2	4th year

No. of hours /week			Credit Hours	Requirement Type	Course Type (Compulsory / Elective)	Course Title	Code No.	Academic Semester	Academic Level / Study Year
Lecture	Practical	Other							
2	2		3	Web Design and Development IS251	Compulsory	Advanced Web Development	IT435	Semester 2	4th year
1.5	3		3	-	Compulsory	Project	IT486	Semester 2	4th year
2	2		3	Computer Networks-2 IT312	Elective	Elective 2 - Selected Topics in IT - 1	IT485	Semester 2	4th year
2	2		3	Computer Networks-2 IT312	Elective	Elective 2 - Network Management and Analysis	IT315	Semester 2	4th year

4 .Adopted Academic Standards

- **Adopted Academic Standards) :(NARS/ARS**
 - **When Adopting ARS**

An alignment matrix demonstrating compliance between the Academic Reference Standards (ARS) and the National Academic Reference Standards (NARS) must be attached.

- * **The standards adoption date must be stated with the attached Governing Council minute.**

5. Academic Standards Matrix (Program Learning Outcomes vs. Courses)

Compulsory Courses (course name, course code)
Mathematics-1 (MA111)
Discrete Mathematics (OD111)
Semiconductors (CS110)
Computer Introduction (CS101)
Logic Design-1 (IT181)
Mathematics-2 (MA112)
Fundamentals of Programming (CS102)
Introduction to IS (IS111)
Statistics & Probabilities (ST111)
Web Design and Development (IT321)
Computer Architecture (CS211)
Data Structure (CS212)
Multimedia-1 (IT261)
Introduction to Operating Systems-1 (CS261)
Computer Programming-2 (CS262)
Modeling & Simulation (OD341)
Computer Networks-1 (IT211)
System Analysis-1 (IS212)
Software Engineering-1 (CS251)
Digital Signal Processing (IT371)
Computer Networks-2 (IT312)
Database Systems-1 (CS321)
Artificial Intelligence (CS321)
Image Processing (IT321)
Computer Graphics-1 (IT341)
Speech Recognition-1 (IT472)
Computer Networks-3 (IT313)
Network Programming (IT417)
Virtual Reality (IT444)
Pattern Recognition (IT431)
Network Security (IT418)
Project (IT486)
Wireless and Mobile Networks (IT422)
Computer Vision (IT422)
Advanced Web Development (IT422)
Project (IT486)

ching and Learning Strategies/Methods for Achieving Program Learning Outcomes (Adopted Standards):

1. **Lectures and Interactive Seminars**
Used to deliver core theoretical knowledge and encourage critical thinking and discussion among students.
2. **Laboratory and Practical Sessions**
Hands-on activities designed to develop practical and technical skills through direct application of concepts.
3. **Project-Based Learning and Case Studies**
Students engage in solving real-world problems, promoting innovation, teamwork, and integration of interdisciplinary knowledge.
4. **E-learning and Digital Platforms**
Utilizing online resources, simulations, and learning management systems to support blended and self-paced learning.
5. **Field Training and Internships**
Exposure to professional environments enhances students' readiness for the job market through real-life experiences.

7 .Student Assessment Strategies/Methods to Verify Attainment of Program Learning Outcomes (Adopted Standards):

A- Assessment methods

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

1. **Written Exam:** To assess the students' knowledge and understanding of theoretical concepts.
2. **Practical Exam:** To evaluate students' practical skills and their ability to apply knowledge in real-world scenarios.
3. **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		✓		✓
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8 . Program Performance Measurement Indicators (if applicable):

م	Measurement Timing	Measurement Methods	Target Level	Performance Indicator
1	End of each course	Written exams, assignments	Knowledge and Understanding (Cognitive)	70% of students score $\geq$ 60% in final written assessments
2	Mid-course and end-of-semester	Practical exams, lab exercises	Practical Skills (Technical/Application)	80% of students demonstrate correct execution of core technical procedures
3	Final year (Level 4)	Graduation project evaluation, presentations	Integration, Problem-Solving, Teamwork	85% of students achieve project scores $\geq$ 70%, and meet teamwork and innovation standards

Name and Signature

**Vice Dean for Academic & Student Affairs /
Dean of the Faculty**

Name and Signature

Program Coordinator