

# Information Technology Program Specification (2025)

## 1. Basic Information

<b>ProgramTitle (according to what is stated in the bylaw):</b>	Information Technology
<b>Total number of credit hours/points of the program:</b>	138 Hours
<b>Number of academic years/levels (expected program duration):</b>	4 Academic Years (8 Semesters)
<b>Department (s) Participating (if any) in teaching the program:</b>	Information Technology Department
<b>Faculty/Institute:</b>	Faculty of Computers and information technology
<b>University/Academy:</b>	Tanta University
<b>Program majors/divisions/tracks/specialties in the final year (if any):</b>	
<b>Partnerships with other parties and the nature of each (if any):</b>	
<b>Name of the program coordinator (attach the assignment decision):</b>	Dr. Marian Wagdy
<b>Program Specification Approval Date:</b>	Click or tap to enter a date.
<b>Council responsible for Program Specification Approval (Attach the Decision / Minutes):</b>	

## 2. Program Aims (Brief description of the overall purpose the program)

The program aims to:

- Provide strong theoretical foundations in computing, programming, network.
- Provide students with solid theoretical and practical foundations in information technology and computing.
- Develop students' abilities to analyze complex problems and design efficient and innovative IT solutions.
- Prepare graduates for professional careers in networks, cybersecurity, cloud computing, distributed systems, software development, and IT management.
- Enhance communication, teamwork, leadership, and project management skills.
- Promote ethical behavior, social responsibility, and awareness of legal and professional issues.
- Instill ethical and professional responsibility in handling data, systems, digital resources.

## 3. Program Structure (Curriculum)

### **Program structure:**

studying 138 credit hours distributed as follows:

A- General requirements (12) credit hours:

- (6) compulsory hours
- (6) hours chosen by the student from among the elective general courses.
- Passing the community issues course.

B- College requirements (60) hours:

It is divided into two parts:

- Mathematics and basic sciences (21) compulsory credit hours.

- Basic computer science (39) compulsory credit hours.

C- Specialization requirements (60) hours:

It is divided into:

- Applied sciences (48) are compulsory accredited according to specialization.
- Applied sciences (12) optional accreditations within the specialization.

D- Project (6) compulsory credit hours.

E - Training (3) compulsory, non-accredited hours

- **Program Components**

<b>Requirement Category/Type</b>	<b>Percentage from the total number of hours/points%</b>
Humanities, ethical and Social Sciences (Univ. Req)	8-10 %
Mathematics and Basic Sciences	16-18 %
Basic Computing Sciences (institution req.)	26-28 %
Applied Computing sciences (Specialisation)	28-30 %
Training	3-5 %
Projects	3-5 %
Subtotal	84-96 %
Optional (institution character-identifying Subjects)	16-4 %
Total	100

- Program courses according to the expected study plan

*Level 1 semester 1*

Level 1 Semester 1		Course Title	Credits	No. of hours /week	
Code No	Prerequisites			Lec.	Prac.
UNV112	-	Societal issues	0	2	-
UNV113	-	English Language (1)	2	2	-
BS111	-	Math (1)	3	2	2
BS112	-	Discrete Mathematics	3	2	2
BS116	-	Probability and Statistics (1)	3	2	2
CS111	-	Fundamentals of Computer Science	3	2	2
IS111	-	Introduction to information systems	3	2	2
<b>Total</b>			<b>17</b>		

*Level 1 Semester 2*

Level 1 Semester 2		Course Title	Credits	No. of hours /week	
Code No	Prerequisites			Lec.	Prac.
UNV114	-	Communication Skills	2	2	-
UNV111		Technical Report Writing	2	2	-
	-	General Elective course (1)	2	2	-
BS113	BS111	Math (2)	3	2	2
BS115	-	Electronics	3	2	2
CS112	CS111	Structured Programming	3	2	2
IT111	-	Fundamentals of Information Technology	3	2	2
<b>Total</b>			<b>18</b>		

*Level 2 Semester 1*

Level 2 Semester 1		Course Title	Credits	No. of hours /week	
Code No	Prerequisites			Lec.	Prac.
BS117	BS116	Operations Research	3	2	2
BS114	BS113	Math (3)	3	2	2
CS211	CS112	Object Oriented Programming	3	2	2
CS212	CS112	Data Structures	3	2	2
CS214	CS212	Operating Systems	3	2	2
IT211	BS115	Digital Logic Design	3	2	2
<b>Total</b>			<b>18</b>		

*Level 2 Semester 2*

Level 2 Semester 2		Course Title	Credits	No. of hours /week	
Code No	Prerequisites			Lec.	Prac.
SE211	-	Introduction to Software Engineering	3	2	2
IS211	IS111	Introduction to Database Systems	3	2	2
IS212	BS112	Optimization methods	3	2	2
IT212	CS111	Computer network Technology	3	2	2
CS213	CS212	Algorithm Analysis and Design	3	2	2
		General Elective course (2)	2	2	-
<b>Total</b>			<b>17</b>		

*Level 3 Semester 1*

Level 3 Semester 1		Course Title	Credits	No. of hours /week	
Code No	Prerequisites			Lec.	Prac.
IT311	CS112	Computer graphic	3	2	2
IT312	BS117	Pattern Recognition	3	2	2
IT313	IT111	Information and Computer Networks Security	3	2	2
IT314	BS114	Signal and Systems	3	2	2
IT315	IT211	Microprocessors	3	2	2
		Major Elective course (1)	3	2	2
<b>Total</b>			<b>18</b>		

*Level 3 Semester 2*

Level 3 Semester 2		Course Title	Credits	No. of hours /week	
Code No	Prerequisites			Lec.	Prac.
IT316	IT314	Image Processing	3	2	2
IT317	IT212	Advanced Computer Networks	3	2	2
SE315	SE315	Advanced Software Engineering	3	2	2
IT318	BS115	Computer Architecture	3	2	2
IT319	IT311	Digital Multimedia	3	2	2
		Major Elective course (2)	3	2	2
TR301		Summer training	3	2	2
<b>Total</b>			<b>18</b>		

*Level 4 Semester 1*

Level 4 Semester 1		Course Title	Credits	No. of hours /week	
Code No	Prerequisites			Lec.	Prac.
IT411	IT315	Robot Systems	3	2	2
CS313	CS212	Artificial Intelligence	3	2	2
CS412	CS212	Internet of Things	3	2	2
		Major Elective course( 3)	3	2	2
PR341		Graduation project (1)	3	-	3
<b>Total</b>			<b>15</b>		

*Level 4 Semester 2*

Level 4 Semester 2		Course Title	Credits	No. of hours /week	
Code No	Prerequisites			Lec.	Prac.
IT413	IT317	Communication Technology	3	2	2
IT414	IT313	Cyber Security	3	2	2
IT415	IT111	Cloud Computing Networks	3	2	2
PR342	PR341	Graduation project (2)	3	-	3
		General Elective course (3)	2	2	-
		Major Elective course (4)	3	2	2
<b>Total</b>			<b>17</b>		

elective course

المتطلب السابق		عدد الساعات الفعلية		عدد الساعات المعتمدة	إسم المقرر	كود المقرر
إسم المقرر	كود المقرر	تعاريف / معامل	محاضرة			
Operating system	CS214	٢	٢	٣	نظم تشغيل الشبكات Network Operating System	IT321
Fundamentals of Information Technology	IT111	٢	٢	٣	تكنولوجيا سلسلة الكتل Blockchain Technology	IT322
Network Operating Systems	IT321	٢	٢	٣	شبكات المحمول Mobile Networks	IT423
Advanced Computer Networks	IT317	٢	٢	٣	موضوعات مختارة في شبكات الحاسب Selected Topics in Computer Networks	IT424
Electronics	BS	٢	٢	٣	الأنظمة المدمجة Embedded Systems	IT331
Microprocessors	IT315	٢	٢	٣	تصور الآلة Machine Vision	IT332
Pattern Recognition	IT312	٢	٢	٣	التعرف على الأنماط المتقدمة Advanced Pattern Recognition	IT433
Embedded Systems	IT331	٢	٢	٣	موضوعات مختارة في النظم المدمجة والإنسان الآلي Selected Topics in Embedded Systems and Robotic	IT434
Fundamental of computer science	CS111	٢	٢	٣	Computer Animation الرسوم الحاسوبية المتحركة	IT341
Computer Animation	IT341	٢	٢	٣	الرسم بالحاسب المتقدم Advanced Computer Graphics	IT342
Image Processing	IT316	٢	٢	٣	معالجة الصور المتقدمة Advanced Image Processing	IT443
Digital Multimedia	IT319	٢	٢	٣	موضوعات مختارة في الوسائط المتعددة Selected Topics in Multimedia	IT444

## 4. Academic Standards

- **Adopted Academic Standards NARS**

### A. Knowledge and Understanding (A)

By the end of the program, graduates should be able to:

- A1.** Demonstrate foundational knowledge and understanding of the fundamental principles of core computing.
- A2.** Demonstrate strong knowledge of programming fundamentals, computer-based system construction, data structures and algorithms, software engineering techniques, and information retrieval.
- A3.** Show deeper understanding of advanced topics such as multimedia, computer and communication networks, data mining and knowledge discovery, information storage and retrieval, mobile communication systems, pattern recognition, artificial intelligence, cryptography, and network security.
- A4.** Understand technologies for the design, development, and management of database systems, systems analysis and design, and information retrieval systems.
- A5.** Recognize the role of human factors in the design of Information Technology systems.
- A6.** Understand and apply tools and techniques for the design and development of applications.
- A7.** Demonstrate knowledge of methods for constructing web-based materials and systems, including internet-based system design.
- A8.** Demonstrate understanding of legal, professional, and ethical aspects related to the exploitation of IT.
- A9.** Understand the broader context of IT, including quality, reliability, enterprise, employment law, accounting, and health considerations.
- A10.** Understand the challenges of maintaining and evolving IT-based systems, and recognize available techniques and best practices.

### B. Intellectual Skills (B)

Graduates should be able to:

- B1.** Analyze IT system problems, define goals, observe outcomes, reason effectively, and apply sound judgment.
- B2.** Identify attributes, components, relationships, patterns, key ideas, and errors in IT systems.
- B3.** Summarize proposed solutions and interpret their outcomes.
- B4.** Adjust and refine solution methodologies based on results.
- B5.** Establish evaluation criteria and verify solution effectiveness.
- B6.** Identify alternative solutions and critically evaluate and justify proposed design choices.
- B7.** Solve IT problems under commercial or industrial constraints.
- B8.** Generate innovative designs that address commercial and industrial limitations.
- B9.** Analyze problems from written descriptions and derive accurate requirement specifications.
- B10.** Create and justify designs that meet specified requirements.
- B11.** Recognize professional, moral, and ethical issues in IT practice and reflect on responsible professional behavior.

## C. Professional and Practical Skills (C)

Graduates should be able to:

- C1.** Specify, investigate, analyze, design, and develop computer-based systems using appropriate tools and techniques.
- C2.** Evaluate systems in terms of quality and trade-offs, and assess appropriate hardware and software solutions for given scenarios.
- C3.** Recognize risks and safety issues in operating computer-based systems.
- C4.** Use tools effectively for the implementation and documentation of computer-based systems.
- C5.** Work effectively as a member of a development team and recognize different team roles.
- C6.** Operate computing equipment efficiently considering both logical and physical properties.
- C7.** Recognize and address professional, moral, and ethical issues within the IT field.
- C8.** Employ effective information-retrieval skills, use browsers, search engines, and digital libraries, and communicate clearly with team members, managers, and clients.

**C9.** Effectively use general IT tools, and plan and manage projects within budget and schedule.

**C10.** Manage personal learning and development, including time-management and organizational skills.

**C11.** Present work professionally through reports, oral presentations, or web-based platforms.

## **D. General and Transferable Skills (D)**

Graduates should be able to:

**D1.** Demonstrate the ability to make use of a range of learning resources and to manage one's own learning. Work in stressful environment and within constraints.

**D2.** Demonstrate skills in group working, team management, time management and organizational skills.

**D3.** Use an appropriate mix of tools and aids in preparing and presenting reports for a range of audiences, including management, technical, users, industry or the academic community.

**D4.** Exhibit appropriate numeracy skills in understanding and presenting cases involving a quantitative dimension.

**D5.** Reveal communication skills, public speaking and presentation skills, and delegation, writing skills, oral delivery, and effectively using various media for a variety of audiences.

**D6.** Show the use of general computing facilities.

**D7.** Demonstrate an appreciation of the need to continue professional development in recognition of the requirement for life-long learning.

## 5. Matrix of Academic Standards (Program Outcomes POs) with Courses

<b>Compulsory Courses (Name and code)</b>	<b>Academic Standards (Mention code only)</b>																														
	A1	A2	A3	A4	A5	A6	A7	A8	A10	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	C1	C2	C3	C4	C5	C6	C7	C7	C9	C10	C11
UNV112: Societal issues																															
UNV113: English Language (1)																															
BS111: Math (1)																															
BS112: Discrete Mathematics																															
BS116: Probability and Statistics (1)																															
CS111: Fundamentals of Computer Science																															
IS111: Introduction to information systems																															
UNV114: Communication Skills																															
UNV111: Technical Report Writing																															
BS113: Math (2)																															
BS115: Electronics																															
CS112: Structured Programming																															





## 6. Teaching and Learning strategies/methods to achieve Program Outcomes:

- Lectures
- Practical laboratories
- Case studies
- Project-based learning
- Interactive discussions
- E-learning activities

## 7. Student Assessment strategies/methods to verify and ensure students' acquisition of Program Outcomes:

- Midterm exams
- Final exams
- Oral examinations
- Practical exams
- Assignments and quizzes
- Course projects
- Presentations
- Graduation project evaluation

## 8. Program Key Performance Indicators (if any)

No.	Performance Indicator	Target Level	Method	Measurement
1.	Students' Success Rate	≥85%	Statistical analysis of students' results	Semester results reports from academic affairs
2.	Graduate Employment Rate within one year	≥70%	Alumni survey	Graduate follow-up survey reports

No.	Performance Indicator	Target Level	Method	Measurement
3.	Students' Satisfaction with the Program	≥80%	Student evaluation questionnaire	End-of-semester survey analysis

**Name & Signature  
Program Coordinator**

**Name & Signature  
Vice Dean for Education and Student Affairs**