

Tanta University

Faculty of computers and informaticsInformation Technology departmentBachelor Program - Credit Hours SystemProgram TitleInformation TechnologyProgram TypeSingleDepartment(s)Information Technology

A. Program Specification

Program Title	Information Technology (B. Sc.)
Award	B. Sc. Information Technology
Parent Department	Information Technology Department
Teaching Institution	Faculty of Computers and Informatics – TU
Awarding Institution	Tanta University
Coordinator	Dr. Aida Nasr
External Evaluator(s)	
QAA Benchmarking Standards	National Academic Reference Standards (NARS)
Other Reference Points	
Date of intake	Every year in September
Review Date	Internal Periodic Review, Summer 2021
Date of Approval	September, 2021

1. Aims

This Program aims to:

- 1. Enable graduates to exhibit a high level of practical and theoretical skills in information technology field with knowledge of currently available techniques.
- Provide scientific and technical advice and assistance for bodies and agencies that use the techniques of Information Technology and components concerned with the technology.
- 3. Provide opportunities for students to understand the various techniques for development
- 4. Preparation of specialists in the field of Information Technology and management of data and secure qualified with theoretical assets and applications to enable them to global competition in the development of computer technology and information.
- 5. Conducting studies and scientific and applied research in the field of Informatic Technology that have a direct impact on the integral development of society.

2. Intended Learning outcomes (ILOs)

This program provides opportunities for graduates to develop and demonstrate knowledge and understanding, skills, qualities, and other attributes in the following areas.

A. Knowledge and understanding:

By the end of the program a successful graduate is expected to be able to:

- A1. Demonstrate basic knowledge and understanding of the core ideas of mathematics and Algorithms.
- A2. Demonstrate basic knowledge and understanding of fundamental principles of core computing
- A3. Know the concepts and algorithmic procedures relevant to
- computer network technology.
- A4. Provide a deeper understanding of some aspects of the subject, such as multimedia, computer and communication network, data mining and knowledge discovery, mobile Communication Systems, pattern recognition, cryptography, and network security.
- A5. Describe the principles of mobile and wireless networking technologies.
- A6. Understand the challenges inherent in the maintenance and evolution of IT based systems, and the techniques and best practices currently available for dealing with them.
- A7. Contribute to business management processes based on knowledge and understanding of the commercial constraints

B. Intellectual skills:

By the end of the program a successful graduate is expected to be able to:

- B1. Analyzing physical problems in mathematical and systematical way
- B2. Identify a range of solutions and critically evaluate and justify proposed design solutions.
- B3. Solve information technology problems with pressing commercial or industrial constraints.
- B4. Implementing the system life cycle in handling different problems of organizations.
- B5. Create and/or justify designs to satisfy given requirements (synthesis, evaluation, application).

C. Practical skills:

By the end of the program a successful graduate is expected to be able to:

C1. Specify, investigate, analyze, design, and develop computer-based systems using appropriate tools and techniques

- C2. Evaluate systems in terms of their quality and possible trade-offs, evaluate appropriate hardware and software solutions for given scenarios
- C3. Deploy tools for the implementation and documentation of computer-based systems.
- C4. Operate computing equipment efficiently, considering its logical and physical properties.
- C5. Present their work in the form of reports, oral presentations, or an internet web site.

D. General and transferable skills:

At the end of this program, the graduate should be able to:

- D1. Use information and communication technology effectively.
- D2. Identify roles and responsibilities, delegate tasks, and set clear guidelines and performance indicators.
- D3. Think independently and solve problems on scientific basis.
- D4. Work in a team effectively; manage time, collaborate and communicate with others positively.
- D5. Address the community linked problems with considerable attention to the community ethics and traditions.
- D6. Acquire self- and life-long learning.
- D7. Deal with property rights legally and ethically.
- D8. Gain the skill of effective collaboration

3.Academic standards:

3.A. Attributes of Information Technology Programs Graduates:

In addition to the general attributes of the graduate of faculties of computers and information, the graduate of the information technology program should be able to:

- 1. Knowledge of computing and mathematics appropriate to the discipline
- 2. Analyze a problem, and identify and define the computing requirements appropriate to its solution
- 3. Design, implement, and evaluate a computer-based system, process, component, or

program to meet desired needs

- 4. Demonstrate independent critical thinking and problem-solving skills and function effectively on a team to accomplish a common goal.
- 5. An understanding of professional, ethical, legal, security and social issues and responsibilities
- 6. Analyze the local and global impact of computing on individuals , organizations, and society

3.B. Graduate Attributes

In order to fulfill Academic Reference Standards (ARS), our students should acquire:

A. Knowledge and Understanding:

By the end of the program a successful graduate is expected to be able to:

- 1.1 Demonstrate basic knowledge and understanding of the core ideas of information technology
- 1.2 Understand programming concepts for various branches of information technology
- 1.3 Use information technology knowledge in solving different problems
 - 1.4 Know the technology required to build networking systems of all types
 - 1.5 Demonstrate knowledge and understanding of the principles of networks and data communication
 - 1.6 Define and assess criteria for measuring the extent to which a computer network is appropriate for deployment and future usage
 - 1.7 Define the current and underlying technologies that support computer processing and computer networking
 - 1.8 Have acquired the skills of using modern methodologies and web and networks programming tools in planning, analyzing, designing, building and managing computer networks.
 - 1.9 Have an integrated understanding of the scientific and practical principles underlying the major fields of networks technology, which include, networks

management and operating, network and information security, embedded networks systems, and internet and web technology.

1.10 Work effectively in teams in designing and implementing software systems

B. Intellectual skills:

By the end of the program a successful graduate is expected to be able to:

- 2.1 Formulate traditional and nontraditional problems, set goals towards solving them, and observe results.
- 2.2 Compare between (algorithms, methods, techniques...etc).
- 2.3 Classify (data, results, methods, techniques, algorithms.. etc.)
- 2.4 Solve technology problems with pressing commercial or industrial constraints
- 2.5 Analyze and evaluate a range of options in producing a solution to an identified problem
- 2.6 Generate an innovative design to solve a problem containing a range of commercial and industrial constraints
- 2.7 Analyze problem from written descriptions; derive requirements specifications from an understanding of problems (analysis, synthesis).
- 2.8 Outline the concepts, principles, theories and practices underpinning computing as an academic discipline
- 2.9 Develop and assess criteria to measure the appropriateness of a computer system for its current deployment and future evolution, and to interpret the results thereof.
- 2.10 Create ideas, proposals and designs effectively using rational and reasoned
- 2.11 Evaluate the results of tests to investigate the functionality of computer systems.

C. Practical skills:

At the end of the program a successful graduate is expected to be able to:

3.1	-	Operate computing equipment, recognizing its logical and physical properties,
		capabilities, and limitations

3.2	Implement comprehensive computing knowledge and skills in projects
	and in deployment of computers to solve position practical problems.
3.3	Deploy the equipment and tools used for the construction,
	maintenance and documentation of computer applications
3.4	Apply information technology skills in computing community
	environment and industry
3.5	Develop a range of fundamental research skills, using
	online resources, technical repositories, and library-based material
3.6	Design, implement, maintain, and manage software systems
3.7	Assess the implications, risks or safety aspects involved in the
	operation of computing equipment within a specific context
3.8	Handle a mass of diverse data, assess risk and draw conclusions

D. General and Transferable skills:

At the end of this program, the graduate should be able to:

- 4.1 Use information and communication technology effectively.
- 4.2 Identify roles and responsibilities and their performing manner.
- 4.3 Think independently, set tasks, and solve problems on scientific basis.
- 4.4 Work in a team effectively; manage time, collaborate and communicate with others positively.
- 4.5 Consider community linked problems, ethics and traditions.
- 4.6 Acquire self- and life-long learning.
- 4.7 Deal with scientific patents considering property rights.
- 4.8 Exhibit the sense of beauty and neatness.
- 4.9 Apply scientific models, systems, and tools effectively.

4. Curriculum Structure and contents:

- 4.A Program duration Four Years
- 4.B Program structure:

4.B.1	Number of co Level – 1	ntact hours First term: Second term:	per Term: Lectures Lectures	12 14	Lab. Lab.	8 8	Credit Credit	16 18
	Level – 2	First term: Second term:	Lectures Lectures	12 12	Lab. Lab.	10 12	Credit Credit	17 18
	Level – 3	First term: Second term:	Lectures Lectures	12 10	Lab. Lab.	12 13	Credit Credit	18 18
	Level – 4	First term: Second term:	Lectures Lectures	10 10	Lab. Lab.	13 13	Credit Credit	18 18
	Overall Contac	t hours	Lectures	92	Lab.	89	Credit	141
4.B.2	Number of cor	ntact hours	Compulsor y	114			Optional	27
4.B.3	Number of co courses:	ontact hours of	basic sciend Lectures	ces 102	Pract.	89	Credit	135
4.B.4	Number of cor sciences and h	ntact hours of cou numanities:	urses of socia 12	al			Credit 12	95.7% 8.5%
4.B.5	Number of cre specialized cou		60					42.5%
4.B.6	Number of credit hours of other courses:		75					53.19%
4.B.7	Practical/field training (Summer training)		4 weeks					
4.B.8	Program levels system):	s (in credit hours	4					

5 .Courses contributing to the Program

In order to fulfill national standards, our students should acquire in each year of full-time study within the program, students are required to study the corresponding courses in four years through 8 terms. This is achieved by providing core material

in the first two years and then in the third and fourth years, after second year succeeded students can continue in the direction of Information Technology program or to quit to other programs like Information System (IS) or computer science (CS) & Software Engineering (SE). In third- and fourth-years computer science program students should be to take 39 hours from mandatory computer science program, 12 hours from information technology elective courses and 9 hours elective courses from information technology program or other programs like IS or CS or SE .

The summary of the courses of the 4-year full-time information technology program is presented in the following tables:

Level (1) Semester 1

Level 1 S	emester 1	Course Title	Hour	Hours	
Code	Preq.	Obligatory:	Lec.	Prac.	Cred.
ENGL113		English Language-1	2		2
MA111		Math-1	2	2	3
MA112		Discrete Mathematics	2	2	3
UN1101		Technical Report Writing	2		2
ST121		Probability and Statistics-1	2	2	3
CS111		Fundamentals of Computer Science	2	2	3
HU112		Human Rights	2		2
					18

Level (1) Semester (2)

Level 1 Se	emester 2	Course Title	Hours		
Code	Preq.	Obligatory:	Lec.	Prac.	Cred.
MA113	MA111	Mathematics-2	2	2(tu)	3

CS141	MA1101	Electronics	2	2	3
CS112	CS111	Structured Programming	2	2	3
ST111		Communication Skills	2		2
IT113		Fundamentals of Information technology	2	2	3
	1	Options: Select Two courses			1
		(4Credit hours) from the following			
		modules:			
HU115		Fundamentals of Psychology	2		2
HU116		Fundamentals of Sociology	2		2
HU117		Comparative Politics	2		2
HU120		Marketing and Sales	2		2
HU118		Selected Topics in Humanities	2		2
HU119		Ethics and Professionalism	2		2
					18

Level (2) Semester (1)

Level 2 Semester 1		Course Title	Hours			
Code	Preq.	Obligatory:	Lec.	Prac.	Cred.	
ENGL211	ENGL113	English Language -2	2		2	
MA214	MA113	Math (3)	2	2	3	
CS213	CS112	Object Oriented Programming	2	2	3	
SE211	CS112	Open-Source Software	2	2	3	
IT212	IT111	Logic Design	2	2	3	
CS214	CS112	Data Structure	2	2	3	
					18	

Level (2) Semester (2)

Level 2 Se	emester 2	Course Title	Hours		
Code	Preq.	Obligatory:	Lec.	Prac.	Cred.
ST222	ENGL113	Probability and Statistics (2)	2	2	3

CS251	MA113	Introduction to Software Engineering	2	2	3
IS211	CS112	Introduction to Database Systems	2	2	3
IS231	CS112	Web Technology	2	2	3
CS221	CS214	Algorithm Analysis and Design	2	2	3
IT221	CS111	Computer network Technology	2	2	3
					18

Level (3) Semester (1)

Level 3 Semester 1		Course Title	Hours		
Code	Preq.	Obligatory:	Lec.	Prac.	Cred.
CS341	CS214	Operating Systems	2	2	3
CS331	IT212	Computer Organization and Architecture	2	2	3
IT316	CS214	Computer Graphics	2	2	3
IT341	MA 114	Data communication	2	2	3
IT331	MA 113	Signal and system	2	2	3
		Elective course 1	2	2	3
					18

Level (3) Semester (2)

Level 3 S	Semester 2	Course Title	Hours	Hours	
Code	Preq.	Obligatory:	Lec.	Prac.	Cred.
IT314	IT 212	Micro Controllers	2	2	3
IT322	IT212	Advanced Computer	2	2	3
	IT331				
		Networks			

IT342	IT 341	Digital Signal Processing	2	2	3
IT352	IT341 ST222	Pattern Recognition	2	2	3
IT331	MA 113	Signal and system	2	2	3
		Elective course 1	2	2	3
					18

Level (4) Semester (1)

Level 3 S	Semester 2	Course Title	Hours	5	
Code	Preq.	Obligatory:	Lec.	Prac.	Cred.
IT 322	IT 212	Information and	2	2	3
		Computer Networks			
		Security			
IT443	IT 341	Image processing	2	2	3
		Elective course 2	2	2	3
		Elective course 3	2	2	3
		Elective course 4	2	2	3
					18

Level (4) Semester (2)

Level 3	Semester 2	Course Title	Hours	5	
Code	Preq.	Obligatory:	Lec.	Prac.	Cred.
IT432	IT 221	Communication Technology	2	2	3
IT444	IT 352	Multimedia Mining	2	2	3
IT342	IT 341	Digital Signal Processing	2	2	3

 	Elective course 5	2	2	3
 	Elective course 6	2	2	3
 	Elective course 7	2	2	3
				18

Ele	ctive Co	urses for Information Tech	nology	v Pro	gram
		Course Title	Hours		
Code	Preq.	Obligatory:	Lect.	Tut.	Cred.
IT415	IT443	Machine Vision	2	2	3
	IT361				
IT416	IT 314	Robotics	2	2	3
IT417	IT 314	Embedded Systems	2	2	3
IT418	IT 314	Selected Topics in Embedded Systems and Robotic	2	2	3
IT424	IT 322	Wireless and Mobile Networks	2	2	3
IT425	IT 322	Cloud Computing Networks	2	2	3
IT426	IT 322	Internet Programming and Protocols	2	2	3
IT427	IT 322	Optical Networks	2	2	3
IT428	IT 424	Wireless Sensors Networks	2	2	3
IT429	IT 322	Selected Topics in Computer Networks	2	2	3
IT433	IT 423	Cyber Security	2	2	3
IT445	IT 443	Advanced Image Processing	2	2	3
IT446	IT443 IT361	Virtual Reality	2	2	3
IT447	IT 342	Speech Processing	2	2	3

IT448	IT 352	Selected Topics in Multimedia	2	2	3
IT453	IT 352	Advanced Pattern Recognition	2	2	3
IT454	IT 352	Human Language Technology	2	2	3
IT462	IT 361	Advanced Computer Graphics	2	2	3
IT463	IT 361	Computer Animation	2	2	3
IT471	IT322 CS112	Ubiquitous Computing	2	2	3
IT472	IT313 CS112	Concurrency and Parallel Computing	2	2	3
IT473	IT313 CS214	Intelligent and Quantum Computing	2	2	3
IT495		Selected Topics in Information Technology-1	2	2	3
IT496		Selected Topics in Information Technology-2	2	2	3

Summer training

Students are required to undertake to obtain one period of at least eight approved field (industrial) experience in industry, or in appropriate laboratories or institutions during a summer vacation. The students are expected to seek the relevant training during the summer vacation between level three and level four.

6. Program admission requirements

Arrangements for admission are based on the national guidelines with no Faculty control on the number of newly enrolled students. Candidates must satisfy the general admission requirements of the University and Faculty which are one of the following:

- 1. General Certificate of Secondary Education (GCSE) in Mathematics or Science
- 2. International Baccalaureate (GCSE, American Diploma).
- 3. In addition, students with GCSE in Science are required to study additional course in mathematics and passed it.

7. Regulations for progression and Program completion

The Faculty has the following system to follow student's progression through the Programs in which they are enrolled

- 1. To progress from level one to level two or level two to level three or level three to level four, student need to pass in all course units with a maximum of fail in two.
- 2. Student who fails his/her final examination at the first attempt will be eligible only for a "Pass" degree following any re-set examinations.

Progression from level one to level two:

In order to progress from Level One to Level Two, a student shall normally achieve a threshold performance at part Level One. To gain a threshold performance at Level One, a student shall normally be required to pass in all course units with a maximum of fail in two

Progression from 'Level Two' to 'Level Three:

To gain a threshold performance in 'Level Two', a student shall normally be required to achieve an aggregate score determined annually by the faculty council, and to pass in all course units. In order to pass from 'Level Two' to Part three, a student shall normally be required to achieve a threshold performance at 'Level Two' and to pass in all course units with a maximum of fail in two.

To pass the Summer Training, students must achieve a non-scored threshold training level base on submission of a formal written non-scored report from the training institution and the supervisor. Students who fail the summer training will (not) be required to transfer to the four-year Program.

To obtain the degree at the end of the 'Level Four', student must pass in all course units and achieve at least an overall of 60%.

8. Evaluation of Program intended learning outcomes

Evaluator Tool	Sample
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1. Senior students	Not applied yet
2. Alumni	Not applied yet
3. Stakeholders(Employers)	Not applied yet
4. External Evaluator(s)(External Examiner(s))	Not applied yet

ARS/ILOs		Kn	owlee	dge a	nd U	nders	tandi	ng		Inte	ellec	tual			Pr	actio	cal				Tr	ansf	erab	le		
_,		A1	A2	A3	A4	A5	A6	A7	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5	D1	D2	D3	D4	D5	D6	D7	D8
	1.1	\checkmark	\checkmark	√	\checkmark										-											
	1.2		√	V																						
Knowledge and understanding Intellectual skills Practical skills	1.3					\checkmark		\checkmark																		
	1.4				√			\checkmark																		
	1.5	\checkmark	\checkmark	\checkmark	\checkmark																					
	1.6					\checkmark	\checkmark	\checkmark																		
understanding	1.7				\checkmark		\checkmark	\checkmark																		
	1.8																									
	1.9			√	√	√																				
	1.10							√																		
	2.1								\checkmark																	
	2.2								\checkmark																	
	2.3																									
+	2.4								\checkmark		√															
Intolloctual	2.5								\checkmark	\checkmark																
	2.6										\checkmark	\checkmark														
51115	2.7								\checkmark	\checkmark																
	2.8									\checkmark			\checkmark													
	2.9										\checkmark	\checkmark	\checkmark													
	2.10										\checkmark		\checkmark												Ļ'	
	2.11									\checkmark		\checkmark	\checkmark												Ļ'	
	3.1													\checkmark											ļ'	
	3.2													√		√									ļ'	
	3.3													\checkmark	\checkmark	\checkmark	\checkmark								ļ'	L
	3.4													\checkmark											ļ'	<u> </u>
skills	3.5																								ļ'	
	3.6													\checkmark	√		,								ļ'	<u> </u>
.	3.7														√	\checkmark	\checkmark								ļ'	
	3.8																√	\checkmark	, ·			· .				
General and	4.1																		√	· .		√		,		\checkmark
transferable	4.2																			\checkmark	· ·			\checkmark	-	<u> </u>
skills	4.3																				\checkmark		,		\checkmark	1
	4.4																				\checkmark		\checkmark			\checkmark

Matrix of ARS/ILOs and Information Technology Program ILOs

4.5									\checkmark					\checkmark	
4.6											\checkmark		\checkmark		
4.7										\checkmark					\checkmark
4.8									\checkmark		\checkmark			\checkmark	
4.9									\checkmark			\checkmark			

10- Program Courses - Program ILOs Matrix (Curriculum Map)

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Progra	mme Contents		Knowl	ledge	and U		tandin	g		Inte	ellect	ual				T	rans	ferat	ple	1	1		1			
riogra	line contents	A 1	A2	A3	A4	A5	A6	A7	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5	D1	D2	D3	D4	D5	D6	D7	D8
Level On	e - Semester 1																									
HU111	Technical Report Writing							\checkmark					\checkmark	\checkmark								\checkmark				
HU112	Human Rights and Combating Corruption							\checkmark												\checkmark			\checkmark		\checkmark	
ENGL113	English Language (1)					\checkmark		\checkmark					\checkmark	\checkmark								\checkmark	\checkmark	\checkmark		\checkmark
MA111	Math (1)	\checkmark	\checkmark						√						\checkmark	\checkmark		\checkmark	√		\checkmark					
MA112	Discrete Mathematics	\checkmark	\checkmark		\checkmark		\checkmark		\checkmark	\checkmark					\checkmark	\checkmark			\bigvee		\checkmark					
ST121	Probability and Statistics (1)	\checkmark	\checkmark					\checkmark	\checkmark		\checkmark				\checkmark	\checkmark			\bigvee	\checkmark	\checkmark					
CS111	Fundamental of computer science		V	\checkmark	\checkmark	V		\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	V	V	V	V	\checkmark	V		\checkmark	V	\checkmark		\checkmark	\checkmark
Level On	e - Semester 2																									
HU114	Communication Skills							\checkmark			\checkmark		\checkmark		\checkmark					\checkmark			\checkmark			
HU121	Marketing and Sales							\checkmark			\checkmark		\checkmark							\checkmark			\checkmark			
HU117	Comparative Politics							\checkmark			\checkmark		\checkmark										\checkmark		\checkmark	
MA113	Math (2)	\checkmark		\checkmark		\checkmark		\checkmark	\checkmark	\checkmark					\checkmark	\checkmark		\checkmark	\checkmark					\checkmark		
IT111	Electronics	\checkmark	\checkmark	\checkmark						\checkmark		\checkmark	\checkmark			\checkmark	\checkmark	\checkmark	\checkmark			√				
CS112	Structured Programming	\checkmark	\checkmark	\checkmark	\checkmark		\checkmark		\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		\checkmark	V		\checkmark	\checkmark							
IT113	Fundamentals of Information Technology		\checkmark	\checkmark	\checkmark	\checkmark	\checkmark				\checkmark	\checkmark			\checkmark		\checkmark	\checkmark	V		\checkmark		\checkmark	\checkmark	\checkmark	\checkmark
-	vo - Semester 1																									
ENGL211	English Language					\checkmark		\checkmark					\checkmark	\checkmark								\checkmark	\checkmark	\checkmark	\checkmark	\checkmark

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	(2)																									
MA214	Math (3)	\checkmark		\checkmark		\checkmark		\checkmark	\checkmark	\checkmark					\checkmark	V		\checkmark	V		\checkmark	√		\checkmark		
CS213	Object Oriented Programming	\checkmark	\checkmark	\checkmark	\checkmark		\checkmark	V	\checkmark	\checkmark		\checkmark		\checkmark	\checkmark											
CS214	Data Structures		\checkmark				\checkmark	√		\checkmark	\checkmark	\checkmark	\checkmark		\checkmark		√		√	\checkmark						
SE 211	Open Source Software	\checkmark	\checkmark	\checkmark		\checkmark				\checkmark	-	\checkmark		\checkmark	\checkmark	\checkmark	V	\checkmark	V				\checkmark	\checkmark	\checkmark	\checkmark
IT212	Logic Design	\checkmark	\checkmark				\checkmark			\checkmark		\checkmark	\checkmark	\checkmark	\checkmark			\checkmark								
Level Tw	o - Semester 2																									
ST222	Probability and Statistics (2)	\checkmark	\checkmark					\checkmark	\checkmark		\checkmark				\checkmark	\checkmark			\checkmark	\checkmark	\checkmark					
CS251	Introduction to Software Engineering		\checkmark	\checkmark		\checkmark	\checkmark		\checkmark	\checkmark		V		\checkmark	\checkmark	\checkmark			V				\checkmark	\checkmark	\checkmark	
IS211	Introduction to Database Systems		\checkmark		\checkmark	V	\checkmark				\checkmark	\checkmark				\checkmark	\checkmark		V			\checkmark		V		
IS231	Web Technology				√				V			\checkmark		\checkmark			V	V	V			√			√	
IT221	Computer network Technology			V	V		\checkmark					V	V					V	V			√			V	
CS221	Algorithm Analysis and Design	\checkmark	\checkmark	\checkmark			\checkmark	V		\checkmark	\checkmark				V	V			V	\checkmark	\checkmark		\checkmark	V		
Level The	ree - Semester																									
CS341	Operating Systems		\checkmark		\checkmark		\checkmark				\checkmark			\checkmark	\checkmark	\checkmark		\checkmark		\checkmark		\checkmark	\checkmark		\checkmark	
IT331	Data communication		\checkmark		\checkmark		\checkmark		\checkmark		V			V	\checkmark		\checkmark	\checkmark		\checkmark						
CS331	Computer Organization and Architecture		\checkmark			V	\checkmark	V	\checkmark		\checkmark	V			V	V	\checkmark	\checkmark		V	\checkmark	\checkmark		V		
IT341	Signal and system			\checkmark		\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		\checkmark		V		\checkmark			V	\checkmark		\checkmark	\checkmark		\checkmark
IT316	Computer Graphics		\checkmark			V	V	V	\checkmark		\checkmark	\checkmark		\checkmark	\checkmark	\checkmark		\checkmark		\checkmark	\checkmark		\checkmark	V		
Level The 2	ree - Semester																									
IT314	Micro Controllers		\checkmark				\checkmark			\checkmark					\checkmark			\checkmark	\checkmark							

IT	Advanced																		\checkmark							
322	Computer		\checkmark	\checkmark		\checkmark	\checkmark		\checkmark		\checkmark	\checkmark			\checkmark			\checkmark	•	\checkmark	\checkmark	√	\checkmark			\checkmark
	Networks								•			•						•								
IT342	Digital Signal				\checkmark		\checkmark				\checkmark	\checkmark					\checkmark	\checkmark	\checkmark		\checkmark	\checkmark	\checkmark	\checkmark		
	Processing				v		v				v	v					v	v	v		v	v	v	v		
IT352	Pattern Recognition		\checkmark		\checkmark		\checkmark					\checkmark	\checkmark	\checkmark	\checkmark			\checkmark		\checkmark	\checkmark	\checkmark				
IT 351	Information																		\checkmark							
	Theory and Data				\checkmark		\checkmark			\checkmark		\checkmark	\checkmark	√				\checkmark			\checkmark		\checkmark	√	\checkmark	
	Comparison			<u> </u>																		<u> </u>				
TR301	Summer training		\checkmark	\checkmark							\checkmark	\checkmark				\checkmark		\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark			<u> </u>
1	our - Semester																									
IT423	Information																									
	and																									
	Computer		\checkmark		√		\checkmark	\checkmark				\checkmark	\checkmark	√				\checkmark	\checkmark	√	\checkmark	√		√		
	Networks																									
	Security		,												,	,					,					<u> </u>
IT443	Image processing		\checkmark		\checkmark				\checkmark	\checkmark				\checkmark	\checkmark	\checkmark				\checkmark	\checkmark	√				<u> </u>
IT497	Graduation project (1)	\checkmark	\checkmark	\checkmark					\checkmark	√	\checkmark	√	V	\checkmark												
2	our - Semester																									
IT432	Communication		\checkmark	\checkmark						\checkmark	\checkmark		\checkmark	\checkmark					\checkmark			\checkmark				
	Technology		V	V						V	v		v	V								V				
IT444	Multimedia			\checkmark		\checkmark	\checkmark						\checkmark		\checkmark	\checkmark			\checkmark		\checkmark					
	Mining			v		v	v						v		v	v					v					
IT498	Graduation project (2)	\checkmark	\checkmark	\checkmark					\checkmark	V	\checkmark	\checkmark														
	Courses(CS)																									
IT415	Machine Vision						\checkmark			\checkmark		\checkmark		√												
IT416	Robotics	\checkmark	\checkmark					\checkmark	,		\checkmark		\checkmark	\checkmark		\checkmark			\checkmark		\checkmark		\checkmark		\checkmark	
IT417	Embedded Systems		\checkmark					\checkmark	V	V		\checkmark				\checkmark	\checkmark							√	\checkmark	\checkmark
IT418	Selected Topics									\checkmark																
	in Embedded		-/					-/		-		\checkmark			- /			_/					-/	_/	-/	_/
	Systems and		\checkmark					\checkmark				ν			\checkmark			\checkmark					\checkmark	√	\checkmark	\checkmark
	Robotic																									
IT424	Wireless and								\checkmark	\checkmark									\checkmark							
	Mobile		\checkmark	\checkmark			\checkmark	\checkmark				\checkmark		\checkmark		\checkmark	\checkmark			\checkmark	\checkmark	\checkmark				
	Networks																									

IT425	Cloud Computing Networks		\checkmark	\checkmark			\checkmark	\checkmark	V	\checkmark	\checkmark		\checkmark	\checkmark	\checkmark	\checkmark		\checkmark	\checkmark	\checkmark	\checkmark				
IT426	Internet Programming and Protocols		\checkmark	\checkmark	\checkmark	\checkmark	V	\checkmark	V	V	\checkmark		\checkmark	\checkmark	\checkmark					V	\checkmark	\checkmark	V		
IT427	Optical Networks		\checkmark					√	√					√	√				√						
IT428	Wireless Sensors Networks		\checkmark	\checkmark	\checkmark	\checkmark	V	V	V	V	\checkmark		V	V	\checkmark			V	\checkmark	\checkmark	√				
IT429	Selected Topics in Computer Networks		\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	V	V	\checkmark		\checkmark	\checkmark	\checkmark			V	\checkmark	\checkmark	V				
IT433	Cyber Security		\checkmark			\checkmark	\checkmark		\checkmark			\checkmark		\checkmark	\checkmark				\checkmark	\checkmark					
IT445	Advanced Image Processing	\checkmark			\checkmark	\checkmark	\checkmark		V	\checkmark		\checkmark	\checkmark			\checkmark	\checkmark	V			\checkmark	\checkmark	\checkmark	\checkmark	
IT446	Virtual Reality	\checkmark			\checkmark	\checkmark	\checkmark		\checkmark	\checkmark		\checkmark	\checkmark				\checkmark	$$				\checkmark		\checkmark	\checkmark
IT447	Speech Processing	\checkmark			\checkmark	\checkmark	\checkmark		V	\checkmark		\checkmark				\checkmark	\checkmark	V				\checkmark	\checkmark	\checkmark	\checkmark
IT448	Selected Topics in Multimedia			\checkmark		\checkmark			V	V		\checkmark				\checkmark	\checkmark	V				√	\checkmark	\checkmark	\checkmark
IT453	Advanced Pattern Recognition	V	\checkmark	\checkmark					V	√	\checkmark	\checkmark				V	V	V				√	V	V	\checkmark
IT454	Human Language Technology		\checkmark				\checkmark		\checkmark	\checkmark		\checkmark				\checkmark	\checkmark	V			\checkmark	\checkmark	\checkmark	\checkmark	
IT462	Advanced Computer Graphics	\checkmark	\checkmark				V		V	V	\checkmark	\checkmark				V	V	V			V	\checkmark	\checkmark	V	
IT463	Computer Animation	\checkmark	\checkmark				\checkmark		\checkmark	\checkmark		\checkmark	\checkmark	\checkmark						\checkmark	\checkmark	\checkmark	\checkmark		
IT471	Ubiquitous Computing	\checkmark	\checkmark	\checkmark			\checkmark		V	V		\checkmark	\checkmark	\checkmark	\checkmark							\checkmark	\checkmark	\checkmark	\checkmark
IT472	Concurrency and Parallel Computing	\checkmark	\checkmark						V	V	\checkmark	\checkmark	\checkmark	\checkmark						V	\checkmark	\checkmark	V		
IT473	Intelligent and Quantum Computing	\checkmark	\checkmark					\checkmark	V	V	\checkmark	\checkmark	\checkmark	\checkmark						V	\checkmark	\checkmark	\checkmark		
IT495	Selected Topics	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark			\checkmark	\checkmark	\checkmark	\checkmark				\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark				1

	in Information Technology-1																		
IT496	Selected Topics													\checkmark					
	in Information	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark			\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		\checkmark	\checkmark	\checkmark		
	Technology-2																		

We certify that all of the information required to deliver this Program is contained in the above specification and will be implemented. All course specifications for this Program are in place.

Name	Signature	Date
Program Coordinator:		
Dr. Omnia El Barbary		9 -2021
د / عایده ابوالسعود نصر		
Head of Quality Assurance Unit:		
Dr. Omnia El Barbary		9 -2021
د / أمنية البربري		
Dean of the Faculty:		
Prof. Nancy El Hefnawy		9 -2021
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