SINAI UNIVERSITY

FACULTY OF IT & COMPUTER SCIENCE
SU

توصيف برنامج تكنولوجيا المعلومات

وحدة ضمان الجودة

كلية:تكنولوجيا المعلومات و علوم الحاسب فرع:القنطرة

SU QUALITY ASSURANCE CENTER

Program Specification for Information Technology Program

Faculty of Information Technology and Computer Sciences

Sinai University
Kantara Campus

Program Specification for Information Technology Program

University/ Academy:	**Sinai University**
Faculty/Institute:	**Faculty of Information Technology & Computer Science**
Department:	**Information Technology**
Program Coordinator:	**Mohammed El-Telbany**
Date of Approval:	**25/9/2019**

A-Basic Information:

1.	**Program:**	**Information Technology**
2.	**Program Type:**	**Single**
3.	**Department:**	**Information Technology**

B-Specialized Information:

1. Program Educational Aims

Information and Communication Technology major is one of the most important requirements of the local market in the modern era, as new increasing challenges around the world require advanced skills to cover the requirements of the modern industry based on the use of computers and digital technologies. After the end of the program, the student will be able to:

1. Gain knowledge of computing and mathematics appropriate to the field of information technology.
2. Apply programming principles to design and build software.
3. Develop software and applications using appropriate processes to adapt to changing environments.
4. Solving problems based on scientific and creative thinking and technological knowledge.
5. Understanding of professional, ethical, legal, security, and social issues and responsibilities.
6. Ability to communicate effectively.
7. Utilizing the field of information technology to achieve the sustainable development goals of society.
8. Enhance field professional skills and the ability to acquire new technology.
9. Completion of studies in relevant postgraduate programs.

2. Graduate Attributes

The program aims to provide the student with both breadth and depth of knowledge in the concepts and techniques related to the design, programming, and application of computing systems. The four-year IT program aims to provide the labor market in Egypt and abroad with qualified IT graduates that enable him or her to successfully perform integrative tasks, including the ability to:

1. Apply the fundamental theories and principles of computing and information applications.
2. Integrate and evaluate the computing tools and facilities.
3. Apply knowledge of mathematics and science.
4. Design a computing system, component, and process to meet the required needs within realistic constraints
5. Exploit the techniques, skills, and up-to-date computing tools necessary for computing and information practice.
6. Display professional responsibilities and ethical, societal, and cultural concerns
7. Use, compare, and evaluate a range of formal and informal techniques, theories, and methods to develop computing and information applications.
8. Consider and deal with the individual, social, environmental, organizational and economic implications of the application of computing and information.

9. Carry out a work plan with minimal supervision.
10. Communicate effectively.
11. Hold knowledge and skills required by the computing and information industry.
12. Engage in self and life-long learning and research in computing and information.
13. Fulfill the requirements of potential employers.
14. Knowledge of computing and mathematics appropriate to the discipline.
15. Analyze a problem, identify and define the computing requirements appropriate to its solution.
16. Design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.
17. Demonstrate independent critical thinking and problem-solving skills and function effectively on a team to accomplish a common goal.
18. An understanding of professional, ethical, legal, security, and social issues and responsibilities.
19. Communicate effectively with a range of audiences.
20. Analyze the local and global impact of computing on individuals, organizations, and society.
21. Recognition of the need for and an ability to engage in continuing professional development.
22. Use current techniques, skills, and tools necessary for information technology practice, and in the creation of an effective project plan.
23. Use and apply current technical concepts and practices in the core information technologies subjects.
24. Identify and analyze user needs and take them into account in the selection, creation, evaluation, and administration of computer-based systems.
25. Address information technologies problems of organizations or individuals.
26. Effectively integrate IT-based solutions into the user environment.
27. Understand the best practices and standards and their application.

3. Program Intended Learning Outcomes (ILOs)

Information Technology is a field that requires many skills. Graduate students must have knowledge and understanding of the field of information technology and computing, intellectual skills, practical and professional skills, and general and transferable skills. According to the National Academic Reference Standards (NARS) 2010 for the computing program, which was approved in 2010.

A. Knowledge and Understanding

The graduates of the information technology program should be able to:

A01. Explain the essential facts, concepts, principles, and theories relating to computing and information, and computer applications as appropriate to the program of study.

A02. Identify the main concepts of the modeling and design of computer-based systems.

A03. Classify the different tools, practices, and methodologies used in the specification, design, implementation, and evaluation of computer software systems.

A04. Select the criteria and specifications appropriate to specific problems, and plan strategies for their solution.

A05. Specify the extent to which a computer-based system meets the criteria defined for its current use and future development.

A06. Outline the current and underlying technologies that support computer processing and inter-computer communication.

A07. Enumerate the principles of generating tests that investigate the functionality of computer programs and computer systems, and evaluating their results.

A08. Match the basics of management and economics principles relevant to computing and information disciplines.

A09. State the professional, moral, and ethical issues involved in the exploitation of computer technology and be guided by the appropriate professional, ethical, and legal practices relevant to the computing and information industry.

A10. Identify current developments in computing and information research.

A11. Enumerate the requirements, practical constraints, and computer-based systems.

A12. Demonstrate basic knowledge of fundamental principles of core computing.
A13. Explain the fundamentals of programming and the construction of computer-based systems, data structures, algorithms, software Computing techniques, and information retrieval.
A14. Demonstrate main subjects, such as multimedia, computer and communication network, data mining and knowledge discovery, information storage and retrieval systems, mobile communication systems, pattern recognition, artificial Intelligence, cryptography, and network security.
A15. Explain the technologies for the design, development, and management of database systems, systems analysis and design, and information retrieval systems.
A16. Describe the role of human factors in the design of information technology systems.
A17. Select tools and techniques for the design and development of applications.
A18. List methods for the construction of web-based materials and systems, design of internet-based systems.
A19. Identify the legal, professional, and moral aspects of the exploitation of IT.
A20. Outline the broad context within computer information technology, such as quality, reliability, enterprise, employment law, accounting, and health.
A21. Describe the challenges inherent in the maintenance and evolution of IT-based systems, and the techniques and best practices currently available for dealing with them.

B. Intellectual Skills

The graduates of the information technology program should be able to:

B01. Analyze computing problems and provide solutions related to the design and construction of computing systems
B02. Discuss the concepts, principles, theories, and practices behind computing and information as an academic discipline.
B03. Interpret the appropriate criteria of a computer system for its current deployment and future evolution.
B04. Evaluate alternative computer systems and processes, taking into account limitations and quality constraints.
B05. Propose ideas, proposals, and designs using rational and reasoned arguments for the presentation of computing systems.
B06. Investigate the functionality of computer systems.
B07. Estimate judgments considering balanced costs, benefits, safety, quality, reliability, and environmental impact.
B08. Summarize the professional, legal, moral and ethical issues relevant to the computing industry.
B09. Evaluate research papers in a range of knowledge areas.
B10. Solve Information technology systems problems, observe results, reason and apply judgment.
B11. Identify attributes, components, relationships, patterns, main ideas, and errors.
B12. Summarize the proposed solutions ad their results.
B13. Restrict solution methodologies upon their results.
B14. Establish criteria, and verify solutions
B15. Evaluate range of solutions and critically and justify proposed design solutions.
B16. Solve information technology problems with pressing commercial or industrial constraints.
B17. Generate an innovative design to solve a problem containing a range of commercial and industrial constraints.
B18. Perform problem analysis from written descriptions; derive requirements specifications from an understanding of problems (analysis, synthesis).
B19. Justify designs to satisfy given requirements (synthesis, evaluation, application).
B20. Examine professional, moral and ethical issues of involved in the exploitation of Information Technology and be guided by their adoption, reflect on issues of professional practice within the discipline.

C. Practical and Professional Skills

The graduates of information technology program should be able to:

C01. Operate computing equipment, recognizing its logical and physical properties, capabilities and limitations.

C02. Implement comprehensive computing knowledge and skills in projects and in deployment of computers to solve position practical problems.
C03. Deploy the equipment and tools used for the construction, maintenance and documentation of computer applications.
C04. Apply computing information retrieval skills in computing community environment and industry.
C05. Develop a range of fundamental research skills, through the use of online resources, technical repositories and library-based material.
C06. Apply the development of life-cycle of software systems.
C07. Assess the implications, risks or safety aspects involved in the operation of computing equipment within a specific context.
C08. Manage diverse data effectively.
C09. Apply appropriate tools and techniques for Specify, investigate, analyze, design and develop computer-based systems.
C10. Evaluate the quality and possible trade-offs of systems based on hardware and software solutions for given scenarios.
C11. Apply the risks or safety aspects management involved in the operation of computer-based systems.
C12. Deploy tools for the implementation and documentation of computer-based systems.
C13. Coordinate development team members in computing systems.
C14. Operate computing equipment efficiently, taking into account its logical and physical properties.
C15. Apply professional, moral and ethical issues within the discipline.
C16. Employ information-retrieval skills effectively.
C17. Communicate effectively with team members, managers and customers. using a variety of communication methods.
C18. Manage IT facilities and plan to complete a project within budget and schedule.
C19. Manage one's own learning and development, including time management and organizational skills.
C20. Present their work in the form of reports, oral presentations or an internet web site.

D. General and Transferable Skills

The graduates of the information technology program should be able to:

D01 Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.
D02. Demonstrate skills in group working, team management, time management and organizational skills.
D03. Utilizing information-retrieval results.
D04. 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.
D05. Exhibit appropriate numeracy skills in understanding and presenting cases involving a quantitative dimension.
D06. Reveal communication skills, public speaking and presentation skills, and delegation, writing skills, oral delivery, and effectively using various media for a variety of audiences.
D07. Manage general computing facilities.
D08. Demonstrate an appreciation of the need to continue professional development in recognition of the requirement for life-long learning.

C. Academic Standards:

The program is considering the **National Academic Reference Standards (NARS)** for Computing and Information, 2010, by the Faculty Council on 28/11/2022.

Annex 1 of this document shows the relationship between the program courses and the program ILOs. Annexes shows the program attributes versus the program ILOs.

D. Program Contents and Structures:

1. Program duration:

Four academic years.	**Eight Semesters**

2. Program Structure

Sn	Subject Area	CH			Percent (%)	NARS (%)
		Compulsory	Elective	Total		
1	University requirements (Humanities, ethical and Social Sciences.	6	6	12	8%	8-10%
2	Mathematics & Basic Sciences	15	-	15	11%	16-18%
	Basic Computing Science	57	6	63	44%	26-28%
3	Program requirements (Specialization)	33	15	48	33%	28-30%
4	Field Training/Internship	0	0	0	0%	3-5%
5	Graduation Project	6	-	6	4%	3-5%
Total Credits Hours		117	27	144	100%	-

4. The Program Contents

1st Year (Semester-1)

Course code	Course Title	Credit hours			Prerequisite	Examination Marks*				Total. marks	Exam Time (hrs)
		L	P/T	Total		CW	T.E	Oral/p	F.E		
Hu 100	Sinai History	2	0	0	No Prerequisite	15	25	-	60	100	2
Hu 110	English Language	2	2	3	No Prerequisite	15	25	-	60	100	2
CSW 110	Introduction to Computer & Internet Technology	2	2	3	No Prerequisite	5	25	10	60	100	3
St 120	Statistics & Probability	3	2	4	No Prerequisite	15	25	-	60	100	3
Ma 111	Calculus	3	2	4	No Prerequisite	15	25	-	60	100	3
INT 110	Introduction to Electronics	2	2	3	No Prerequisite	5	25	10	60	100	3
Total		14	10	17							

- L= lecture, P/T= practical/tutorial, CW= Course work, T.E =Term exams, F.E =Final exam

1st Year(Semester-2)

Course code	Course Title	Credit hours			Prerequisite	Examination Marks*				Total. marks	Exam Time (hrs)
		L	P/T	Tot al		CW	T.E	Oral/p	F.E		
ISD 100	Introduction to Systems & Informatics	2	2	3	No Prerequisite	15	25	-	60	100	3
CSW 232	Computer Programming (1)	3	2	4	CSW 110Introduction to Computer & Internet Technology	5	25	10	60	100	3
CSW 121	Logic Design	2	2	3	INT 110Introduction to Electronics	15	25	-	60	100	3
Hu 230	Communication Skills	1	0	1	No Prerequisite	15	25	-	60	100	3
Ma 110	Linear Algebra	2	2	3	No Prerequisite	15	25	-	60	100	3
Hu 111	Composition + Technical Writing	3	-	3		15	25	-	60	100	3
Hu 194	Human Rights	2	0	0	No Prerequisite	15	25	-	60	100	2
Total		13	8	17							

- L= lecture, P/T= practical/tutorial, CW= Course work, T.E =Term exams, F.E =Final exam

2nd Year (Semester-3)

Course code	Course Title	Credit hours			Prerequisite	Examination Marks*				Total. marks	Exam Time (hrs)
		L	P/T	Total		CW	T.E	Oral/p	F.E		
CSW 221	Data Structures	2	2	3	Ma 110 Linear Algebra	5	25	10	60	100	3
CSW 241	File Organization & Processing	2	2	3	CSW 110 Introduction to Computer & Internet Technology	5	25	10	60	100	3
CSW 263	Software Engineering	2	2	3	CSW 232Computer Programming (1)	15	25	-	60	100	3
CSW 234	Computer Programming (2)	3	2	4	CSW 232Computer Programming (1)	5	25	10	60	100	3
Ma 212	Discrete Mathematics	3	2	4	Ma 110Linear Algebra	15	25	-	60	100	3
Hu 213	Creative Thinking	3	0	3	No Prerequisite	15	25	-	60	100	3
Total		15	10	20							

- L= lecture, P/T= practical/tutorial, CW= Course work, T.E =Term exams, F.E =Final exam

2nd Year (Semester-4)

Course code	Course Title	Credit hours			Prerequisite	Examination Marks*				Total. marks	Exam Time (hrs)
		L	P/T	Total		CW	T.E	Oral/p	F.E		
CSW 242	Operating Systems (1)	2	2	3	CSW 241File Organization & Processing	15	25	-	60	100	3
ISD 220	Introduction to Operations Research	3	2	4	Ma 110Linear Algebra St 120Statistics & Probability	15	25	-	60	100	3
INT 232	Computer Networks	2	2	3	Ma 110Linear Algebra	15	25	-	60	100	3
Hu 212	Reading & Presentation Skills	2	0	2	No Prerequisite	15	25	-	60	100	3
ISD 242	Database Systems	2	2	3	CSW 221Data Structure	5	25	10	60	100	3
CSW 225	Computer Architecture	2	2	3	CSW 110Introduction to Computer & Internet Technology CSW 121Logic Design	15	25	-	60	100	3
Total		13	10	18							

- L= lecture, P/T= practical/tutorial, CW= Course work, T.E =Term exams, F.E =Final exam

3rd Year (Semester-5)

Course code	Course Title	Credit hours			Prerequisite	Examination Marks*				Total. marks	Exam Time (hrs)
		L	P/T	Total		CW	T.E	Oral/p	F.E		
CSW 325	Parallel Processing	2	2	3	CSW 225Computer Architecture	15	25	-	60	100	3
INT 353	Multimedia	2	2	3	CSW 225Computer Architecture	5	25	10	60	100	3
CSW 351	Artificial Intelligence	2	2	3	CSW 232Computer Programming (1)	5	25	10	60	100	3
CSW 323	Operating Systems (2)	2	2	3	CSW 242Operating Systems (1)	15	25	-	60	100	3
INT 341	Web Technology	2	2	3	CSW 110Introduction to Computer & Internet Technology	5	25	10	60	100	3
INT 351	Computer Graphics	2	2	3	CSW 234 Computer Programming (2)	5	25	10	60	100	3
Total		12	12	18							

- L= lecture, P/T= practical/tutorial, CW= Course work, T.E =Term exams, F.E =Final exam

3rd Year (Semester-6)

Course code	Course Title	Credit hours			Prerequisite	Examination Marks*				Total. marks	Exam Time (hrs)
		L	P/T	Total		CW	T.E	Oral/p	F.E		
INT 343	Website Design & Implementation	2	2	3	INT 341Web Technology CSW 338Programming for WWW	15	25	-	60	100	3
INT 338	Network - Based Multimedia	2	2	3	INT 353Multi Media INT 232Computer Network	15	25	-	60	100	3
CSW 337	Web client side Programming	2	2	3	CSW 234Computer Programming (2)	15	25	-	60	100	3
CSW 338	Programming for WWW	2	2	3	CSW 234Computer Programming (2)	15	25	-	60	100	3
INT 349W	WDT Project	2	2	3	No Prerequisite	5	25	10	60	100	3
INT 330	Data Communications	2	2	3	Ma 110Linear Algebra Ma 111Calculus	15	25	-	60	100	3
Total		12	12	18							

- L= lecture, P/T= practical/tutorial, CW= Course work, T.E =Term exams, F.E =Final exam

4th Year (Semester-7)

Course code	Course Title	Credit hours			Prerequisite	Examination Marks*				Total. marks	Exam Time (hrs)
		L	P/T	Total		CW	T.E	Oral/p	F.E		
INT 421	Digital Signal Processing	2	2	3	Ma 110Linear Algebra Ma 111Calculus	15	25	-	60	100	3
INT 422	Pattern Recognitions	2	2	3	Ma 110Linear Algebra Ma 111Calculus	15	25	-	60	100	3
INT 423	Image Processing	2	2	3	Ma 110Linear Algebra	5	25	10	60	100	3
INT 453	Digital Multimedia	2	2	3	INT 353Multimedia	5	25	10	60	100	3
INT 461	Information Engineering	2	2	3	INT 232Computer Network	15	25	-	60	100	3
INT 498	IT Project (1)	2	2	3	Passing 95 credit hours	15	25	-	60	100	3
Total		12	12	18							

- L= lecture, P/T= practical/tutorial, CW= Course work, T.E =Term exams, F.E =Final exam

4th Year (Semester-8)

Course code	Course Title	Credit hours			Prerequisite	Examination Marks*				Total. marks	Exam Time (hrs)
		L	P/T	Total		CW	T.E	Oral/p	F.E		
INT 434	Network Operations & Administration	2	2	3	INT 232Computer Network	15	25	-	60	100	3
INT 435	Information & Networks Security	2	2	3	INT 232Computer Network	15	25	-	60	100	3
INT 433	Broadband Network & Communication	2	2	3	INT 232Computer Network INT 330Data Communication	15	25	-	60	100	3
INT 437	Wireless & Mobile Networks	2	2	3	INT 232Computer Network	15	25	-	60	100	3
INT 489	Selected Topics in IT	2	2	3	No Prerequisite	15	25	-	60	100	3
INT 499	IT Project (2)	2	2	3	IT Project (1)	15	25	-	60	100	3
Total		12	12	18							

- L= lecture, P/T= practical/tutorial, CW= Course work, T.E =Term exams, F.E =Final exam

Elective Courses for University Requirements

Course code	Course Title	Credit hours			Prerequisite	Examination Marks*				Total. marks	Exam Time (hrs)
		L	P/T	Total		CW	T.E	Oral/p	F.E		
Hu 213	Creative Thinking	3	0	3	No Prerequisite	15	25	-	60	100	3
Hu 212	Reading & Presentation Skills	2	0	2	No Prerequisite	15	25	-	60	100	3
Hu 230	Communication Skills	1	0	1	No Prerequisite	15	25	-	60	100	3
Hu 120	Ethical and Professional Issues	1	0	1	No Prerequisite	15	25	-	60	100	3
ISD 110	Introduction to Management	3	0	3	No Prerequisite	15	25	-	60	100	3
ISD 111	Introduction to Economics	3	0	3	No Prerequisite	15	25	-	60	100	3
Total		15	0	15							

- L= lecture, P/T= practical/tutorial, CW= Course work, T.E =Term exams, F.E =Final exam

Elective Courses for Faculty Requirements

Course code	Course Title	Credit hours			Prerequisite	Examination Marks*				Total. marks	Exam Time (hrs)
		L	P/T	Total		CW	T.E	Oral/p	F.E		
INT 232	Computer Networks	2	2	3	Ma 110Linear Algebra	15	25	-	60	100	3
ISD 330	Project Management	2	2	3	ISD 100Introduction to Systems & Informatics	15	25	-	60	100	3
ISD 242	Database Systems (1)	2	2	3	CSW 221Data Structure	5	25	10	60	100	3
CSW 326	Compiler	2	2	3	CSW 221Data Structure	5	25	10	60	100	3
ISD 340	Data Mining	2	2	3	ISD 242Database Systems (1)	5	25	10	60	100	3
ISD 331	Queuing theory	2	2	3	ISD 220Introduction to Operations Research	15	25	-	60	100	3
ISD 321	Modeling & Simulation	2	2	3	ISD 220Introduction to Operations Research	15	25	-	60	100	3
Total		14	14	21							

- L= lecture, P/T= practical/tutorial, CW= Course work, T.E =Term exams, F.E =Final exam

Elective Courses for Specialization

Course code	Course Title	Credit hours			Prerequisite	Examination Marks*				Total. marks	Exam Time (hrs)
		L	P/T	Total		CW	T.E	Oral/p	F.E		
ISD 342	Database System (2)	2	2	3	ISD 242 Database Systems (1)	5	25	10	60	100	3
ISD 442	Database Design	2	2	3	ISD 242 Database Systems (1)	5	25	10	60	100	3
CSW 433	Concept of Computer Programming	2	2	3	CSW 241File Organization & Processing	15	25	-	60	100	3
ISD 351	Information Systems Fundamentals	2	2	3	ISD 242 Database Systems (1) CSW 263 Software Engineering	15	25	-	60	100	3
ISD 352	Information Systems Analysis & Design	2	2	3	ISD 100 Introduction to Systems & Informatics	15	25	-	60	100	3
INT 351	Computer Graphics	2	2	3	CSW 234 Computer Programming (2)	5	25	10	60	100	3
ISD 321	Modeling & Simulation	2	2	3	ISD 220Introduction to Operations Research	15	25	-	60	100	3
INT 461	Information Engineering	2	2	3	INT 232Computer Network	15	25	-	60	100	3
Total		16	16	24							

- L= lecture, P/T= practical/tutorial, CW= Course work, T.E =Term exams, F.E =Final exam

Distribution of Credit Hours (total 144 hours) according to the NARS

Sn	Subject Area	CH			Percent (%)	NARS (%)
		Compulsory	Elective	Total		
1	University requirements (Humanities, ethical and Social Sciences.	6	6	12	8%	8-10%
2	Mathematics & Basic Sciences	15	-	15	11%	16-18%
	Basic Computing Science	57	6	63	44%	26-28%
3	Program requirements (Specialization)	33	15	48	33%	28-30%
4	Field Training/Internship	0	0	0	0%	3-5%
5	Graduation Project	6	-	6	4%	3-5%
Total Credits Hours		117	27	144	100%	-

Field Training/Internship in Summer

Is not applied.

However, the duration of summer training is (**30**) thirty days or (**4**) four weeks distributed over the summer vacations from the first level until the student reaches the fourth level. Coordination is made with the heads of departments in the college and the community parties committees to provide practical training opportunities for students in information technology institutions through the summer practical training committee for students, which contacts the training entity and sends students with evaluation forms for each student. The faculty also prepares internal training programs for students in the laboratories of the various practical departments during the summer vacation in coordination with the faculty members and the laboratories and material capabilities committee in the faculty.

E. Admission Criteria for the Program

Admission requirements for the program, according to the instructions of the Supreme Council of Private Universities and the rules and conditions of the university, are as follows:

- Obtaining a high school completion certificate from Egyptian schools, or an equivalent certificate recognized by the Supreme Council of Egyptian Universities.
- Admission requirements to the college are subject to the rules determined by the Council of Private and Civil Universities.
- Admission requirements to the college for non-Egyptian students are subject to the rules determined by the Ministry of Higher Education and the Council of Private and Civil Universities.
- Fulfilling all requirements, rules, and conditions set by the university.
- Full-time study is a basic condition for all students.

F. Program Teaching Methods

Teaching and Learning Methods
Direct learning (theoretical lectures& theoretical part of the practical)
Interactive learning (discussion through lectures & labs)
Practical laboratory work
Visual education (movies & pictures)
Self learning (active posters & presentation)
Collaborative learning (grouping in presentation, practical labs & awareness campaigns)
Active learning (case study & brainstorm)
Electronic education (online lecture & interactive E- learning)
Field education (summer training)

G. Program Students' Assessment Methods

ILOs	Assessment Methods	Schedule	Degree	Weight
Knowledge and understanding skills Intellectual skills Professional and Practical Skills	Midterm Exam	7th week	20	20%
Knowledge and understanding skills Intellectual skills Professional and Practical Skills	Coursework (Assignments, Quizzes)	Every week	10	10%
Knowledge and understanding skills Intellectual skills Professional and Practical Skills General skills	Practical exam	14th Week	10	10%
Knowledge and understanding skills Intellectual skills Professional and Practical Skills	Final written exam	15th Weeks	60	60%
Total			**100**	**100%**

H. Program Evaluation Methods

Sample	Method	Evaluator
Minimum 50% of total number of students	Questionnaires& Meetings	Senior Students
10 % of all Graduates	Program coordinator, Meeting staff member &Questionnaires	Alumni
Stack holders	Program coordinator, Questionnaires & Meetings	Stack holders
One external Examiner	Report for revising final year Exams	External Examiner
One external Reviewer (Professor)	External Reviewer Report	External Reviewer
One internal Reviewer (Professor)	Internal Reviewer Report	Internal Reviewer

Dean

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Prof. Yasser Dakroury

Program Coordinator

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Associate. Prof. Mohammed El-Telbany

SINAI UNIVERSITY جامعة سيناء | Kantara

Information Technology Program Matrices

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Academic Standards (Knowledge and Understanding Skills)

IT Program ILOs	Corresponding in NARS		NARS ILOs - General	NARS ILOs - Special
A01. Explain the essential facts, concepts, principles and theories relating to computing and information and computer applications as appropriate to the program of study.	**K1**	**k1**	K1. Essential facts, concepts, principles and theories relating to computing and information and computer applications as appropriate to the program of study. K2. Modeling and design of computer-based systems bearing in mind the trade-offs. K3. Tools, practices and methodologies used in the specification, design, implementation and evaluation of computer software systems. K4. Criteria and specifications appropriate to specific problems, and plan strategies for their solution. K5. The extent to which a computer-based system meets the criteria defined for its current use and future development. K6. The current and underlying technologies that support computer Processing and inter-computer communication. K7. Principals of generating tests which investigate the functionality of computer programs and computer systems and evaluating their results. relevant to computing and information disciplines.	k1. Demonstrate basic knowledge and understanding of fundamental principles of core computing. k2. Demonstrate strong knowledge of fundamentals of programming and the construction of computer-based systems, data structures and algorithms, software Computing techniques and information retrieval. k3. Provide a deeper understanding of some aspects of the subject, such as multimedia, computer and communication network, data mining and knowledge discovery, information storage and retrieval systems, mobile Communication Systems, pattern recognition, artificial Intelligence, cryptography and network security. k4. Show the understanding of technologies for the design, development and management of database systems, systems analysis and design and of information retrieval systems. k5. Know the role of human factors in the design of Information Technology systems. k6. Apply tools and techniques for the design and development of applications. k7. Know methods for the construction of web-based materials and systems, design of internet-based systems. k8. Provide an understanding of legal, professional and moral aspects of the exploitation of IT.
A02. Identify the main concepts of the modeling and design of computer-based systems.	**K2**			
A03. Classify the different tools, practices and methodologies used in the specification, design, implementation and evaluation of computer software systems.	**K3**	**k2**		
A04. Select the criteria and specifications appropriate to specific problems, and plan strategies for their solution.	**K4**			
A05. Specify the extent to which a computer-based system meets the criteria defined for its current use and future development.	**K5**			
A06. Outline the current and underlying technologies that support computer processing and inter-computer communication.	**K6**			
A07. Enumerate the principals of generating tests which investigate the functionality of computer programs and computer systems and evaluating their results.	**K7**			
A08. Match the basics of management and economics principles relevant to computing and information disciplines.	**K8**			
A09. State the professional, moral and ethical issues involved in the exploitation of computer technology and be guided by the appropriate professional, ethical and legal practices relevant to the computing and information industry.	**K9**			
A10. Identify current developments in computing and information research.	**K10**			
A11. Enumerate the requirements, practical constraints and computer-based systems.	**K11**			

A12. Demonstrate basic knowledge of fundamental principles of core computing.	**K1**	**k1**	K9. Professional, moral and ethical issues involved in the exploitation of computer technology and be guided by the appropriate professional, ethical and legal practices relevant to the computing and information industry. K10.Current developments in computing and information research. K11. Requirements, practical constraints and computer-based systems	k9. Understand the broad context within computer information technology such as quality, reliability, enterprise, employment law, accounting and health. k10. 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.
A13. Explain the fundamentals of programming and the construction of computer-based systems, data structures and algorithms, software Computing techniques and information retrieval.		**k2**		
A14. Demonstrate main subject, such as multimedia, computer and communication network, data mining and knowledge discovery, information storage and retrieval systems, mobile Communication Systems, pattern recognition, artificial Intelligence, cryptography and network security.		**k3**		
A15. Explain the technologies for the design, development and management of database systems, systems analysis and design and of information retrieval systems.		**k4**		
A16. Describe the role of human factors in the design of Information Technology systems.		**k5**		
A17. Select tools and techniques for the design and development of applications.		**k6**		
A18. List methods for the construction of web-based materials and systems, design of internet-based systems.		**k7**		
A19. Identify the legal, professional and moral aspects of the exploitation of IT.		**k8**		
A20. Outline the broad context within computer information technology such as quality, reliability, enterprise, employment law, accounting and health.	**K11**	**k9**		
A21. Describe the challenges inherent in the maintenance and evolution of IT-based systems, and the techniques and best practices currently available for dealing with them.	**K11**	**k10**		

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Academic Standards (Intellectual Skills)

IT Program ILOs	Corresponding in NARS		NARS ILOs - General	NARS ILOs - Special
B01. Analyze computing problems and provide solutions related to the design and construction of computing systems	**I1**		I1. Analyze computing problems and provide solutions related to the design and construction of computing systems. I2. Realize the concepts, principles, theories and practices behind computing and information as an academic discipline. I3. Identify criteria to measure and interpret the appropriateness of a computer system for its current deployment and future evolution. I4. Analyze alternative computer systems and processes taking into account limitations, and quality constraints. I5. Make ideas, proposals and designs using rational and reasoned arguments for presentation of computing systems. I6. Evaluate the results of tests to investigate the functionality of computer systems. I7. Achieve judgments considering balanced costs, benefits, safety, quality, reliability, and environmental impact. I8. Familiar with the professional, legal, moral and ethical issues relevant to the computing industry. I9. Evaluate research papers in a range of knowledge areas.	i1. Information technology systems problems, set goals towards solving them, observe results, reason and apply judgment. i2. Identify attributes, components, relationships, patterns, main ideas, and errors. i3. Summarize the proposed solutions ad their results. i4. Restrict solution methodologies upon their results. i5. Establish criteria, and verify solutions i6. Identify a range of solutions and critically evaluate and justify proposed design solutions. i7. Solve information technology problems with pressing commercial or industrial constraints. i8. Generate an innovative design to solve a problem containing a range of commercial and industrial constraints. i9. Perform problem analysis from written descriptions; derive requirements specifications from an understanding of problems (analysis, synthesis). i10. Create and/or justify designs to satisfy given requirements (synthesis, evaluation, application). i11. Recognize the professional, moral and ethical issues of involved in the exploitation of Information Technology and be guided by their adoption, reflect on issues of professional practice within the discipline.
B02. Discuss the concepts, principles, theories and practices behind computing and information as an academic discipline.	**I2**			
B03. Interpret the appropriate criteria of a computer system for its current deployment and future evolution.	**I3**			
B04. Evaluate alternative computer systems and processes taking into account limitations, and quality constraints.	**I4**			
B05. Propose ideas, proposals and designs using rational and reasoned arguments for presentation of computing systems.	**I5**			
B06. Investigate the functionality of computer systems.	**I6**			
B07. Estimate judgments considering balanced costs, benefits, safety, quality, reliability, and environmental impact.	**I7**			
B08. Summarize the professional, legal, moral and ethical issues relevant to the computing industry.	**I8**			
B09. Evaluate research papers in a range of knowledge areas.	**I9**			
B10. Solve Information technology systems problems, observe results, reason and apply judgment.		**i1**		
B11. Identify attributes, components, relationships, patterns, main ideas, and errors.		**i2**		
B12. Summarize the proposed solutions ad their results.		**i2**		
B13. Restrict solution methodologies upon their results.		**i4**		
B14. Establish criteria, and verify solutions		**i5**		
B15. Evaluate range of solutions and critically and justify proposed design solutions.		**i6**		
B16. Solve information technology problems with pressing commercial or industrial constraints.		**i7**		
B17. Generate an innovative design to solve a problem containing a range of commercial and industrial constraints.		**i8**		
B18. Perform problem analysis from written descriptions; derive requirements specifications from an understanding of problems (analysis, synthesis).		**i9**		

B19. Justify designs to satisfy given requirements (synthesis, evaluation, application).		**i10**		
B20. Examine professional, moral and ethical issues of involved in the exploitation of Information Technology and be guided by their adoption, reflect on issues of professional practice within the discipline.		**i11**		

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Academic Standards (Professional and Practical Skills)

IT Program ILOs	Corresponding in NARS		NARS ILOs - General	NARS ILOs - Special
C01. Operate computing equipment, recognizing its logical and physical properties, capabilities and limitations.	**P1**		P1. Operate computing equipment effectively, recognizing its logical and physical properties, capabilities and limitations. P2. Implement comprehensive computing knowledge and skills in projects and in deployment of computers to solve position practical problems. P3. Deploy the equipment and tools used for the construction, maintenance and documentation of computer applications. P4. Apply computing information retrieval skills in computing community environment and industry. P5. Develop a range of fundamental research skills, through the use of online resources, technical repositories and library-based material. P6. Design, implement, maintain, and manage software systems. P7. Assess the implications, risks or safety aspects involved in the operation of computing equipment within a specific context. P8. Handle a mass of diverse data, assess risk and draw conclusions.	p1. Specify, investigate, analyze, design and develop computer-based systems using appropriate tools and techniques. p2. Evaluate systems in terms of their quality and possible trade-offs, evaluate appropriate hardware and software solutions for given scenarios. p3. Recognize risks or safety aspects involved in the operation of computer based systems. p4. Deploy tools for the implementation and documentation of computer-based systems. p5. Work as part of a development team and to recognize the different roles of its members. p6. Operate computing equipment efficiently, taking into account its logical and physical properties. p7. Recognize and address professional, moral and ethical issues within the discipline. p8. Effectively employ information-retrieval skills, (including the use of browsers, search engines, and on-line library catalogues), communicate effectively using a variety of communication methods, and communicate effectively with team members, managers and customers. p9. Make effective use of general IT facilities, plan and manage a project to complete within budget and schedule.
C02. Implement comprehensive computing knowledge and skills in projects and in deployment of computers to solve position practical problems.	**P2**			
C03. Deploy the equipment and tools used for the construction, maintenance and documentation of computer applications.	**P3**			
C04. Apply computing information retrieval skills in computing community environment and industry.	**P4**			
C05. Develop a range of fundamental research skills, through the use of online resources, technical repositories and library-based material.	**P5**			
C06. Apply the development of life-cycle of software systems.	**P6**			
C07. Assess the implications, risks or safety aspects involved in the operation of computing equipment within a specific context.	**P7**			
C08. Manage diverse data effectively.	**P8**			
C09. Apply appropriate tools and techniques for Specify, investigate, analyze, design and develop computer-based systems.		**p1**		
C10. Evaluate the quality and possible trade-offs of systems based on hardware and software solutions for given scenarios.		**p2**		
C11. Apply the risks or safety aspects management involved in the operation of computer-based systems.		**p3**		
C12. Deploy tools for the implementation and documentation of computer-based systems.		**p4**		
C13. Coordinate development team members in computing systems.		**p5**		

C14. Operate computing equipment efficiently, taking into account its logical and physical properties.		**p6**		p10. Manage one's own learning and development, including time management and organizational skills. p11. Present their work in the form of reports, oral presentations or an internet web site.
C15. Apply professional, moral and ethical issues within the discipline.		**p7**		
C16. Employ information-retrieval skills effectively.		**p8**		
C17. Communicate effectively with team members, managers and customers. using a variety of communication methods.		**p9**		
C18. Manage IT facilities and plan to complete a project within budget and schedule.		**p9**		
C19. Manage one's own learning and development, including time management and organizational skills.		**p10**		
C20. Present their work in the form of reports, oral presentations or an internet web site.		**p11**		

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Academic Standards (Transferable Skills)

IT Program ILOs	Corresponding in NARS		NARS ILOs - General	NARS ILOs - Special
D01 Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.	**T1**		T1. Demonstrate the ability to make use of a range of learning resources and to manage one's own learning. T2. Demonstrate skills in group working, team management, time management and organizational skills. T3. Show the use of information-retrieval. T4. 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. T5. Exhibit appropriate numeracy skills in understanding and presenting cases involving a quantitative dimension. T6. Reveal communication skills, public speaking and presentation skills, and delegation, writing skills, oral delivery, and effectively using various media for a variety of audiences. T7. Show the use of general computing facilities.	
D02. Demonstrate skills in group working, team management, time management and organizational skills.	**T2**			
D03. Utilizing information-retrieval results.	**T3**			
D04. 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.	**T4**			
D05. Exhibit appropriate numeracy skills in understanding and presenting cases involving a quantitative dimension.	**T5**			
D06. Reveal communication skills, public speaking and presentation skills, and delegation, writing skills, oral delivery, and effectively using various media for a variety of audiences.	**T6**			
D07. Manage general computing facilities.	**T7**			
D08. Demonstrate an appreciation of the need to continue professional development in recognition of the requirement for life-long learning.	**T8**			

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Academic Standards Matrix

Knowledge and Understanding Skills				**Intellectual Skills**			
NARS ILOs General	Covering ILOs in IT Program	NARS ILOs Special	Covering ILOs in IT Program	NARS ILOs General	Covering ILOs in IT Program	NARS ILOs Special	Covering ILOs in IT Program
K1	A01	k1	A12	I1	B01	i1	B10
K2	A01	k2	A13	I2	B02	i2	B11
K3	A03	k3	A14	I3	B03	i3	B12
K4	A04	k4	A15	I4	B04	i4	B13
K5	A05	k5	A16	I5	B05	i5	B14
K6	A06	k6	A17	I5	B06	i6	B15
K7	A07	k7	A18	I7	B07	i7	B16
K8	A08	k8	A19	I8	B08	i8	B17
K9	A09	k9	A20	I9	B09	i9	B18
K10	A10	k10	A21			i10	B19
K11	A11					i11	B20
Professional and Practical Skills				**Transferable Skills**			
NARS ILOs General	Covering ILOs in IT Program	NARS ILOs Special	Covering ILOs in IT Program	NARS ILOs General	Covering ILOs in IT Program		
P1	C01	p1	C09	T1	D01		
P2	C02	p2	C10	T2	D02		
P3	C03	p3	C11	T3	D03		
P4	C04	p4	C12	T4	D04		
P5	C05	p5	C13	T5	D05		
P6	C06	p6	C14	T6	D06		
P7	C07	p7	C15	T7	D07		
P8	C08	p8	C16	T8	D08		
		p9	C17, C18				
		p10	C19				
		p11	C20				

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Program Matrix I (Courses – NARS General)

Course	Knowledge and Understanding Skills											Intellectual Skills									Professional and Practical Skills								Transferable skills							
	K1	K2	K3	K4	K5	K6	K7	K8	K9	K10	K11	I1	I2	I3	I4	I5	I6	I7	I8	I9	P1	P2	P3	P4	P5	P6	P7	P8	T1	T2	T3	T4	T5	T6	T7	T8
HU100	✓			✓																										✓		✓		✓		
HU110	✓			✓																										✓		✓		✓		
CSW110	✓	✓	✓	✓			✓					✓	✓	✓	✓	✓	✓		✓	✓		✓								✓		✓		✓		
ST120	✓			✓																										✓		✓		✓		
MA111	✓			✓																										✓		✓		✓		
INT110	✓	✓	✓	✓			✓																							✓		✓		✓		
ISD100	✓			✓																										✓		✓		✓		
CSW232	✓	✓	✓	✓			✓																							✓		✓		✓		
CSW121	✓	✓	✓	✓								✓	✓	✓	✓	✓	✓		✓	✓	✓	✓								✓		✓		✓		
HU230	✓			✓																										✓		✓		✓		
MA110	✓			✓																										✓		✓		✓		
HU111	✓			✓																										✓		✓		✓		
HU194	✓			✓																										✓		✓		✓		
CSW221	✓	✓	✓	✓			✓					✓	✓	✓	✓	✓	✓		✓	✓	✓	✓								✓		✓		✓		
CSW241	✓	✓	✓	✓			✓														✓	✓								✓		✓		✓		
CSW263	✓	✓	✓	✓								✓	✓	✓	✓	✓	✓		✓	✓	✓	✓								✓		✓		✓		
CSW234	✓	✓	✓	✓			✓					✓	✓	✓	✓	✓	✓		✓	✓	✓	✓								✓		✓		✓		
MA212	✓			✓																										✓		✓		✓		
HU213	✓			✓																										✓		✓		✓		
CSW242	✓	✓	✓	✓			✓																							✓		✓		✓		
ISD220	✓			✓																										✓		✓		✓		
INT232	✓	✓	✓	✓								✓	✓	✓	✓	✓	✓		✓	✓	✓									✓		✓		✓		
HO212	✓	✓	✓	✓																										✓		✓		✓		
ISD242	✓			✓																										✓		✓		✓		
CSW225	✓	✓	✓	✓																										✓		✓		✓		
CSW325	✓	✓	✓	✓																										✓		✓		✓		
INT353	✓	✓	✓	✓			✓																							✓		✓		✓		
CSW351	✓	✓	✓	✓			✓																							✓		✓		✓		
CSW323	✓	✓	✓	✓			▪																							✓		✓		✓		
INT341	✓	✓	✓	✓			✓																							✓		✓		✓		
INT351	✓	✓	✓	✓			✓					✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓				✓			✓		✓		✓		
INT343	✓	✓	✓	✓								✓	✓	✓	✓	✓	✓		✓	✓	✓	✓					✓			✓		✓		✓		
INT338	✓	✓	✓	✓								✓	✓	✓	✓	✓	✓		✓	✓	✓	✓					✓			✓		✓		✓	✓	
CSW337	✓	✓	✓	✓								✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					✓			✓		✓		✓	✓	
CSW338	✓	✓	✓	✓		✓						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					✓			✓		✓		✓	✓	✓
INT349W	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					✓			✓		✓		✓		
INT330	✓	✓	✓	✓		✓															✓	✓	✓	✓	✓		✓			✓		✓		✓		
INT421	✓	✓	✓	✓	✓			✓													✓	✓	✓				✓			✓		✓		✓		
INT422	✓	✓	✓	✓	✓			✓				✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓				✓			✓		✓		✓		
INT423	✓	✓	✓	✓	✓		✓	✓				✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓				✓			✓		✓		✓		
INT453	✓	✓	✓	✓	✓		✓	✓				✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓				✓			✓		✓		✓		
INT461	✓	✓	✓	✓	✓			✓													✓	✓	✓	✓	✓		✓			✓		✓		✓		
INT498	✓	✓	✓	✓	✓			✓													✓	✓	✓	✓	✓		✓			✓		✓		✓		
INT434	✓	✓	✓	✓	✓			✓													✓	✓	✓	✓	✓		✓			✓		✓		✓		
INT435	✓	✓	✓	✓	✓	✓		✓													✓	✓	✓	✓	✓		✓			✓		✓		✓		
INT433	✓	✓	✓	✓	✓	✓		✓													✓	✓	✓	✓	✓		✓			✓		✓		✓		
INT437	✓	✓	✓	✓	✓	✓		✓													✓	✓	✓	✓	✓		✓			✓		✓		✓		✓
INT489	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
INT499	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

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Program Matrix II (Courses – NARS Special)

Course	Knowledge and Understanding Skills										Intellectual Skills											Professional and Practical Skills										
	k1	k2	k3	k4	k5	k6	k7	k8	k9	k10	i1	i2	i3	i4	i5	i6	i7	i8	i9	i10	i11	p1	p2	p3	p4	p5	p6	p7	p8	p9	p10	p11
HU100	✓			✓			▪																									
HU110	✓			✓			▪																									
CSW110	✓	✓	✓	✓			✓				✓	✓	✓	✓	✓	✓		✓			✓		✓									
ST120	✓			✓			▪																									
MA111	✓			✓			▪				✓	✓																				
INT110	✓	✓	✓	✓			✓																									
ISD100	✓			✓			▪				✓	✓																				
CSW232	✓	✓	✓	✓			✓																									
CSW121	✓	✓	✓	✓			▪				✓	✓	✓	✓	✓	✓		✓			✓	✓	✓									
HU230	✓			✓			▪																									
MA110	✓			✓			▪																									
HU111	✓			✓			▪																									
HU194	✓			✓			▪																									
CSW221	✓	✓	✓	✓			✓				✓	✓	✓	✓	✓	✓		✓			✓	✓	✓									
CSW241	✓	✓	✓	✓			✓															✓	✓									
CSW263	✓	✓	✓	✓			▪				✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓				✓		✓	✓	✓	✓
CSW234	✓	✓	✓	✓			✓				✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓									
MA212	✓			✓			▪				✓	✓																				
HU213	✓			✓			▪																									
CSW242	✓	✓	✓	✓			✓												✓	✓							✓		✓	✓	✓	✓
ISD220	✓			✓			▪																									
INT232	✓	✓	✓	✓			▪				✓	✓	✓	✓	✓	✓		✓			✓	✓										
HO212	✓	✓	✓	✓			▪																									
ISD242	✓			✓			▪																									
CSW225	✓	✓	✓	✓			▪				✓	✓																				
CSW325	✓	✓	✓	✓			▪																									
INT353	✓	✓	✓	✓			✓																									
CSW351	✓	✓	✓	✓			✓																									
CSW323	✓	✓	✓	✓			▪																									
INT341	✓	✓	✓	✓			✓																									
INT351	✓	✓	✓	✓			✓				✓	✓	✓	✓	✓	✓		✓			✓	✓	✓	✓				✓				
INT343	✓	✓	✓	✓			▪				✓	✓	✓	✓	✓	✓		✓			✓	✓	✓					✓				
INT338	✓	✓	✓	✓			▪				✓	✓	✓	✓	✓	✓		✓			✓	✓	✓					✓				
CSW337	✓	✓	✓	✓			▪				✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓					✓				
CSW338	✓	✓	✓	✓		✓	▪				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					✓	✓	✓	✓	✓
INT349W	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					✓	✓	✓	✓	✓
INT330	✓	✓	✓	✓		✓	▪															✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
INT421	✓	✓	✓	✓	✓		▪	✓														✓	✓	✓				✓				
INT422	✓	✓	✓	✓	✓		▪	✓			✓	✓	✓	✓	✓	✓		✓			✓	✓	✓	✓				✓				
INT423	✓	✓	✓	✓	✓		✓	✓			✓	✓	✓	✓	✓	✓		✓			✓	✓	✓	✓				✓				
INT453	✓	✓	✓	✓	✓		✓	✓			✓	✓	✓	✓	✓	✓		✓			✓	✓	✓	✓				✓				
INT461	✓	✓	✓	✓	✓		▪	✓														✓	✓	✓	✓	✓		✓				
INT498	✓	✓	✓	✓	✓		▪	✓														✓	✓	✓	✓	✓		✓				
INT434	✓	✓	✓	✓	✓		▪	✓														✓	✓	✓	✓	✓		✓				
INT435	✓	✓	✓	✓	✓	✓	▪	✓														✓	✓	✓	✓	✓		✓				
INT433	✓	✓	✓	✓	✓	✓	▪	✓														✓	✓	✓	✓	✓		✓				
INT437	✓	✓	✓	✓	✓	✓	▪	✓														✓	✓	✓	✓	✓		✓				
INT489	✓	✓	✓	✓	✓		▪	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
INT499	✓	✓	✓	✓	✓		▪	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

APPPENDEX H

Program Matrix I (Courses –IT Programs)

Course Code	Knowledge and Understanding Skills																					Intellectual Skills																					
	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20	A21	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
HU100	✓			✓								✓			✓																												
HU110	✓			✓								✓			✓																												
CSW110	✓	✓	✓	✓			✓					✓	✓	✓	✓			✓				✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓			✓
ST120	✓			✓								✓			✓																												
MA111	✓			✓								✓			✓															✓	✓												
INT110	✓	✓	✓	✓			✓					✓	✓	✓	✓			✓																										
ISD100	✓			✓								✓			✓															✓	✓												
CSW232	✓	✓	✓	✓			✓					✓	✓	✓	✓			✓																										
CSW121	✓	✓	✓	✓								✓	✓	✓	✓							✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓			✓
HU230	✓			✓								✓			✓																												
MA110	✓			✓								✓			✓																												
HU111	✓			✓								✓			✓																												
HU194	✓			✓								✓			✓																												
CSW221	✓	✓	✓	✓			✓					✓	✓	✓	✓			✓				✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓			✓
CSW241	✓	✓	✓	✓			✓					✓	✓	✓	✓			✓																										
CSW263	✓	✓	✓	✓								✓	✓	✓	✓			·				✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
CSW234	✓	✓	✓	✓			✓					✓	✓	✓	✓			✓				✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
MA212	✓			✓								✓			✓															✓	✓												
HU213	✓			✓								✓			✓																												
CSW242	✓	✓	✓	✓			✓					✓	✓	✓	✓			✓																						✓	✓	
ISD220	✓			✓								✓			✓																												

INT232	✓	✓	✓	✓								✓	✓	✓	✓								✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓			✓
HO212	✓	✓	✓	✓								✓	✓	✓	✓																											
ISD242	✓	·	·	✓								✓			✓																											
CSW225	✓	✓	✓	✓								✓	✓	✓	✓																✓	✓									
CSW325	✓	✓	✓	✓								✓	✓	✓	✓																											
INT353	✓	✓	✓	✓			✓					✓	✓	✓	✓			✓																								
CSW351	✓	✓	✓	✓			✓					✓	✓	✓	✓			✓																								
CSW323	✓	✓	✓	✓			·					✓	✓	✓	✓			·																								
INT341	✓	✓	✓	✓			✓					✓	✓	✓	✓			✓																								
INT351	✓	✓	✓	✓			✓					✓	✓	✓	✓			✓				✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓			✓
INT343	✓	✓	✓	✓								✓	✓	✓	✓							✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓			✓
INT338	✓	✓	✓	✓								✓	✓	✓	✓							✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓			✓
CSW337	✓	✓	✓	✓								✓	✓	✓	✓							✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓
CSW338	✓	✓	✓	✓		✓						✓	✓	✓	✓		✓					✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
INT349W	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
INT330	✓	✓	✓	✓		✓						✓	✓	✓	✓		✓																								
INT421	✓	✓	✓	✓	✓			✓				✓	✓	✓	✓	✓			✓																						
INT422	✓	✓	✓	✓	✓			✓				✓	✓	✓	✓	✓			✓			✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓			✓
INT423	✓	✓	✓	✓	✓		✓	✓				✓	✓	✓	✓	✓		✓	✓			✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓			✓
INT453	✓	✓	✓	✓	✓		✓	✓				✓	✓	✓	✓	✓		✓	✓			✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓			✓
INT461	✓	✓	✓	✓	✓			✓				✓	✓	✓	✓	✓			✓																						
INT498	✓	✓	✓	✓	✓			✓				✓	✓	✓	✓	✓			✓																						
INT434	✓	✓	✓	✓	✓			✓				✓	✓	✓	✓	✓			✓																						
INT435	✓	✓	✓	✓	✓	✓		✓				✓	✓	✓	✓	✓	✓		✓																						
INT433	✓	✓	✓	✓	✓	✓		✓				✓	✓	✓	✓	✓	✓		✓																						
INT437	✓	✓	✓	✓	✓	✓		✓				✓	✓	✓	✓	✓	✓		✓																						
INT489	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓
INT499	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓

APPPENDEX I

Program Matrix II (Courses –IT Programs)

Course Code	Professional and Practical Skills																				Transferable skills							
	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18	C19	C20	B1	B2	B3	B4	B5	B6	B7	B8
HU100																						✓		✓		✓		
HU110																						✓		✓		✓		
CSW110		✓																				✓		✓		✓		
ST120																						✓		✓		✓		
MA111																						✓		✓		✓		
INT110																						✓		✓		✓		
ISD100																						✓		✓		✓		
CSW232																						✓		✓		✓		
CSW121	✓	✓							✓	✓	✓											✓		✓		✓		
HU230																						✓		✓		✓		
MA110																						✓		✓		✓		
HU111																						✓		✓		✓		
HU194																						✓		✓		✓		
CSW221	✓	✓							✓	✓	✓											✓		✓		✓		
CSW241	✓	✓							✓	✓	✓											✓		✓		✓		
CSW263	✓	✓							✓	✓	✓				✓		✓	✓	✓	✓		✓		✓		✓		
CSW234	✓	✓							✓	✓	✓											✓		✓		✓		
MA212																						✓		✓		✓		
HU213																						✓		✓		✓		
CSW242															✓		✓	✓	✓	✓		✓		✓		✓		
ISD220																						✓		✓		✓		

INT232	✓								✓	✓												✓		✓		✓		
HO212																						✓		✓		✓		
ISD242																						✓		✓		✓		
CSW225																						✓		✓		✓		
CSW325																						✓		✓		✓		
INT353																						✓		✓		✓		
CSW351																						✓		✓		✓		
CSW323																						✓		✓		✓		
INT341																						✓		✓		✓		
INT351	✓	✓	✓				✓		✓	✓	✓	✓	□	□	□	✓						✓		✓		✓		
INT343	✓	✓					✓		✓	✓	✓					✓						✓		✓		✓		
INT338	✓	✓					✓		✓	✓	✓					✓						✓		✓		✓	✓	
CSW337	✓	✓					✓		✓	✓	✓					✓						✓		✓		✓	✓	
CSW338	✓	✓					✓		✓	✓	✓					✓	✓	✓	✓	✓		✓		✓		✓	✓	✓
INT349W	✓	✓					✓		✓	✓	✓					✓	✓	✓	✓	✓		✓		✓		✓		
INT330	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓		✓		✓		✓		
INT421	✓	✓	✓				✓		✓	✓	✓	✓				✓						✓		✓		✓		
INT422	✓	✓	✓				✓		✓	✓	✓	✓				✓						✓		✓		✓		
INT423	✓	✓	✓				✓		✓	✓	✓	✓				✓						✓		✓		✓		
INT453	✓	✓	✓				✓		✓	✓	✓	✓				✓						✓		✓		✓		
INT461	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓		✓						✓		✓		✓		
INT498	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓		✓						✓		✓		✓		
INT434	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓		✓						✓		✓		✓		
INT435	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓		✓						✓		✓		✓		
INT433	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓		✓						✓		✓		✓		
INT437	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓		✓						✓		✓		✓		✓
INT489	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
INT499	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

APPPENDEX J

Program Matrix VII (Aims - ILOs)

Intended Learning Outcomes (ILO's) of the program		Aims								
		Aim - 01	Aim - 02	Aim - 03	Aim - 04	Aim - 05	Aim - 06	Aim - 07	Aim - 08	Aim - 09
Knowledge and Understanding	A1	✓							✓	
	A2	✓				✓				
	A3		✓							
	A4		✓							
	A5				✓					
	A6						✓			
	A7				✓			✓		
	A8							✓		
	A9			✓						✓
	A10	✓	✓							
	A11	✓					✓	✓		
	A12			✓				✓	✓	
	A13						✓			
	A14			✓	✓					
	A15					✓	✓			
	A16			✓					✓	
	A17				✓					
	A18								✓	
	A19			✓			✓			
	A20									✓
	A21		✓				✓		✓	
Intellectual Skills	B1	✓	✓							
	B2	✓					✓			
	B3		✓							
	B4				✓	✓				
	B5				✓					
	B6						✓			
	B7				✓			✓		
	B8							✓		
	B9									✓
	B10	✓	✓							

	B11	✓						✓		
	B12			✓				✓		
	B13						✓			
	B14				✓					
	B15					✓	✓			
	B16			✓					✓	
	B17				✓					
	B18								✓	
	B19			✓			✓			
	B20									✓
Professional Skills	**C1**	✓						✓		
	C2	✓				✓				
	C3		✓							
	C4			✓					✓	
	C5				✓	✓				
	C6					✓				
	C7							✓		✓
	C8						✓			✓
	C9			✓				✓		
	C10							✓		
	C11	✓		✓						
	C12							✓		
	C13				✓	✓				✓
	C14							✓		
	C15		✓					✓		
	C16						✓	✓	✓	
	C17					✓	✓			
	C18				✓					✓
	C19								✓	
	C20									✓
General Skills	**D1**									✓
	D2								✓	
	D3								✓	
	D4								✓	✓
	D5							✓		
	D6							✓		✓
	D7							✓		✓
	D8	✓							✓	

APPPENDEX K

Teaching and Learning Methods Matrix VIII (ILOs-Teaching and Learning Methods)

Intended Learning Outcomes (ILO's) of the program		Teaching and Learning Methods											
		Lecture	Presentations	Discussion and	Brainstorming.	Self-Study	Laboratory	Modeling &	Online	Projects	Cooperative	Problem	E-Learning
Knowledge and Understanding	A1	✓		✓	✓				✓			✓	✓
	A2	✓		✓	✓				✓			✓	✓
	A3	✓		✓	✓				✓			✓	✓
	A4	✓		✓	✓				✓			✓	✓
	A5	✓		✓	✓				✓			✓	✓
	A6	✓		✓	✓				✓			✓	✓
	A7	✓		✓	✓				✓			✓	✓
	A8	✓		✓	✓				✓			✓	✓
	A9	✓		✓	✓				✓			✓	✓
	A10	✓		✓	✓				✓			✓	✓
	A11	✓		✓	✓				✓			✓	✓
	A12	✓		✓	✓				✓			✓	✓
	A13	✓		✓	✓				✓			✓	✓
	A14	✓		✓	✓				✓			✓	✓
	A15	✓		✓	✓				✓			✓	✓
	A16	✓		✓	✓				✓			✓	✓
	A17	✓		✓	✓				✓			✓	✓
	A18	✓		✓	✓				✓			✓	✓
	A19	✓		✓	✓				✓			✓	✓
	A20	✓		✓	✓				✓			✓	✓
	A21	✓		✓	✓				✓			✓	✓
Intellectual Skills	B1	✓		✓	✓				✓	✓		✓	✓
	B2	✓		✓	✓				✓	✓		✓	✓
	B3	✓		✓	✓				✓	✓		✓	✓
	B4	✓		✓	✓				✓	✓		✓	✓
	B5	✓		✓	✓				✓	✓		✓	✓
	B6	✓		✓	✓				✓	✓		✓	✓
	B7	✓		✓	✓				✓	✓		✓	✓
	B8	✓		✓	✓				✓	✓		✓	✓
	B9	✓		✓	✓				✓	✓		✓	✓
	B10	✓		✓	✓				✓	✓		✓	✓
	B11	✓		✓	✓				✓	✓		✓	✓
	B12	✓		✓	✓				✓	✓		✓	✓

	B13	✓		✓	✓				✓	✓		✓	✓
	B14	✓		✓	✓				✓	✓		✓	✓
	B15	✓		✓	✓				✓	✓		✓	✓
	B16	✓		✓	✓				✓	✓		✓	✓
	B17	✓		✓	✓				✓	✓		✓	✓
	B18	✓		✓	✓				✓	✓		✓	✓
	B19	✓		✓	✓				✓	✓		✓	✓
	B20	✓		✓	✓				✓	✓		✓	✓
Professional Skills	**C1**				✓	✓	✓	✓		✓	✓		
	C2				✓	✓	✓	✓		✓	✓		
	C3				✓	✓	✓	✓		✓	✓		
	C4				✓	✓	✓	✓		✓	✓		
	C5				✓	✓	✓	✓		✓	✓		
	C6				✓	✓	✓	✓		✓	✓		
	C7				✓	✓	✓	✓		✓	✓		
	C8				✓	✓	✓	✓		✓	✓		
	C9				✓	✓	✓	✓		✓	✓		
	C10				✓	✓	✓	✓		✓	✓		
	C11				✓	✓	✓	✓		✓	✓		
	C12				✓	✓	✓	✓		✓	✓		
	C13				✓	✓	✓	✓		✓	✓		
	C14				✓	✓	✓	✓		✓	✓		
	C15				✓	✓	✓	✓		✓	✓		
	C16				✓	✓	✓	✓		✓	✓		
	C17				✓	✓	✓	✓		✓	✓		
	C18				✓	✓	✓	✓		✓	✓		
	C19				✓	✓	✓	✓		✓	✓		
	C20				✓	✓	✓	✓		✓	✓		
General Skills	**D1**		✓	✓		✓				✓	✓		
	D2		✓	✓		✓				✓	✓		
	D3		✓	✓		✓				✓	✓		
	D4		✓	✓		✓				✓	✓		
	D5		✓	✓		✓				✓	✓		
	D6		✓	✓		✓				✓	✓		
	D7		✓	✓		✓				✓	✓		
	D8		✓	✓		✓				✓	✓		

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Assessment Methods Matrix VIIII (ILOs-Assessment Methods)

Intended Learning Outcomes (ILO's) of the program		Assessment Methods				
		Final Exam	Mid-Term Exam	Practical Exam	Class Work	Oral Exam
Knowledge and Understanding	A1	✓	✓		✓	
	A2	✓	✓		✓	
	A3	✓	✓		✓	
	A4	✓	✓		✓	
	A5	✓	✓		✓	
	A6	✓	✓		✓	
	A7	✓	✓		✓	
	A8	✓	✓		✓	
	A9	✓	✓		✓	
	A10	✓	✓		✓	
	A11	✓	✓		✓	
	A12	✓	✓		✓	
	A13	✓	✓		✓	
	A14	✓	✓		✓	
	A15	✓	✓		✓	
	A16	✓	✓		✓	
	A17	✓	✓		✓	
	A18	✓	✓		✓	
	A19	✓	✓		✓	
	A20	✓	✓		✓	
	A21	✓	✓		✓	
Intellectual Skills	B1	✓	✓		✓	
	B2	✓	✓		✓	
	B3	✓	✓		✓	
	B4	✓	✓		✓	
	B5	✓	✓		✓	
	B6	✓	✓		✓	
	B7	✓	✓		✓	
	B8	✓	✓		✓	
	B9	✓	✓		✓	
	B10	✓	✓		✓	
	B11	✓	✓		✓	
	B12	✓	✓		✓	

	B13	✓	✓		✓	
	B14	✓	✓		✓	
	B15	✓	✓		✓	
	B16	✓	✓		✓	
	B17	✓	✓		✓	
	B18	✓	✓		✓	
	B19	✓	✓		✓	
	B20	✓	✓		✓	
Professional Skills	**C1**	✓	✓	✓	✓	✓
	C2	✓	✓	✓	✓	✓
	C3	✓	✓	✓	✓	✓
	C4	✓	✓	✓	✓	✓
	C5	✓	✓	✓	✓	✓
	C6	✓	✓	✓	✓	✓
	C7	✓	✓	✓	✓	✓
	C8	✓	✓	✓	✓	✓
	C9	✓	✓	✓	✓	✓
	C10	✓	✓	✓	✓	✓
	C11	✓	✓	✓	✓	✓
	C12	✓	✓	✓	✓	✓
	C13	✓	✓	✓	✓	✓
	C14	✓	✓	✓	✓	✓
	C15	✓	✓	✓	✓	✓
	C16	✓	✓	✓	✓	✓
	C17	✓	✓	✓	✓	✓
	C18	✓	✓	✓	✓	✓
	C19	✓	✓	✓	✓	✓
	C20	✓	✓	✓	✓	✓
General Skills	**D1**	✓	✓		✓	✓
	D2	✓	✓		✓	✓
	D3	✓	✓		✓	✓
	D4	✓	✓		✓	✓
	D5	✓	✓		✓	✓
	D6	✓	✓		✓	✓
	D7	✓	✓		✓	✓
	D8	✓	✓		✓	✓