Tanta University

Faculty of computers and informatics

Information System Department

Bachelor Program - Credit Hours System

Program Title   **Information System**

Program Type   **Single**

Department(s)   **Information System**

2019

Program Specification

A. Basic Information

Program Title	Information System (B. Sc.)
Award	B. Sc. Information System
Parent Department	Information System Department
Program Type	Single
Teaching Institution	Faculty of Computers and Informatics
Awarding Institution	Tanta University
Coordinator	Dr. Omnia Elbarbary / Dr.Shaimaa Hagras
External Evaluator(s)	
QAA Benchmarking Standards	National Academic Reference Standards (NARS)2010
Date of Approval	

B. Professional Information

1. Aims and Objectives

	1.	Enable students to solve the problem using computer systems and knowledge of the necessary tools to solve this problem.
	2.	Develop the students' ability to understand the principles underlying the systems development life cycle (SDLC), networks, data mining, e-commerce, information security, and crisis management.
	3.	Develop the students' ability to apply knowledge of mathematics, and science to real world problems; as well as to analyze and interpret data.
	4.	Develop the students' ability to Create data and information models, manage projects and resources for the development of information systems, managing and utilize organizational data and information

	5.	Prepare students for design and implement solutions, including use of appropriate programming languages, web-based systems and tools, design methodologies, and database systems.
	6.	Provide students with a solid understanding of the principles of effective information management, information organization, information mining, and information-retrieval skills to information of various kinds, including text, images, sound, and video.
	7.	Equip students with state-of-the-art knowledge and understanding of data structures, computer organization and architecture, programming language concepts, networks, artificial intelligence, graphics, human computer interfaces, databases, data mining and high performance computing, with their computing requirements.
	8.	Develop the students understanding of the fundamentals of intelligent information systems technologies.
	9.	Develop students' ability to design, create, and execute computer-based information systems, then assess them based on the problem's specific requirements and potential trade-offs. .
	10.	Prepare students for working effectively in teams in designing and implementing software systems and to equip them with management skills to be able to carry out a work plan with minimal supervision.
	11.	Develop students' ability to apply IS solutions to functional, inter-organizational, operational, managerial, and executive problems and opportunities.
	12.	Develop the students' ability to understand characteristics of various components of information systems, use the appropriate tools and techniques to analyze, design, and construct information systems.

	13.	Produce graduates with the ability to aware of key ethical issues affecting information systems and their responsibilities as information science professionals.

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:

Upon successful completion of an undergraduate computer science program, the graduates will be able to:

	a1.	Demonstrate basic knowledge and understanding of a core of analysis, algebra, applied mathematics and statistics.
	a2.	Demonstrate strong knowledge of information systems.
	a3.	Describe the principles and techniques of a number of application areas informed by the research directions of information systems.
	a4.	Explain the broad context within which information systems including issues such as quality and reliability.
	a5.	Identify information systems applications, such as accounting, health informatics, medical informatics, etc.
	a6.	Identify selected specialist fields at the forefront of information systems
	a7.	Discuss the principles of Information communication and information security.
	a8.	Describe the challenges inherent in the maintenance and evolution of software systems, and the techniques and best practices currently available for dealing with them.
	a9.	Discuss some aspects of object-oriented analysis and design.
	a10.	Explain decision support tools and systems.
	a11.	Identify various approaches to Management Sciences (MS) such as Operation Management, Inventory Management, Project Management, and Supply Chain Management.
	a12.	Interpret and analyze data qualitatively and/or quantitatively.
	a13.	Demonstrate strong knowledge of fundamentals of programming and the construction of computer-based systems, data structures and algorithms, software engineering techniques and information retrieval.
	a14.	Demonstrate a deep knowledge of business area analysis and the enterprise architecture.

	a15.	Define the tools, practices and methodologies used in the specification, design, implementation and critical evaluation of computer and information systems.
	a16.	Define the methods used in defining and assessing criteria for measuring the extent to which an information system is appropriate for its current deployment and future evolution.
	a17.	Describe the current and underlying technologies that support computer processing and inter-computer communication.
	a18.	Discuss developments in research fields across a range of knowledge areas.

b. intellectual skills:

Upon successful completion of an undergraduate computer science program, the graduates will be able to:

	b1.	Define traditional and nontraditional information systems problems, set goals towards solving them, and observe results
	b2.	Apply the concepts, principles, theories and practices underpinning computing as an academic discipline.
	b3.	Make contrasts between (approaches, strategies, etc.)
	b4.	Determine characteristics, elements, connections, trends, primary concepts, and mistakes.
	b5.	Determine a variety of options, then assess, analyze, and provide evidence for suggested design solutions.
	b6.	Summarize the proposed solutions and their results.
	b7.	Restrict solution methodologies upon their results.
	b8.	Solve information systems problems with pressing commercial or industrial constraints.
	b9.	Generate an innovative design to solve a problem containing a range of commercial and industrial constraints.
	b10.	Solve a decision model with appropriate techniques.
	b11	Perform improvement of a system that benefits stakeholders.
	b12	Recognize the professional, moral and ethical issues involved in the exploitation of Information Technology and be guided by their adoption, reflect on issues of professional practice within the discipline.

c. Professional and Practical Skills:

		Upon successful completion of an undergraduate computer science program, the graduates will be able to:
	c1.	Use appropriate database management systems.
	c2.	Apply the principles of effective information management, information organization, and information-retrieval skills to information of various kinds, including text, images, sound, and video.
	c3.	Apply the principles of human-computer interaction to the evaluation and construction of a wide range of materials including user interfaces, web pages, and multimedia systems.
	c4.	Use appropriate web-based systems and tools, and design methodologies.
	c5.	Identify any risks or safety aspects that may be involved within a given context.
	c6.	Deploy effectively the tools used for the construction and documentation of software, with particular emphasis on understanding the whole process involved in using computers to solve practical problems.
	c7.	Implement data and model centered and distributed systems.

d. **General and Transferable Skills**

		Upon successful completion of an undergraduate computer science program, the graduates will be able to:
	d1.	Collaborate effectively within multidisciplinary team, managers and customers.
	d2.	Work in stressful environment and within constraints
	d3.	Communicate effectively using a variety of communication methods.
	d4.	Demonstrate efficient IS capabilities.
	d5.	Lead and motivate individuals.
	d6.	Manage tasks and resources.
	d7.	Effectively employ information-retrieval skills, (including the use of browsers, search engines, and on-line library catalogues).
	d8.	Search for information and adopt life-long self-learning.
	d9.	Acquire analytical thinking and problem solving skills
	d10.	Manage one's own learning and development, including time management and organizational skills.
	d11.	Prepare their work in the form of reports, oral presentations or an internet web site.

4. Academic standards		
The academic standards invoked in this specification are driven based on the National Academic Reference Standards (NARS) for "Computing and Information" approved by the National Authority of Quality Assurance and Accreditation of Education in October 2010.		

5. Curriculum Structure and contents:

5.A	Program duration:138 credit hours.	Four Years
5.B	Program structure: studying 138 credit hours distributed as follows: A- General requirements (14) credit hours: • (8) compulsory hours • (6) hours chosen by the student from among the elective general courses. • Passing the community issues course. B- College requirements (60) hours: It is divided into two parts: • Mathematics and basic sciences (21) compulsory credit hours. • Basic computer science (39) compulsory credit hours. C- Specialization requirements (66) hours: It is divided into: • Applied sciences (39) are compulsory accredited according to specialization. • Applied sciences (21) optional accreditations within the specialization. D- Project (6) compulsory credit hours. E - Training (3) compulsory.	
5.C	The following table summarizes the program structure:	

Subject Area	IS program %	Total number of hours
Humanities and social sciences (University requirements)	9.79%	14
Mathematics and basic science (Institution requirements)	14.69%	21
Basic computing science (Institution requirements)	27.27%	39
Applied computing science (specialization requirements)	27.27%	39

Applied computing science (specialization elective)	14.69%	21
Projects and practical exercises	4.19%	6
Summer training	2.10%	3
6. Program Courses		
The summary of the courses of the 4-year full-time computer science program is presented in the following tables:		

Level 1 semester 1

Level 1 Semester 1		Course Title	Credits	No. of hours /week	
Code No	Prerequisites			Lec.	Prac.
HU111	-	**Technical Report Writing**	2	2	-
HU112	-	**Human Rights and Combating Corruption**	0	2	-
ENGL113	-	**English Language (1)**	2	2	-
MA111	-	**Math (1)**	3	2	2
MA112	-	**Discrete Mathematics**	3	2	2
ST121	-	**Probability and Statistics (1)**	3	2	2
CS111	-	**Fundamentals of Computer Science**	3	2	2
		Total	**16**		

Level 1 Semester 2

Level 1 Semester 2		Course Title	Credits	No. of hours /week	
Code No	Prerequisites			Lec.	Prac.
HU114	-	**Communication Skills**	2	2	-
HU121	-	**Marketing and Sales**	2	2	-
HU117	-	**Comparative Politics**	2	2	-
MA113	MA111	**Math (2)**	3	2	2
IT111	-	**Electronics**	3	2	2
CS112	CS111	**Structured Programming**	3	2	2
IT113	-	**Fundamentals of Information Technology**	3	2	2
		Total	**18**		

Level 2 Semester 1

Level 2 Semester 1		Course Title	Credits	No. of hours /week	
Code No	Prerequisites			Lec.	Prac.
ENGL211	ENGL113	English Language (2)	2	2	-
MA214	MA213	Math (3)	3	2	2
CS213	CS112	Object Oriented Programming	3	2	2
CS214	CS112	Data Structures	3	2	2
SE 211	CS112	Open Source Software	3	2	2
IT212	IT111	Logic Design	3	2	2
Total			17		

Level 2 Semester 2

Level 2 Semester 2		Course Title	Credits	No. of hours /week	
Code No	Prerequisites			Lec.	Prac.
ST222	ST121	Probability and Statistics (2)	3	2	2
CS251	CS112	Introduction to Software Engineering	3	2	2
IS211	CS112	Introduction to Database Systems	3	2	2
IS231	CS213	Web Technology	3	2	2
IT221	CS111	Computer network Technology	3	2	2
CS221	CS214	Algorithm Analysis and Design	3	2	2
Total			18		

Level 3 Semester 1

Level 3 Semester 1		Course Title	Credits	No. of hours /week	
Code No	Prerequisites			Lec.	Prac.
CS341	CS214	**Operating Systems**	3	2	2
IS312	CS213 IS 211	**Database Management Systems**	3	2	2
IS 321	CS214	**File Management and Processing**	3	2	2
IS332	IS211	**Analysis and Design of Information System**	3	2	2
IS333	IS231	**Web-based Information System Development**	3	2	2
CS361	CS214	**Artificial Intelligence**	3	2	2
		Total	**18**		

Level 3 Semester 2

Level 3 Semester 2		Course Title	Credits	No. of hours /week	
Code No	Prerequisites			Lec.	Prac.
IS313	IS211	Data ware Housing	3	2	2
IS322	IS211 ST222	Information Retrieval	3	2	2
IS341	IS332	Business Process Management	3	2	2
CS352	CS251	Advanced Software Engineering	3	2	2
		Elective course 2	3	2	2
TR301		Summer training	3	2	2
Total			15		

Level 4 Semester 1

Level 4 Semester 1		Course Title	Credits	No. of hours /week	
Code No	Prerequisites			Lec.	Prac.
IS422	IS322	Data Mining	3	2	2
CS462	CS213	Machine Learning	3	2	2
IS497	Student must pass 85 credit hours	Graduation project (1)	3	-	3
		Elective course 2	3	2	2
		Elective course 3	3	2	2
		Elective course 4	3	2	2
		Total	18		

Level 4 Semester 2

Level 4 Semester 2		Course Title	Credits	No. of hours /week	
Code No	Prerequisites			Lec.	Prac.
IS434	IS333	Service-Oriented Architecture	3	2	2
IS498	IS497	Graduation project (2)	3	-	3
		Elective course 5	3	2	2
		Elective course 6	3	2	2
		Elective course 7	3	2	2
		Elective course 8	3	2	2
Total			18		

Elective Courses for Information System Program

المتطلب السابق		عدد الساعات الفعليه		عدد الساعات المعتمدة	إسم المقرر	كود المقرر
إسم المقرر	كود المقرر	تمارين / معامل	محاضرة			
Introduction to Database Systems	IS211	2	2	3	أساسيات نظم المعلومات Fundamentals of Information Systems	IS331
Database Management Systems	IS312	2	2	3	قواعد البيانات السحابية Cloud Databases	IS415
Database Management Systems	IS 312	2	2	3	قواعد البيانات الموزعة Distributed Databases	IS416
Database Management Systems	IS312	2	2	3	موضوعات مختارة في هندسة البيانات Selected Topics in Data Database	IS417
Business Process Management	IS341	2	2	3	التنقيب فى إجراءات الاعمال Business Process Mining	IS423
Database Management Systems	IS312	2	2	3	موضوعات مختارة في قواعد البيانات Selected Topics in Data Engineering	IS424
Web Technology	IS231	2	2	3	هندسة الاستخدامية Usability Engineering	IS4351
Web Technology	IS231	2	2	3	تطوير تطبيقات المحمول للمؤسسات Enterprise Mobile Applications Development	IS436
Analysis and Design Information Systems	IS332	2	2	3	منهجيات تطوير نظم المعلومات Information Systems Development Methodologies	IS437
Analysis and Design Information Systems	IS332	2	2	3	نظم المعلومات الإدارية Management Information Systems	IS439
Database Management Systems	IS312	2	2	3	نظم المعلومات الجغرافية Geographical Information Systems	IS442
Analysis and design	IS332	2	2	3	ضمان جودة نظم المعلومات Information Systems	IS443

Information Systems					Quality Assurance	
Analysis and design Information Systems	IS332	2	2	3	أمن وإدارة مخاطر نظم المعلومات Information Systems Security and Risk Management	IS444
Analysis and design Information Systems	IS332	2	2	3	مراجعة ورقابة نظم المعلومات Information Systems Audit and Control	IS445
Web-Based Information Systems Development	IS333	2	2	3	نظم معلومات المؤسسة Enterprise Information Systems	IS446
Analysis and design Information Systems	IS332	2	2	3	إدارة مشاريع نظم المعلومات Information Systems Projects Management	IS447
Analysis and design Information Systems	IS332	2	2	3	الأعمال الإلكترونية E-Business	IS448
Analysis and design Information Systems	IS 332	2	2	3	موضوعات مختارة في هندسة نظم المعلومات Selected Topics in Information Systems Engineering	IS449
Analysis and design Information Systems	IS332	2	2	3	موضوعات مختارة فى نظم المعلومات-1 Selected Topics in Information Systems-1	IS495
Analysis and design Information Systems	IS332	2	2	3	موضوعات مختارة فى نظم المعلومات-2 Selected Topics in Information Systems-2	IS496

7. Summer training

Students are required to complete a mandatory one-month field training, equivalent to 3 credit hours, prior to graduation. This training can be undertaken during any summer break after completing 60 credit hours.

A faculty member will be assigned as the training supervisor, along with a team of teaching assistants, to monitor participants annually and evaluate their performance based on criteria established by the college council. Please note that the grades for this course will not be included in the student's GPA."

8. Program admission requirements

A. Computer Science and Information Systems College Admissions

Students who have completed their secondary education with a major in Mathematics or Science, or an equivalent, are eligible to apply, subject to the conditions specified by the Supreme Council of Universities and the Admissions Office. For international students, admission requirements are determined based on the regulations and procedures set by the Admissions Office. Additionally, the College Council may set specific admission requirements that comply with the regulations of the Supreme Council of Universities.

B. Mathematics Proficiency

A student with a Science major must pass the Mathematics (Math 0) proficiency exam in order to be eligible to take the Mathematics (Math 2) proficiency exam, which is required for students who majored in Mathematics in their secondary education. The credits earned from these proficiency exams will be counted towards the student's cumulative GPA.

9. Regulations for progression and Program completion

- Complete a minimum of 138 credit hours with a Cumulative Grade Point Average (CGPA) of 2.7 or higher.

- Successfully pass all required proficiency exams as outlined in the college's curriculum, even if these exams do not carry credit hours.

- Complete a minimum of three academic years (six semesters) under the semester system (fall and spring).

- Fulfill all other graduation requirements as specified by the university.

9.Student Assessment (Methods and rules for student assessment)

a. Maximum Grade:

- The maximum attainable grade for any course is 100 points.

b. Passing Grade:

- To successfully pass a course, a student must achieve a minimum of 60% of the total course points and a minimum of 30% on the final exam.

c. Grade Distribution:

- Course grades are distributed as follows:
  - **Classwork (40%):** This includes assignments, quizzes, and a midterm exam (which can account for up to 20% of the total). The remaining 20% is allocated for other assessments such as periodic quizzes, practical applications, and projects assigned by the instructor. Oral exams may also be included.
  - **Final Exam (60%):** The final exam constitutes 60% of the total course grade.
- The college council sets the dates for midterm and final exams and informs students in advance.

d. Practical Components in Final Exams:

- If the final exam for a course includes a practical component, as recommended by academic departments and approved by the college council, the student's final exam grade will be determined by combining the scores from the theoretical and practical portions of the exam.

Method (tool)	Intended leaning outcomes assessed
1- Written examinations	Knowledge and Understanding - Intellectual Skills - Professional Skills - General Skills
2- Oral examination	Knowledge and Understanding - Intellectual Skills
3- Practical exams	Professional Skills - General Skills
4- Laboratory examination	Professional Skills - General Skills
5- Graduation project	Professional Skills - General Skills
6- Reports and Assignments	Knowledge and Understanding - Intellectual Skills- Professional Skills

10 Evaluation of Program intended learning outcomes

Evaluator Tool		Sample
1. Senior students	Questionnaires	
2. Alumni	Questionnaires	
3. Stakeholders (Employers)	Questionnaires	
4. External Evaluator(s)(External Examiner(s))	Questionnaires	

IS Program Matrices

The main description of Information System Program can be summarized in different types of matrices. These matrices are:

1- Academic Standards Matrix

This matrix shows the ILOs invoked in IS Program Specifications and those existing in NARS and the corresponding between them.

2- Program Matrix I (Courses – NARS General)

This matrix shows how IS Program Courses can cover the NARS general ILOs.

3- Program Matrix II (Courses – NARS Special)

This matrix shows how IS Program Courses can cover the NARS special ILOs.

4- Program Matrix I (Courses – Knowledge and Understanding Skills)

This matrix shows how IS Program Courses can cover Knowledge and Understanding Skills in IS Program Specifications.

5- Program Matrix II (Courses – Intellectual Skills)

This matrix shows how IS Program Courses can cover Intellectual Skills invoked in IS Program Specifications.

6- Program Matrix III (Courses – Professional and Practical Skills)

 This matrix shows how IS Program Courses can cover Professional and Practical Skills invoked in IS Program Specifications.

7- Program Matrix IV (Courses – Transferable Skills)

This matrix shows how IS Program Courses can cover Transferable Skills invoked in IS Program Specifications.

8- Program Matrix V (Courses –IS Program)

This matrix shows how IS Program Courses can cover IS Program ILOs

Academic Standards (Knowledge and Understanding Skills) (March 2010)

IS Program ILOs	Corresponding in NARS		NARS ILOs - General	NARS ILOs - Special
a1. Demonstrate basic knowledge and understanding of a core of analysis, algebra, applied mathematics and statistics.	K1	A1	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 tradeoffs. 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	A1. A core of analysis, algebra, applied mathematics and statistics. A2. Information systems, data and Information Management, enterprise architecture, IS project management, IT infrastructure, systems analysis and design, and IS strategies. A3. Principles and techniques of database management systems, management, data mining, geographical information systems, multimedia, application development, business process management, enterprise systems, human computer interaction, object-oriented analysis and design, e-technologies, multimedia, image processing, information and infrastructures security and computer graphics techniques. A4. Issues such as quality, reliability, enterprise, employment law, accounting and health. A5. Awareness of organizational, human and economic sides of modern organizations. A6. Principles of Information communication and information security.
a2. Demonstrate strong knowledge of information systems.	K1	A2		
a3. Describe the principles and techniques of a number of application areas informed by the research directions of information systems.	K1	A3		
a4. Explain the broad context within which information systems including issues such as quality and reliability.	K9	A4		
a5. Identify information systems applications, such as accounting, health informatics, medical informatics, etc.	K3	A2		
a6. Identify selected specialist fields at the forefront of information systems	K1	A3		
a7. Discuss the principles of Information communication and information security.	K6	A6		

a8. Describe the challenges inherent in the maintenance and evolution of software systems, and the techniques and best practices currently available for dealing with them.	K7	A7	Processing and inter-computer communication. K7. Principals of generating tests which investigate the functionality of computer programs and computer systems and evaluating their results. K8. Management and economics principles relevant to computing and information disciplines. 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	A7. Specification, analysis, design, implementation and operation and maintenance of IS solutions. A8. Modeling organizational processes and data, defining and implementing technical and process solutions, managing projects, and integrating systems. A9. Types and alternatives of global information systems architectures, and their differences in terms of service and cost consequences, and their implications for the organizational support needed.
a9. Discuss some aspects of object-oriented analysis and design.	K4	A7		
a10. Explain decision support tools and systems.	K10	A8		
a11. Identify various approaches to Management Sciences (MS) such as Operation Management, Inventory Management, Project Management, and Supply Chain Management.	K1	A8		
a12. Interpret and analyze data qualitatively and/or quantitatively.	K1	A7		
a13. Demonstrate strong knowledge of fundamentals of programming and the construction of computer-based systems, data structures and algorithms, software engineering techniques and information retrieval.	K3, K6	A3		
a14. Demonstrate a deep knowledge of business area analysis and the enterprise architecture.	K3	A9		
a15. Define the tools, practices and methodologies used in the	K3,K7, K11	A7		

specification, design, implementation and critical evaluation of computer and information systems.				
a16. Define the methods used in defining and assessing criteria for measuring the extent to which an information system is appropriate for its current deployment and future evolution.	K5	A7, A8		
a17. Describe the current and underlying technologies that support computer processing and inter-computer communication.	K6,K10	A9		
a18. Discuss developments in research fields across a range of knowledge areas.	K10	A3		

Academic Standards (Intellectual Skills)

IS Program ILOs	Corresponding in NARS		NARS ILOs - General	NARS ILOs - Special
b1. Identify issues with traditional and nontraditional information systems, make plans to address them, and track your progress.	I1	B1	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, propose and evaluate 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.	B1. Define traditional and nontraditional information systems problems, set goals towards solving them, and observe results. B2. Perform comparisons between (methods, techniques...etc). B3. Identify attributes, components, relationships, patterns, main ideas, and errors. B4. Restrict solution methodologies upon their results. B5. Select the suitable tools, methods and techniques for modeling, analyzing IS, establishing criteria, and verify solutions. B6. Identify a range of solutions and critically evaluate and justify proposed design solutions. B7. Solve IS problems with pressing commercial, time, and industrial constraints. B8. Suggest an innovative design to solve a problem containing a range of commercial and industrial constraints. B9. Perform problem analysis from written descriptions; derive requirements
b2. Apply the concepts, principles, theories and practices underpinning computing as an academic discipline.	I2	B1		
b3. Make contrasts between (approaches, strategies, etc.)	I3	B2		
b4. Determine characteristics, elements, connections, trends, primary concepts, and mistakes.	I3	B3		
b5. Determine a variety of options, then assess, analyze, and provide evidence for suggested design solutions.	I4, I5	B6		
b6. Summarize the proposed solutions and their results.	I6	B6		

b7. Restrict solution methodologies upon their results.	I6	B6, B7	I6. Evaluate the results of tests to investigate the functionality of computer systems.	specifications from an understanding of problems (analysis, synthesis).
b8. Solve information systems problems with pressing commercial or industrial constraints.	I4, I5	B7		
b9. Generate an innovative design to solve a problem containing a range of commercial and industrial constraints.	I4, I5	B8	I7. Achieve judgments considering balanced costs, benefits, safety, quality, reliability, and environmental impact.	
b10. Solve a decision model with appropriate techniques.	I6	B8	I8. Familiar with the professional, legal, moral and ethical issues relevant to the computing industry.	
b11. Perform improvement of a system that benefits stakeholders.	I7	B8		
b12. Recognize the professional, moral and ethical issues involved in the exploitation of Information Technology and be guided by their adoption, reflect on issues of professional practice within the discipline.	I8	B8, B9	I9. Evaluate research papers in a range of knowledge areas	

Academic Standards (Professional and Practical Skills)

IS Program ILOs	Corresponding in NARS		NARS ILOs - General	NARS ILOs - Special
c1. Use appropriate database management systems.	C1	P6, P8	P1. Operate computing equipment, recognizing its logical and physical properties, capabilities and limitations.	C1. Use appropriate programming languages, web-based systems and tools, design methodologies, and database systems.
c2. Apply the principles of effective information management, information organization, and information-retrieval skills to information of various kinds, including text, images, sound, and video.	C6, C7	P4	P2. Implement comprehensive computing knowledge and skills in projects and in deployment of computers to solve position practical problems.	C2. Use quantitative analysis techniques appropriately. C3. Justify technological, methodological and management choices for an information system project for a given organization.
c3. Apply the principles of human-computer interaction to the evaluation and construction of a wide range of materials including user interfaces, web pages, and multimedia systems.	C8	P1, P2, P3	P3. Deploy the equipment and tools used for the construction, maintenance and documentation of computer applications.	C4. Plan and manage an information systems project from inception to final implementation and cut-over. C5. Produce acceptable reports and technical and user system documentation.
c4. Use appropriate web-based systems and tools, and design methodologies.	C1	P6	P4. Apply computing information retrieval skills in computing community environment and industry.	C6. Perform information acquisition and management, using the scientific literature and Web sources. C7. Apply the principles of effective information acquisition, information management, organization, and information-retrieval to text, images, sound, and video.
c5. Identify any risks or safety aspects that may be involved within a given context.	C3	P7		
c6. Deploy effectively the tools used for the construction and documentation of software, with particular emphasis on understanding the whole process involved	C3,C4,C5	P3	P5. Develop a range of fundamental research skills, through the use of online	

in using computers to solve practical problems.			resources, technical repositories and library-based material	C8. Apply the principles of human-computer interaction to the evaluation and construction of a wide range of materials including user interfaces, web pages, and multimedia systems.
c7. Implement data and model centered and distributed systems.	C9,C10, C11	P5,P6	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.	C9. Using tools to automate IS development phases. C10. Analyze and documenting the feasibility of various options and comparing solution options. C11. Maintaining existing information systems

Academic Standards (Transferable Skills)

IS Program ILOs	Corresponding in NARS	NARS ILOs - General
d1. Collaborate effectively within multidisciplinary team, managers and customers.	T2, T6	T1. Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.
d2. Work in stressful environment and within constraints	T2, T6	T2. Demonstrate skills in group working, team management, time management and organizational skills.
d3. Communicate effectively using a variety of communication methods.	T6	T3. Show the use of information-retrieval.
d4. Demonstrate efficient IS capabilities.	T3, T4, T5	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.
d5. Lead and motivate individuals.	T2	

d6. Manage tasks and resources.	T1,T2	T5. Exhibit appropriate numeracy skills in understanding and presenting cases involving a quantitative dimension.
d7. Effectively employ information-retrieval skills, (including the use of browsers, search engines, and on-line library catalogues).	T3	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.
d8. Search for information and adopt life-long self-learning.	T1,T8	T7. Show the use of general computing facilities.
d9. Acquire analytical thinking and problem solving skills	T4, T5, T7	
d10. Manage one's own learning and development, including time management and organizational skills.	T1, T2	T8. Demonstrate an appreciation of the need to continue professional development in recognition of the requirement for life-long learning.
d11. Prepare their work in the form of reports, oral presentations or an internet web site.	T6	

1- Academic Standards Matrix

- Academic Standards Matrix (General)

	Knowledge and Understanding											Intellectual									Professional and Practical								Transferable							
	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
a1	√																																			
a2	√																																			
a3	√																																			
a4									√																											
a5			√																																	
a6	√																																			
a7							√																													
a8							√																													

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	c1	c2	c3	c4	c5	c6	c7	c8	c9	c10	c11	c12	c13	c14
a9				√										
a10										√				
a11	√													
a12	√													
a13			√			√								
a14			√											
a15			√				√				√			
a16					√									
a17						√				√				
a18										√				
b1												√		
b2													√	
b3														√
b4														√

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
b5																√	√																					
b6																		√																				
b7																		√																				
b8																√	√																					
b9																√	√																					
b10																		√																				
b11																			√																			
b12																				√																		
c1																															√		√					
c2																														√								
c3																						√	√	√														
c4																												√										
c5																													√									
c6																									√													

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c7																									√	√											
d1																														√				√			
d2																														√				√			
d3																																		√			
d4																																√	√	√			
d5																														√							
d6																													√	√							
d7																															√						
d8				√																									√								√
d9																																√	√		√		
d10																													√	√							
d11																															√						

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Academic Standards Matrix (Specific)

	Knowledge and Understanding									Intellectual									Professional and Practical										
	A1	A2	A3	A4	A5	A6	A7	A8	A9	B1	B2	B3	B4	B5	B6	B7	B8	B9	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11
a1	√																												
a2		√																											
a3			√																										
a4				√																									
a5		√																											
a6			√																										
a7						√																							
a8							√																						
a9							√																						
a10								√																					
a11								√																					

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
a12							√															
a13			√																			
a14									√													
a15							√															
a16								√														
a17									√													
a18			√																			
b1										√												
b2										√												
b3												√										
b4													√									
b5																	√					
b6																	√					
b7																	√	√				

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	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
b8													√											
b9														√										
b10														√										
b11														√										
b12														√	√									
c1																√								
c2																				√	√			
c3																					√			
c4																√								
c5																	√							
c6																	√	√	√					
c7		√	√																		√√		√	

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 **د / أمنية البربري** **Dr.** Shaimaa Hagras **د/ شيماء هجرس**		
Head of Quality Assurance Unit: Dr. Omnia El Barbary **د / أمنية البربري**		
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