Program Specifications

Information Systems

B.Sc. Program

Form (13)

University: Ain Shams
Faculty Computer and Information Sciences
Department: Information Systems

Program specifications

A. Basic Information

1. **Program Title:**Bachelor of Information Systems
2. **Program Type:**Single
3. **Faculty:** Computer and Information Sciences
4. **Departmentoffering the program:** Information Systems
5. **Last date of program specifications approval:**
   Dep. Council: 15/5/2018
   Faculty council: 22/5/2018
6. **Program Coordinator:** Prof. Tarek Gharib

B. Professional Information

1. Program Goals

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 information systems. The IS program aims to provide the student with the ability to:

1. Recognize the information requirements of various business activities on both operational and decision making levels.
2. Tackle business problems using system analysis tools and techniques.
3. Implement phases of the computer system development life cycle, plan, design and test system maintenance.
4. Provide scientific and technical advice and assistance for agencies that use the techniques of information systems and components concerned with the technology.
5. Demonstrate an operating knowledge of integrated information systems implementation in a diverse, global business environment.
6. Display professional and ethical responsibilities; and contextual understanding.

7. Conduct scientific research in the field of information systems that have a direct impact on society.
8. Command of the conceptual frameworks of information systems and operations management.

2. Graduate attributes

The Information Systems program is designed to provide the student with the foundations of the discipline as well as the opportunity for specialization. After successfully completing the Information systems program, the graduate should be able to:

1. Apply knowledge of mathematics, statistics, and scientific concepts to the solution of information system problems.
2. Recognize problems that are amenable to computer information systems, and knowledge of the tools necessary for solving such problems.
3. Understand fundamentals of systems development life cycle (SDLC), information networks, information security, data mining, geographical information systems, and crisis management.
4. Manage and exploit organizational data and information; design data and information models, manage information systems development resources and projects.
5. Implement solutions, including use of appropriate programming languages, design methodologies, and database systems.
6. Apply the principles of effective information management, information organizations, and information-retrieval skills to information   of various kinds, including text, images, sound, and video.
7. Specify, design, and implement computer-based information systems, andevaluate them in terms of general quality attributes and possible tradeoffspresented within the given problem.
8. Apply IS solutions to functional, inter-organizational, operational, managerial, and executive problems and opportunities.
9. Describe characteristics of various components of information systems, use the appropriate tools and techniques to analyze, design, and construct information systems.

3. Intended Learning Outcomes (ILOs)

3.a.   Knowledge and Understanding

A1.   Identify essential facts, concepts,principles and theories relating to computing and information and computer applications as appropriate to the program of study.
A2.   Clarify management and economics principles relevant to computing and information disciplines.

A3.   Identify 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.

A4.   Define the syntax and semantics of different human and programming languages and paradigms.

A5.   Demonstrate strong knowledge of fundamentals of programming, data structures, algorithms, and computer graphics.

A6.   Clarify core knowledge of computer-based architectures and operating systems.

A7.   Identify the tools, practices and methodologies used in the specification, design,implementation and evaluation of computer software systems.

A8.   Identify principles and techniques of system analysis and design, database management systems.

A9.   Demonstrate strong knowledge of information systems and software engineering.

A10. Illustrate the principles of artificial intelligence and machine learning.

A11. Demonstrate deep knowledge of data mining, business area analysis andenterprise architectures.

A12. Identify decision support tools and systems.

A13. Identify principles of information communication and information security.

A14. Demonstrate strong knowledge of fundamentals of multimedia, information retrieval, mobile computing and geographical information systems.

A15. Examine differences between information systems architectures in terms of service and cost consequencesandtheir implications for the organization.

A16. Describe methods for specification, analysis, design, implementation and operation and maintenance of IS solutions.

A17. Describe the principles and techniques of information systems research directions for several application areas.

3.b.   Intellectual Skills

B1.   Analyze computing problems and provide solutions related to thedesign and construction of computing systems.

B2.   Compare between methods, techniques...etc in the computing discipline

B3.   Realize the concepts, principles, theories and practices behindcomputing and information as an academic discipline.

B4.   Explain attributes, components, relationships, patterns, main ideas, and errors.

B5.   Identify the suitable tools, methods and techniques for modeling and analyzing computer and information systems.

B6.   Make ideas, proposals and designs using rational and reasoned arguments for presentation of computing systems.

B7. Identify criteria to measure and interpret the appropriateness of a computer system for its current deployment and future evolution.
B8. Solve problems with emphasis on commercial or industrial constraints.
B9. Design systems and architectures to solve different scientific problems.
B10. Interpret results of different solutions and implementations.
B11. Developan innovative design to solve a problem containing a range of commercial and industrial constraints.
B12. Construct a decision model using appropriate techniques.
B13. Model organizational processes and data scientifically.
B14. Perform problem analysis from written descriptions; derive requirements specifications from an understanding of problems (analysis, synthesis).
B15. Select the suitable tools, methods and techniques for modeling, analyzing business and enterprise information systems, establishing criteria, and verifying solutions.
B16. Demonstrate an ability to understand, analyze, and find technical solutions for complex business problems correctly.
B17. Identify ways information systems & technology may improve an organization's performance, including improving organizational processes and decision-making.
B18. Evaluate problems in the planning and implementation of organizational change as related to an organization's information and enterprise systems.

3.c. Professional and Practical

C1. Deploy appropriate programming languages, web-based systems and tools, design methodologies, and knowledge and database systems.
C2. Develop a range of fundamental research skills, through the use ofonline resources, technical repositories and library-based material.
C3. Perform independent information acquisition and management, using the scientific literature and Web sources.
C4. Prepare and present seminars to a professional standard.
C5. Apply appropriate techniques to solve mathematical problems.
C6. Apply the standard numerical recipes and mathematical libraries in problem solving.
C7. Implement comprehensive computing knowledge and skills in projects
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.
C9. Assess the implications, risks or safety aspects involved in theoperation of computing equipment within a specific context.
C10. 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.

C11. Manage a project from inception to final implementation and cut-over.
C12. Deploy software tools, packages and open source materials to automate IS development phases and build applications.
C13. Employ computer and mobile networking technologies to support the design and management of business data communication networks.
C14. Develop effective solutions and implementations using appropriate information technologies and customized to the businesses architecture.
C15. Justify technological, methodological and management choices for an information system project for a given organization.
C16. Evaluate systems in terms of general quality attributes and possible tradeoffs presented within the given problem.
C17. Apply the principles of effective information acquisition, information management, organization, and information-retrieval to text, images, sound, and video.

3. d. General and Transferable Skills

D1. Demonstrate skills in group working, team management, timemanagement and organizational skills.
D2. Work in stressful environment and within constraints.
D3. Work independently and as part of a team with minimum guidance.
D4. Reveal communication skills, public speaking and presentation skills,and delegation, writing skills, oral delivery, and effectively using variousmedia for a variety of audiences.
D5. Deal with others according to the rules of professional ethics.

4. Academic standards

The academic standards considered in the development of this program were the National Academic Reference Standards (NARS) prepared by National Authority for Quality Assurance and Accreditation of Education 2010 (Adopted by faculty council in 16/5/2017).

5. Curriculum Structure and Contents

5.a. Program duration: 240 hours.

5.b. Program structure

- Compulsory (240)
- Program Levels: 4 levels.(60 hours/ level)

The following table summarizes the program structure.

Subject Area	Hours	IS Program %
Humanities, ethical and Social Sciences	15 hours Lect.: 14 lab/exercises: 1	6.25%
Mathematics and Basic Sciences	51 hours, Lect:26 lab/exercises: 25	21.2%
Basic Computing Sciences (institution req.)	89 hours, Lect:51 lab/exercises: 38	37.08%
Specialization	75 hours, Lect:48 lab/exercises: 27	31.25
Projects	10 hours	4%
Total	240 hours	100%

5.c. Program Courses

Year of Program: 1st Year

1st Semester

Code	Course Title	No. of hours/week		
		Lect.	Tut.	Lab.
HUM110	English Language (1)	2	-	-
HUM113	Computational Linguistics	2	-	-
HUM114	Humanities	2	-	-
BSC 120	Mathematics (1)	4	3	-
BSC 125	Physics (1)	4	3	2
CHW160	Introduction to Computers	4	-	4

2nd Semester

Code	Course Title	No. of hours/week		
		Lect.	Tut	Lab
HUM111	English Language (2)	2	-	-
HUM115	Business Organization	2	-	-
BSC 121	Mathematics (2)	4	3	-
BSC 126	Physics (2)	3	2	2
BSC 127	Electronics	3	2	2
CSW 150	Fundamental of structured Programming	3	-	2

Year of Program: 2nd Year

1st Semester

Code	Course Title	No. of hours/week		
		Lect.	Tut	Lab
HUM212	Report Writing	2	1	-
BSC222	Mathematics (3)	4	3	-
DBA 270	Data Structures	3	-	2
CHW261	Logic Design	3	-	3
BSC 223	Probability and Statistics	2	2	-
INF 280	Introduction to Information Systems	3	-	2

2nd Semester

Code	Course Title	No. of hours/week		
		Lect.	Tut.	Lab.
HUM 216	Professional Ethics & Legal Aspects	2	-	-
BSC 228	Mathematics (4)	4	3	-
DBA 271	File Organization	3	-	2
BSC 234	Statistical Analysis & Applications	3	2	-
CSW 251	Object Oriented Programming	3	-	3
SCC 231	Operations Research	3	2	-

Year of Program   3rd Year

1st Semester

Code	Course Title	No. of hours/week		
		Lect.	Tut.	Lab
CSC341	Formal Languages& Automata	3	-	-
SCC332	Numerical Computing Methods	3	2	-
CSW352	Logic Programming	3	-	3
CSC 340	Analysis and Design of Algorithms	3	-	2
CSW 354	Software Engineering	3	-	2
CSW 353	Assembly Language	3	-	3

2nd Semester

Code	Course Title	No. of hours/week		
		Lect.	Tut.	Lab
INF 381	Systems Analysis and Design	3	2	-
CSW355	Operating Systems	3	-	2
DBA 372	Database Management Systems	3	-	2
CSC 343	Artificial Intelligence	3	-	2
SCC 342	Computer Graphics	3	-	2
CHW 362	Computer Architecture& Organization	3	-	2

Year of Program   4th Year

1st Semester

Code	Course Title	No. of hours/week		
		Lect.	Tut.	Lab
HUM417	Economics for S/W Development	3	-	-
INF 484	Mobile Computing	3	2	-
INF 482	Multimedia	4	2	-
INF 487	Data Mining	3	2	1
4XX	Selected Topics	3	-	2
PRO 400	Project	-	1	4

2nd Semester

Code	Course Title	No. of hours/week		
		Lect.	Tut	Lab
INF 486	Information Security	3	-	-
INF 485	Geographical Information Systems	4	2	-
INF 483	Information Retrieval	3	2	-
INF 488	Decision Support Systems	4	-	-
4XX	Selected Topic	3	-	2
PRO 400	Project	-	1	4

6. Program admission requirement

Have Egyptian Secondary education or equivalent certificate with major in Mathematics 2 and Physics.

7. Regulations for progression and program completion

Rules for progression are the same over all years of the program. These rules are:

- Minimum grad of Pass (%50) is required in each course in order to advance to the next level.
- Students who fail a maximum of two courses can advance to the next year and take a re-sit exam at the end of each semester in the next year.
- Students who fail more than two courses do not advance and have to re-take the exams the following year.
- A maximum of three Re-sit exams is allowed for each academic year.
- Students are expelled from the faculty after failing three Re-sit Exams.
- Forth year Re-Sit exams are scheduled before the beginning of the academic year.
- Forth year students who fail the graduation project do not graduate and have to re-take the project the following year.

8. Assessment Methods (Evaluation Techniques):

1. Practical Exam
2. Year Work
3. Final Exam

9. Evaluation of Program Intended Learning Outcomes

Evaluator	Tool	Sample
1- Senior students	Evaluation sheets	Suitable number
2- Alumni	Evaluation sheets and Interviews	Suitable number
3- Stakeholders (Employers)	Evaluation sheets and Interviews	2
4- External Evaluator (s) (External Examiner (s))	Evaluation Report	1 or 2
5- Other	---	

Program coordinator: Prof.Dr. Tarek Gharib

Date: 2018