21 September University

Information Technology

Program Specifications

Preparation Committee:

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2023م – 1444هـ

Department Head	Quality Unit	Dean of Faculty	Dean of Quality	President

21 September for medical and Applied sciences   (Medical Information Technology) Program Specifications

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Department Head	Faculty Dean	Quality Unit	President

1. Program Identification and General Information:

1	**Scientific name of the program:**	Information Technology
2	**Total credit hours required to award the degree**	**140** Credit Hours
3	**Number of years needed for completion of the program:**	4 Years [8 Academic semesters]
4	**The body responsible for granting the degree:**	21 September University for medical and Applied sciences University
5	**The body responsible for the program:**	**Department** of Information Technology **Faculty** of Medical Technology
6	**Award granted on completion of the program:**	**Bachelor of Science in** Information Technology
7	**Study system:**	Regular attendance (Semester based System)
8	**Study Language of the Program:**	English
9	**Entry requirements:**	Secondary School Certificate (Scientific)
10	**Departments participating in the program:**	Department of Health Information Technology
11	**Starting year of the program:**	1444 هـ – 2022/2023 م
12	**Study methods in the program:**	Full time
13	**Location of Delivery:**	Faculty of Medical Technology, 21 September University for medical and Applied sciences Campus
14	**The program resources:**	21 September for medical and Applied sciences
15	**Minimum grade requirements:**	Following the Admission Rules made by Ministry of Higher Education and Scientific Research- Republic of Yemen.
16	**Other admission requirements:**	21 September University Admission and Regulations Rules.
17	**Date of current development of the program:**	Feb 2022
18	**Prepared by:**	1. Dr. Abdulrahman Mohammed Obaid 2. Dr. Jamial Ahsan Mujlai 3. Dr. Hamzah Ali
19	**Program coordinator:**	1. Dr. Abdulrahman Mohammed Obaid

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2. Introduction:

The Bachelor's program in Medical Information Technology (BIT) focuses on providing academic education to Bachelor's students to enable them to graduate with knowledge, insight and experience in the integrated and coordinated development of Health processes in organizations and associated information and communication technology support structures. The graduates have thorough understanding and insight into the academic disciplines of Computing and Management, and they are capable of integrating their knowledge and insights. This program is designed to provide students with expertise in the development and use of computer systems and quantitative modeling techniques for solving Health problems and making managerial decisions. Students learn the necessary information technology and computing skills to develop and implement sophisticated Health-related computer systems.

The degree program focuses on the practical application of computing to Health problem-solving. Students develop an academically inquisitive attitude while on the program, along with thorough technical understanding, insight and experience in the integrated application of their expertise in a design process. Program graduates are thus capable of working with advanced IT in an academically prudent, ethically sound and socially responsible way, and of contributing to the further development of the field of study. Furthermore, graduates are capable of pursuing a Master's program to specialize in a particular type of IT system or aspect of the field and/or to gain further experience by conducting scientific research. The design-oriented program activates and challenges students by focusing on the combination of expertise, quality, creativity and technological developments, thus preparing them for a future in which they continually work on their professional development and apply their expertise appropriately, effectively and with sound professional judgment.

Promising Jobs:

IT Support Officer/ Technical Support / Helpdesk Analyst	Health/System Analyst
IT Network Administrator	Database Administrator/developer
Application Developer/Full-Stack developer/ Software Developer/	Front End Developer / Web Developer/ Back End Developer
Android & iOS Developer	Quality Assurance Engineer
Information systems manager	IT consultant
Information processing specialist	Medical records technician
Biomedical IT specialist	Healthcare technology management

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3. `University Vision, Mission, Values, Objectives, and Goals:

University vision:

A Contemporary University with National Responsibility and Faith Identity

University Mission:

Leadership of transformation in managing and providing the health care with all partners via having the distinction standard in education and applied and medical researches that meet the needs of Yemeni people and regional influence.

University Core values:

- Leadership and Influence
- Excellence and Innovation
- Work effectively with a time

Special University Goals:

1- Ensuring the application of quality standards and having the distinction standards in medical and applied sciences, scientific research and community service.

2- Adopting student-centered learning, the partnership with them for life, consolidating the principles of national responsibility and faith identity, looking after them and developing their capabilities after graduation and during work.

3- Attracting and Eemploying scientists, cadres and talents to gain minds and put an end for the "brain drain" in a way that promotes and ensures the availability of thinkers, businessmen and good citizens.

4- Developing the distinguished academic infrastructure continuously and establishing modern research and service centers with high efficiency that can give a real effect locally and regionally.

5- Enhancing the university status as a preferred partner for local, regional and international partnership through implementing creative styles of education, exchanging researches and knowledge, and providing real and effective outcomes for developing professional practices to benefit from them locally and regionally.

4. Faculty Vision, Mission, Values, and Objectives:

Faculty Vision:

To achieve excellent standard of quality education and internally acknowledged in Healthcare and Information Technology.

Faculty Mission:

To produce highly qualified Computing professionals in field of healthcare that contribute to the Yemeni and regional knowledge and serve society providing excellent quality education.

Faculty Values:

- Leadership and influence

- Development and innovation

- Professional integrity

- Job commitment and adherence to goals

Faculty Goals:

1- To produce highly qualified students in computing field who fulfill Health care needs.

2- To enhance computing as well as healthcare knowledge and skills in the society.

3- To contribute to the direction and future advancement of the national profile in the global competition and its increase dependency on computing.

4- To display excellent academic quality and relevant to the academic and professional programs that enables students to meet the criteria required by future employers.

5- To extended the innovative application in modern Health computing by providing services to the community.

5. Department Vision, Mission, and Objectives :

Department Vision:

To maintain regionally leading and recognized reputation in the field of Health information technology by providing distinguished academic programs and quality education.

Department Mission:

To prepare distinguished and well-qualified graduates who are capable of meeting the market demands

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in the field of Health Information Technology by providing high quality academic programs and appropriate teaching-learning and research environment.

Department Objectives:

1- To provide distinguished and excellent academic programs in field of Health Information Technology.

2- To encourage creative and innovative thinking to identify and solve the IT problems to serve the needs of Health organization.

3- To implement acquired knowledge of IT in efficient and effective manner to construct IT solution to solve Health problem in dynamic environment.

4- To acquire skills to communicate and work effectively as an individual or as member in team.

5- To pursue lifelong learning, career development and provide foundation for research and further studies.

6- To encourage graduates to follow appropriate computing practices with professional, societal, legal, and ethical responsibility.

6. Health Information Technology Program Mission and Objectives:

Program Mission:

To provide quality education that contributes in lifelong learning and professional development for graduates through integrating healthcare with computing and information technology.

Program Educational Objectives:

PEO1. Comprehend and demonstrate the understanding of key information and Health system and their interrelationships.

PEO2. Analyze Health environment issues that influence information system development.

PEO3. Select and apply appropriate tools and techniques to design and deliver IT related applications for enterprise.

PEO4. Develop student with critical thinking, analytical reasoning modeling and development skills to construct IT solution to solve Health problem in dynamic environment.

PEO5. Exhibit communication, professionalism, team work, leadership skills, and ethical and responsible behavior in development or applying information technology in Health.

PEO6. Produce graduates with an ability to pursue lifelong learning, career development and provide

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foundation for further studies.

Annex- 2, Survey on the Strategic Orientations of the Department and Similar Departments, and their Alignment to the Strategic Orientations of the University and Faculty.

7. Program Standards & Benchmarks:

Academic Standards:

1. National Academic Reference Standards (NARS) For Undergraduate Computing Programs, Yemen, First Edition, Council for Accreditation & Quality Assurance, Yemen, May 2018.

2. Accreditation Board for Engineering and Technology (ABET) criteria for accrediting engineering programs 2020 (Computing Program)

Governmental Rules and Regulations:

1. Act No. 13/2005 of the Law of private universities, higher institutes and colleges, Yemen.

2. The executive regulations of Act No. 13/2005 of the Law of private universities, higher institutes and colleges, Yemen.

3. 21 September University - for Medical and Applied Sciences .

Annex- 3, Academic Standards Curriculum Criteria of Accreditation Board

Annex- 4, Unified Regulations for Student Affairs, Ministry of Higher Education and Scientific Research

Program Benchmarks:

1. Tehran University of Medical Sciences, B.Sc. in Health Information Technology, Iran
https://en.tums.ac.ir/en/department/major/64/health-information-technology-b.sc-

2. Miami University, B.Sc.(IT Major in Health Information Technology) College of Liberal Arts and Applied Science, Department of Computer and Information Technology, USA.
https://bulletin.miamioh.edu/liberal-arts-applied-science/information-technology-bs/

3. Tennessee State University, B.Sc.(Health Sciences) College, Department of Health Information Management ,USA.
https://www.tnstate.edu/him/

4. Saudi Electronic University, B.Sc.(Bachelor in Health Informatics) CollegeCollege of Health Sciences, KSA.
https://seu.edu.sa/hsc/en/bachelor-programs/bachelor-in-health-informatics/#messages

5. King Saud Bin Abdulaziz University for Health Sciences , B.Sc.(Health Information Systems) College of Public Health & Health Informatics, KSA.
https://www.ksauhs.edu.sa/English/Colleges/Cphhi/Pages/Academics/BachelorsProgramsHealthInformationSystems.aspx

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6. Emirates College of Technology . B.Sc.(Health Information Management) college: Applied Health Sciences, UAE.

   https://ect.ac.ae/en/academics/bachelor-of-applied-health-sciences/

8. Graduate Attributes:

After successfully completing the program, the graduate should be able to:

1. Demonstrate knowledge of information technology discipline theoretically and practically.

2. Identify information technology problems and Health requirements using computational approaches, modern information technologies, tools and techniques.

3. Analyze, design and manage computing-based solutions within the context of information technology discipline to meet the organization's goals and Health objectives.

4. Work effectively within a team or individually in planning, implementing, deploying, configuring, maintaining, and managing practices and technology trends of Health's computing infrastructures.

5. Use efficiently project management, research capability, leadership, communication, interpersonal relationship and life-long learning skills.

6. Demonstrate commitment to ethical, legal, security and social responsibilities as professionals in Health information Technology.

9. Program Intended Learning Outcomes (PILOs):

A. Knowledge and Understanding:

Upon successful completion of the Program, graduates should be able to:

A1. Demonstrate an understanding of appropriate models, theories, mathematical foundations, and techniques related to Health Information Technology discipline.

A2. Identify user and Healthcare needs to provide IT based solutions to real-world problem.

A3. Demonstrate a profound knowledge in utilizing and adapting IT tools, techniques, practices, and methods for solving computing problems in Health environment.

A4. Demonstrate a sound understanding the computing concept related to analysis, design, implementation, and evaluation of Health information system.

B. Cognitive/ Intellectual Skills:

Upon successful completion of the program, graduates should be able to:

B1. Critically analyse complex computing problems and propose appropriate information technology based solutions and integrate them effectively into the uses and organization Health.

B2. Analyze the impacts of computing on Health objectives and customer needs, and consider them

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during the analytical processing, selection, integration, configuration and administration of information systems

B3. Explore variety of challenges and problems related to Health Information Technology to select the optimal solution.

B4. Evaluate IT based solution to meet a given set of Health requirements in the context of Health Information Technology discipline.

C. Practical and Professional Skills:

Upon successful completion of the program, graduates should be able to:

C1. Employ effectively the concepts, principles of computational tools, techniques used for the construction and documentation of Health Information of varying complexity.

C2. design, implement, and test a computing-based solution to meet a given set of computing requirement in the context of Health Information Technology.

C3. Use systematic approaches to select, develop, apply integrates, and administrate secure computing technologies to accomplish user and Health goals.

C4. Use current techniques, skills, and tools necessary for computing practices.

D. General and Transferable Skills:

Upon successful completion of the program, graduates should be able to:

D1. Function effectively as an individual, as a member, or leader of a team engaged in activities appropriate to the Health Information Technology discipline to accomplish a common goal.

D2. Commit to professional ethics, responsibilities, and norms of professional IT practices .

D3. Communicate effectively in writing and orally in a variety of professional contexts.

D4. Engage in continuing professional development and lifelong learning as an IT professional

> Annex- 5, Survey of Similar Accredited Programs at National and International Universities (Benchmarks)
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> Annex- 1, Survey on Mission and Objectives of the Program and Similar Accredited Programs and its Alignment to the University, Faculty, and Department Missions and 0bjectives
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> Annex- 7, Alignment of Program Intended Learning Outcomes (PILOs) to the Faculty Objective
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> Annex- 10, Mapping of Program Objectives to the Faculty Mission
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10. Teaching and Learning Strategies:

- Interactive lectures,
- Problem solving,
- Tutorials,
- Seminar/ Project/Presentation,
- Teamwork,
- Laboratory based session,
- Interactive Class Discussions,
- Directed Self- Study,
- Exercises and Home Works,
- Field Visits.

Teaching Strategy	Description
Active lectures	The lectures are conducted in the class. It are provided on a weekly basis. It also showing students what they need to know, the teacher incorporates a variety of formats including lectures and multimedia presentations.
Problem solving	This allows students to become more active in their learning as they work out which information they need to find out how to solve a particular problem.
Tutorials	Some courses need to have tutorial sessions to solve problems related to the subjects. The students exchange their knowledge with the teacher.
Seminar/ Project/Presentation	Assigned project is given to student and she/he must give a seminar to present her/his project.
Teamwork	The students are assigned to work in a small group as a team on some subjects.
Laboratory based session	Laboratory based sessions are required for some courses to balance between theoretical and practical issues.
Interactive Class Discussions	Interactive class discussions are carried out about some aspects, related to the subject. It involves a large or small group activity that encourages students to focus on a topic and contribute to the free flow of ideas. The teacher may begin a brainstorming session by posing a question or a problem, or by introducing a topic. Students then express possible answers, relevant words and ideas
Directed Self- Study	The student should be directed to some related references to read and summarize some.
Exercises and Home Works	Exercises and home works are assigned to students periodically, so the students will gain more knowledge about the subjects.
Art Gallery	The students are assigned to show their work individually or in groups to visitor.
Drawing Sessions	The students are assigned to work individual in the drawing halls.

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Teaching Strategy	Description
Field Visits	The students are assigned to perform a site visit to acquire field related information.

11. Assessment Methods:

- Coursework Activities
- Written tests
- Written assessments such as multiple-choice questions and Quizzes
- Report/Project/ Practical Lab Sessions
- Home works and assignments.
- Presentations

Assessment Strategy	Description
Written exams (Midterm and final exams)	Midterm & Final exams for each course is required for all courses except Graduation Projects. These exams will evaluate the extent in which the student understanding of theoretical and applied subjects
Case studies	Assigning case studies to students is very helpful to assess the extent of understanding the topics.
Presentations	It's an assessment of the ability of organizing and the way of presentation.
Project/ Practical Lab/ Reports	Assessing students to their ability to write theoretical and lab reports as well as the understanding of organizing the reports. The practical lab sessions are required for some courses.
Coursework Activities	Coursework Activities is one of the assessment methods by which it can evaluate students.
Homework's	Home works and assignments will evaluate students according to their ability to explain and illustrate the assignments they are given.
Written assignments such as multiple choice questions, quizzes or drawings	Some points are assigned to multiple choice questions and Quizzes in order to asses' student ability to follow the lecturer during the study course.

12. Alignment of Program Intended Learning Outcomes (PILOs) to Teaching Strategies and Assessment Methods:

PILOs	Teaching Strategy	Assessment Methods
Knowledge and Understanding	Lectures, Interactive class discussions, Tutorials.	Written exams, assignment work, quizzes, submission of reports.
Intellectual Skills	Lectures, Tutorial, Interactive class discussions, and group work, presentation.	Written exams, Project, Case studies and assignment work.
Professional & practical skills	Short lectures, case study, Laboratory experiments, Project, and group work,	Written exams, quizzes, Practical exam assignment and report

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PILOs	Teaching Strategy	Assessment Methods
	Field training, Drawing sessions.	submission.
General & Transferable Skills	Group work, Self-study, Interactive class discussions, Tutorials, Seminar/ project/presentation, Laboratory experiments, Project, and Art Gallery	Project presentation, Laboratory exam, Report/Project

13. Project Assessment:

Each project will be assessed by a committee of three members as follows:

Item	Marks Distribution
Project supervisor	50%
Internal examiner: a member of the department staff.	25%
External examiner: a qualified external examiner (either from other departments of the faculty or from another university)	25%
Total	**100%**

14. Training Course Assessment:

Six (6) months training period in an approved and related engineering institution: governmental, commercial, or industrial. This internship provides real-life experience and exposure and provides the students with real opportunity to get connected and develop their professional network and connection.

The training course will be assessed through:

- Evaluation by the program chair during at least two field visits (30%)
- Evaluation by the external supervisor from the field (30%)
- Reports presented by students groups related to different training branches (40%).

15. Intended Learning Outcomes Mapping:

See below Annexes.

Annex- 14, Alignment of Program PILOs with Council of Accreditation and Standards
Annex- 15, Survey of Credit Hours of Similar Programs

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16. Program Structure:

No	Requirements		No. of Courses	Credit Hours	Rational Weight %
1	University Requirements	Compulsory	7	14	10%
		Elective	--	--	
2	Faculty Requirements	Compulsory	10	21	15 %
		Elective	--	--	
3	Department Requirements	Compulsory	9	27	19.29%
		Elective	--	--	
4	Program Requirements	Compulsory	24	68	51.43%
		Elective	2	4	
5	Projects	Compulsory	2	6	4.28%
		Elective	--	--	
	Total:		**54**	**140**	**100.00%**

* The Project Courses Credit Hours are already added to the total credit hours with the faculty requirements.

16.1. University Requirements

	Compulsory Courses								

No.	Level-Sem.	Course Code	Course Name	اسم المقرر	Cr. Hrs.	L	T	P	Prerequisites, Co-requisites
1.	1/1	06.11.70**2**	Arabic 101	لغة عربية101	2	2			
2.	1/2	06.11.70**6**	Arabic 102	لغة عربية 102	2	2			06.11.702
3.	1/1	06.11.70**1**	English 101	لغة انجليزية 101	2	2			
4.	1/2	06.11.70**5**	English 102	لغة انجليزية102	2	2			06.11.701
5.	1/1	06.11.70**3**	Islamic Culture	ثقافة إسلامية	2	2			
6.	1/1	06.11.70**4**	National Culture	ثقافة وطنية	2	2			
7.	1/2	06.11.707	Arabic Israeli Conflict	الصراح العربي الإسرائيلي	2	2			
			Total		**14**	**14**			

	Elective Courses: None								

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16.2. Faculty Requirements

Compulsory Courses

No.	Level/Sem.	Course Code	Course Name	Cr. Hrs.	L	T	P	Prerequisites, Co-requisites
1.	Level 1/ semester 1	04.01.711	Fundamentals of Nursing	2	2			
2.	Level 1/ semester 1	04.02.712	Medical Terminology	2	2			
3.	Level 1/ semester 2	01.01.714	Anatomy and Physiology	2	2			
4.	Level 1/ semester 2	05.01.713	Principle of Health Management	2	2			
5.	Level 1/ semester 2	05.01.715	Communication skills and presentation	2	**2**			
6.	Level 3/ semester 1	05.02.719	Biostatistics	2	2			
7.	Level 1/ semester 2	03.01.716	General Biology	3	2		2	
8.	Level 3/ semester 1	05.01.718	Total Quality Management	2	2			
9.	Level 3/ semester 2	05.02.720	Research methodology	2	2			
10.	Level 2/ semester 2	05.01.717	pharmacology	2	**2**			
11.		05.02.721	Fundamentals of account	2	**2**			
			Total	**23**	**22**		**2**	

Elective Courses: None

16.1. Department Requirements

Compulsory Courses

No.	Level/Sem.	Course Code	Course Name	Cr. Hrs.	L	T	P	Prerequisites, Co-requisites
1.	Level 1/ semester 1	07.02.701	Math 1	3	2		2	
2.	Level 1/ semester 2	07.02.704	Math 2	3	2		2	07.02.711
3.	Level 2/ semester 1	07.02.706	Math 3	3	2		2	07.02.712
4.	Level 1/ semester 1	07.02.703	Bio Physics	3	2		2	
5.	Level 2/ semester 1	07.02.705	Fundamentals of Electrical Circuits	3	2		2	
6.	Level 2/ semester 2	07.02.719	Electrical Circuits 2	3	2		2	07.02.718
7.	Level 2/ semester 1	07.02.707	Digital Logic Design	3	2		2	
8.	Level 3/ semester 1	07.02.729	Biomedical Devices	3	2		2	07.02.718, 07.02.719
9.	Level 3/ semester 2	07.02.730	Biomedical Devices 2	3	2		2	07.02.729
			Total	**27**	**18**		**18**	

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16.4 Program Major

Compulsory Courses

No.	Level-Sem.	Course Code	Course Name	Cr. Hrs.	L	T	P	Prerequisites, Co-requisites
1.	1/1	07.01.701	Introduction to Information Technology	3	2		2	
2.	1/2	07.01.702	Programming1	3	2		2	07.01.701
3.	2/1	07.01.703	Programming 2	3	2		2	07.01.702
4.	2/2	07.01. 704	Health Information Technology	3	2		2	07.01.701
5.	2/1	07.01. 705	Database management Systems	3	2		2	
6.	2/2	07.01. 706	Object-Oriented Programming	3	2		2	07.01.703
7.	2/1	07.01. 707	Computer system architecture	3	2		2	07.01.701
8.	2/2	07.01. 708	Computer Network	3	2		2	07.01.701
9.	2/1	07.01. 709	System Analysis and Design	3	3			07.01. 707
10.	3/1	07.01. 710	IT Project Management	3	3			
11.	3/1	07.01. 711	Visual Programming	3	2		2	07.01. 706
12.	2/2	07.01. 712	Operating System	3	2		2	
13.	3/2	07.01. 713	Health information management	3	3			07.01. 704
14.	2/2	07.01. 714	Software Engineering	3	3			07.01. 709
15.	3/2	07.01. 715	Web Design and development	3	2		2	07.01. 711
16.	3/1	07.01. 716	Electronic Health Records	2	2			
17.	4/1	07.01. 718	Information Security and Audit	3	2		2	
18.	3/1	07.01. 719	Medical Coding and Billing	3	3			
19.	3/2	07.01. 720	Current issues in computer	3	3			
20.	3/2	07.01. 721	Cloud Computing	3	3			
21.	4/1	07.01. 722	Mobile Application Development	3	2		2	
22.	4/1	07.01. 723	Decision Support System	2	2			
23.	4/2	07.01. 724	Legal and Ethical Aspects of HIT	2	2			
24.	4/2	07.01. 717	Entrepreneurship	2	2			
25.	4/2	07.01. 728	Protocols of Biomedical Devices	2	2			
			Total	**70**	**57**	**0**	**26**	

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Elective Courses

No	Level-Sem.	Course Code	Course Name	Cr. Hrs.	L	T	P	Prerequisites, Co-requisites
1	4/1	07.01. 730	Elective 1	3	2		2	
2	4/2	07.01. 731	Elective 2	3	2		2	
			Total	**6**	4		**4**	

Project Work Courses

No	Level-Sem.	Course Code	Course Name	Cr. Hrs.	L	T	P	Prerequisites, Co-requisites
1	4/1	07.01. 725	Project 1	3	3			05.02.710
2	4/2	07.01. 726	Project 2	3	3			07.01. 725
			Total	**6**	6			

Field Attachments and Training Courses (6 أشهر امتياز)

No	Level-Sem.	Course Code	Course Name	Mon				Prerequisites, Co-requisites
1	4/2	07.01. 727	Field Training	6				07.01. 726
			Total	**6**				

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16.5 Study Plan:

Level 1

Term 1

No.	Course Code	Course Name	اسم المقرر	L	T	P	Cr. Hrs.	Prerequisites, Co-requisites
1	06.11.702	Arabic 101	لغة عربية 101	2			2	-
2	06.11.701	English 101	لغة انجليزية 101	2			2	-
3	06.11.703	Islamic Culture	ثقافة إسلامية	2			2	-
4	06.11.704	National Culture	ثقافة وطنية	2			2	-
5	07.01.701	Introduction to Information Technology	مقدمة الى تكنولوجيا المعلومات	3		2	3	-
6	04.01.711	Fundamentals of Nursing	اساسيات التمريض	2			2	-
7	04.02.712	Medical Terminology	مصطلحات طبية	2			2	-
8	07.02.701	Math 1	رياضيات 1	2	2		3	-
9	07.02.703	Bio physics	فيزياء طبية	3		2	3	-
				10	2	4	**21**	

Term 2

No.	Course Code	Course Name	اسم المقرر	L	T	P	Cr. Hrs.	Prerequisites, Co-requisites
1	06.11.705	English 102	لغة انجليزية 102	2			2	06.11.503
2	06.11.706	Arabic 102	لغة عربية 102	2			2	06.11.501
3	06.11.707	Arabic Israeli Conflict	الصراع العربي الإسرائيلي	2			2	-
4	01.01.714	Anatomy and Physiology	علم التشريح ووظائف الأعضاء	2			2	-
5	05.01.713	Principle of Health Management	مبادئ أداره طبية	2			2	-
6	03.01.716	General Biology	احياء عامة	2			2	07.01.702
7	07.01.702	Programming 1	برمجة 1	2		2	3	07.01.701
8	07.02.704	Math 2	رياضيات 2	2	2		3	07.02.711
9	05.01.715	Communication skills and presentation	مهارات الاتصال وتواصل	2			2	-
				18	2	2	**20**	

Level 2

Term 1

No.	Course Code	Course Name	اسم المقرر	L	T	P	Cr. Hrs.	Prerequisites, Co-requisites
1	07.02.707	Digital Logic Design	التصميم المنطقي الرقمي	2		2	3	
2	07.01.703	Programming 2	برمجة 2	2		2	3	07.01.702
3	07.01. 705	Database management	إدارة قواعد البيانات	2		2	3	-

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4	07.02.706	Math 3	رياضيات 3	2	**2**		3	07.02.712
5	07.01. 707	Computer system architecture	معمارية الحاسوب	2		2	3	07.01.701
6	07.01. 709	System Analysis and Design	تحليل وتصميم نظم	3			3	07.01. 707
7	07.02.705	Fundamentals of Electrical Circuits	اساسيات دوائر كهربائية	2		2	3	-
				15		**10**	**21**	

Term 2

No.	Course Code	Course Name	اسم المقرر	L	T	P	Cr. Hrs.	Prerequisites, Co-requisites
1	07.01. 708	Computer Network	شبكات الحاسوب	2		2	3	07.01.701
2	07.01. 706	Object-Oriented Programming	برمجة هدفية موجهة	**2**		2	3	07.01.703
3	05.01.717	pharmacology	علم العقاقير	2			2	-
4	07.01. 704	Health information Technology	تكنولوجيا المعلومات الصحية	2		2	3	07.01.701
5	07.01. 712	Operating System	نظم تشغيل	2		2	3	-
6	07.01. 714	Software Engineering	هندسة البرمجيات	3			3	07.01. 709
7	05.02.721	Fundamentals of account	اساسيات المحاسبة	2			2	07.02.718
				15		**8**	**19**	

Level 3

Term 1

No.	Course Code	Course Name	اسم المقرر	L	T	P	Cr. Hrs.	Prerequisites, Co-requisites
1	07.01. 710	IT Project Management	إدارة مشاريع تكنولوجيا المعلومات	3			3	-
2	05.02.719	Biostatistics	إحصاء طبي	2			2	-
3	05.01.718	Total Quality Management	إدارة الجودة الشاملة	2			2	-
4	07.01. 711	Visual Programming	البرمجة المرئية	**2**		2	3	07.01. 706
5	07.01. 716	Electronic Health Records	السجلات الصحية الالكترونية	**2**			2	-
6	07.01. 719	Medical Coding and Billing	الفواتير والترميزات الطبية	3			3	-
7	07.12.716	Biomedical Devices	أجهزة طبية	2		2	3	07.02.718, 07.02.719
				16		**4**	**18**	

Term 2

No	Course Code	Course Name	اسم المقرر	L	T	P	Cr. Hrs.	Prerequisites, Co-requisites
1	07.01. 715	Web Design and development	تصميم وتطوير المواقع	**2**		2	3	07.01. 711
2	07.01. 713	Health information management	إدارة المعلومات الصحية	3			3	07.01. 704

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3	07.01. 720	Current issues in computer	القضايا الراهنة في الحاسوب	3			3	-
4	07.01. 721	Cloud Computing	الحوسبة السحابية	3			3	-
5	05.02.720	Research methodology	اساليب البحث العلمي	2			2	-
6	07.01. 728	Protocols of Biomedical Devices	بروتوكولات الأجهزة الطبية	2			2	07.02.729
				15		2	16	

Level 4

Term 1								
No.	Course Code	Course Name	اسم المقرر	L	T	P	Cr. Hrs.	Prerequisites, Co-requisites
1	07.01. 722	Mobile Application Development	تطوير تطبيقات الأجهزة المتنقلة	2		2	3	-
2	07.01. 723	Decision Support System	نظام دعم القرار	2			2	-
3	07.01. 718	Information Security and Audit	أمن المعلومات ومراجعة الحسابات	2		2	3	-
4	07.01. 730	Elective 1	مقرر اختياري 1	2		2	4	-
5	07.01. 725	Final Project 1	مشروع التخرج 1	3			3	05.02.710
				11		6	**14**	

Term 2								
No.	Course Code	Course Name	اسم المقرر	L	T	P	Cr. Hrs.	Prerequisites, Co-requisites
1	07.01. 726	Final Project 2	مشروع التخرج 2	3			3	07.01. 725
2	07.01.724	Legal and Ethical Aspects of HIT	القوانين والاخلاقيات المهنية لمتخصصي نظم المعلومات الطبية	2			2	-
3	07.01. 731	Elective 2	مقرر اختياري 2	2		2	3	-
4	07.01. 717	Entrepreneurship	ريادة أعمال	2			2	-
				9		2	**10**	

Term 1								
No.	Course Code	Course Name	اسم المقرر	L	T	P	Cr. Hrs.	Prerequisites, Co-requisites
1	07.01. 727	Field Training	التدريب الميداني				6	-
							6	

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16.6 Distribution of Total Credit Hours:

Level	Term	University Requirements		Faculty Requirements		Department Requirements		Program Requirements		Elective Courses		Training		Project		Total Cr. Hrs.		Total Cr. Hrs./ Level
		No. of Courses	Credit Hours	No. of Courses	Credit Hours	No. of Courses	Credit Hours	No. of Courses	Credit Hours	No. of Courses	Credit Hours	No. of Courses	Credit Hours	No. of Courses	Credit Hours	No. of Courses	Credit Hours	
First	First	4	8	2	4	2	6	2	6	-	-	-	-	-	-	10	24	32.14 %
	Second	3	6	4	9	1	3	1	3	-	-	-	-	-	-	9	21	
Second	First	-	-	-		3	9	4	12	-	-	-	-	-	-	7	20	30.7%
	Second	-	-	1	2	1	3	4	12	-	-	-	-	-	-	8	23	
Third	First	-	-	2	4	1	3	4	11	-	-	-	-	-	-	6	16	23.57 %
	Second	-	-	1	2	1	3	4	12	-	-	-	-	-	-	6	17	
Fourth	First	-	-	-	-	-	-	3	8	1	2	-	-	1	3	4	10	13.57 %
	Second	-	-	-	-	-	-	2	4	1	2	-	-	1	3	4	9	
Total:		7	14	10	21	9	27	24	68	2	4	-	-	2	6	54	140	
Percentage:		12.96 %		18.5%		16.67%		44.47%		3.7%		-		3.7%		100%		

Annex- 16, Survey of Number of Courses and Credit Hours of Similar Programs

Annex- 17, Themes of Courses of Study and their Weightage

Annex- 18, Coding System

Annex- 19, Survey of Course Names per Academic Semesters of Similar Program

Annex- 20, Comparison of Program Courses and Similar Programs Courses

Annex- 21, Matrix of Mapping Program PILO's with Courses

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16.7   Admission Requirements:

1. Admissions to the program shall be made as per the admission rules set by the Ministry of Higher Education and Scientific Research as well as 21 September university admission guidelines.

2. General Secondary school certificate (Science Section) or any equivalent certificate with grade as specified in the admission rules made by Ministry of Higher Education and Scientific Research.

3. Pass the aptitude test and personal interview if any.

4. Any necessary requirement for specialization, decided by the Faculty.

16.8 Attendance and Graduation Requirements:

1. Student attendance should not be less than 75%.
2. Student will graduate after successfully passing all program requirements.
3. Total credit hours for the program are 140 credit hours.
4. Minimum score for any student to pass any credit hours course is 50% marks.

16.9 Grading System:

From 90% to 100% of total marks	Excellent
From 80% to less than 90%	Very Good
From 65% to less than 80%	Good
From 50% to less than 65%	Pass
Less than 50%	Poor/Fail

16.10   Facilities Required for Running the Program:

1. Sufficient Classrooms furnished with all necessary pieces and equipment.
2. Drawing halls.
3. Library and study room
4. Computer Labs.
5. Audio Studio.
6. Photography and Video Studio.
7. Academic and administrative staff offices.
8. Internet.

16.11   Program Assessment:

	Type of the Sample who Assess the program	Instruments used	Sample
1	Graduates	Questionnaire	20%
2	Academic Staff	Interviews	100%
3	Employment agencies (views)	Questionnaires	50%
4	Final year students	Focus group discussions	20%
5	External Examiners	Interviews	100%
6	Others CAQA	Interviews/ Documents analysis	100%

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16.12	Program Quality Standards:

16.13	Internal and external training to satisfy program standards:

16.14 Program Policies:

Based on University Regulations

1.	**(Class Attendance):** A student should attend not less than 75 % of total hours of the subject; otherwise, he/she will not be able to take the exam and will be considered as exam failure. If the student is absent due to illness, he/she should bring a proof statement from university Clinic. If the absent is more than 25% of a course total contact hour, student will be required to retake the entire course again.
2.	**(Tardy) :** For late in attending the class, the student will be initially notified. If he repeated lateness in attending class, he/she will be considered as absent.
3.	**(Exam Attendance/Punctuality) :** A student should attend the exam on time. He/she is permitted to attend an exam half one hour from exam beginning, after that he/she will not be permitted to take the exam and he/she will be considered as absent in exam.
4.	**(Assignments & Projects) :** Assignments and projects are given as per course specification; the student has to submit all the assignments for checking on time, mostly one week after given the assignment.
5.	**(Cheating) :** For cheating in exam, a student will be considered as fail. In case the cheating is repeated three times during his/her study the student will be disengaged from the Faculty.
6.	**(Plagiarism) :** Plagiarism is the attending of a student the exam of a course instead of another student. If the examination committee proofed a plagiarism of a student, he/she will be disengaged from the Faculty. The final disengagement of the student from the Faculty should be confirmed from the Student Council Affair of the university or according to the university roles.
7.	**(Other policies) :** - Mobile phones are not allowed to use during a class lecture. It must be closed; otherwise the student will be asked to leave the lecture room. - Mobile phones are not allowed in class during the examination. - Lecture notes and assignments might be given directly to students using soft or hard copy.

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Minstry of Higher Education &Sientific Research

21 September for medical and Applied sciences

Faculty of Medical Information Technology

وزارة التعليم العالي والبحث العلمي

جامعة 21 سبتمبر للعلوم الطبية والتطبيقية

كلية تقنية المعلومات الطبية

Annex- 2, Survey on the Strategic Orientations of the Department and Similar Departments, and their Alignment to the Strategic Orientations of the University and Faculty:

Benchmarked Programs:

1. Tehran University of Medical Sciences, B.Sc. in Health Information Technology, Iran

   https://en.tums.ac.ir/en/department/major/64/health-information-technology-b.sc-

2. Miami University, B.Sc.(IT Major in Health Information Technology) College of Liberal Arts and Applied Science, Department of Computer and Information Technology, USA.

    https://bulletin.miamioh.edu/liberal-arts-applied-science/information-technology-bs/

3. Tennessee State University, B.Sc.(Health Sciences) College, Department of Health Information Management ,USA.
   https://www.tnstate.edu/him/

4. Saudi Electronic University, B.Sc.(Bachelor in Health Informatics) CollegeCollege of Health Sciences, KSA.
   https://seu.edu.sa/hsc/en/bachelor-programs/bachelor-in-health-informatics/#messages

5. King Saud Bin Abdulaziz University for Health Sciences , B.Sc.(Health Information Systems) College of Public Health & Health Informatics, KSA.
   https://www.ksauhs.edu.sa/English/Colleges/Cphhi/Pages/Academics/BachelorsProgramsHealthInformationSystems.aspx

6. Emirates College of Technology . B.Sc.(Health Information Management) college: Applied Health Sciences, UAE.
   https://ect.ac.ae/en/academics/bachelor-of-applied-health-sciences/

Annex- 2, Survey on the Strategic Orientations of the Department and Similar Departments, and their Alignment to the Strategic Orientations of the University and Faculty:

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1- Vision of the Corresponding Departments and Suggested Vision:

#	The Department	Vision
1.	Health Information Technology	
2.	Computer and Information Technology	
3.	Health Information Management	
4.	Health Informatics	
5.	Health Information Systems	
6.	Health Information Management	

Annex- 2, Survey on the Strategic Orientations of the Department and Similar Departments, and their Alignment to the Strategic Orientation of the University and Faculty:

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2- Mapping of Department Vision to the University and Faculty Visions:

University Vision	Faculty of Computer Science & Information Technology Vision	Department of Information Technology Vision
A Contemporary University with National Responsibility and Faith Identity	To achieve excellent standard of quality education and internally acknowledged in Computing and Information Technology.	To maintain regionally leading and recognized reputation in the field of Health information technology by providing distinguished academic programs and quality education.

3- Mission of the Corresponding Departments and Suggested Mission:

#	The Department	Mission
1.	Health Information Technology	▪ Knowing about management of Health Information technology department, methods of storage and processing of data (organization , classification and statistical accounting), retrieval of information, Indicators and Analysis of health data.
2.	Computer and Information Technology	▪ The program in Health Information Technology (HIT) addresses the technology and processes used by health care providers and related organizations.
3.	Health Information Management	▪ Prepares and transforms students to achieve the highest levels of academic performance, leading them to excel and advance in their chosen fields in the 21st century.
4.	Health Informatics	▪ To provide high quality academic, research, consultancy programs in order to prepare qualified, trained, and excellent national talents to serve the requirements of health care sector.
5.	Health Information Systems	▪ The BHI program strives to advance the quality and efficiency of the Saudi health care

Annex- 2, Survey on the Strategic Orientations of the Department and Similar Departments, and their Alignment to the Strategic Orientation of the University and Faculty:

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#	The Department	Mission
		system through producing distinct graduates with in-depth knowledge and skills in health informatics. This mission is attained through using innovative teaching methods, collaborative research, and community-oriented education.
6.	Health Information Management	is to provide students with a range of knowledge, skills and competencies that will prepare them to meet the requirements of the health care sector.

4- Mapping of Department Mission to the University and Faculty Missions:

University Mission	Faculty of Medical Technology Mission	Department of Information Technology Mission
Leadership of transformation/upturning headway in managing and providing the health care with all partners via having the distinction standard in education and applied and medical researches that meet the needs of Yemeni people and regional influence	To produce highly qualified Computing professionals that contribute to the world knowledge and serve society needs by providing excellent quality education.	. To prepare distinguished and well-qualified graduates who are capable of meeting the market demands in the field of Health Information Technology by providing high quality academic programs and appropriate teaching-learning and research environment.

Annex- 2, Survey on the Strategic Orientations of the Department and Similar Departments, and their Alignment to the Strategic Orientation of the University and Faculty:

Department Head   Faculty Dean   Quality Unit   President

5- Objectives (Educational) of the Corresponding Departments and Suggested Objectives:

#	The Department	Objectives
1.	Health Information Technology	
2.	Computer and Information Technology	
3.	Health Information Management	
4.	Health Informatics	1 - Raising the competence levels of ours students to keep pace with the developments of various health sectors in the Kingdom. 2 - Developing the spirit of belonging and proficiency. 3 - Fulfilling the needs of our society by producing highly qualified national health cadres. 4 - Raising health awareness in the community. 5 - Providing appropriate educational environment for students and faculty members. 6 - Offering training and workshops to develop the skills of health staff. 7 - Presenting consultations to develop and support the health system. 8 - Integrating e-learning, blended learning with the field of health informatics. 9 - Promoting excellence in research through interdisciplinary research involving various health specialties and sectors.
5.	- Department Health Information Systems	1- Graduate professionals with substantive knowledge and skills in the field of Health Informatics. 2. Promote scientific research pertinent the HI through equipping the graduates with the necessary skills to read, evaluate, and conduct research. 3- Contribute to the community through directing the education activities, projects and field experience to public and private health-care institutions

Annex- 2, Survey on the Strategic Orientations of the Department and Similar Departments, and their Alignment to the Strategic Orientation of the University and Faculty:

Department Head   Faculty Dean   Quality Unit   President

#	The Department	Objectives
6.	Department of Applied Health Sciences	1- Enhance students' awareness of societal values, integrity at work and excellence in Healthcare sector. 2- Prepare students to evolve in a cross-functional, team-based work environment. 3- Equip students with multidisciplinary competencies to meet the requirements of the healthcare sector. 4- Prepare students to serve in middle management positions in public and private healthcare sector. 5- Prepare students for HIMA international certifications. 6- Equip students with the knowledge and skills required for developing wide health record systems.

Annex- 2, Survey on the Strategic Orientations of the Department and Similar Departments, and their Alignment to the Strategic Orientation of the University and Faculty:

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6- Mapping of Department Objectives to the University and Faculty Objectives:

University Objectives	Faculty of Medical Technology Objectives	Department of Information Technology Objectives
1- Ensuring the application of quality standards and having the distinction standards in medical and applied sciences, scientific research and community service. 2- Adopting student-centered learning, the partnership with them for life, consolidating the principles of national responsibility and faith identity, looking after them and developing their capabilities after graduation and during work. 3- Attracting and Eemploying scientists, cadres and talents to gain minds and put an end for the "brain drain" in a way that promotes and ensures the availability of thinkers, businessmen and good citizens. 4- Developing the distinguished academic	1- To produce highly qualified students in computing field who fulfill Health care needs. 2- To enhance computing knowledge and skills in the society. 3- To contribute to the direction and future advancement of the national profile in the global competition and its increase dependency on computing. 4- To display excellent academic quality and relevant to the academic programs that enables students to meet the criteria required by future employers. 5- To extended the innovative application in modern Health computing by providing services	1- To provide distinguished and excellent academic programs in field of Health Information Technology. 2- To encourage creative and innovative thinking to identify and solve the IT problems to serve the needs of Health organization. 3- To implement acquired knowledge of IT in efficient and effective manner to construct IT solution to solve Health problem in dynamic environment. 4- To acquire skills to communicate and work effectively as an individual or as member in team. 5- To pursue lifelong learning, career

Annex- 2, Survey on the Strategic Orientations of the Department and Similar Departments, and their Alignment to the Strategic Orientation of the University and Faculty:

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infrastructure continuously and establishing modern research and service centers with high efficiency that can give a real effect locally and regionally. 5- Enhancing the university status as a preferred partner for local, regional and international partnership through implementing creative styles of education, exchanging researches and knowledge, and providing real and effective outcomes for developing professional practices to benefit from them locally and regionally.	to the community.	development and provide foundation for research and further studies. 6- To encourage graduates to follow appropriate computing practices with professional, societal, legal, and ethical responsibility.

Annex- 2, Survey on the Strategic Orientations of the Department and Similar Departments, and their Alignment to the Strategic Orientation of the University and Faculty:

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كلية التكنولوجيا الطبية

Annex- 3, Academic Standards Curriculum Criteria of Accreditation Board

Council for Accreditation & Quality Assurance

ACCREDITATION BOARD FOR ENFINEERING AND TECHNOLOGY (ABET)

CRITERIA FOR ACCREDITING COMPUTING PROGRAMS 2020 (Information Technology)

ABET
415 N. Charles Street
Baltimore, MD 21201
Telephone: 410-347-7700
E-mail: accreditation@abet.org
Website: www.abet.org

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Annex- 4, Unified Regulations for Student Affairs, Ministry of Higher Education and Scientific Research

Attached Separately

| Department Head | Faculty Dean | Quality Unit | President |

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Ministry of Higher Education &Sientific Research
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Annex- 5, Survey of Similar Accredited Programs at National and International Universities (Benchmarks)

* National Academic Reference Standards (NARS) * Tohe National Architectural Accrediting Board (NAAB) * National Authority of Quality Assurance and Accreditation of Education (QAAE)
* Middle States Commission on Higher Education (MSCHE) * European Credit Transfer and Accumulation System (ECTS)

#	The Academic Program	The University	The Faculty	The Department	The Country	Program Accrediting Body	Degree Award at Program Completion	Year of accreditation	Study Duration
Current Program	Medical Information Technology	21 September University for medical and Applied sciences	Medical Technology	Medical Information Technology	Yemen	Under Accreditation	Bachelor of Medical Information Technology		4
The 1st Program	Health Information Technology	Tehran University of Medical Sciences,	School of Allied Medical Sciences	Health Information Technology	Iran	Ministry of Higher Education and Scientific Research	B.Sc. in Health Information Technology		4
The 2nd Program	IT Major in Health Information Technology	Miami University	College of Liberal Arts and Applied Science	Computer and Information Technology	USA	Higher Learning Commission	B.Sc.(IT Major in Health Information Technology)	2015	4
The 3rd Program	Health Information Management	Tennessee State University	HEALTH SCIENCES	Health Information Management	USA	Health Informatics and Information Management Education (CAHIIM).	B.Sc Health Information Management		4
The 4th Program	Health Informatics	Saudi Electronic University	Health Sciences	Health Informatics	KSA	Ministry of Education in the Kingdom of Saudi Arabia	B.Sc Health Informatics		4
The 5th Program	Health Information Systems	King Saud Bin Abdulaziz University for Health Sciences	Public Health & Health Informatics	Health Information Systems	KSA	Ministry of Education in the Kingdom of Saudi Arabia	B.Sc Health Information Systems		4

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The 6ᵗʰ Program	Health Information Management	Emirates College of Technology	Applied Health Sciences	Health Information Management	UEA	Ministry of Higher Education and Scientific Research	B.Sc Health Information Management	2019	4

Annex- 6, Survey on Mission and Objectives of the Program and Similar Accredited Programs and its Alignment to the University, Faculty, and Department Missions and 0bjectives

1- Survey on Mission and Objectives of the Program and Similar Accredited Programs

University	Tehran University of Medical Sciences	Miami University	Tennessee State University	Saudi Electronic University	King Saud Bin Abdulaziz University for Health Sciences	Emirates College of Technology	21 September University for medical and Applied sciences
Faculty	School of Allied Medical Sciences	Faculty of Electrical Engineering, Mathematics and Computer Science.	Health Sciences	Health Sciences	Public Health & Health Informatics	Applied Health Sciences	Medical Technology
Department	Health Information Technology	Computer and Information Technology	Health Information Management	Health Informatics	Health Information Systems	Health Information Management	Medical Information Technology
Program	Health Information Technology	IT (Major in Health Information Technology)	Health Information Management	Health Informatics	Health Information Systems	Health Information Management	Medical Information Technology
Country	Iran	USA	USA	KSA	KSA	UAE	Yemen
Program Mission	Knowing about management of Health Information technology department, methods of storage and processing of data (organization , classification and statistical accounting), retrieval	The program in Health Information Technology (HIT) addresses the technology and processes used by health care providers and related organizations.	The mission of the Health Information Management program is to provide quality education that stimulate students to reach their full potential through respect for inquiry and lifelong learning; to develop required professional	To provide high quality academic, research, consultancy programs in order to prepare qualified, trained, and excellent national talents to serve the requirements of health care sector.	The BHI program strives to advance the quality and efficiency of the Saudi health care system through producing distinct graduates with in-depth knowledge and skills in health informatics. This mission is attained	The mission of the Bachelor of Applied Health Sciences is to provide students with a range of knowledge, skills and competencies that will prepare them to meet the requirements of the health care sector.	To provide quality education that contributes in lifelong learning and professional development for graduates; and to participate in both scientific research and community services.

Department Head	Faculty Dean	Quality Unit	President

University	Tehran University of Medical Sciences	Miami University	Tennessee State University	Saudi Electronic University	King Saud Bin Abdulaziz University for Health Sciences	Emirates College of Technology	21 September University for medical and Applied sciences
	of information, Indicators and Analysis of health data.		competencies that will enable them to succeed in an ever changing health care industry, and to develop leadership, problem solving and critical thinking skills for advancement in the field of health information.		through using innovative teaching methods, collaborative research, and community-oriented education.		
Program Objectives	**PEO1.** Rules and Regulation for coding mortality and importance of statistics application them about mortality in national and international levels. **PEO2.** Familiar with applying some of management methods for management of health information technology department. **PEO3.** Familiar with fundamental concepts about electronic health record (EHR) and implement of HER. **PEO4.** Learning	**PEO1.** Obtain a strong background in technology including database, problem-solving, systems analysis, and project management skills as well as a foundation in the culture of the healthcare system. **PEO2.** Acquire and direct the flow of information between the clinical, administrative, and financial systems in the healthcare industry as well as general principles of information technology. **PEO3.** Addresses the technology and	**PEO1.** To provide a quality educational program in HIM that will prepare all students as competent entry-level health information managers for employment in various health care facilities. **PEO2.** To maintain full accreditation status to allow students' eligibility status to take national certification exam for RHIA credential. **PEO3.** To provide students with life-long learning	**PEO1.** Raising the competence levels of ours students to keep pace with the developments of various health sectors in the Kingdom. **PEO2.** Developing the spirit of belonging and proficiency. **PEO3.** Fulfilling the needs of our society by producing highly qualified national health cadres. **PEO4.** Raising health awareness in the community. **PEO5.** Providing appropriate	**PEO1.** Graduate professionals with substantive knowledge and skills in the field of Health Informatics. **PEO2.** Promote scientific research pertinent the HI through equipping the graduates with the necessary skills to read, evaluate, and conduct research. **PEO3.** Contribute to the community through directing the education activities, projects and field experience to public	**PEO1.** Enhance students' awareness of societal values, integrity at work and excellence in Healthcare sector. **PEO2.** Prepare students to evolve in a cross-functional, team-based work environment. **PEO3.** Equip students with multidisciplinary competencies to meet the requirements of the healthcare sector. **PEO4.** Prepare students to serve in middle management	**PEO1.** Comprehend and demonstrate the understanding of key information and Health system and their interrelationships . **PEO2.** Analyze Health environment issues that influence information system development . **PEO3.** Select and apply appropriate tools and techniques to design and deliver IT related applications for enterprise . **PEO4.** Develop student with critical thinking, analytical reasoning modeling and development skills

Annex- 6, Survey on Mission and Objectives of the Program and Similar Accredited Programs and its Alignment to the University, Faculty, and Department Missions and 0bjectives

Department Head   Faculty Dean   Quality Unit   President

University	Tehran University of Medical Sciences	Miami University	Tennessee State University	Saudi Electronic University	King Saud Bin Abdulaziz University for Health Sciences	Emirates College of Technology	21 September University for medical and Applied sciences
	with Information architecture Models, Tools and Information Technology, application of information Technology in Medical Informatics Domain. **PEO5.** Learning about structure and program health system and types of health services and programs. **PEO6.** Course learner to be familiar with information technology and its application in other sciences. **PEO7.** To be Familiar with the fundamental concepts of research and report development in the area of health information technology. **PEO8.** To be familiar with computer network and systems security	processes used by healthcare providers and related organizations **PEO5.** Prepare students for graduate studies and/or jobs that integrate healthcare and technology in the evolving healthcare system.	experience through research project, service learning, and participation in the professional association in the local, state and national. **PEO4.** To maintain sufficient enrollment through effective recruitment and retention activities. **PEO5.** To provide students with didactic and laboratory instructions along with a supervised professional practice experience. **PEO6.** To provide adequate instructional and learning resources with a cutting-edge technology environment.	educational environment for students and faculty members. **PEO6.** Offering training and workshops to develop the skills of health staff. **PEO7.** Presenting consultations to develop and support the health system. **PEO8.** Integrating e-learning, blended learning with the field of health informatics. **PEO9.** Promoting excellence in research through interdisciplinary research involving various health specialties and sectors.	and private health-care institutions.	positions in public and private healthcare sector. **PEO5.** Prepare students for HIMA international certifications. **PEO6.** Equip students with the knowledge and skills required for developing wide health record systems.	to construct IT solution to solve Health problem in dynamic environment . **PEO5.** Exhibit communication, professionalism, team work, leadership skills, and ethical and responsible behavior in development or applying information technology in Health . **PEO6.** Produce graduates with an ability to pursue lifelong learning, career development and provide foundation for further studies.

Annex- 6, Survey on Mission and Objectives of the Program and Similar Accredited Programs and its Alignment to the University, Faculty, and Department Missions and 0bjectives

| Department Head | Faculty Dean | Quality Unit | President |

University	Tehran University of Medical Sciences	Miami University	Tennessee State University	Saudi Electronic University	King Saud Bin Abdulaziz University for Health Sciences	Emirates College of Technology	21 September University for medical and Applied sciences
	and their application in health care centers. **PEO9.** To be familiar with computer data structure and health information technology stages using technical knowledge and applying computer resources to acquisitive information, information system life cycle and to model Health information systems. **PEO10.** To be familiar with the structure and performance of different types of health information systems, to understand and to value of every integrated information system and software development. **PEO11.** To be familiar with informative resources						

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University	Tehran University of Medical Sciences	Miami University	Tennessee State University	Saudi Electronic University	King Saud Bin Abdulaziz University for Health Sciences	Emirates College of Technology	21 September University for medical and Applied sciences
	in medical sciences and to manage them.						
Program ILOs	**PLO1.** Examine conceptual knowledge of the computing theories, concepts and techniques related to Health and Information Technology at different levels of abstraction. **PLO2.** Utilize current computing techniques, skills, and modern tools required for the Health and Information Technology domain. **PLO3.** Apply numeracy, algorithmic and information technology skills in developing Health and Information Technology-based	**1.** Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions; **2.** Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline; **3.** Communicate effectively in a variety of professional contexts; **4.** Recognize professional responsibilities and make informed judgments in	**1.** Demonstrate confident, innovative and ability to identify and use a variety of information resources and technologies to accomplish the objectives of a diverse practice environment. **2.** Reach full potential through respects for inquiry /research in HIM field. **3.** Demonstrate HIM entry-level competencies required for health information administrators that will enhance success in an ever-	**PLO1.** Demonstrate high level understanding of the fundamentals, processes, and contributions associated with the academic discipline. **PLO2.** Employ critical thinking skills by applying knowledge to make well-reasoned arguments and effective decisions. **PLO3.** Practice the lifelong skills needed in all social, economic, mental, and emotional aspects of life. **PLO4.** Illustrate effective utilization of technological tools and methods relating to the program of study. **PLO5.** Utilize skills that exhibit ethical behavior to	**A.Knowledge and understanding** **A1.** Recognize the informational need for care encounter, patient, providers and other organizations through the development of information management plans and strategies **A2.** Describe the nature and limitations of existing data collection systems, and the need for Compliance with standards and regulations **A3.** State the structure of continuum of care and the exchange of health information between the entities, including but not limited to: levels of care including hospitals/acute, public health, long-term, home care, and community.	**1.** The project will be designed to show that the core concepts in health environment & society can be implemented with different means. Students will be asked to use methods in which can help them to plan and implement the concept of healthcare safety and quality in the UAE society. **2.** A group work will be discussed in the class to implement the theory, practice and emerging issues in the ethical decisions based on	**A. Knowledge and Understanding:** **A1.** Demonstrate an understanding of appropriate concepts, theories, mathematical foundations, models and techniques related to Health Information Technology discipline. **A2.** Identify user and Health needs to provide IT based solutions to real-world problem. **A3.** Demonstrate a profound knowledge in utilizing and adapting IT tools, techniques, practices, and methods for solving computing problems in Health enviroment. **A4.** Demonstrate a sound understanding the computing concept related to analysis, design, implementation, and evaluation of Health

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	models and applications in a professional manner. **PLO4.** Formulate the computing needs to deliver appropriate solutions in a range of Health and Information Technology contexts. **PLO5.** Communicate proficiently the advanced knowledge orally and verbally to a broad range of audiences. **PLO6.** Evaluate the competency requirements of Health and Information Technology problems to propose and develop an appropriate	computing practice based on legal and ethical principles; **5.** Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline; **6.** Identify and analyze user needs and to take them into account in the selection, creation, integration, evaluation, and administration of computing based systems.	changing health care industry. **4.** Demonstrate leadership and problem solving skills needed for advancement in the field of health information management. **5.** exhibit knowledge and skills necessary to become self-directed learners who possess critical thinking, effective communication and interpersonal skills. **6.** Acquire lifelong learning and important ethical values required of HIM practitioners. **7.** Contribute to	characterize accountable, responsible, and contributing citizens to the society. **PLO6.** Recognize the social and environmental responsibilities through the participation of extra-curricular activities. **PLO7.** Demonstrate team spirit and leadership skills in a collaborative and inclusive environment.	**B. skills** **B1.** Analyze, design and develop information systems that aim to enhance quality of healthcare and operational efficiencies of healthcare organization **B2.** Apply data quality management principles and analytic technologies to improve quality and efficiency of the healthcare **B3.** Evaluate, implement and manage health systems for clinical care and administrative purposes **B4.** Apply principles of organization and management to human resources and information decision-making process **B5.** Be responsible for the management of health information	an understanding of the societal values in the UAE healthcare institutions. **3.** The objective of this group work is to familiarize students with the knowledge in the biomedical sciences required to manage healthcare sector s. **4.** A group work will be discussed in the class to implement health Economics in the administration of healthcare services. **5.** A group work will be discussed in the class to apply IT skills and tools to effectively manage	information system. **B. Cognitive/ Intellectual Skills:** **B1.** Critically analyse complex computing problems and propose appropriate information technology based solutions and integrate them effectively into the uses and organization Health. **B2.** Analyze the impacts of computing on Health objectives and customer needs, and consider them during the analytical processing, selection, integration, configuration and administration of information technology systems. **B3.** Explore a variety of challenges and problems related to Health Information Technology to select the optimal solution. **B4.** Evaluate IT based solution to meet a given set of Health

Annex- 6, Survey on Mission and Objectives of the Program and Similar Accredited Programs and its Alignment to the University, Faculty, and Department Missions and 0bjectives

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	technology-oriented solution. **PLO7.** Function independently, self-managing and as an active member of a team to perform a required task. **PLO8.** Implement a Health and Information Technology systems, solutions and resources to meet desired needs in the working environment. **PLO9.** Characterize ethical, social, cultural and organizational responsibilities on national and international levels. **PLO10.** Employ entrepreneurial skills in evaluating national and international impact		society and the profession through collaborative practice, innovative teaching, and the generation application of new knowledge about health information management. 8. Take and successfully pass the national certification examination to become a registered health information administrator.		systems consistent with the medical, administrative, ethical, and legal requirements of the healthcare delivery system **B6.** Capable to develop information systems for quality patient care, facility reimbursement, medical research, health planning, and healthcare evaluation **B7.** Capable to develop information systems for quality patient care, facility reimbursement, medical research, health planning, and healthcare evaluation **B8.** Being able to analyze data, develop presentations, provide health information to qualified users, and safeguard confidential patient data **C. Values** **C1.** Taking the initiative, with or without the assistance	healthcare operations services. 6. A group work will be discussed in the class to implement and manage applications and processes for clinical classification and coding. 7. A group work will be discussed in the class to manage the health data and documentation in line with quality management principles. 8. Graduation project 1 and 2 will be discussed in the presentation day the principles of management of healthcare	requirements in the context of Health Inforamtion Tecnology discipline. **C. Practical and Professional Skills:** **C1.** Employ effectively the concepts, principles of computational tools, techniques used for the construction and documentation of Health Information of varying complexity. **C2.** Design, implement, and test a comuting-based solution to meet a given set of computing requirement in the context of Health Information Technology. **C3.** Use systematic approaches to select, develop, applym integrates, and administrate secure computing technologies to accomplish user and Health goals. **C4.** Use current techniques, skills, and

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Department Head   Faculty Dean   Quality Unit   President

University	Tehran University of Medical Sciences	Miami University	Tennessee State University	Saudi Electronic University	King Saud Bin Abdulaziz University for Health Sciences	Emirates College of Technology	21 September University for medical and Applied sciences
	of Health and Information Technology on individuals, community and industry. **PLO11.** Fulfil responsibility for, and be engaged in, managing the pathway and progress of their own selfdevelopment and learning in the domain of Health and Information Technology.				of others, in diagnosing their learning needs, formulating learning goals, identifying resources for learning, and evaluating learning outcome **C2.** Being able to Work effectively in teams to accomplish a goal **C3.** Act responsibly in personal and professional relationships by engaging in the intellectual life of the University outside the classroom and as a member of the community **C4.** Act ethically and consistently with high moral standards in personal and public forums using all forms of data and technology	processes in accordance with the UAE's healthcare delivery systems. 9. Internship projet will be discussed in the presentation day the develop, evaluate and select applications and processes of reimbursement systems in healthcare delivery.	tools necessary for computing practices. **D. General and Transferable Skills**: **D1.** Function effectively as an individual, as a member, or leader of a team engaged in activities appropriate to the Health Information Technology discipline to accomplish a common goal. **D2.** Commit to professional ethics, responsibilities, and norms of professional IT practices. **D3.** Communicate effectively in writing and orally in a variety of professional contexts **D4.** Engage in continuing professional development and lifelong learning as an IT professional

Annex- 6, Survey on Mission and Objectives of the Program and Similar Accredited Programs and its Alignment to the University, Faculty, and Department Missions and 0bjectives

Department Head   Faculty Dean   Quality Unit   President

2- Mapping of Program Mission with the University, Faculty and Department Missions:

University Mission	Faculty of Medical Technology Mission	Department of Medical Information Technology Mission	Medical Information Technology. Program Mission
Leadership of transformation/upturning headway in managing and providing the health care with all partners via having the distinction standard in education and applied and medical researches that meet the needs of Yemeni people and regional influence.	To produce highly qualified Computing professionals that contribute to the world knowledge and serve society needs by providing excellent quality education.	To prepare distinguished and well-qualified graduates who are capable of meeting the market demands in the field of Health Information Technology by providing high quality academic programs and appropriate teaching-learning and research environment.	To provide quality education that contributes in lifelong learning and professional development for graduates; and to participate in both scientific research and community services.

Annex- 6, Survey on Mission and Objectives of the Program and Similar Accredited Programs and its Alignment to the University, Faculty, and Department Missions and 0bjectives   **| P a g e   43**

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3- Mapping of Program Objectives with the University, Faculty and Department Objectives:

University Objectives	Faculty of Medical Technology Objectives	Department of Medical Information Technology Objectives	Medical Information Technology Program Objectives
1- Ensuring the application of quality standards and having the distinction standards in medical and applied sciences, scientific research and community service. 2- Adopting student-cantered learning, the partnership with them for life, consolidating the principles of national responsibility and faith identity, looking after them and developing their capabilities after graduation and during work. 3- Attracting and Employing scientists, cadres and talents to gain minds and put an end for the "brain drain" in a way that promotes and ensures the availability of thinkers, businessmen and good citizens. 4- Developing the distinguished academic infrastructure continuously and establishing modern research and service	1- To produce highly qualified students in computing field who fulfill Health care needs. 2- To enhance computing knowledge and skills in the society. 3- To contribute to the direction and future advancement of the national profile in the global competition and its increase dependency on computing. 4- To display excellent academic quality and relevant to the academic programs that enables students to meet the criteria required by future employers. 5- To extended the innovative application in modern Health computing by providing services to the community.	1- To provide distinguished and excellent academic programs in field of Health Information Technology. 2- To encourage creative and innovative thinking to identify and solve the IT problems to serve the needs of Health organization. 3- To implement acquired knowledge of IT in efficient and effective manner to construct IT solution to solve Health problem in dynamic environment. 4- To acquire skills to communicate and work effectively as an individual or as member in team. 5- To pursue lifelong learning, career development and provide foundation for research and further studies. 6- To encourage graduates to follow appropriate computing practices with	**PEO1.** Comprehend and demonstrate the understanding of key information and Health system and their interrelationships. **PEO2.** Analyze Health environment issues that influence information system development. **PEO3.** Select and apply appropriate tools and techniques to design and deliver IT related applications for enterprise. **PEO4.** Develop student with critical thinking, analytical reasoning modeling and development skills to construct IT solution to solve Health problem

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University Objectives	Faculty of Medical Technology Objectives	Department of Medical Information Technology Objectives	Medical Information Technology Program Objectives
centres with high efficiency that can give a real effect locally and regionally. 5- Enhancing the university status as a preferred partner for local, regional and international partnership through implementing creative styles of education, exchanging researches and knowledge, and providing real and effective outcomes for developing professional practices to benefit from them locally and regionally.		professional, societal, legal, and ethical responsibility.	in dynamic environment. **PEO5.** Exhibit communication, professionalism, team work, leadership skills, and ethical and responsible behavior in development or applying information technology in Health. **PEO6.** Produce graduates with an ability to pursue lifelong learning, career development and provide foundation for further studies.

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Annex- 7, Alignment of Program Intended Learning Outcomes (PILOs) to the Faculty Objective

Program PILOs	Faculty Objectives				
	FObj1	FObj2	FObj3	FObj4	FObj5
A1		√	√		
A2	√				
A3	√		√	√	
A4			√	√	
B1					
B2		√	√	√	√
B3			√		√
B4		√		√	√
C1	√			√	
C2	√	√		√	
C3		√	√		
C4				√	
D1	√	√			√
D2		√			√
D3		√			√
D4			√	√	√

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Annex- 8, Alignment of Program Intended Learning Outcomes (PILOs) to the Department Objective

Program PILOs	Department Objectives					
	DObj1	DObj2	DObj3	DObj4	DObj5	DObj6
A1	√	√				
A2		√				
A3	√	√	√			
A4						
B1		√				
B2	√					
B3	√					
B4	√	√				
C1			√			
C2			√			
C3	√		√			
C4			√			
D1				√		
D2						√
D3		√		√		√
D4	√				√	

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Annex- 9, Alignment of Program Intended Learning Outcomes (PILOS) to Program Objectives (POs)

Program PILOs	Program Objectives					
	PObj1	PObj2	PObj3	PObj4	PObj5	PObj6
A1	√					
A2			√			
A3	√		√			
A4	√					
B1						
B2	√	√				
B3		√				
B4	√	√		√		
C1		√				
C2		√	√			
C3		√	√			
C4		√				
D1					√	
D2					√	
D3				√	√	
D4						√

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Annex- 10, Mapping of Program Objectives to the Faculty Mission

Program Objectives	Faculty Mission				
	Highly qualified graduates	Professional skills	Knowledge contribution	Society needs	Excellent academic programs
PObj1	√	√	√		√
PObj2	√	√	√	√	√
PObj3		√	√	√	√
PObj4	√	√	√	√	√
PObj5	√	√	√	√	√
PObj6	√			√	√

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Annex- 11, Mapping Program Objectives to the Department Mission

Program Objectives	Department Mission			
	well-qualified graduates	Market needs	high quality academic programs	Professional Education
PObj1	√		√	√
PObj2	√	√	√	√
PObj3			√	√
PObj4	√	√	√	√
PObj5	√	√	√	√
PObj6	√		√	√

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Annex- 12, Mapping of Program Objectives (POs) to the Department Objectives

Program Objectives	Department Objectives					
	DObj1	DObj2	DObj3	DObj4	DObj5	DObj6
PObj1	√	√				
PObj2	√	√				
PObj3	√		√			
PObj4	√	√	√			
PObj5	√			√		√
PObj6	√				√	√

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Annex- 13, Survey of PILOs for Similar Accredited Programs at National and International Universities

Program PILOs	Similar Accredited Programs					
	Tehran University of Medical Sciences	Miami University	Tennessee State University	Saudi Electronic University	King Saud Bin Abdulaziz University for Health Sciences	Emirates College of Technology
A1	PLO1		1	4		1, 7
A2			5		A2	3
A3			3		A1	
A4			2			
B1	PLO4	1				
B2				3	B1	
B3		4			B8	
B4	PLO6	6		2, 5	B2, B3	
C1	PLO3			1	B4	2
C2	PLO8	2				4,5
C3						6
C4	PLO2					
D1	PLO7	5	4		C2	8
D2	PLO9				C3, C4	
D3	PLO5	3	7			
D4	PLO11-PLO10		8	6		9

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جامعة 21 سبتمبر للعلوم الطبية والتطبيقية

كلية التكنولوجيا الطبية

اسم هيئة الاعتماد: مجلس الاعتماد الأكاديمي وضمان جودة التعليم العالي، اصدار المعايير: مايو 2018م إن وجد

Annex- 14, Alignment of Program PILOs with Council of Accreditation and Standards

Accreditation Body: National Academic Reference Standards (NARS), Yemen, May 2018 If Any

Program PILOs	NARS (Yemen), ILOs for Programs	Students Criterion
A1	A1	
A2	A5	
A3	A2	
A4	A4-A7	
B1	B6	
B2		1
B3	B3	
B4	C2	
C1	C4-C6	6
C2	B10	2
C3	C1	
C4		
D1	C5	5
D2	B11-C7	4
D3	C11	3

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Program PILOs	NARS (Yemen), ILOs for Programs	Students Criterion
D4	C10	

1- National Academic Reference Standards for Computing Programs, Yemen, May 2018: If Any??
I. GRADUATE ATTRIBUTES

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

1. Knowledge of computing and mathematics appropriate to the discipline

2. Analyze a problem, and identify and define the computing requirements appropriate to its solution

3. Design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

4. Demonstrate independent critical thinking and problem solving skills and function effectively on a team to accomplish a common goal.

5. An understanding of professional, ethical, legal, security and social issues and responsibilities

6. Communicate effectively with a range of audiences

7. Analyze the local and global impact of computing on individuals, organizations, and society

8. Recognition of the need for and an ability to engage in continuing professional development

9. Use current techniques, skills, and tools necessary for Information technology practice and in the creation of an effective project plan

II. LEARNING OUTCOMES

A. Knowledge and Understanding

Upon successful completion of the undergraduate computing education programs, the graduates will be able to demonstrate understanding of:

A1. Demonstrate basic knowledge and understanding of fundamental principles of core computing.

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A2. Demonstrate strong knowledge of fundamentals of programming and the construction of computer-based systems, data structures and algorithms, software engineering techniques and information retrieval.

A3. 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.

A4. Show the understanding of technologies for the design, development and management of database systems, systems analysis and design and of information retrieval systems.

A5. Know the role of human factors in the design of Information Technology systems.

A6. Apply tools and techniques for the design and development of applications.

A7. Know methods for the construction of web-based materials and systems, design of internet-based systems.

A8. Provide an understanding of legal, professional and moral aspects of the exploitation of IT.

A9. Understand the broad context within computer information technology such as quality, reliability, enterprise, employment law, accounting and health.

A10. Understand the challenges inherent in the maintenance and evolution of ITbased systems, and the techniques and best practices currently available for dealing with them.

B. Cognitive / Intellectual Skills

Upon successful completion of an undergraduate computing education program, the graduates will be able to:

B1. Information technology systems problems, set goals towards solving them, observe results, reason and apply judgment.

B2. Identify attributes, components, relationships, patterns, main ideas, and errors.

B3. Summarize the proposed solutions and their results.

B4. Restrict solution methodologies upon their results.

B5. Establish criteria, and verify solutions

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B6. Identify a range of solutions and critically evaluate and justify proposed design solutions.

B7. Solve information technology problems with pressing commercial or industrial constraints.

B8. Generate an innovative design to solve a problem containing a range of commercial and industrial constraints.

B9. Perform problem analysis from written descriptions; derive requirements specifications from an understanding of problems (analysis, synthesis).

B10. Create and/or justify designs to satisfy given requirements (synthesis, evaluation, application).

B11. 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.

C. Practical and Professional Skills:

Upon successful completion of an undergraduate computing education program, the graduates will be able to:

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

C2. Evaluate systems in terms of their quality and possible trade-offs , evaluate appropriate hardware and software solutions for given scenarios.

C3. Recognize risks or safety aspects involved in the operation of computerbased systems.

C4. Deploy tools for the implementation and documentation of computer-based systems.

C5. Work as part of a development team and to recognize the different roles of its members.

C6. Operate computing equipment efficiently, taking into account its logical and physical properties.

C7. Recognize and address professional, moral and ethical issues within the discipline.

C8. 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, communicate effectively with team members, managers and customers.

C9. Make effective use of general IT facilities, plan and manage a project to complete within budget and schedule

C10. Manage one's own learning and development, including time management and organizational skills.

C11. Present their work in the form of reports, oral presentations or an internet web site.

2- Proposed Program Criteria for Information Technology and Similarly Named Computing Programs

1- Criterion 3. Student Outcomes

The program must have documented and publicly stated student outcomes that include (1) through (5) below and any outcomes required by applicable Program Criteria. The program may define additional outcomes.

Graduates of the program will have an ability to:

1. Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.

2. Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.

3. Communicate effectively in a variety of professional contexts.

4. Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.

5. Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.

6. Use systemic approaches to select, develop, apply, integrate, and administer secure computing technologies to accomplish user goals.

2- Criterion 5. Curriculum

The curriculum requirements are in addition to the General Criteria curriculum requirements and specify topics, but do not prescribe specific courses. The requirements are:

(a) Information Technology: At least 45 semester credit hours (or equivalent) that must include:
1. Fundamentals and applied practice in:
   a. health Information management
   b. Integrated systems
   c. Platform technologies
   d. System paradigms
   e. User experience design
   f. Networking

Annex- 14, Alignment of Program PILOs with Council of Accreditation and Standards

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     g. Software development and management

     h. Web and mobile systems

2. Advanced and supplemental IT topics that build on fundamentals and applied practice to provide depth.

3. Experiential learning appropriate to the program.

4. Principles and practices of IT project management.

(b) Mathematics: At least six semester credit hours (or equivalent) of appropriate mathematical topics that includes relevant discrete mathematics.

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Annex- 15, Survey of Credit Hours of Similar Programs

Benchmarking		Tehran University of Medical Sciences	Miami University	Tennessee State University	Saudi Electronic University	King Saud Bin Abdulaziz University for Health Sciences	Emirates College of Technology	21 September University	**Average** Cr. Hrs.
University Requirements	Credit Hours	22	14	69	34	44	9	14	29.42
	Percentage	16.9%	11.29%	51.1%	26.15%	20.18%	6.8%	10%	20.35%
University Electives	Credit Hours	12	-	-	-	-	-	-	1.71%
	Percentage	9.23%	-	-	-	-	-	-	1.3%
Faculty Requirements	Credit Hours	30	33	-	33	40	36	21	27.57%
	Percentage	23.07%	26.6%	-	25.38%	18.35%	27.27%	15%	19.3%
Faculty Electives	Credit Hours	-	-	-	-	-	-	-	00%
	Percentage	-	-	-	-	-	-	-	00%
Department Requirements	Credit Hours	-	19	51	54	-	-	27	21.57%
	Percentage	-	15.3%	37.78%	41.54%	-	-	19.29%	16.27%
Major Requirements	Credit Hours	59	48	15	9	134	81	68	59.14%
	Percentage	45.38%	38.7%	11.1%	6.9%	61.47	61.36%	48.57%	39%
Major Electives	Credit Hours	-	6	-	-	-	-	4	1.43%
	Percentage	-	4.8%	-	-	-	-	2.86%	1.09%
Practical Courses	Credit Hours	-	-	-	-	-	-	-	00%
	Percentage	-	-	-	-	-	-	-	00%
Training Courses	Credit Hours	16	-	-	-	-	-	-	2.285%
	Percentage	12.3%	-	-	-	-	-	-	1.75%
Project Courses	Credit Hours	3	4	-	-	-	6	6	2.7%
	Percentage	2.30%	3.22%	-	-	-	4.55%	4.28%	7.05%
Total Credit Hours	Credit Hours	130	124	135	130	218	132	140	

Annex- 15, Survey of Credit Hours of Similar Programs

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Annex- 16, Survey of Number of Courses and Credit Hours of Similar Programs

University		Tehran University of Medical Sciences		Miami University		Tennessee State University		Saudi Electronic University		King Saud Bin Abdulaziz University for Health Sciences		Emirates College of Technology		21 September University for medical and Applied sciences		Average	
Total Courses and Cr. Hrs.		Cr. Hrs.	Courses	Cr. Hrs.	Courses	Cr. Hrs.	Courses	Cr. Hrs.	Courses	Cr. Hrs.	Courses	Cr. Hrs.	Courses	Cr. Hrs.	Courses	Cr. Hrs.	Courses
University Requirements	**Compulsory**	10	5	14	4	69	24	34	9	44	11	9	3	14	7	27.7	9
	Electives	12	5	-	-	-	-	-	-	-	-	-	-	-	-	1.7	0.7
Faculty Requirements	**Compulsory**	30	15	33	10	-	-	33	11	40	11	36	12	21	10	27.9	9.86
	Electives	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Department Requirements	**Compulsory**			19	7	-	-	54	19	-	-	-	-	27	9	12.3	5
	Electives	-	-	-	-	51	23	-	-	-	-	-	-	-	-	-	-
Major Requirements	**Compulsory**	59	29	48	15	-	-	9	2	134	30	81	27	68	24	56.1	18
	Electives			6	2	-	-	-	-	-	-	-	-	4	2	1.4	0.57
	Graduation Project	3	1	4	1	-	-	-	-	-	-	6	2	6	2	2.4	0.86
	Summer Training	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Field Training	16	2	-	-	-	-	-	-	-	-	-	-	-	-	3.14	0.29
	Practical Skills	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other Courses		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total		Cr. Hrs.	Courses	Cr. Hrs.	Courses	Cr. Hrs.	Courses	Cr. Hrs.	Courses	Cr. Hrs.	Courses	Cr. Hrs.	Courses	Cr. Hrs.	Courses	Cr. Hrs.	Courses
		130	57	124	39	135	47	130	41	218	52	132	44	140	54	144	47.7

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Annex- 17, Themes of Courses of Study and their Weightage

#	Themes	No. of Courses	Credit Hours	Percentage of Cr. Hrs.
0	University Requirements	7	14	10%
1	Faculty Requirements	10	21	15 %
2	Department Courses	9	27	19.29%
3	General Courses (Program Courses)	24	68	48.57%
4	Electives Courses (Program Courses)	2	4	2.86%
5	Graduation Project Courses*	2	6	4.28%
6	Field Training	-	-	0.0%
	Program Total	**54**	**140**	**100%**

* The Project Courses Credit Hours are already added to the total credit hours with the faculty requirements.

Annex- 16, Survey of Number of Courses and Credit Hours of Similar Programs

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Themes of Courses of Study and their Weightage

Pie chart: Themes of Courses of Study and their Weightage

- Graduation Project Courses; 4.28%
- Field Training; 0.0%
- University Requirements; 10%
- Faculty Requirements; 15%
- Program Elective Courses; 2.86%
- Program Compulsory Courses; 48.57%

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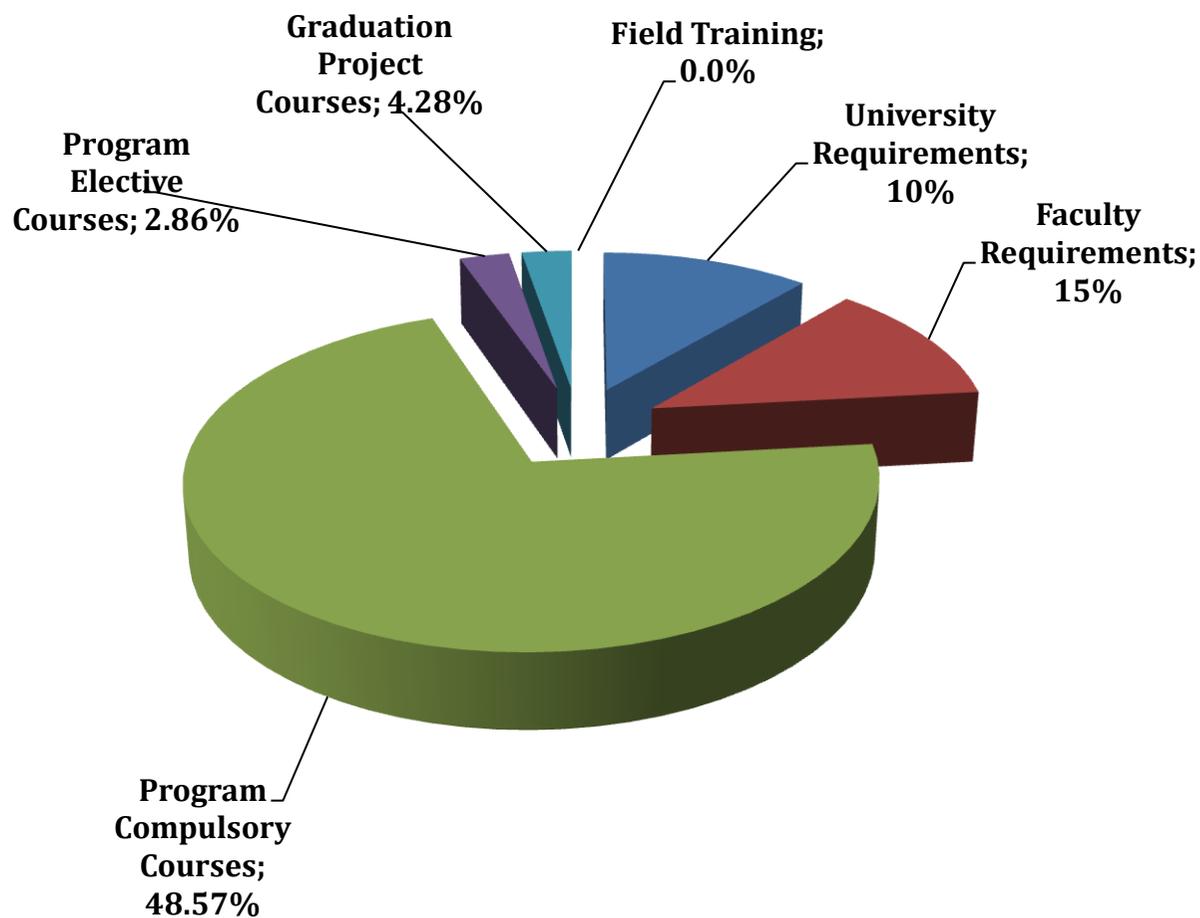
Annex- 18, Coding System

Program	Level	Theme Code	No. of the course in the list
AAA	1	0	1

Themes	Theme Code	No.	Course Title	Course Code	Credit Hours				Prerequisites/ Co-requisites	Level/Term
					Cr. Hrs.	L	T	P		
University Requirements	0	1.	Arabic 101	06.11.70**2**	2	2				1/1
		2.	Arabic 102	06.11.70**6**	2	2			06.11.701	1/2
		3.	English 101	06.11.70**1**	2	2				1/1
		4.	English 102	06.11.70**5**	2	2			06.11.703	1/2
		5.	Islamic Culture	06.11.70**3**	2	2				1/1
		6.	National Culture	06.11.70**4**	2	2				1/1
		7.	Arabic Israeli Conflict	06.11.707	2	2				1/2
Total					14	14				

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Themes	Theme Code	No.	Course Title	Course Code	Credit Hours				Prerequisites/ Co-requisites	Level/Term
					Cr. Hrs.	L	T	P		
Faculty Requirements	1	1.	Fundamentals of Nursing	04.01.711	2	2				Level 1/ semester 1
		2.	Medical Terminology	04.02.712	2	2				Level 1/ semester 1
		3.	Anatomy and Physiology	01.01.714	2	2				Level 1/ semester 2
		4.	Principle of Health Management	05.01.713	2	2				Level 1/ semester 2
		5.	Communication skills and presentation	05.01.715	2	2				Level 1/ semester 2
		6.	Biostatistics	05.02.719	2	2				Level 3/ semester 1
		7.	Genera Biology	03.01.716	3	2		2		Level 1/ semester 2
		8.	Total Quality Management	05.01.718	2	2				Level 3/ semester 1
		9.	Research methodology	05.02.720	2	2				Level 3/ semester 2
		10.	pharmacology	05.01.717	2	2				Level 2/ semester 2
		11.	Fundamentals of account	05.02.721						
Total					21	20		2		

Annex- 18, Coding System

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Themes	Theme Code	No.	Course Title	Course Code	Credit Hours				Prerequisites/ Co-requisites	Level/Term
					Cr. Hrs.	L	T	P		
Department Requirements	2	1.	Math 1	07.02.701	3	2		2		Level 1/ semester 1
		2.	Math 2	07.02.704	3	2		2	07.02.711	Level 1/ semester 2
		3.	Math 3	07.02.706	3	2		2	07.02.712	Level 2/ semester 1
		4.	Bio Physics	07.02.703	3	2		2		Level 1/ semester 1
		5.	Fundamentals of Electrical Circuits	07.02.705	3	2		2		Level 2/ semester 1
		6.	Electrical Circuits 2	07.02.719	3	2		2	07.02.718	Level 2/ semester 2
		7.	Digital Logic Design	07.02.707	3	2		2	07.02.718	Level 2/ semester 1
		8.	Biomedical Devices 1	07.02.729	3	2		2	07.02.718, 07.02.719	Level 3/ semester 1
		9.	Biomedical Devices 2	07.02.730	3	2		2	07.02.729	Level 3/ semester 2
Total					27	18		18		

Annex- 18, Coding System

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Themes	Theme Code	No.	Course Title	Course Code	Credit Hours				Prerequisites/ Co-requisites	Level/Term
					Cr. Hrs.	L	T	P		
General Courses (Program Courses)	3	1.	Introduction to Information Technology	07.01.701	3	2		2		1/1
		2.	Programming1	07.01.702	3	2		2		1/2
		3.	Programming 2	07.01.703	3	2		2	07.01.702	2/1
		4.	Health Information Technology	07.01. 704	3	2		2	07.01.701	2/1
		5.	Database management Systems	07.01. 705	3	2		2		2/1
		6.	Object-Oriented Programming	07.01. 706	3	2		2	07.01.703	2/2
		7.	Computer system architecture	07.01. 707	3	2		2	07.01.701	2/1
		8.	Computer Network	07.01. 708	3	2		2	07.01.701	2/2
		9.	System Analysis and Design	07.01. 709	3	3			07.01. 707	2/1
		10.	IT Project Management	07.01. 710	3	3				3/1
		11.	Visual Programming	07.01. 711	3	2		2	07.01. 706	3/1
		12.	Operating System	07.01. 712	3	2		2		2/2
		13.	Health information management	07.01. 713	3	3			07.01. 704	3/2
		14.	Software Engineering	07.01. 714	3	3			07.01. 709	2/2
		15.	Web Design and development	07.01. 715	3	2		2	07.01. 711	3/2
		16.	Electronic Health Records	07.01. 716	2	2				3/1
		17.	Information Security and Audit	07.01. 718	3	2		2		4/1
		18.	Medical Coding and Billing	07.01. 719	3	3				3/1
		19.	Current issues in computer	07.01. 720	3	3				3/2
		20.	Cloud Computing	07.01. 721	3	3				3/2
		21.	Mobile Application Development	07.01. 722	3	2		2		4/1
		22.	Decision Support System	07.01. 723	2	2				4/1

Annex- 18, Coding System

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		No.	Course Title	Course Code					Prerequisites/ Co-requisites	Level/Term
		23.	Legal and Ethical Aspects of HIT	07.01. 724	2	2				4/2
		24.	Entrepreneurship	07.01. 717	2	2				4/2
		25.	Protocols of Biomedical Devices	07.01. 728						
Total					68	55	0	26		

Themes	Theme Code	No.	Course Title	Course Code	Credit Hours				Prerequisites/ Co-requisites	Level/Term
					Cr. Hrs.	L	T	P		
Elective Courses	4	**1.**	Elective 1	07.01. 730	2	2				4/1
		2.	Elective 2	07.01. 731	2	2				4/2
Total					4	4				

Themes	Theme Code	No.	Course Title	Course Code	Credit Hours				Prerequisites/ Co-requisites	Level/Term
					Cr. Hrs.	L	T	P		
Graduation Project Courses	5	**1**	Project 1	07.01. 725	3				05.02.710	4/1
		2.	Project 2	07.01. 726	3				07.01. 725	4/2
Total					6					

Themes	Theme Code	No.	Course Title	Course Code	Credit Hours				Prerequisites/ Co-requisites	Level/Term
					Cr. Hrs.	L	T	P		
Field Training	6	1	Field Training	07.01. 727	6					4/2
Total					6					

Annex- 18, Coding System

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Annex- 19, Survey of Course Names per Academic Semesters of Similar Programs

University	21 September University	Tehran University of Medical Sciences	Miami University	Tennessee State University	Saudi Electronic University	King Saud Bin Abdulaziz University for Health Sciences	Emirates College of Technology
No of Courses	54	57	39	47	41	52	44
Total Cr. Hrs.	140	130	124	120	130	218	132
Total Years	4	4	4	4	4	**4**	4

Level 1							

Semester	No	Course Name	Course Name	Course Name	Course Name	Course Name	Course Name	Course Name
1	1	Arabic 101	Two Courses from among Theoretical Foundations of Islam Courses	English Composition	Orientation to Health Sciences	English Skills	English Communication Skills	English I
	2	English 101	Physiology	IT Tools and Techniques	Introduction to Health Records	Essentials of Computers & Software	English Grammar I	College Mathematics
	3	Islamic Culture	Medical Terminology	Principles of Public Speaking or Intro to Interpersonal Communication	Oral Communication	Academic skills	English Reading & Vocabulary	Medical Terminology
	4	National Culture	Mathematics	Pre-Calculus	Freshman English I		Arabic Language Skills I	Introduction to Information Technology Skills
	5	Introduction to Information	Health Information Management (1)		Anatomy & Physiology		Islamic Culture	Islamic Culture

Department Head	Faculty Dean	Quality Unit	President

University		21 September University	Tehran University of Medical Sciences	Miami University	Tennessee State University	Saudi Electronic University	King Saud Bin Abdulaziz University for Health Sciences	Emirates College of Technology
		Technology						
	6	Fundamentals of Nursing	Principle of Management		Microcomputer Applications		Chemistry for Health Sciences I	Human Biology
	7	Medical Terminology	Descriptive Biostatistics				Physics for Health Sciences I	
	8	Math 1	Insurance and payment systems in Health care systems					
	9	Bio physics						
	--	--	--	--	--	--	--	--
2	1	English 102	General English	Database Design & Development	Intro. to Philosophy	Fundamentals to Mathematics	English Academic Writing For Health Sciences I	Introduction to Management
	2	Arabic 102	Physical Education (1)	Intro to Computer Concepts & Programming	Freshman English II	Communication Skills	English Grammar II	English II
	3	Arabic Israeli Conflict	One of the Islamic Ethics Courses	Workplace Writing or ENG 313 Technical Writing	Humanities/Fine Arts		Arabic Language Skills II	General Psychology
	4	Anatomy and Physiology	Anatomy	MPF IIA Creative Arts	Anatomy & Physiology		Chemistry for Health Sciences I	Human Anatomy and Physiology I
	5	Principle of Health Management	Health Information Management (2)	Statistics or Applied Statistics			Physics for Health Sciences II	Business Calculus
	6	General Biology	Specialized English Language IT (1)				Biology for Health Sciences	Accounting
	7	Programming 1	Health Information Technology (1)				Biostatistics	
	8	Math 2	Health Information					

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University		21 September University	Tehran University of Medical Sciences	Miami University	Tennessee State University	Saudi Electronic University	King Saud Bin Abdulaziz University for Health Sciences	Emirates College of Technology
			Management in Crisis					
	9	Communication skills and presentation						
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Level 2								
Semester	**No**	**Course Name**	**Course Name**	**Course Name**	**Course Name**	**Course Name**	**Course Name**	**Course Name**
1	**1**	Digital Logic Design	Physical Education (2)	Principles of Human Physiology	American History I	Introduction to IT and IS	English Academic Writing For Health Sciences II	Introduction to Human Resource Management
	2	Programming 2	Persian Literature	Advanced Spreadsheets & Analytics	Social Statistics	Object Oriented Programming	English Grammar III	Health Communication Skills
	3	Database management Systems	Pathogens and Infections disease	IT Systems Design & Lifecycle Management	Medical Terminology	Basic Medical Terminology	Medical Terminology	Introduction to Health Information Management
	4	Math 3	Technology Management In Health Care	Medical Terminology	Intro. to Pharmacology	Introduction to Biostatistics	Basic Biochemistry for Health Sciences	Fundamental of Innovation
	5	Computer system architecture	Current Nomenclature and Classification of diseases and procedure system (1)	**MAJOR** Technical Elective	Principles of Accounting	Introduction to Health informatics	Microbiology & Immunology for Health Informatics	Human Anatomy and Physiology II
	6	System Analysis and Design	Specialized English Language IT (2)			Introduction to Database	Research Skills	Introduction to Economy
	7	Fundamentals of Electrical Circuits	Health Information Technology (2)					

Annex- 19, Survey of Course Names per Academic Semesters of Similar Programs

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University		21 September University	Tehran University of Medical Sciences	Miami University	Tennessee State University	Saudi Electronic University	King Saud Bin Abdulaziz University for Health Sciences	Emirates College of Technology
	8		Health Information resources management					
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2	1	Computer Network	One of the Islamic Revolution Courses	Pathophysiology	Soc. Behav. Sci. Elective	Health Care Management	English Academic Writing For Health Sciences III	Pathophysiology
	2	Object-Oriented Programming	Fundamentals of Epidemiology	Tech, Ethics & Global Society	Management Info. Systems	Introduction to Anatomy and Physiology	Advanced Biochemistry for Health Informatics	Biostatistics for Health Sciences
	3	pharmacology	Specialized Nosology (1)	Intro to Human-Computer Interaction	American History II	Data Structure	Computer Science & Health Informatics	Data Communication and Networking
	4	Health information Technology	Current Nomenclature and Classification of diseases and procedure system (2)	Natural Science	English Literature	Organizational Behavior	Anatomy for Health Informatics	Introduction to Financial Management
	5	Operating System	Introduction To Operating System and Applied Planning	**ELECTIVE** Technical Elective	Intro. to Economics	Introduction to Epidemiology	Physiology for Health Informatics	Database Management System
	6	Software Engineering	Inferential Vital Statistics			Introduction to Islamic Culture I	Behavioral Science	Healthcare Institutions Management
	7	Fundamentals of account	Health Information technology (3)				Introduction to Health Informatics	
	8		Management Principles of Individual in work environment					
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	Level 3							

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University		21 September University	Tehran University of Medical Sciences	Miami University	Tennessee State University	Saudi Electronic University	King Saud Bin Abdulaziz University for Health Sciences	Emirates College of Technology
Semester	No	Course Name	Course Name	Course Name	Course Name	Course Name	Course Name	Course Name
1	1	IT Project Management	One of the Courses on the Introduction to Islamic Sources	Human Heredity or Genetics	Mgt. & Org. Behavior	Electronic Health Records	Pharmacology for Health Informatics	Management of Health Information Systems
	2	Biostatistics	Data structure and Computer Programming	IT Assurance & Security	Foundations of HIM	Computer Networks	Pathology and Molecular Genetics for Health Informatics	Pharmacology
	3	Total Quality Management	Specialized Nosology (3)	Integrative Writing in Global Contexts	Fundamentals of Medical Science	Human Computer Interaction	Foundations of Database System	Operations Management
	4	Visual Programming	Specialized English Language Health Information Management (1)	Business Intelligence Tools	Leg/Ethical Aspects of HIM	System Analysis and Design	Ethics for Health Care Profession	Human Health and Disease
	5	Electronic Health Records	Indicators and Analysis of health data	Thematic Sequence	Hlth. Statistics & Analysis	Medical Coding and Billing	Introduction to the Health Care System	Sociology
	6	Medical Coding and Billing	Computer Network and System Security			Web Technologies	Principles of Health Information Management	Legal and Ethical Aspects in Health Sciences
	7	Biomedical Devices	Introduction of Health System Structure and Plans in Iran				Information Systems for Health informatics	
	8		Specialized Nosology (2)					
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2	1	Web Design and development	Population and Family Planning	Info Management & Retrieval	Human Resources Management	IT Project Management	Legal Aspects of Health Information Management	Medical Coding I
	2	Health information	One of the Courses on Islamic History & Civilization	Current Practices in IT	Alter. Hlth. Record Systems	Health Policy and Saudi Healthcare System	Mathematical Reasoning	Healthcare Economics

Annex- 19, Survey of Course Names per Academic Semesters of Similar Programs

Department Head   Faculty Dean   Quality Unit   President

University		21 September University	Tehran University of Medical Sciences	Miami University	Tennessee State University	Saudi Electronic University	King Saud Bin Abdulaziz University for Health Sciences	Emirates College of Technology
		management						
	3	Current issues in computer	Pharmacology	IT for Organizations	Coding/Classifica tion of Health. Data	Concepts of Health Education and Promotion	Management and Business Practices	Health Promotion and Prevention
	4	Cloud Computing	The Research Method	US Health Care System & Culture	CPT/HCPCS Coding	Healthcare Research	Analysis of Health Care Data	Health Data Concepts
	5	Research methodology	Specialized English Language of Health Information Management (2)	Humanities or Social Science	Quality Asses. & Performance Improvement	Financial Management for Healthcare	Alternative Health Records	Information Security
	6	Protocols of Biomedical Devices	Specialized nomenclature and classification of disease and procedures systems			Ethics & Regulations in Healthcare	Introduction to Research in Health Informatics	
	7		Mortality Nosology/coding				Technical Affiliation	
	8		First Aids					
	--	--	--	--	--	--	--	--
Level 4								
Semester	**No**	**Course Name**	**Course Name**	**Course Name**	**Course Name**	**Course Name**	**Course Name**	**Course Name**
1	1	Mobile Application Development	Internship (1)	Health Information Technology I	Health Care Billing	Consumer Health Informatics	Coding and Classification Systems	Graduation Project in HIM
	2	Decision Support System	Data Quality and Health Information System	Health IT Project Lifecycle	Current Issues in HIM	Decision Support Systems	Coding and Reimbursement Systems	Medical Coding II
	3	Information Security and	Management of Health Information Technology	Global Perspectives	Adv. Coding & Classification	IT Security & Policies	Healthcare Financial Management	Leadership

Annex- 19, Survey of Course Names per Academic Semesters of Similar Programs

Department Head   Faculty Dean   Quality Unit   President

University		21 September University	Tehran University of Medical Sciences	Miami University	Tennessee State University	Saudi Electronic University	King Saud Bin Abdulaziz University for Health Sciences	Emirates College of Technology
		Audit	Department					
	4	Elective 1	Health Care Informatics (1)	Thematic Sequence	Computerized HIM System	Prof. Conduct & Ethics in Islam	Health IT Project Management	Health Care Delivery Systems
	5	Final Project 1	Accounting Principles and Health economy	**ELECTIVE** Elective	Org. Mgmt. of Hlth. Info. Service	Telehealth and Telemedicine	Health IT Project Management	Epidemiology
	6					Health Communications		
--	--	--	--	--	--	--	--	--
2	1	Final Project 2	Internship (2, 3, 4)	Health Information Technology II	Mgmt. Professional Practice in HIM	Islamic Economic System	Human Resources Management	Graduation Project in HIM
	2	Legal and Ethical Aspects of HIT	Electronic Health Record	Global Strategic Issues in IT	Mgmt. Prof. Practice Seminar	Public Health Informatics	Systems Analysis	Reimbursement and Revenue Cycle Management
	3	Elective 2	Research Project	Thematic Sequence	Health Care Research	E-Health	Programming and Data Analytics	Internship in Healthcare Establishment
	4	Entrepreneurship	Health Care Informatics (2)	Global Perspectives		Social System and Human Rights	Quality Evaluation and Management	Quality Management in Healthcare
	5			**ELECTIVE** Elective		Elective 1	Current Issues in Health Informatics	
	6					Elective 2	Clinical Practicum	
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Annex- 19, Survey of Course Names per Academic Semesters of Similar Programs

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Annex- 20, Comparison of Program Courses and Similar Programs Courses

#	Tehran University					Miami University					Tennessee State University					Saudi Electronic University					King Saud Bin Abdulaziz University for Health Sciences					Emirates College of Technology					21 September University				
	Course	CH	L	T	P	Course	CH	L	T	P	Course	CH	L	T	P	Course	CH	L	T	P	Course	CH	L	T	P	Course	CH	L	T	P	Course	CH	L	T	P
Level 1																																			
1	Two Courses from among Theoretical Foundations of Islam Courses	2				English Composition	3				Orientation to Health Sciences	1				English Skills	16				English Communication Skills	5				English I	3				Arabic 101	2			
2	Physiology	3				IT Tools and Techniques	4				Introduction to Health Records	1				Essentials of Computers & Software	3				English Grammar I	5				College Mathematics	3				English 101	2			
3	Medical Terminology	3				Principles of Public Speaking or Intro to Interpersonal Communication	3				Oral Communication	3				Academic skills	2				English Reading & Vocabulary	3				Medical Terminology	3				Islamic Culture	2			
4	Mathematics	3									Pre-Calculus	5				Freshman English I	3									Arabic Language Skills I	3				Introduction to Information Technology Skills	3				National Culture	2			
5	Health Information	3									Anatomy & Physiology	4									Islamic Culture	3				Islamic Culture	3				Introduction to	3	2		2

Department Head	Faculty Dean	Quality Unit	President

#	Tehran University Course	CH	L	T	P	Miami University Course	CH	L	T	P	Tennessee State University Course	CH	L	T	P	Saudi Electronic University Course	CH	L	T	P	King Saud Bin Abdulaziz University for Health Sciences Course	CH	L	T	P	Emirates College of Technology Course	CH	L	T	P	21 September University Course	CH	L	T	P
	Management (1)																														Information Technology				
6	Principle of Management	3									Microcomputer Applications	3									Chemistry for Health Sciences I	3				Human Biology	3				Fundamentals of Nursing	2			
7	Descriptive Biostatistics	2																			Physics for Health Sciences I	3									Medical Terminology	2			
8	Insurance and payment systems in Health care systems																														Math 1	3	3		
		3			2																										Bio physics	3	2		2
1	General English	2				Database Design & Development	3				College Algebra	3				Fundamentals to Mathematics	3				English Academic Writing For Health Sciences I	6				Introduction to Management	3				English 102	2			
2	Physical Education (1)	2				Intro to Computer Concepts & Programming	3				Intro. to Philosophy	3				Communication Skills	2				English Grammar II	3				English II	3				Arabic 102	2			
3	One of the Islamic Ethics Courses	3				Workplace Writing or ENG 313 Technical Writing	3				Freshman English II	3									Arabic Language Skills II	3				General Psychology	3				Arabic Israeli Conflict	2			
4	Anatomy	3				MPF IIA Creative Arts	3				Humanities/Fine Arts	3									Chemistry for Health Sciences I	3				Human Anatomy and Physiology I	3				Anatomy and Physiology	2			

Annex- 20, Comparison of Program Courses and Similar Programs Courses

Department Head   Faculty Dean   Quality Unit   President

#	Tehran University Course	CH	L	T	P	Miami University Course	CH	L	T	P	Tennessee State University Course	CH	L	T	P	Saudi Electronic University Course	CH	L	T	P	King Saud Bin Abdulaziz University for Health Sciences Course	CH	L	T	P	Emirates College of Technology Course	CH	L	T	P	21 September University Course	CH	L	T	P
5	Health Information Management (2)	3				Statistics or Applied Statistics	4				Anatomy & Physiology	4									Physics for Health Sciences II	3				Business Calculus	3				Principle of Health Management	2			
6	Specialized English Language IT (1)	3																			Biology for Health Sciences	3				Accounting	3				General Biology	3	2		2
7	Health Information Technology (1)	2																			Biostatistics	3									Programming 1	3	2		2
8	Health Information Management in Crisis																														Math 2	3	3		
																														Communication skills	2	2		
Level 2																																		
1	Physical Education (2)	2				Principles of Human Physiology	15				American History I	3				Introduction to IT and IS	3				English Academic Writing For Health Sciences II	6				Introduction to Human Resource Management	3				Digital Logic Design	3	2		2
2	Persian Literature	2				Advanced Spreadsheets & Analytics	15				Social Statistics	3				Object Oriented Programming	3				English Grammar III	3				Health Communication Skills	3				Programming 2	3	2		2
3	Pathogens and Infections disease	3				IT Systems Design & Lifecycle Management					Medical Terminology	3				Basic Medical Terminology	3				Medical Terminology	3				Introduction to Health Information Management	3				Database Systems	3	2		2
4	Technology Management	3				Medical Terminology					Intro. to Pharmacology	3				Introduction to Biostatistics	3				Basic Biochemistry	4				Fundamental of Innovation	3				Math 3	3	3		

Annex- 20, Comparison of Program Courses and Similar Programs Courses

Department Head   Faculty Dean   Quality Unit   President

#	Tehran University Course	CH	L	T	P	Miami University Course	CH	L	T	P	Tennessee State University Course	CH	L	T	P	Saudi Electronic University Course	CH	L	T	P	King Saud Bin Abdulaziz University for Health Sciences Course	CH	L	T	P	Emirates College of Technology Course	CH	L	T	P	21 September University Course	CH	L	T	P
	In Health Care																				for Health Sciences													
5	Current Nomenclature and Classification of diseases and procedure system (1)	3				MAJOR Technical Elective					Principles of Accounting	3				Introduction to Health informatics	3				Microbiology & Immunology for Health Informatics	3				Human Anatomy and Physiology II	3				Computer system architecture	3	2		2
6	Specialized English Language IT (2)	3														Introduction to Database	3				Research Skills	2				Introduction to Economy	3				System Analysis and Design	3	2		2
7	Health Information Technology (2)	3																													Fundamentals of Electrical Circuits	3	2		2
8	Health Information resources management																																	
1	One of the Islamic Revolution Courses	2				Pathophysiology	15				Soc. Behav. Sci. Elective	3				Health Care Management	3				English Academic Writing For Health Sciences III	4				Pathophysiology	3				Computer Network	3	2		2
2	Fundamentals of Epidemiology	3				Tech, Ethics & Global Society	15				Management Info. Systems	3				Introduction to Anatomy and Physiology	3				Advanced Biochemistry for Health Informatics	3				Biostatistics for Health Sciences	3				Object-Oriented Programming	3	2		2
3	Specialized	3				Intro to					American	3				Data Structure	3				Computer	4				Data	3				pharmacolog	2	2		

Annex- 20, Comparison of Program Courses and Similar Programs Courses

Department Head   Faculty Dean   Quality Unit   President

#	Tehran University Course	CH	L	T	P	Miami University Course	CH	L	T	P	Tennessee State University Course	CH	L	T	P	Saudi Electronic University Course	CH	L	T	P	King Saud Bin Abdulaziz University for Health Sciences Course	CH	L	T	P	Emirates College of Technology Course	CH	L	T	P	21 September University Course	CH	L	T	P
	Nosology (1)					Human-Computer Interaction					History II										Science & Health Informatics					Communication and Networking					y				
4	Current Nomenclature and Classification of diseases and procedure system (2)	3				Natural Science					English Literature	3				Organizational Behavior	3				Anatomy for Health Informatics	5				Introduction to Financial Management	3				Health information Technology	3	2		2
5	Introduction To Operating System and Applied Planning	3				ELECTIVE Technical Elective					Intro. to Economics	3				Introduction to Epidemiology	3				Physiology for Health Informatics	3				Database Management System	3				Operating System	3	2		2
6	Inferential Vital Statistics	3														Introduction to Islamic Culture I	2				Behavioral Science	3				Healthcare Institutions Management	3				Software Engineering	3	3		
7	Health Information technology (3)	3																			Introduction to Health Informatics	3									Fundamentals of account	3	2		2
8	Management Principles of Individual in work environment																																		
Level 3																																		
1	One of the Courses on the Introduction	3				Human Heredity or Genetics	15				Mgt. & Org. Behavior	3				Electronic Health Records	3				Pharmacology for Health Informatics	5				Management of Health Information Systems	3				IT Project Management	3	3		

Annex- 20, Comparison of Program Courses and Similar Programs Courses

Department Head   Faculty Dean   Quality Unit   President

#	Tehran University					Miami University					Tennessee State University					Saudi Electronic University					King Saud Bin Abdulaziz University for Health Sciences					Emirates College of Technology					21 September University				
	Course	CH	L	T	P	Course	CH	L	T	P	Course	CH	L	T	P	Course	CH	L	T	P	Course	CH	L	T	P	Course	CH	L	T	P	Course	CH	L	T	P
	to Islamic Sources																														Biostatistics				
2	Data structure and Computer Programing	3				IT Assurance & Security	15				Foundations of HIM	3				Computer Networks	3				Pathology and Molecular Genetics for Health Informatics	5				Pharmacology	3				Biostatistics		2	2	
3	Specialized Nosology (3)	3				Integrative Writing in Global Contexts					Fundamentals of Medical Science	3				Human Computer Interaction	3				Foundations of Database System	3				Operations Management	3				Total Quality Management		2	2	
4	Specialized English Language Health Information Management (1)	3				Business Intelligence Tools					Leg/Ethical Aspects of HIM	2				System Analysis and Design	3				Ethics for Health Care Profession	2				Human Health and Disease	3				Visual Programming		3	2	2
5	Indicators and Analysis of health data	3				Thematic Sequence					Hlth. Statistics & Analysis	2				Medical Coding and Billing	3				Introduction to the Health Care System	4				Sociology	3				Medical Coding and Billing		3	3	
6	Computer Network and System Security	3														Web Technologies	3				Principles of Health Information Management	6				Legal and Ethical Aspects in Health Sciences	3				Electronic Health Records		2	2	
7	Introduction of Health System Structure and Plans in Iran	3																			Information Systems for Health informatics	3									Biomedical Devices		3	2	2

Annex- 20, Comparison of Program Courses and Similar Programs Courses

Department Head   Faculty Dean   Quality Unit   President

#	Tehran University Course	CH	L	T	P	Miami University Course	CH	L	T	P	Tennessee State University Course	CH	L	T	P	Saudi Electronic University Course	CH	L	T	P	King Saud Bin Abdulaziz University for Health Sciences Course	CH	L	T	P	Emirates College of Technology Course	CH	L	T	P	21 September University Course	CH	L	T	P
8	Specialized Nosology (2)																																	
1	Population and Family Planning	3				Info Management & Retrieval	15				Human Resources Management	3				IT Project Management	3				Legal Aspects of Health Information Management	4				Medical Coding I	3				Health information management	3	3		
2	One of the Courses on Islamic History & Civilization	3				Current Practices in IT	15				Alter. Hlth. Record Systems	3				Health Policy and Saudi Healthcare System	3				Mathematical Reasoning	5				Healthcare Economics	3				Web Design and development	3	2		2
3	Pharmacology	3				IT for Organizations					Coding/Classification of Health. Data	3				Concepts of Health Education and Promotion	3				Management and Business Practices	5				Health Promotion and Prevention	3				Current issues in computer	3	3		
4	The Research Method	3				US Health Care System & Culture					CPT/HCPCS Coding	3				Healthcare Research	3				Analysis of Health Care Data	6				Health Data Concepts	3				Cloud Computing	3	3		
5	Specialized English Language of Health Information Management (2)	3				Humanities or Social Science					Quality Asses. & Performance Improvement	3				Financial Management for Healthcare	3				Alternative Health Records	6				Information Security	3				Research methodology	2	2		
6	Specialized nomenclature and classification of disease and procedures	3														Ethics & Regulations in Healthcare	3				Introduction to Research in Health Informatics	4									Protocols of Biomedical Devices	2	2		

Annex- 20, Comparison of Program Courses and Similar Programs Courses

Department Head   Faculty Dean   Quality Unit   President

#	Tehran University					Miami University					Tennessee State University					Saudi Electronic University					King Saud Bin Abdulaziz University for Health Sciences					Emirates College of Technology					21 September University				
	Course	CH	L	T	P	Course	CH	L	T	P	Course	CH	L	T	P	Course	CH	L	T	P	Course	CH	L	T	P	Course	CH	L	T	P	Course	CH	L	T	P
	systems																																		
7	Mortality Nosology/coding																				Technical Affiliation	6													
8	First Aids																																		
Level 4																																			P
1	Internship (1)	3				Health Information Technology I					Health Care Billing	2				Consumer Health Informatics	3				Coding and Classification Systems	5				Graduation Project in HIM	3				Mobile Application Development	3	2		2
2	Data Quality and Health Information System	3				Health IT Project Lifecycle					Current Issues in HIM	3				Decision Support Systems	3				Coding and Reimbursement Systems	6				Medical Coding II	3				Decision Support System	2	2		
3	Management of Health Information Technology Department	3				Global Perspectives					Adv. Coding & Classification	2				IT Security & Policies	3				Healthcare Financial Management	4				Leadership	3				Information Security and Audit	3	2		2
4	Health Care Informatics (1)	3				Thematic Sequence					Computerized HIM System	3				Prof. Conduct & Ethics in Islam	2				Health IT Project Management	6				Health Care Delivery Systems	3				Elective 1	2	2		
5	Accounting Principles and Health economy	3				ELECTIVE Elective					Org. Mgmt. of Hlth. Info. Service	3				Telehealth and Telemedicine	3				Health care Data Structures and Management	5				Epidemiology	3				Final Project 1	3	3		
6		3														Health Communications	3																		
7		6																																	
1	Internship (2, 3, 4)					Health Information Technology II					Mgmt. Professional Practice in	6				Islamic Economic System	2				Human Resources Management	6				Graduation Project in HIM	3				Project 2		3	3	

Annex- 20, Comparison of Program Courses and Similar Programs Courses

Department Head　　　　　Faculty Dean　　　　　Quality Unit　　　　　President

#	Tehran University					Miami University					Tennessee State University					Saudi Electronic University					King Saud Bin Abdulaziz University for Health Sciences					Emirates College of Technology					21 September University				
	Course	CH	L	T	P	Course	CH	L	T	P	Course	CH	L	T	P	Course	CH	L	T	P	Course	CH	L	T	P	Course	CH	L	T	P	Course	CH	L	T	P
											HIM																								
2	Electronic Health Record					Global Strategic Issues in IT					Mgmt. Prof. Practice Seminar	3				Public Health Informatics	3				Systems Analysis	6				Reimbursement and Revenue Cycle Management	3				Legal and Ethical Aspects of HIT	2	2		
3	Research Project					Thematic Sequence					Health Care Research	3				E-Health	3				Programming and Data Analytics	5				Internship in Healthcare Establishment	3				Elective 2	2	2		
4	Health Care Informatics (2)					Global Perspectives										Social System and Human Rights	2				Quality Evaluation and Management	4				Quality Management in Healthcare	3				Entrepreneurship	2	2		
5						ELECTIVE Elective										Elective 1	3				Current Issues in Health Informatics	4													
6																Elective 2	3			121	Clinical Practicum	8													

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Annex- 21, Matrix of Mapping Program PILO's with Courses

I =Introduction; E=Extension; A=Application

Year السنة	Term الفصل	Course Name اسم المقرر	Course Code رمز المقرر	Credit Hours الساعات المعتمدة				Program Intended Learning Outcomes (PILOs) رمز ورقم مخرجات التعلم															
								A. Knowledge and understanding المعرفة والفهم				B. Intellectual Skills المهارات الذهنية				C. Practical & Professional Skills المهارات العملية				D. Transferrable Skills المهارات الانتقالية			
				L	T	P	Total	A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2	D3	D4
1	1	Arabic 101	06.11.702	2			2													√		√	
1	1	English 101	06.11.701	2			2													√		√	
1	1	Islamic Culture	06.11.703	2			2													√		√	
1	1	National Culture	06.11.704	2			2													√		√	
1	1	Introduction to Information Technology	07.01.701	2		2	3	√	√	√	√		√	√		√			√				
1	1	Fundamentals of Nursing	04.01.711	2			2	√	√		√						√						
1	1	Medical Terminology	04.02.712	2			2	√	√											√			
1	1	Math 1	07.02.701	2		2	3	√									√					√	
1	1	Biophysics	07.02.703	2		2	3	√				√					√		√	√	√		
1	2	English 102	06.11.705	2			2													√		√	
1	2	Programming 1	07.01.702	2		2	3	√	√	√		√					√		√				
1	2	Arabic 102	06.11.706	2			2													√		√	
1	2	General Biology	03.01.716	2		2	3	√									√					√	
1	2	Arabic Israeli Conflict	06.11.707	2			2													√		√	
1	2	Anatomy and Physiology	01.01.714	2			2	√	√		√						√						
1	2	Principle of Health	05.01.713	2			2	√	√			√	√										

| Department Head | Faculty Dean | Quality Unit | President |

Year السنة الدراسية	Term الفصل الدراسي	Course Name اسم المقرر	Course Code رمز المقرر	Credit Hours الساعات المعتمدة				Program Intended Learning Outcomes (PILOs) رمز ورقم مخرجات التعلم															
								A. Knowledge and understanding المعرفة والفهم				B. Intellectual Skills المهارات الذهنية				C. Practical & Professional Skills المهارات العملية				D. Transferrable Skills المهارات الانتقالية			
				L	T	P	Total	A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2	D3	D4
		Management																					
1	2	Communication skills and presentation	05.01.715	2			2													√		√	
1	2	Math 2	07.02.704	2			2	√												√	√		
2	1	Programming 2	07.01.703	2		2	3	√	√	√	√	√	√			√			√	√	√		
2	1	Digital Logic Design	07.02.707	2		2	3	√	√		√			√	√	√	√			√			
2	1	Math 3	07.02.706	2		2	3	√									√					√	
2	1	Fundamental of Electrical Circuits	07.02.705	2		2	3	√	√			√			√	√	√			√	√		
2	1	Database management Systems	07.01. 705	2		2	3	√	√		√	√	√		√	√			√	√			
2	1	Computer system architecture	07.01. 707	3			3	√	√			√			√	√	√			√			
2	1	System Analysis and Design	07.01. 709	3			3	√	√	√	√		√	√	√	√	√	√	√	√		√	
2	2	Object-Oriented Programming	07.01. 706	2		2	3	√	√		√	√	√		√	√			√	√			
2	2	pharmacology	05.01.717	2			2	√	√		√												
2	2	Software Engineering	07.01. 714	3			3				√	√		√	√		√	√		√			√
2	2	Health information Technology	07.01. 704	3		2	3	√	√	√	√		√	√		√			√				

Department Head　　　　　　　Faculty Dean　　　　　　　Quality Unit　　　　　　　President

Year السنة الدراسية	Term الفصل الدراسي	Course Name اسم المقرر	Course Code رمز المقرر	Credit Hours الساعات المعتمدة				Program Intended Learning Outcomes (PILOs) رمز ورقم مخرجات التعلم														
								A. Knowledge and understanding المعرفة والفهم				B. Intellectual Skills المهارات الذهنية				C. Practical & Professional Skills المهارات العملية				D. Transferrable Skills المهارات الانتقالية			
				L	T	P	Total	A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2	D3	D4
2	2	Computer Network	07.01.708	2		2	3	√	√		√	√	√		√	√	√			√	√		
2	2	Operating System	07.01.712	3			3	√		√	√		√			√							
2	2	Fundamentals of account	05.02.721	2			2																
3	1	Visual Programming	07.01.711	2		1	3		√		√				√	√	√	√	√	√			√
3	1	Total Quality Management	05.01.718	2			2	√						√	√				√	√	√	√	√
3	1	IT Project Management	07.01.710	3			3	√	√	√	√		√	√		√		√		√	√		
3	1	Electronic Health Records	07.01.716	2			2	√	√		√	√			√	√	√		√				
3	1	Biostatistics	05.02.719	2			2	√									√					√	
3	1	Biomedical Devices	07.02.729	2		2	3	√	√				√	√	√	√			√	√			
3	1	Medical Coding and Billing	07.01.719	3			3	√	√		√	√	√	√		√			√				
3	2	Health information management	07.01.713	2		2	3	√	√			√	√		√	√			√	√			√
3	2	Web Design and development	07.01.715	2		1	3				√	√			√		√	√	√	√			√
3	2	Current issues in computer	07.01.720	2			2	√	√		√		√		√			√	√				

Annex- 21, Matrix of Mapping Program PILO's with Courses

Department Head   Faculty Dean   Quality Unit   President

Year السنة الدراسية	Term الفصل الدراسي	Course Name اسم المقرر	Course Code رمز المقرر	Credit Hours الساعات المعتمدة				Program Intended Learning Outcomes (PILOs) رمز ورقم مخرجات التعلم															
								A. Knowledge and understanding المعرفة والفهم				B. Intellectual Skills المهارات الذهنية				C. Practical & Professional Skills المهارات العملية				D. Transferrable Skills المهارات الانتقالية			
				L	T	P	Total	A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2	D3	D4
3	2	Cloud Computing	07.01. 721	3			3	√	√	√			√	√	√	√			√	√			
3	2	Research methodology	05.02.720	2			2				√	√		√		√		√		√	√	√	
3	2	Protocols of Biomedical Devices	07.01. 728	2		2	3				√			√	√	√		√	√	√			√
4	1	Mobile Application Development	07.01. 722	2		2	3		√		√				√	√	√	√	√	√			√
4	1	Decision Support System	07.01. 723	2			2			√	√	√		√	√	√		√		√			
4	1	Elective 1	07.01. 730	2			2	√			√	√	√	√	√	√				√			√
4	1	Information Security and Audit	07.01. 718	3			3	√	√	√		√	√	√	√	√		√					
4	1	Final Project 1	07.01. 725	3			3	√			√	√	√			√	√		√	√		√	
4	2	Project 2	07.01. 726	3			3							√	√		√	√	√		√	√	√
4	2	Legal and Ethical Aspects of HIT	07.01. 724	2			2	√			√			√				√				√	√
4	2	Elective 2	07.01. 731	2			2	√			√	√	√	√	√	√				√			√
4	2	Entrepreneurship	07.01. 717	2			2				√			√	√	√			√	√			√
	1	Field Training	07.11.1053			6	6					√	√	√	√		√	√	√	√			√

Annex- 21, Matrix of Mapping Program PILO's with Courses

Department Head   Faculty Dean   Quality Unit   President

Program Intended Learning Outcomes (PILOs): Information Technology Program at 21 September university

A. Knowledge and Understanding:

Upon successful completion of the Program, the graduates will be able to:

A1. Demonstrate an understanding of appropriate concepts, theories, mathematical foundations, models and techniques related to Health Information Technology discipline..

A2. Identify user and Health needs to provide IT based solutions to real-world problem.

A3. Demonstrate a profound knowledge in utilizing and adapting IT tools, techniques, practices, and methods for solving computing problems in Health enviroment.

A4. Demonstrate a sound understanding the computing concept related to analysis, design, implementation, and evaluation of Health information system.

B. Cognitive/ Intellectual Skills:

Upon successful completion of the Program, the graduates will be able to:

B1. Critically analyse complex computing problems and propose appropriate information technology based solutions and integrate them effectively into the uses and organization Health.

B2. Analyze the impacts of computing on Health objectives and customer needs, and consider them during the analytical processing, selection, integration, configuration and administration of information technology systems.

B3. Explore a variety of challenges and problems related to Health Information Technology to select the optimal solution.

B4. Evaluate IT based solution to meet a given set of Health requirements in the context of Health Information Technology discipline.

Annex- 21, Matrix of Mapping Program PILO's with Courses

| Department Head | Faculty Dean | Quality Unit | President |

C. Practical and Professional Skills:

Upon successful completion of the Program, the graduates will be able to:

C1. Employ effectively the concepts, principles of computational tools, techniques used for the construction and documentation of Health Information of varying complexity.

C2. design, implement, and test a computing-based solution to meet a given set of computing requirement in the context of Health Information Technology.

C3. Use systematic approaches to select, develop, apply, integrates, and administrate secure computing technologies to accomplish user and Health goals.

C4. Use current techniques, skills, and tools necessary for computing practices.

D. General and Transferable Skills:

Upon successful completion of the Program, the graduates will be able to:

D1. Function effectively as an individual, as a member, or leader of a team engaged in activities appropriate to the Health Information Technology discipline to accomplish a common goal.

D2. Commit to professional ethics, responsibilities, and norms of professional IT practices .

D3. Communicate effectively in writing and orally in a variety of professional contexts.

D4. Engage in continuing professional development and lifelong learning as an IT professional

| Department Head | Faculty Dean | Quality Unit | President |

Annex- 22, CVs for the Preparation Committee

Attached separately.

Department Head   Faculty Dean   Quality Unit   President

Approved by

| Department Head | Faculty Dean | Quality Unit | Vice President |

| Department Head | Faculty Dean | Quality Unit | President |