

Program SPECIFICATION FOR *Master Degree in Biomedical Devices*

Code: 1720700

University: Alexandria

Faculty: Medical Research Institute

Program Specification

A- Basic information

1- Program title: *Master degree in Biomedical Devices*

2- Program type: single double multiple

3- Department(s): *Biomedical Engineering*

4- Coordinator: *Dr. Ahmad Nashaat*

5- External evaluator(s): *Prof.Dr/ Nour El Din Ismail*

6- Last date of program specification approval: *5/6/2014*

B- Professional Information

1- Program aims:

At completion of this program the student will be able to

- 1. Demonstrate a comprehensive understanding of physical principles associated with biomedical engineering.*
- 2. Acquire a systematic understanding of physiological/biomedical measurements and statistics.*
- 3. Recognize the working principles behind the maintenance and management of biomedical instruments and safety procedures in a wide range of medical physics and biomedical engineering applications.*
- 4. Acquire a high level of practical, analytical, communication and research skills.*

5. *Address the question of how to develop computer models of disease that can be used to understand disease mechanisms.*
6. *Examine information systems used in clinical practice.*
7. Use systematic approaches to design and conduct scientific research.

2- Intended learning outcomes (ILOs)

a- knowledge and understanding:

- a1- Review the functions of several physiological systems with human body.
- a2- Order the research method in details.
- a3- Discuss modelling strategies in physiology.
- a4- Recall beneficence and non maleficence medical ethics.
- a5- Describe & explain principles and application of neuro physiological assessments.
- a6- **Discuss** the essential facts, concepts, principals and theories of electrophysiological function.
- a7- Describe operating systems, software security, risk assessment
- a8- **List** the different techniques used for machine learning.

b- Intellectual skills:

- b1- Distinguish between the different activities for biomedical engineers.
- b2- Differentiate between sensors and electrodes.
- b3- Analyze biomedical signals.
- b4- Analyze the indications of using various imaging techniques.
- b5- Examine the parameters that usually read from patient monitors.
- b6- Criticize a structured Introduction section in a scientific paper or research.
- b7- Calculate parameters in intensive monitoring.
- b8- Examine problem solving as regards types of research design

b9- Compare between viruses

b10- Distinguish between blind and directed searches.

B11. Write a thesis protocol using a scientific systematic approach to a research problem.

c- professional and practical skills:

c1- Demonstrate dialysis machines used in hemodialysis.

c2. Demonstrate buffer preparation, acid base balance and muscle demonstration

c3- Apply voltometric sensors.

c4- Apply signals using a variety of engineering tools like MATLAB.

c5- Demonstrate the principle of operation of X-ray machine.

c6- Practice on diathermy machine.

c7 - Illustrate the role of the main components of the hemodialyzer.

c8-Apply models on Matlab Simulink software.

c9- Practice brainstem, cranial nerve and reflex examination.

c10- use operating instruments in the ICU.

c11- Use Scoop for organizing information.

c12- Practice in Medical Research Institute Intensive Care Unit using safety analyzer

c13-Apply the appropriate analysis measure in different research techniques

c14-Employ network security

c15- Use Prolog programming language to solve logic and decision problems.

d- General and transferable skills:

d1- Manage time.

d2- Develop skills in communication.

d3- Gives oral presentations.

d4-Use conventional and electronic resources to collect, select and organize complex scientific information.

d5-Perform critical appraisal of information and published material.

d6- Use information technology to improve his professional practice.

d7- Use different sources of information to obtain data.

d8-Develop skills in Reading & Researches.

d9- Develop skills in systematic thinking.

d10-Learn skills for planning and organization.

3- Academic standards

3a External references for standards (Benchmarks)

Generic Academic Reference Standards if the National Authority for Quality Assurance and Accreditation of Education (NAQAAE) adopted at MRI council 12/2/2014 and re-adopted at 15/1/2023

Last date of Academic Reference standards (ARS) approval by Institute Council: 15/1/2023

3b Comparison of provision to selected external references

Generic Academic Standards	ARS of master degree in biomedical devices
<p>➤ <i>A1-Basic facts , theories, of the specialty and related subjects/ fields</i></p>	<p><i>A1. Describe the functions of several physiological systems in human body.</i></p> <p><i>A2. Recognize different biomedical signals induced from human body.</i></p>
<p>➤ <i>A2-Mutual relation between professional practice and effects on environment</i></p>	<p><i>A3. Translate different signal processing techniques on biosignals for enhancing patient diagnosis.</i></p>

➤ <i>A3-Main scientific advances in the field of practice</i>	<i>A4- Recognize the main advance in the field of biomedical engineering</i>
➤ <i>A4-Fundamentals of ethical & legal practice</i>	<i>A5-Recognize the ethical regulations associated with the use of medical devices.</i>
➤ <i>A5-Quality standards of the practice</i>	<i>A6-Recognize the quality standards of the practice in the field of biomedical engineering.</i>
➤ <i>A6-Basics and ethics of scientific research</i>	<i>A7-Order the research method in details. A8-Identify intellectual property rights.</i>
➤ <i>B1-Interpret, analyze & evaluate the information to solve problems</i>	<i>B1- Analyze biosignals using signal processing techniques.</i>
➤ <i>B2-Solve some problems that do not conform to classic data (incomplete data)</i>	<i>B2- Examine dynamic physiological systems using simulation modeling techniques.</i>
➤ <i>B3-Integrate different information to solve professional problems</i>	<i>B3-Compare different information to solve professional problems through thesis</i>
➤ <i>B4-Conduct a scientific research &/Or write scientific systematic approach to a research problem (hypothesis)</i>	<i>B4- Write a thesis protocol using a scientific systematic approach to a research problem.</i>
➤ <i>B5-Evaluate risks imposed during professional practice.</i>	<i>B5- Examine safety instructions associated with the use of medical devices.</i>
➤ <i>B6-Plan for professional improvement</i>	<i>B6- Analysis of student questionnaire for professional improvement plan</i>
➤ <i>B7-Take professional decisions in wide range of professional situations</i>	<i>B7.Comparing different biosensors for capturing bioelectrical signals.</i>
➤ <i>C1-Competent in all basic and some of the advanced professional skills (to be determined according to the specialty board/ department)</i>	<i>C1. Practice on different aspects in neurophysiology. C5. Sketch various medical devices used in operation room or in hospitals.</i>

	<i>C7. Demonstrate different aspects in bioelectric phenomena.</i>
➤ <i>C2-Write and appraise reports</i>	<i>C3. Practice on writing a research protocol.</i>
➤ <i>C3-Evaluate methods and tools used in specialty</i>	<i>C2. Design physiological models on MATLAB simulink software.</i> <i>C4-Apply different various signal processing techniques for extracting biosignal features.</i> <i>C6. Practice on using different technical computer programs used in hospital information system construction.</i>
➤ <i>D1-Communicate effectively using all methods</i>	<i>D1- Develop skills in communication</i>
➤ <i>D2-Use information technology to improve his/her professional practice</i>	<i>D2- Use information technology to improve professional practice and use different sources of information to obtain data</i>
➤ <i>D3-Practice self appraisal and determines his learning needs</i>	<i>D3- Develop skills in self appraisal and seek continuous learning during preparation of thesis.</i>
➤ <i>D4-Share in determination of standards for evaluation of others (e.g.: subordinates/ trainees etc.)</i>	<i>D4.Develop skills of evaluating different scientific papers based on scientific regulations.</i>
➤ <i>D5-Use different sources of information to obtain data</i>	<i>D5.Use of World Wide Web, digital libraries to obtain required data for research.</i>
➤ <i>D6-Work in teams</i>	<i>D6. Develop a culture of disseminating and sharing information with peers.</i>

➤ <i>D7-Manage time effectively</i>	<i>D7. Develop skill in time Management through giving oral presentation and sending required activities before deadline.</i>
➤ <i>D8-Work as team leader in situations comparable to his work level</i>	<i>D8- Election of students for representation in department's council.</i>
➤ <i>D9-Learn independently and seek continuous learning</i>	<i>D9- Use of resources (www, research articles,) other than lecture notes to master his research point during preparation of thesis.</i>

4- curriculum structure and contents

4.a program duration: 3-5 years

4.b program structure:

4.b.i- No. of hours per week in each year/semester:

Semester	Core Courses	Elective Courses
	No. of hours	No. of hours
First semester	13 hrs	-
Second semester	6 hrs	6 hrs
Third semester	2 hrs	3 hrs

4.b.ii- No. of credit hours

Lectures	<input type="text" value="21"/>	Practical	<input type="text" value="9"/>	Thesis	<input type="text" value="8"/>	Total	<input type="text" value="38"/>
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Compulsory	<input type="text" value="21"/>	Elective	<input type="text" value="9"/>	Optional	<input type="text" value="0"/>
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4.b.iii- No. of credit hours of specialized courses

No.	<input type="text" value="30"/>	%	<input type="text" value="100"/>
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4.b.iv- No. of credit hours of other courses

No. % **4.b.v- Program levels (in credit-hours system)**

Student is required to pass at least 12 credit hours with CGPA not less than C+ before submitting a thesis proposal.

5- Program Courses**5.1- Compulsory (21 hrs)**

Code No.	Course Title	No. of credit hours	No. of hours /week	
			Lecture	Practical
1720701	Introductionto Biomedical Engineering	4	3	2
1720702	Bioelectric Phenomena	3	2	2
1720703	Biomedical Sensors.	3	2	2
1720704	Biomedical signal Analysis	3	2	2
1720705	DiagnosticImaging	3	2	2
1720706	Medical instruments ,and devices	3	2	2
1720712	Technical Report Writing and presentationskills	2	2	0
Total		21	15	12

5.2- Elective I (9 hours)

Code No.	Course Title	No. of credit hours	No. of hours /week	
			Lecture	Practical
1720707	prosthesis and Artifitcal Organ	3	2	2
1720708	Physiological Modeling simulation and control	3	2	2
1720709	Clinical Neurophysiology	3	2	2
1720710	Intensive Care Engineering	3	2	2
1720711	Medical Informatics	3	2	2
1720713	Ethical issues associated with the use of Medical Technology	3	2	2
1720714	Design of Experiment	3	2	2
1720717	Security Systems	3	2	2
1720718	Artificial Intelligence and Machine Learning	3	2	2

5.3- Elective II (none)

5.4- Optional – (none)

6- Program admission requirements

Graduate Students with a B.Sc. of engineering or its equivalent.

7- Teaching and Learning Methods

- Lecture
- Practical/Clinical
- Brainstorming
- Discussion Groups
- Problem Solving
- Case Study
- Field Training
- Training Workshops
- Self-Directed Learning
- Project

8- Regulations for progression and program completion

For the progression and completion of the program to obtain the degree of Master *in Biomedical Devices*, the student must

- 1- Complete 30 credit hours with CGPA of at least C+ through courses.
- 2- Complete 8 credit hours with through thesis.
- 3- Submit a thesis validity report by an examination committee approved by the department council and their members include at least two external examiners.

8- Evaluation of Students enrolled in the program.

Tool evaluation	Intended learning outcomes being assessed
Written	ILOs a &b
Practical	ILOs c
Oral	ILOs a ,b &d
Semester Work	ILOs b & d

Evaluation of the Program

Evaluator	Tool	Sample
1- Senior students	questionnaire	50 %
2- Alumni	questionnaire	Representative sample
3- Stakeholders (Employers)	meeting	Representative sample
4- External Evaluator(S) or External Examiner (s)	Reports	Name of evaluator : <i>Prof.Dr/ Nour El Din Ismail</i>
5- Other		

Program coordinator:

Name: Prof. Dr. Ahmad Nashaat

Signature: **Department Head:**

Name: Prof. Dr. Saleh ElShehaby

Signature: **Date of Department Council Approval: 29/8/2023******Program Aims vs ILOs matrix***

PROGRAMME ILOS AIMS	A 1	A 2	A 3	A 4	A 5	A 6	A 7	A 8	B 1	B 2	B 3	B 4	B 5	B 6	B 7	B8	B 9	B 10	B 11
1. Demonstrate a comprehensive understanding of physical principles associated with biomedical engineering.	X			X	X	X			X										
2. Acquire a systematic understanding of physiological/ biomedical measurements and statistics.										X	X		X		X				
3. Recognize the working principles behind the maintenance and management of biomedical instruments and safety procedures in a wide range of biomedical engineering applications.										X		X							
4. Acquire a high level of practical, analytical,		X									X			X		X			

communication and research skills.																			
5. Address the question of how to develop computer models of disease that can be used to understand disease mechanisms.			X																
6. Examine information systems used in clinical practice.							X	X									X	X	
7. Use systematic approaches to design and conduct scientific research.																			X

PROGRAMME ILOS AIMS	C 1	C 2	C 3	C 4	C 5	C 6	C 7	C 8	C 9	C 10	C 11	C 12	C 13	C 14	C 15
1. Demonstrate a comprehensive understanding of physical principles associated with															

biomedical engineering.																
2. Acquire a systematic understanding of physiological/biomedical measurements and statistics.																
3. Recognize the working principles behind the maintenance and management of biomedical instruments and safety procedures in a wide range of biomedical engineering applications.	X	X	X	X	X	X	X									
4. Acquire a high level of practical, analytical, communication and research skills.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
5. Address the question of how to develop computer models of disease that can be used to understand disease mechanisms.								X								
6. Examine information systems used in clinical practice.											X				X	X

7. Use systematic approaches to design and conduct scientific research.																			

PROGRAMME ILOS AIMS	D1	D2	D3	D4	D5	D6	D7	D8	D9	D 10
1. Demonstrate a comprehensive understanding of physical principles associated with biomedical engineering.										
2. Acquire a systematic understanding of physiological/biomedical measurements and statistics.										
3. Recognize the working principles behind the maintenance and management of biomedical instruments and safety procedures in a wide range of biomedical engineering applications.										

4. Acquire a high level of practical, analytical, communication and research skills.	X	X	X	X	X	X	X	X	X	X	X
5. Address the question of how to develop computer models of disease that can be used to understand disease mechanisms.											
6. Examine information systems used in clinical practice.											
7. Use systematic approaches to design and conduct scientific research.											

** Courses vs Program ILOs matrix*

CourseTitle	Code ID	A 1	A 2	A 3	A 4	A 5	A 6	A 7	A 8	B 1	B 2	B 3	B 4	B 5	B 6	B 7	B 8	B 9	B 10	B 11	
Introduction to Biomedical Engineering	1720701	X								X											
Bioelectric Phenomena	1720702						X														
Biomedical sensors	1720703										X										
Biomedical Signal Analysis	1720704											X									

Diagnostic Imaging	1720705																			
Medical Instruments and devices	1720706													X						
Prosthesis and Artificial Organs	1720707	X																		
Physiological Modeling, simulation and control	1720708			X																
Clinical Neurophysiology	1720709					X														
Intensive Care Engineering	1720710															X				
Medical Informatics	1720711								X											
Course Title	Code ID	A 1	A 2	A 3	A 4	A 5	A 6	A 7	A 8	B 1	B 2	B 3	B 4	B 5	B 6	B 7	B 8	B 9	B 10	
Technical Report Writing	1720712		X										X		X					
Ethical Issues Associated with the use of medical technology	1720713				X															
Design of Experiments	1720 714																X			
Security Systems	1720717								X										X	
Artificial intelligence	1720718								X											X

and machine learning																				
Thesis																				X

CourseTitle	Code ID	C 1	C 2	C 3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15
Introduction to Biomedical Engineering	1720701	X														
Bioelectric Phenomena	1720702		X													
Biomedical sensors	1720703			X												
Biomedical Signal Analysis	1720704				X											
Diagnostic Imaging	1720705					X										
Medical Instruments and devices	1720706						X									
Technical Report Writing and presentation skills	1720712															
Course Title	Code ID	C 1	C 2	C 3	C 4	C 5	C 6	C7	C8	C9	C 10	C 11	C 12	C 13	C 14	C 15
Prosthesis and Artificial Organs	1720707							X								
Physiological Modeling, simulation and control	1720708								X							
Clinical Neurophysiology	1720709									X						

Intensive Care Engineering	1720710										X								
Medical Informatics	1720711											X							
Ethical Issues Associated with the use of medical technology	1720713												X						
Design of Experiments	1720714													X					
Security Systems	1720717																	X	
Artificial intelligence and machine learning	1720718																		X

Course Title	Code ID	D 1	D 2	D3	D4	D 5	D6	D7	D8	D9	D 10
Introduction to Biomedical Engineering	1720701	X	X	X							
Bioelectric Phenomena	1720702				X	X					
Biomedical sensors	1720703			X							
Biomedical Signal Analysis	1720704	X	X	X			X	X			
Diagnostic Imaging	1720705		X	X							

Medical Instruments and devices	1720706	X	X	X								
Technical Report Writing and presentation skills	1720712								X			
Prosthesis and Artificial Organs	1720707											
Physiological Modeling, simulation and control	1720708									X		
Clinical Neurophysiology	1720709											
Intensive Care Engineering	1720710											
Course Title	Code ID	D 1	D 2	D3	D4	D 5	D6	D7	D8	D9	D 10	
Medical Informatics	1720711		X									
Ethical Issues Associated with the use of medical technology	1720713			X					X			
Design of Experiments	1720714											X
Security Systems	1720717	X										
Artificial intelligence and machine learning	1720718	X										

Program ILOs versus ARS FOR *Master Degree in Biomedical Devices*

PROGRAMME ILOS	A 1	A 2	A 3	A 4	A 5	A 6	A 7	A 8
ARS								
<i>A1. Describe the functions of several physiological systems in human body.</i>	X							
<i>A2. Recognize different biomedical signals induced from human body.</i>					X	X		
<i>A3. Use of different signal processing techniques on biosignals for enhancing patient diagnosis.</i>								X
<i>A4- Recognize the main advance in the field of biomedical engineering</i>			X					

<i>A5-Recognize the ethical regulations associated with the use of medical devices.</i>				X						
<i>A6-Recognize the quality standards of the practice in the field of biomedical engineering.</i>									X	
<i>A7-Order the research method in details.</i>		X								
<i>A8-Identify intellectual property rights.</i>		X								

PROGRAMME	B 1	B 2	B 3	B 4	B 5	B 6	B 7	B 8	B 9	B 10	B 11
ARS											
<i>B1- Analyze biosignals using signal processing techniques.</i>			X								

B2- Examine dynamic physiological systems using simulation modeling techniques.									X	
B3-Relate different information to solve professional problems through thesis			X	X		X			X	
B4- Write a thesis protocol using a scientific systematic approach to a research problem.									X	X
B5- Examine safety instructions associated with the use of medical devices.				X	X					
B6- Analysis of student questionnaire for professional improvement plan	X									

<i>B7. Comparing different biosensors for capturing bioelectrical signals.</i>		X														
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PROGRAMME ILOS ARS	C 1	C 2	C 3	C 4	C 5	C 6	C 7	C 8	C 9	C 10	C 11	C 12	C 13	C 14	C 15
<i>C1. Practice on different aspects in neurophysiology.</i>									X						
<i>C2. Design physiological models on MATLAB simulink software.</i>								X							
<i>C3. Practice on writing a research protocol.</i>													X		
<i>C4-Apply different various signal processing techniques</i>				X											

for extracting biosignal features.																			
C5. Sketch various medical devices used in operation room or in hospitals.	X		X		X	X	X			X		X							
C6. Practice on using different technical computer programs used in hospital information system construction.											X							X	X
C7. Demonstrate different aspects in bioelectric phenomena.		X																	

PROGRAMME ILOS ARS	D1	D2	D3	D4	D5	D6	D7	D8	D9	D
										10
D1- Develop skills in communication		X								
D2- Use information technology to improve professional practice and use			X							

<i>different sources of information to obtain data</i>										
<i>D3- Develop skills in self appraisal and seek continuous learning during preparation of thesis.</i>			X							
<i>D4. Develop skills of evaluating different scientific papers based on scientific regulations.</i>										
<i>D5. Use of World Wide Web, digital libraries to obtain required data for research.</i>					X					
<i>D6. Develop a culture of disseminating and sharing information with peers.</i>			X							
<i>D7. Develop skill in time Management through giving oral presentation and sending required activities before deadline.</i>	X		X							X
<i>D8- Election of students for representation in department's council.</i>		X								
<i>D9- Use of resources (www, research articles,)</i>			X	X	X	X	X	X	X	X

<p><i>other than lecture notes to master his research point during preparation of thesis.</i></p>										
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Teaching and Learning Methods Vs Courses Matrix

	17207 01	17207 02	17207 03	17207 04	17207 05	17207 06	17207 12	17207 07	17207 08
Lecture	√	√	√	√	√	√	√	√	√
Practical/Clinical	√	√	√	√	√	√		√	√
Brainstorming					√		√	√	
Discussion Groups					√		√		
Problem Solving		√						√	√
Case Study									√

Training Workshops					√		√		
Self-Directed Learning	√	√			√	√	√	√	
e-learning									
Project			√	√			√		√

	1720709	1720710	1720711	1720713	1720714	1720717	1720718
Lecture	√	√	√	√	√	√	√
Practical/Clinical	√	√	√	√	√	√	√
Brainstorming	√				√		
Discussion Groups				√	√		√
Problem Solving					√		
Case Study							
Training Workshops							
Self-Directed Learning	√	√	√	√	√	√	√

e-learning							
Project							

Program Aims vs Graduate Attribute matrix

Generic Graduate Attributes of NAQAAE	Graduate Attributes of Master of Science in <i>Biomedical image processing</i>	Program Aims
	By the end of this program, Graduate of Master of Science in <i>Biomedical image processing</i> , should be able to	
Apply the basics and methodologies of scientific research and using its various tools proficiently.	<ul style="list-style-type: none"> Develop skills of evaluating different scientific papers based on scientific regulations. Order the research method in details. 	<ul style="list-style-type: none"> Use systematic approaches to design and conduct scientific research.
Use the analytical methods in the field of specialty	<ul style="list-style-type: none"> Analyze biosignals using signal processing techniques. 	<ul style="list-style-type: none"> Recognize the working principles behind the

	<ul style="list-style-type: none"> • <i>Examine dynamic physiological systems using simulation modeling techniques.</i> • <i>Comparing different biosensors for capturing bioelectrical signals.</i> 	<p><i>maintenance and management of biomedical instruments and safety procedures in a wide range of medical physics and biomedical engineering applications.</i></p> <ul style="list-style-type: none"> • <i>Acquire a high level of practical, analytical, communication and research skills.</i> • <i>Address the question of how to develop computer models of disease that can be used to understand disease mechanisms.</i> •
<p>Apply specialized knowledge in the field of specialty and integrate it with relevant knowledge in his professional practice.</p>	<ul style="list-style-type: none"> • <i>Apply different various signal processing techniques for extracting biosignal features.</i> • <i>Practice on using different technical computer programs used in hospital information system construction.</i> • <i>Examine effect of using non efficient signal processing techniques for analyzing medical signals on patient diagnosis during preparation of thesis.</i> 	<ul style="list-style-type: none"> • <i>Acquire a systematic understanding of physiological/biomedical measurements and statistics.</i> • <i>Demonstrate a comprehensive understanding of physical principles associated with biomedical engineering.</i>

<p>Demonstrate awareness of current problems and modern visions in the field of specialty</p>	<ul style="list-style-type: none"> • <i>Examine recent scientific papers through thesis</i> • <i>Use information technology to improve professional practice and use different sources of information to obtain data</i> • <i>Develop skills of evaluating different scientific papers based on scientific regulations.</i> 	<ul style="list-style-type: none"> • <i>Recognize the working principles behind the maintenance and management of biomedical instruments and safety procedures in a wide range of medical physics and biomedical engineering applications.</i>
<p>Identify professional problems in the field of specialty and propose solutions to them.</p>	<ul style="list-style-type: none"> • <i>Develop skills in self appraisal and seek continuous learning during preparation of thesis.</i> • <i>Examine recent scientific papers through thesis</i> 	<ul style="list-style-type: none"> • <i>Recognize the working principles behind the maintenance and management of biomedical instruments and safety procedures in a wide range of medical physics and biomedical engineering applications.</i> •
<p>Master an appropriate of professional skills in the field of including use of technology.</p>	<ul style="list-style-type: none"> • <i>Apply different signal processing techniques on digital signals using MATLAB.</i> • <i>Apply physiological models on MATLAB simulink software.</i> 	<ul style="list-style-type: none"> • <i>Address the question of how to develop computer models of disease that can be used to understand disease mechanisms.</i> • <i>Examine information systems used in clinical practice</i> •
<p>Communicate efficiently and lead work teams.</p>	<ul style="list-style-type: none"> • <i>Develop skill in time Management through giving oral presentation and sending required</i> 	<ul style="list-style-type: none"> • <i>Acquire a high level of practical, analytical, communication and research skills.</i>

	<p><i>activities before deadline.</i></p> <ul style="list-style-type: none"> • <i>Develop a culture of disseminating and sharing information with peers.</i> • <i>Election of students for representation in department's council</i> • <i>Develop skills in communication</i> 	
<p>Take Decision in different professional contexts.</p>	<ul style="list-style-type: none"> • <i>Develop skills of evaluating different scientific papers based on scientific regulations.</i> • <i>Examine effect of using non efficient signal processing techniques for analyzing medical signals on patient diagnosis during preparation of thesis.</i> • <i>Compare different information to solve professional problems through thesis</i> 	<ul style="list-style-type: none"> • <i>Address the question of how to develop computer models of disease that can be used to understand disease mechanisms.</i> •
<p>Employ the available resources to achieve the highest benefit and maintain them.</p>	<ul style="list-style-type: none"> • <i>Use of World Wide Web, digital libraries to obtain required data for research.</i> • <i>Use of resources (www, research articles,) other than lecture notes to master his research point during preparation of thesis.</i> 	<ul style="list-style-type: none"> • <i>Acquire a high level of practical, analytical, communication and research skills.</i> • <i>Examine information systems used in clinical practice</i>

<p>Show awareness of his/her role in community development and environmental preservation in light of global and regional changes.</p>	<ul style="list-style-type: none"> • <i>Practice on using different technical computer programs used in hospital information system construction.</i> • <i>Recognize the ethical regulations associated with the use of medical devices.</i> • <i>Examine effect of using non efficient signal processing techniques for analyzing medical signals on patient diagnosis during preparation of thesis.</i> 	<ul style="list-style-type: none"> • <i>Address the question of how to develop computer models of disease that can be used to understand disease mechanisms.</i> • <i>Acquire a systematic understanding of physiological/biomedical measurements and statistics.</i> • <i>Recognize the working principles behind the maintenance and management of biomedical instruments and safety procedures in a wide range of medical physics and biomedical engineering applications</i>
<p>Act in a manner that reflects a commitment to integrity, credibility, professionalism, and accountability.</p>	<ul style="list-style-type: none"> • <i>Develop skills in self appraisal and seek continuous learning during preparation of thesis.</i> • <i>Develop skills of evaluating different scientific papers based on scientific regulations.</i> 	<ul style="list-style-type: none"> • <i>Acquire a high level of practical, analytical, communication and research skills.</i> •
<p>Realize the need for self-development and engaging in continuous learning.</p>	<p><i>Use of resources (www, research articles,) other than lecture notes to master his research point during preparation of thesis.</i></p>	<p><i>Examine information systems used in clinical practice</i></p>