



Program SPECIFICATION FOR Diploma Degree in Biomedical informatics & Medical Statistics

Code: 1721600

University: Alexandria

Faculty: Medical Research Institute

Program Specification

A- Basic information

1- Program title: Biomedical informatics & Medical Statistics

2- Program type: single double multiple

3- Department(s):Biomedical informatics & Medical Statistics

4- Coordinator:Dr. Omaima Gaber

5- External evaluator(s): Prof. Dr. Aly Abdel Halim Hasseb

6- Last date of program specification approval:8/1/2017

B- Professional Information

1- Program aims:

It is designed to help the student to:

- Apply the acquired statistical knowledge to solve common research questions with interpretation of results.
- Differentiate between the epidemiological research designs.
- Acquire the principles of chronic diseases' registration.
- Be competent in basic practical skills for personal computer and internet.
- Implement evidence-based medicine
- Follow the code of ethics in practicing medical research.
- Learn the skills of scientific writing.



- Recognize the basic statistical methods in genetic epidemiology and pharmaco-epidemiology.
- Acquire the basis of bioinformatics.
- Recognize hospital statistics.

2- Intended learning outcomes (ILOs)

a- knowledge and understanding:

a1-**List** different computer components and popular soft-wares

a2-Define and explain theimportance of chronic diseases' registries

a3-Classify different variables, describe themmathematically, graphically, and **recall** the normal distribution and the statistical significance.

a4- Describe different research designs.

a5- **Define** the appropriate statistical test for:groups' comparisons, agreement, and describe the performance of a diagnostic test.

a6- Explain regression analysis, its use and differentiateits types

a7-Define ethical issues in research and publications.

a8- Explain genomics, proteomics and protein structure.

a9- **List** the components of a scientific paper.

a10- **Recall** the scope of epidemiology and different morbidity and mortality statistics.

a11- Explain the objectives of pharmaco-epidemiology and its tools

a12- Define hospital rates.

a13- Explain the principles of evidence-based medicine.

a14- **Discuss** the role of genetic epidemiology and factors affecting the population genetic structure



b- Intellectual skills:

b1-Select the appropriate software tools and functions to do computer tasks.

b2- Distinguish data sources and medical coding used in disease registration.

b3- Select the statistical test of significance for common research problems.

b4- Differentiate between different sampling techniques.

b5- Judge a regression model

b6- Differentiate between ethical and non-ethical issues in journal publications.

b7- Examine genomic and proteomic data and analyze microarray.

b8- Organize ideas for scientific writing.

b9- Analyze epidemiological measures.

b10- Criticize main methodological issues raised by pharmaco-epidemiological studies.

b11- Calculate hospital rates.

b12- Analyze clinical scenarios and formulate health questions

b13- Analyze genetic knowledge to identify factors affecting population genetic structure.

c- professional and practical skills:

c1-Practice using different soft-wares' packages and search through the internet using search engines with transferring files.

c2- Apply coding in chronic diseases' registration.

c3- Use of statistical soft-wares to describe and analyze data with interpretation of the results from data analysis.



- c4- Calculate the required sample size for researches.
- c5- Apply linear regression models using statistical soft-wares with interpretation of the results.
- c6- Practice the assessmentof ethical issues in scientific papers.
- c7- Manipulate data base system in bioinformatics.
- c8- Apply the principles of effective scientific writing.
- c9- Compute disease measures used in epidemiological studies.
- C10- Determine costing of a health service.
- c11- Calculate different hospital rates.
- c12- Apply searching for the evidence
- c13- Compute probabilities in population genetic.

d- General and transferable skills:

- d1- Communicate effectively and work in team
- d2-Use information technology to improve his professional practice
- d3-Learn skills of planning and organization
- d4- Develop skills of critical reading.

3- Academic standards

3a- External references for standards (Benchmarks)

Generic Academic Reference Standards of the National Authority for Quality Assurance and Accreditation of Education (NAQAEE)

Date of Academic Reference standards (ARS) approval by Institute Council: 12/2/2014

3b-Comparison of provision to selected external references



NAQAEE matrix for Diploma

NAQAEE	NARS
A1- Basic facts, theories, of specialty related subjects/fields	A2- Explain the background of genetic epidemiology A4- Explain knowledge of basic computer skills A5- Identify basic facts, theories of principles of medical statistics.
A2- Fundamentals of ethical & legal practice	A7- Identify basic principles of ethics in scientific research.
A3- Quality standards of practice	A6- Identify quality standards in the practice of personal computers and internet.
A4- Effect of specialty practice on environment, including rules for environment conservation	A3- Explain examples of bioinformatics.
B1- Determine, analyze & prioritize problems	B1-Critically analyze problems through utilization of wide range of observational and scientific approach. B3- Differentiate statistical problems effectively B8- Analyze genetic problems and do pedigree analysis. B9- Analyze and evaluate the information to solve problems of regression analysis B12- Analyze and prioritize problems in scientific writing
B2- Solve common problems effectively	B2- Evaluate data and adopt a critical approach to scientific data or



	<p>ideas</p> <p>B5- express the statistical presentation in the appropriate graphs</p> <p>B8- Analyze genetic problems and do pedigree analysis</p> <p>B9- Analyze and evaluate the information to solve problems of regression analysis</p> <p>B11- Analyze, compare medical data using statistical program</p>
<p>B3- Critically appraise researches & articles</p>	<p>B13-Critically appraise scientific articles and researches.in ethics of research and internet</p>
<p>B4-Evaluate Professional risks</p>	<p>B14- Appraise professional risks in introduction to computers and internet</p>
<p>B5- Make decisions to solve professional problems according to available data</p>	<p>B9- Analyze and evaluate the information to solve problems of regression analysis</p>

**5.1- Compulsory(20hours)**

Code No.	Course Title	No. of credit hours	No. of hours /week	
			Lecture	Practical
1721601	Introduction to Personal Computers and the Internet	3	2	2
1721602	Principles of Registration of Chronic Diseases	3	2	2
1721603	Principles of Medical Statistics	4	2	4
1721604	Principles of Medical Research Designs	3	2	2
1721605	Intermediate Medical Statistics	4	2	4
1721606	Regression analysis	3	2	2

5.2- Elective I (22 hours)

Code No.	Course Title	No. of credit hours	No. of hours /week	
			Lecture	Practical
1721607	Ethics in Research and in the Internet	3	2	2
1721608	Introduction to Bioinformatics	2	1	2
1721609	Scientific Writing	3	2	2
1721610	Basic Epidemiology	3	2	2
1721611	Basic pharmaco-epidemiology	3	2	2
1721612	Hospital statistics	3	2	2
1721613	Introduction to Evidence Based Medicine	2	1	2
1721614	Basic genetic epidemiology	3	2	2

5.3- Elective II (none)**5.4- Optional – (none)****6- Program admission requirements**

Graduate students with an M.b.cH. B of medicine, dentistry, B. sc. Pharmacy, veterinary, physiotherapy, and nursing

7- Regulations for progression and program completion



For the progression and completion of the program to obtain the degree of diploma, the student must:

1- Complete 30 CH. credit hours with CGPA of at least C+.

2- 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	Interview	At least 50 %
2- Alumni	Interview	Representative sample
3- Stakeholders (Employers)	Interview	Representative sample
4- External Evaluator(S) or External Examiner (s)	Reports	Name of evaluator or examiner
5- Other		



Dates of Previous editions/revisions:

Editions/Revisions Number	Date
Edition no.1	2009
Edition no. 2	2011
Edition no.3	5/6/2014
Edition no.3, revision no.1	12/2014
Edition no.3, revision no.2	10/2016
Edition no 3, revision no 3	9/ 2017

Program coordinator:

Name: Omaima Gaber

Signature:

Department Head:

Name: Fayek Elkhwesky

Signature:

Date of Department Council Approval: 6/ 9/ 2017

Attach these Matrixes:

****Program Aims vs ILOs matrix***

**** Courses vs Program ILOs matrix***

****ARS vs ILOs matrix***

****Teaching methods vs Course matrix***



Matrix for ILOs of Program of a Diploma in Biomedical informatics& Medical statisticsand its aims

ILOs Aims	A 1	A 2	A 3	A 4	A 5	A 6	A 7	A 8	A 9	A 10	A 11	A 12	A 13	A 14	B 1	B 2	B 3	B 4	B 5	B 6	B 7	C 1	C 2	C 3	C 4	C 5
	1- Apply the acquired statistical knowledge to solve common research questions with interpretation of results.	X				X				X	X	X														
2- Differentiate between the epidemiological research designs.					X				X		X															
3- Acquire the principles of chronic diseases' registration.	X										X			X					X							
4- Learn basic practical skills for personal computer and internet.	X																X									
5- Implement evidence-based medicine.								X	X				X						X							



6-Follow the code of ethics in practicing medical research.																		X						
7-Learn the skills of scientific writing		X				X									X	X				X				X
8-Recognize the basic statistical methods in genetic epidemiology and pharmaco-epidemiology	X				X	X				X	X													
9-Acquire the basis of bioinformatics.					X		X	X	X															
10-Recognize hospital statistics.										X									X					X



Courses- Program ILO matrix

Course title	a1	a2	a3	a4	a5	a6	a7	a8	a9	a10	a11	a12	a13	a14	b1	b2	b3	b4	b5	b6	b7	b8	b9	b10	b11	b12	b13	c1	c2	c3	c4	c5	c6	c7	c8	c9	c10	c11	c12	c13	d1	d2	d3	d4							
Introduction to Personal Computers and the Internet	X														x													x																x	x						
Principles of Registration of Chronic Diseases		x														x													x																		x	x	x	x	
Principles of Medical Statistics			x		x												x													x																		x	x	x	
Principles of Medical Research Designs				x														x													x																	x	x	x	
Intermediate Medical Statistics					x												x													x																		x	x	x	
Regression analysis						x											x		x											x		x																x	x	x	



Teaching methods vs courses matrix

	1721 601	1721 602	1721 603	1721 604	1721 605	1721 606	1721 607	1721 608	1721 609	1721 610	1721 611	1721 612	1721 613	1721 614	1721 620
Lecture	x	x	X	x	x	x	x	x	x	x	x	x	x	x	x
Practical/Clinical	x	x	X	x	x	x	x	x	x	x	x	x	x	x	
Brainstorming			X	x					x			x			
Discussion Groups	x	X			x	x	x	x	x	x	x	x	x	x	x
Problem Solving		X	X	x	x	x			x	x		x		x	X
Case Study		X								x		x	x		
Field Training															
Role playing															
Training Workshops															
Self-Directed Learning		X	x	x			x	x	x			x	x	x	
e-learning													x		
Project						x							x		

