كلية الطب
Faculty of Medicine

Doctorate (MD) Program & Courses' Specification of Medical Biochemistry 2022-2023

Program Specifications for Doctorate Degree (MD) in Medical Biochemistry (2022-2023)

University: Minia University.
Faculty(s): Faculty of Medicine
Department: Medical Biochemistry

A- Basic Information
1- Programme title: Doctorate Degree (MD) degree of Medical Biochemistry, **code BC 100**
2- Programme type: Single
3- **Department (s)**: Medical Biochemistry, Microbiology and medical immunology, public health and preventive medicine departments.
4- **Coordinator:**
- Prof. Salama Abdel Reheim
- Prof. Hend Mohmaed AbdelGhany
- Prof. Ahmed Mohamed Okasha
- Prof. Maggie Maher Ramzy
- Ass.Prof. Rasha Fouad

5- **External evaluator (s):**
6- Last date of programme specifications approval: 2022-2023

B- Professional Information
1- Programme aims
The aim of that program is to provide the postgraduate student with the advanced medical knowledge and skills essential for the mastery of practice of specialty and necessary to provide further training and practice in the field of Medical Biochemistry and Molecular Biology

Graduate of Medical Doctorate Degree (MD) in Medical Biochemistry, should be able to:

I. Understand all molecular basics and diseases.
II. Know different molecular techniques and their advanced applications.
III. Better understand and use the research tools including internet and different laboratory equipments.
IV. Know retrieving the literature and understanding the evidence-based medicine.
V. Improve and develop current methods and create new methods & tools that enable proper diagnosis, early identification as well as prognosis.

VI. Use efficiently recent technologies to improve the various aspects of professional practice.

VII. Demonstrate leadership competencies and effective communication skills to ensure effective information exchange with other health professionals, colleagues, students, technical staff and patients.

VIII. Master decision making skills in various situations during the professional practice, especially with provided available information.

IX. Employ effectively the available resources & plan to improve them as well as attaining new ones.

X. Demonstrate comprehensive awareness of common public health problems and health policy issues and plan to improve & maintain health care on a system-based strategy.

XI. Show suitable attitudes and professionalism that reflect credibility and obligation to standards of medical practice.

XII. Demonstrate the skills of lifelong learning, professional self-development and continuous medical education as well as educating others.

2 - Intended learning outcomes (ILOs)

a- Knowledge and understanding:

The student finishes the course, he will be able to :

a1. Discuss various metabolic processes of carbohydrate, lipid and protein.

a2. Explain role of minerals and hormones in metabolism.

a3. Define various metabolic diseases and their diagnosis

a4. Explain integration of metabolism.

a5. Identify all molecular basics and diseases.

a6. List different molecular techniques and their applications.

a7. Discuss principles, methodologies, tools and ethics of scientific research.

b- Intellectual skills

By the end of the program the student should be able to:

b1. Interpret the skills for analysis of different diseases to reach a final diagnosis.

b2. Solve problems associated with metabolic diseases.

b3. Integrate metabolic pathways with diseases.

b4. Conduct research studies that add to knowledge.

b5. Formulate scientific papers in the area of Medical Biochemistry and Molecular Biology.

b6. Mange scientific discussion based on scientific evidences and proofs.

b7. Criticize researches related to Medical Biochemistry and Molecular Biology.

b8. Manage efficiently evidence-based discussion.

C- Professional and practical skills

After completing the course, the student should be able to:

C1.Perform Biochemical urine and stool analysis

C2.Perform basic biochemical blood tests

C3.Examine blood group and perform cross matching and compitability tests

C4.Preparing and examining blood films and assessing hemoglobin value in a blood sample

C5. Perform ELISA, spectrophotometry, Realtime PCR,Western blotting to reach diagnosis.

D- General and transferable skills

The course will assist the student to:

d1. Communicate efficiently with his/her colleges.

d2. Use the different tools of technology that help in conveying his/her message.

d3. Work as team leader.

d4. Manage the time appropriately.

1. Program Academic Reference Standards (ARS):

- Faculty of medicine, Minia university adopted the general national academic reference standards provided by the national authority for quality assurance and accreditation of education (NAQAAE) for all postgraduate programs. (Faculty Council Decree No.6854, in its cession No.177 Dated: 18\5\2009). **{Annex 1}.**

2. Then, Faculty of medicine, Minia university has developed the academic standards (ARS) for doctorate (MD) program and approved in faculty council decree No.7528, in its cession No.191 dated: 15\3\2010 and these standards (faculty ARS) have been updated and approved in faculty council No.52\2 dated: 20\2\2023 **{Annex 1}.**

Then Medical Biochemistry department has adopted these standards and developed intended learning outcome (ILOS) for MD program in Medical Biochemistry and the date of program specification 1ˢᵗ approval by department council:13\5\2013 and the last date of program specification approval by department council :5\3\2023 {Annex 2}.

3. Program External References

- Minia faculty of medicine adopted the standards provided by "Accreditation council for graduate Medical Education" (http: acgme.org). (Faculty Council Decree No.7528, in its cession No.191, dated: 15\3\2010).

4- Curriculum Structure and Contents
a- Programme duration: 3.5 years
b- **Number of courses:4 courses**

c- Programme structure:

1st part

Subject	Hours / week		Total No. of hours
	Lectures	**practical**	
*Microbiology and immunology (Molecular biology)	2	2	60
*Use of computer in medicine	2	2	45
*Biostatistics and research methodology	2	2	30

2nd part:

Courses	No. of hours	Lectures	Tutorial/Practical
General Medical Biochemistry and molecular biology	100	96	4

b.i- No. of hours per week: 4 hours / week

Lectures: 4 hrs/w

Lab./ Practical: 2-4 hrs /w

Total hours/week: 6-8 hrs/w

6- Programme admission requirements

General Requirement

1. Candidates should have either:

a. MBBCh Degree from any Egyptian Faculties of Medicine, or

b. Equivalent Degree from Medical Schools abroad approved by the Ministry of Higher Education.

2. Follow postgraduate regulatory rules of Minia University, Faculty of Medicine

Specific Requirements:

1. Candidates graduated from Egyptian Universities should have at least "Good Rank" in their final/cumulative year(s) examination, and grade "Good Rank" in Medical Biochemistry Course too.

2. MSc Degree in Medical Biochemistry.

3. Candidate should know how to speak & write English well.

4. Candidate should have computer skills.

7- Regulations for progression and programme completion

First Year/Level/Semester

Duration of program is (3.5 years), starting from registration till acceptance of the thesis; divided to:

First Part: (≥6 months):

1. Program-related basic science Microbiology and immunology, Use of computer in medicine, Biostatistics and research methodology

2. At least six months after registration should pass before the student can ask for examination in the 1st part.

3. Two sets of exams: 1st in April — 2nd in October.

4. For the student to pass the first part exam, a score of at least 60% in each curriculum is needed.

5. Those who fail in one curriculum need to re-exam it only.

Protocol:
Submitting protocol after 1.5 year of registration for MD.

Second Part: (≥24 months):

1. Program related specialized science Medical Biochemistry and Molecular Biology Courses and ILOs. At least 24 months after passing the 1st part should pass before the student can ask for examination in the 2nd part.

2. Fulfillment of the requirements in each course as described in the template and registered in the log book is a prerequisite for candidates to be assessed and undertake part 1 and part 2 examinations; as following:

Grand round	اجتماع علمى موسع
Training courses	دورات تدريبية
Thesis discussion	حضور مناقشات رسائل
Workshops	حضور ورش عمل
Journal club	ندوة الدوريات الحديثة
Case presentation	تقييم حالة مرضية
Seminars	لقاء علمى موسع
Morbidity and Mortality conference	ندوة تحليل المخاطر المرضية أوالوفاة
Self education program	برنامج التعليم الذاتى

3. Two sets of exams: 1st in April— 2nd in October.

4. At least 60% of the written exam is needed to be admitted to the oral and practical exams.

5. 4 times of oral and practical exams are allowed before the student has to re-attend the written exam.

6. Thesis (24-48 months):

Could start after protocol registration and should be completed, defended and accepted after passing the 2nd part final examination, and after passing of at least 24 months after documentation of the subject of the thesis.

Publishing 2 paper- based thesis: at least 1 international paper in an international journal with (cite score 0.5 or more-has an ISSN) is required to pass this part.

8-Teaching and learning methods

1. Lectures per week throughout the course.
2. Assignments
3. Attending and participating in scientific conferences and workshops to acquire the general and transferable skills needed.
4. Practical lessons, training and demonstration weekly throughout the course.
5. Self-learning activities such as use of internet and multimedia
6. Regular weekly seminars and presentation
7. Thesis discussion.

Additional lectures, adjusting time and place of lectures according to their schedule and capacity.

Matrix between ILOs & Teaching and learning methods

Teaching and learning methods	The assessed ILOs

• **Lectures**	A1, A2, A3, A4, A5, A6, A7, B1, B2, B3, B4, B5, B6 B6 , B7,B8
• **Practical sessions**	C1, C2, C3, C4, C5
• **Self-training activities** • **seminars, presentations and assignments.** • **Training courses & workshops.** • **Thesis discussion.** • **Conference attendance**	D1, D2, D3, D4

٩. Methods of student assessment:

Method of assessment	The assessed ILOs
1. Research (Thesis)	**a.** Knowledge & understanding, **b.** Intellectual skills **c.** Professional & practical skills **d.** General & transferable skills

2. Written Exams: ☐ Short essay ☐ MCQs ☐ Complete ☐ True or false andcorrect the wrong ☐ Problem solving	**a.** Knowledge & understanding **b.** Intellectual skills **c.** Professional skills
3. PracticalExams	**a.** Professional & practical skills
4. Log book	**a.** Knowledge & understanding, **b.** Intellectual skills **c.** Professional & practical skills **d.** General & transferable skills
5. Oral Exams	**a.** knowledge & understanding **b.** Intellectual skills

Matrix between ILOs & Method of student assessment:

Method of assessment	The assessed ILOs
1- Research (Thesis)	A1, A2, A3, A4, A5, A6, A7, B1, B2, B3, B4, B5, B6 , B7, B8, C1, C2, C3, C4, C5, D1, D2, D3, D4.
2- Written Exams: - **Short essay** - **Problem solving** - **MCQ** - **Complete** - **True or False and correct the wrong**	A1, A2, A3, A4, A5, A6, A7, B1, B2, B3, B4, B5, B6, B7, B8

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3- Practical Exams	C1, C2, C3, C4, C5
4- Oral Exams	A1, A2, A3, A4, A5, A6,A7, B1, B2, B3, B4, B5, B6, B7,B8
5- Seminars, presentation, assignments, and logbook assessment	D1, D2, D3, D4

Weight of assessement

Course	Written	Oral	practical	total
Microbiology and immunology (Molecular biology)	100	100	100	100
Use of computer in medicine	100	100	100	100
Biostatistics and research methodology	100	100	100	100
Medical biochemistry and Molecular biology	100	100	100	100

8- Evaluation of programe intended learning outcomes

Evaluator Tool Sample

    a. Senior students

    b. Alumni

c. Stakeholders (Employers)

d. External Evaluator(s) (External Examiner(s))

e. Other

Course Coordinators:

Prof. Salama Rabie Abdel Reheim

Prof. Hend Mohmaed Abd elGhany

Prof. Ahmed Mohamed Okasha

Prof. Maggie Maher Ramzy

Ass.Prof. Rasha Fouad

Dr. Samar Hisham

Head of Department: Prof.Dr / Salama Rabie Abd el Reheim

Date of approval of the last update: 5 /   3 / 2023

Annex (1): Comparison between General Academic Reference Standards (GARS) and Faculty Academic Reference Standards (ARS)

برامج الد كتوراه NAQAAE	Faculty Doctorate (MD) Program
1. مواصفات الخريج: **خريج برنامج الدكتوراه في أي تخصص يجب أن يكون قادرا على:**	**1. Graduate attributes:** Graduate of doctorate (MD) program in any specialty should be able to:
1.1. إتقان أساسيات ومنهجيات البحث العلمي.	1.1. Mastery of basic research skills and types of study design.
1.2. العمل المستمر علي الإضافة للمعارف في مجال التخصص.	1.2. Contribute to development, application, and translation of new medical knowledge in his scholarly field through research.
1.3. تطبيق المنهج التحليلي والناقد للمعارف في مجال التخصص والمجالات ذات العلاقة.	1.3. use analytical and critical skills in observing, collecting and interpreting data.
1.4. دمج المعارف المتخصصة مع المعارف ذات العلاقة مستنبطا ومطورا للعلاقات البينية بينها.	1.4. Integrate biomedical sciences with clinical information to explore scientific basis of medical practice for improvement of management of diseases.
1.5. إظهار وعيا عميقا بالمشاكل الجارية والنظريات الحديثة في مجال التخصص.	1.5. Demonstrate an awareness of current health problems and recent theories in his scholarly field

1.6. تحديد المشكلات المهنية و إيجاد حلولا مبتكرة لحلها.	1.6. Identify and create solutions for occupational problems and medical malpractice conditions.
1.7. إتقان نطاقا واسعا من المهارات المهنية في مجال التخصص	1.7. perform a wide range of professional skills in his scholarly field.

1.8. التوجه نحو تطوير طرق و أدوات و أساليب جديدة للمزاولة المهنية.	1.8. Develop and improve new methods and approaches in the professional medical practice of the specific field.
1.9. استخدام الوسائل التكنولوجية المناسبة بما يخدم ممارسته المهنية	1.9. Use information technology to improve his professional medical practice including online medical information manage information and researches.
1.10. التواصل بفاعلية وقيادة فريق عمل في سياقات مهنية مختلفة.	1.10. communicate effectively as a member or leader of health care group or other professional group and gain leadership skills.
1.11. اتخاذ القرار في ظل المعلومات المتاحة.	1.11. Make informed decisions based on available data (e.g. patient information, up to date scientific evidence and clinical judgement).
1.12. توظيف الموارد المتاحة بكفاءة وتنميتها والعمل على إيجاد موارد جديدة .	1.12. Effective management, development & improvement of available resources and have the competency to get new resources.
1.13. الوعي بدوره في تنمية المجتمع و الحفاظ على البيئة.	1.13. Be aware of his community needs related to his field and have the ability to improve & maintain health care and carryout system-based improvement.
1.14. التصرف ب ما يعكس الالتزام بالنزاهة والمصداقية وقواعد المهنة.	1.14. Demonstrate ethical behavior, moral reasoning, honesty, integrity, dependability, and commitment to service and health equity.
1.15. الالتزام بالتنمية الذاتية المستمرة ونقل علمه و خبراته للآخرين.	1.15. Critically reflect on one's own performance to set learning and improving goals and sharing his knowledge.

2. Faculty Academic Reference Standards (ARS) for MD Program	**2. المعايير القياسية العامة:** **NAQAAE General Academic Reference Standards "GARS" for MD Programs**
2.1. Knowledge and understanding: Upon completion of the doctorate Program (MD), the graduate should have sufficient knowledge and understanding of:	**1.2. المعرفة والفهم:** **بانتهاء دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا علي الفهم والدراية بكل من:**
2.1.1. Theories, basics and updated knowledge in his scholarly field and related basic sciences.	1.1.2. النظريات والأساسيات والحديث من المعارف في مجال التخصص والمجالات ذات العلاقة
2.1.2. Basic, methods and ethics of medical research.	2.1.2. أساسيات ومنهجيات وأخلاقيات البحث العلمي وأدواته المختلفة
2.1. 3. Ethical and medicolegal principles of medical practice.	3.1.2. المبادئ الأخلاقية والقانونية للممارسة المهنية في مجال التخصص
2.1. 4. Identify Principles and fundamental of quality in professional medical practice.	4.1.2. مبادئ وأساسيات الجودة في الممارسة المهنية في مجال التخصص
2.1.5. Knowledge related to effects of professional practice on public health and methods of maintenance and system-based improvement of public health.	5.1.2. المعارف المتعلقة بآثار ممارسته المهنية على البيئة وطرق تنمية البيئة وصيانتها
2.2. Intellectual skills: Upon completion of the doctorate program (MD), the graduate must be able to:	**2.2. المهارات الذهنية:** **بانتهاء دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:**

2.2.1.تحليل وتقييم المعلومات في مجال التخصص والقياس عليها والاستنباط منها	2.2.1 Analysis and evaluation of information to correlate and deduce from it.
2.2.2. حل المشاكل المتخصصة استنادا على المعطيات المتاحة	2.2.2. Problem solving skills based on analysis of available data for common health problems related to his scholarly field.
2.2.3. إجراء دراسات بحثية تضيف إلى المعارف	2.2.3. Carryout research projects related to his scholarly field.
2.2.4. صياغة أوراق علمية	2.2.4. Write and publish scientific papers.
2.2.5. تقييم المخاطر في الممارسات المهنية	2.2.5. Assess risk in professional medical practice.
2.2.6. التخطيط لتطوير الأداء في مجال التخصص	2.2.6. Establish goals, commitments and strategies for improved productivity and performance.
2.2.7. اتخاذ القرارات المهنية في سياقات مهنية مختلفة	2.2.7. Making professional decisions in different professional contexts.
2.2.8. الابتكار/ الإبداع	2.2.8. Demonstrate intellectual curiosity necessary for scientific discovery and innovation through active participation in research.
2.2.9. الحوار والنقاش المبني على البراهين والأدلة	2.2.9. Using Evidence-based strategies to during discussion or teaching others.
2.3. مهارات المهنية: **بانتهاء دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:**	**2.3. Professional skills:** Upon completion of the doctorate program (MD), the graduate must be able to:
2.3.1. إتقان المهارات المهنية الأساسية والحديثة في مجال التخصص	2.3.1. Master the basic as well as modern professional practical and/or clinical skills.

2.3.2. Write and evaluate professional reports.	2.3.2 . كتابة وتقييم التقارير المهنية
2.3.3. Evaluate and improve the methods and tools in the specific field	2.3.3 . تقييم وتطوير الطرق والأدوات القائمة في مجال التخصص
2.3.4. use of technological means to serve Professional practice	2.3.4. استخدام الوسائل التكنولوجية بما يخدم الممارسة المهنية
2.3.5. Planning for the development of professional practice and improve of the performance of others	2.3.5. التخطيط لتطوير الممارسة المهنية وتنمية أداء الآخرين.
2.4. General and transferable skills Upon completion of the doctorate program (MD), the graduate must be able to:	**2.4. المهارات العامة والمنتقلة:** **بانتهاء دراسة برنامج الدكتوراه يجب أن يكون الخريج قادرا على:**
2.4.1. Communicate (in writing and orally) effectively and respectfully with peers, faculty, colleagues, and other members of the health care team, understanding the role of consultations and referrals.	2.4.1. التواصل الفعال بأنواعه المختلفة
2.4.2. Use of information technology to serve Professional Practice Development.	2.4.2. استخدام تكنولوجيا المعلومات ب ما يخدم تطوير الممارسة المهنية
2.4.3. Demonstrate effective teaching and evaluating others.	2.4.3. تعليم الآخرين وتقييم أداءهم
2.4.4. Self-assessment and continuous learning.	2.4.4. التقييم الذاتي والتعلم المستمر.

2.4.5. use physical information resources (print, analog), online (electronic, digital,) text, audio-video, book and journal to address medical questions and knowledge to sustain professional growth	2.4.5. استخدام المصادر المختلفة للحصول على المعلومات والمعارف.
2.4.6. Work as a member in larger teams and as well as a team leader knows how to develop "teaming strategy" to plan how people will act and work together.	2.4.6. العمل في فريق وقيادة فرق العمل
2.4.7. Manage of scientific meetings and the ability to manage Time effectively.	2.4.7. إدارة اللقاءات العلمية والقدرة علي إدارة الوقت

Annex (2): ARS VS. MD PROGRAM of Medical Biochemistry and molecular biology

MD Program of Biochemistry and molecular biology	2. Faculty Academic Reference Standards (ARS) for MD Program
2.1. Knowledge and Understanding Upon completion of the doctorate Program (MD) in Biochemistry and molecular biology, the graduate should be able to	2.1. Knowledge and understanding: Upon completion of the doctorate Program (MD), the graduate should have sufficient knowledge and understanding of:
A4. Explain integration of metabolism. A5 Identify all molecular basics and diseases.	2.1.1. Theories, basics and updated knowledge in his scholarly field and related basic sciences.
A7Discuss principles, methodologies, tools and ethics of scientific research	2.1.2. Basic, methods and ethics of medical research.
A6. List different molecular techniques and their applications.	2.1. 3. Ethical and medicolegal principles of medical practice.
A3. Define various metabolic diseases and their diagnosis	2.1. 4. Identify Principles and fundamental of quality in professional medical practice.
A7. Discuss principles, methodologies, tools and ethics of scientific research.	2.1.5. Knowledge related to effects of professional practice on public health and methods of maintenance and system-based improvement of public health.
2.2 Intellectual skills by the end of the program the student should be able to:	2.2. Intellectual skills: Upon completion of the doctorate program (MD), the graduate must be able to:

b2. Solve problems associated with metabolic diseases.	2.2.1 Analysis and evaluation of information to correlate and deduce from it.
b2. Solve problems associated with metabolic diseases.	2.2.2. Problem solving skills based on analysis of available data for common health problems related to his scholarly field.
b4. Conduct research studies that add to knowledge.	2.2.3. Carryout research projects related to his scholarly field.
b5. Formulate scientific papers in the area of Medical Biochemistry and Molecular Biology.	2.2.4. Write and publish scientific papers.
b2. Solve problems associated with metabolic diseases.	2.2.5. Assess risk in professional medical practice.
b1. Interpret the skills for analysis of different diseases to reach a final diagnosis.	2.2.6. Establish goals, commitments and strategies for improved productivity and performance.
b4. Conduct research studies that add to knowledge.	2.2.7. Making professional decisions in different professional contexts.
b7. Criticize researches related to Medical Biochemistry and Molecular Biology.	2.2.8. Demonstrate intellectual curiosity necessary for scientific discovery and innovation through active participation in research.

b8. Manage efficiently evidence-based discussion	2.2.9. Using Evidence-based strategies to during discussion or teaching others.
2.3 Professional and practical skills After completing the program, the student should be able to:	**2.3. Professional skills:** Upon completion of the doctorate program (MD), the graduate must be able to:
C2. Perform basic biochemical blood tests	2.3.1. Master the basic as well as modern professional practical and/or clinical skills.
C1. Perform Biochemical urine and stool analysis C2.Perform basic biochemical blood tests	2.3.2. Write and evaluate professional reports.
C5. Perform ELISA, spectrophotometry, Realtime PCR, Western blotting to reach diagnosis.	2.3.3. Evaluate and improve the methods and tools in the specific field
C4. Preparing and examining blood films and assessing hemoglobin value in a blood sample C5. Perform ELISA , spectrophotometry, Realtime PCR ,Western blotting to reach diagnosis.	2.3.4. use of technological means to serve Professional practice
C5. Perform ELISA, spectrophotometry, Realtime PCR, Western blotting to reach diagnosis.	2.3.5. Planning for the development of professional practice and improve of the performance of others

2.4. **General and transferable skills** Upon completion of the doctorate program (MD), the graduate must be able to:	2.4. **General and transferable skills** Upon completion of the doctorate program (MD), the graduate must be able to:
d1. Communicate efficiently with his/her colleges.	2.4.1. Communicate (in writing and orally) effectively and respectfully with peers, faculty, colleagues, and other members of the health care team, understanding the role of consultations and referrals.
d2. Use the different tools of technology that help in conveying his/her message.	2.4.2. Use of information technology to serve Professional Practice Development.
d1. Communicate efficiently with his/her colleges.	2.4.3. Demonstrate effective teaching and evaluating others.
d3. Work as team leader. d4. Manage the time appropriately.	2.4.4. Self-assessment and continuous learning.
d2. Use the different tools of technology that help in conveying his/her message.	2.4.5. use physical information resources (print, analog), online (electronic, digital,) text, audio-video, book and journal to address medical questions and knowledge to sustain professional growth

d3. Work as team leader.	2.4.6. Work as a member in larger teams and as well as a team leader knows how to develop "teaming strategy" to plan how people will act and work together.
d4. Manage the time appropriately.	2.4.7. Manage of scientific meetings and the ability to manage Time effectively.

Annex (3): Courses

Course specification of:

"*Medical Statistics and Research Methodology*"
In MD degree

University: Minia

Faculty: Medicine

Department offering the course: Public health and preventive medicine department

Department offering the programme: Medical Biochemistry

Programme(s) on which the course is given: First part MD for Medical Biochemistry program

Academic year/ Level: First part of MD

1. Course Information		
Academic Year/level: **First part MD**	Course Title: **Medical Statistics and Research Methodology**	Code:
Number of teaching hours: - **Lectures:** 30 hours - **Practical/clinical:** 15 hours - **Total:** 45 hours		
2. Overall Aims of the course	*By the end of the course the student must be able to:* 1. Gain skills necessary for proper practice in the field of Research Methods including diagnostic, problem solving and decision-making skills. 2. Apply ethical principles of scientific research with good awareness about patient´s rights. 3. Use precisely the research methodology in researches	

	4. Influence the students to adopt an analytical thinking for evidence-based medicine
	5. Enable graduate students to use statistical principles to improve their professional work and develop the concept of critical interpretation of data
	6. To use precisely computer programs SPSS, Epi Info and Excel in data analysis

3. Intended learning outcomes of course (ILOs):
Upon completion of the course, the student should be able to:

A. Knowledge and understanding	A.1. Define terms of research methodology .
	A.2. Describe the spectrum of research methodology .
	A.3. Explain tie strategies and design of research .
	A.4. Describe the study design, uses, and limitations .
	A.5. Explain evidence-based Medicine
	A.6. Define causation and association .
	A.7. Tell the principles and fundamentals of ethics.
	A.8. Describe the different sampling strategies
	A.9. Summarize the advantages and disadvantages of different sampling strategies
	A.10. Summarize different methods of samples size calculation
	A.11. Recognize the sources and the recent methods in data collection and analysis.
	A.12. Identify the types of variables
	A.13. Identify types of tabular and graphic presentation of data
	A.14. Describe the normal curves and its uses
	A.15. Identify the characters of normal distribution curve
	A.16. Identify measures of central tendency and measures of dispersion
	A.17. Explain regression analysis, its use and differentiate its types

	A.18. Define the screening tests pertinent to selected diseases and the at-risk approach in the application of screening tests
	A.19. Explain the usefulness of screening tests
B. Intellectual Skills	B.l. Apply research methods to different community health problems.
	B.2. Apply appropriate research strategies for use .
	B.3. Select appropriate research methods .
	B.4. Teach and advocate appropriately in the research design.
	B.5. Describe the normal curves
	B.6. Describe and summarize data
	B.7. Select the proper test of significance for a specific data.
	B.8. Interpret selected tests of significance and the inferences obtained from such tests
C. Professional and Practical Skills	C.1. Plan a research proposal for community diagnosis.
	C.2. Design questionnaires.
	C.3. Conduct research.
	C.4. Judge association and causation.
	C.5. Criticize for bias and confounding factors
	C.6. Design data entry file
	C.7. Validate data entry
	C.8. Manage data files
	C.9. Construct tables and graphs
	C.10. Calculate different samples sizes
	C.11. Calculate measures of central tendency and measures of dispersion
	C.12. Calculate sensitivity, specificity, and predictive values
D. General and transferable Skills	D.l. Lead a research team to conduct a specific study .
	D.2. Take part and work coherently with his associates to in research.
	D.3. Write scientific papers.
	D.4. Appraise scientific evidence
	D.5. Analyze and interpret data

	D.6. Use standard computer programs for statistical analysis effectively			

4. Course Contents

Topic	No. of hours	Lecture	Tutorial/ Practical
Research methods			
Introduction : - Introduction to research. - Terminology and Rationale - Originality		3	
- Study design : -Cross sectional study and the prevalence rate -Cohort study, incidence rate, relative & attributable risk -Case-control study, Odd's ratio sampling -Experimental study and clinical trials		4	
- Sources of Errors in Medical Research **- Bias and confounding and its Control.**		3	
- Validity and reliability		2	
- The questionnaire design		2	
- Writing the Research Paper or Manuscript **- Protocol Writing**		2	2
- Critic technique for the literature review		2	2
- Association and causation		1	
- Evidence -based approach in medical practice		2	1
- Ethics of medical research		2	
Statistics			
Sampling		1	
Introduction to Sample Size Calculation		1	1
Data presentation		1	1
Tests of significance		2	
Introduction to SPSS		1	1

Proportion test			1
Chi-square test			1
Student T test, Paired T test			1
ANOVA test			1
Correlation (simple and multiple)			1
Regression			1
Screening		1	1
Total		**30**	**15**

5. Teaching and Learning Methods	**Since COVID-19 pandemic, blended learning approach was adopted that mixes virtual face-to-face interaction activities with the online learning. 60% of study method is offline and 40% of study is online** **Online learning materials are available at Minia University site** - Lectures: Face to face lectures, Pre-recorded video lectures - Practical lessons - Assignment - Online quizzes
6. Teaching and Learning Methods for students with limited Capacity	- Outstanding student rewarded certificate of appreciation due to high level of achievement - Limited students divided into small group to make learning more effective
7. Student Assessment	

D. Student Assessment Methods	7.1- **Research assignment:** to assess general transferable skills, intellectual skills.
	
	7.2- **Written exams:**
	
	  • Short essay: to assess knowledge.
	
	  • Commentary: to assess intellectual skills.
	
	7.3- **Practical Exams:** to assess practical skills, intellectual skills.
	
	7.4- **Oral Exams:** Oral exams to assess knowledge and understanding, attitude, communication
	
	7.5- **Structured oral exams:** to assess knowledge.

E. Assessment Schedule (Timing of Each Method of Assessment)	Assessment 1: Final written exam week: 24-28 Assessment 2: Oral exam week: 24-28 Assessment 3: Practical exam week: 24-28
F. Weighting of Each Method of Assessment	- Final Written Examination 100% - Oral Examination 100% - Practical Examination 100% - Total 100%
8- List of References	
A. Course Notes/handouts	- Department notes, lectures and handouts
B. Essential Books	- The Lancet Handbook of Essential Concepts in Clinical Research

C. Recommended Textbooks	*Research methods:*
	- **Introducing Research Methodology**; A Beginner's Guide to Doing a Research Project
	- **Understanding Clinical Research**, Renato Lopes and Robert Harrington; ISBN-10: 0071746781 | ISBN-13: 978-0071746786
	- **Users' guides to the medical literature: a manual for evidence-based clinical practice:** Guyatt, G., D. Rennie, M. Meade and D. Cook (2002), AMA press Chicago.
	- **Research Methods in Community Medicine:** Surveys, Epidemiological Research, Programme Evaluation, Clinical Trials, 6th Edition Joseph Abramson, Z. H. Abramson
	Computer:
	- Discovering statistics using IBM SPSS statistics, Field, A. (2013). sage.
	- Medical Statistics: A Guide to SPSS, Data Analysis and Critical Appraisal, Belinda Barton, Jennifer Peat - 2nd EditionEveritt, Brian S.
	- Medical statistics from A to Z: a guide for clinicians and medical students. Cambridge University Press, 2022.
	- Bowers, David. Medical statistics from scratch: an introduction for health

	professionals. John Wiley & Sons, 2019.
	- Aviva, P. (2005): Medical Statistics at a Glance, Blackwell Company, 2nd , ed., Philadelphia
D. Periodicals, websites	- https://phrp.nihtraining.com/users/login.php - http://www.jhsph.edu/ - Journal of Biomedical Education - https://lagunita.stanford.edu/courses/Medicine/MedStats-SP/SelfPaced/about?fbclid=IwAR3nfirLM4wnuEqqUjLjk8TCR7lzPdnpGqwin06L-GjFq32a62w3j6R5s9c

- o **Course Coordinators:**

  ➢ **Coordinators:**

  Lecturers: Dr / Chrestina Monir, Dr Shaimma Mahmoud

  Head of Department:

  Professor Dr. Nashwa Nabil Kamal

Date of program specifications 1st approval by department council: 13 /5/2013.

Date of last update & approval by department council: 5 / 3 / 2023

جامعة/أكاديمية : المنيا		مسمى المقرر	Medical Statistics and Research Methodology
كلية / معهد: الطب			
قسم: الصحة العامة والطب الوقائي		كود المقرر	CM 100

Matrix of Coverage of Course ILOs By Contents

Contents (List of course topics)	Week No.	Intended Learning Outcomes (ILOs)			
		A. Knowledge & Understanding	B. Intellectual Skills	C. Professional & Practical skills	D. General & Transferable Skills
		A	B	C	D
Introduction : - Introduction to research. - Terminology and Rationale - Originality		A.1, A.2,			
- Study design : -Cross sectional study and the prevalence rate -Cohort study, incidence rate, relative & attributable risk -Case-control study, Odd's ratio sampling -Experimental study and clinical trials		A.3, A.4,	B.l, B.2, B.3, B.4,	C.1,	
- Sources of Errors in Medical Research **- Bias and confounding and its Control.**			B.3,	C.5	
- Validity and reliability					
- The questionnaire design				C.2,	
- Writing the Research Paper or Manuscript **- Protocol Writing**			B.3,	C.3,	D.1, D.2, D.3
- Critic technique for the literature review					
- Association and causation		A.6,		C.4,	
- Evidence -based approach in medical practice		A.5,			

- Ethics of medical research		A.7			
Statistics					
Sampling		A.8, A.9, A.11			D.4
Introduction to Sample Size Calculation		A.10		C.10	D.4
Data presentation		A.13, A.14	B.6	C.9	D.4
Tests of significance		A.15, A16	B.5	C.11	D.4
Introduction to SPSS		A.12	B.6	C.6, C7, C8	D.5, D.6
Proportion test		A.11	B.7, B8		D.5, D.6
Chi-square test		A.11	B.7, B8		D.5, D.6
Student T test, Paired T test		A.11	B.7, B8		D.5, D.6
ANOVA test		A.11	B.7, B8		D.5, D.6
Correlation (simple and multiple)		A.11	B.7, B8		D.5, D.6
Regression		A.17	B.7, B8		D.5, D.6
Screening		A.18, A.19	B.7, B8	C.12	D.4

Matrix of Coverage of Course ILOs by Methods of Teaching & Learning

Methods of Teaching & Learning	Intended Learning Outcomes (ILOs)			
	A. Knowledge & Understanding	B. Intellectual Skills	C. Professional & Practical skills	D. General & Transferable Skills
	A	B	C	D
Lecture	A.1, A.2, A.3, A.4, A.5, A.6, A.7, A.8,A9,A10,A11,A12,A13 A.14, A.15, A.16,A17, A.18	B.1, B.2, B.3, B.4, B5,B.6, B.7, B.8		
Practical			C1, C.3, C4, C.5, C.6, C.7, C.8. C.9, C.10, C11,C.12	
Assignment	A.11, A.13, A.18	B.7, B.8	C.2, C.6, C.8, C.9, C.10, C.12	D.1, D.2., D.4, D.5, D.6

Matrix of Coverage of Course ILOs by Methods of Student Assessment

Methods of Assessment	Intended Learning Outcomes (ILOs)			
	A. Knowledge & Understanding	B. Intellectual Skills	C. Professional & Practical skills	D. General & Transferable Skills
	A	B	C	D
Written paper based exam	A.3, A.4, A.5, A.6, A.7, A.8, A.9, A.14, A.15, A16, A18	B.3, B.5,		
Practical exam (Statistical exam)			C.1, C.2, C.5, C.6, C.7,C.8, C.9, C.10, C.11, C.12	
Oral exam	A.10, A11, A.12, A13, A.15, A.16, A.17, A18	B.1, B.2, B.6, B.7, B.8		D.1, D.2, D.5, D.6

Course specification of :

*"*Use of Computer in Medicine*"*
in MD degree

University: Minia

Faculty: Medicine

Department offering the course: Public health and preventive medicine department

Department offering the programme: Medical Biochemistry

Programme(s) on which the course is given: First part MD for Medical Biochemistry program

Academic year/ Level: First part of MD

1. Course Information		
Academic Year/level: **First part MD**	Course Title: **Use of Computer in Medicine**	Code:

• **Number of teaching hours:**
  - **Lectures:** 20 hours
  - **Practical/clinical:** 10 hours
  - **Total:** 30 hours	

2. Overall Aims of the course	*By the end of the course the student must be able to:* 1. Recognize knowledge about the software and their applications in Medicine 2. Gain skills necessary for using and managing heath care information systems
3. Intended learning outcomes of course (ILOs): *Upon completion of the course, the student should be able to:*	
A. Knowledge and understanding	A.1. Define each part of computer hardware and its function A.2. Have a basic understanding of various computer applications in medicine - for instruction, information managing, and computer based medical record, etc.

	A.3. Define telemedicine and its importance
	A.4. Recognize importance of health information technology in improvement of healthcare
	A.5. Describe electronic medical records and obstacles facing it
	A.6. Identify the concept of big data analysis
B. Intellectual Skills	B.1. Criticize adoption of telemedicine
	B.2. Discover factors constraining adoption of telemedicine
C. Professional and Practical Skills	C.1. Design framework for understanding of health information system performance
D. General and transferable Skills	D.1. Utilize computers in conducting research
	D.2. Appraise adoption of telemedicine
	D.3. Discover skills to carry out the process of improving health information system performance

4. Course Contents

Topic	No. of hours	Lecture	Tutorial/ Practical
Use of Computer in Medicine			
General concepts Introduction to Microsoft PowerPoint	6	4	2
Health Information Systems (HIS)	6	4	2
Telemedicine	6	4	2
Software Used in the Health Care	6	4	2
Big Data Analysis in Health	6	4	2
Total	**30**	**20**	**10**

5. Teaching and Learning Methods	**Since COVID-19 pandemic, blended learning approach was adopted that mixes virtual face-to-face interaction activities with the online learning. 60% of study method is offline and 40% of study is online** **Online learning materials are available at Minia University site** ▪ Lectures: Face to face lectures, Pre-recorded video lectures

	▪ Practical lessons
	▪ Assignment
	▪ Online quizzes
6. Teaching and Learning Methods for students with limited Capacity	• Outstanding student rewarded certificate of appreciation due to high level of achievement • Limited students divided into small group to make learning more effective

7. Student Assessment

A. Student Assessment Methods	7.1- **Research assignment:** to assess general transferable skills, intellectual skills. 7.2- **Written exams:** • Short essay: to assess knowledge. • Commentary: to assess intellectual skills. 7.3- **Practical Exams:** to assess practical skills, intellectual skills. 7.4- **Oral Exams:** Oral exams to assess knowledge and understanding, attitude, communication 7.5- **Structured oral exams:** to assess knowledge.
B. Assessment Schedule (Timing of Each Method of Assessment)	Assessment 1: Final written exam week: 24-28 Assessment 2: Oral exam week: 24-28 Assessment 3: Practical exam week: 24-28
C. Weighting of Each Method of Assessment	Final Written Examination 100% Oral Examination 100% Practical Examination 100% Total 100%

8. List of References

A. Course Notes/handouts	Department notes, lectures and handouts
B. Essential Books	Essential Medical Statistics, Betty R. Kirkwood and J. A. Sterne (2000), 2nd edition
C. Recommended Textbooks	Data Management and Analytics for Medicine and Healthcare: Begoli, Edmon, Fusheng Wang, and Gang Luo. Springer, 2017.

D. Periodicals, websites	- National Institutes of Health: http://www.nih.gov - American Medical Informatics Association: http://www.amia.org/

- o **Course Coordinators:**

  - ➢ **Coordinators:**

    1) **Lecturers:** Dr / Shaimma Mahmoud, Dr/ Chrestina Monir
- o **Head of Department**:

    Professor Dr. Nashwa Nabil Kamal

Date of <u>last update</u> & approval by <u>department council</u>:   5/ 3 / 2023

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نموذج رقم (١١)

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أكاديمية: المنيا/جامعة

معهد: الطب / كلية

الوقائي قسم: الصحة العامة والطب

</div>

Use of Computer in Medicine	مسمى المقرر
CM 100	كود المقرر

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Matrix of Coverage of Course ILOs By Contents

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Contents (List of course topics)	Week No.	Intended Learning Outcomes (ILOs)			
		A. Knowledge & Understanding	B. Intellectual Skills	C. Professional & Practical skills	D. General & Transferable Skills
		A	**B**	**C**	**D**
Use of Computer in Medicine					
General concepts Introduction to Microsoft PowerPoint		A.1, A.2,			D.1
Health Information Systems (HIS)		A.4, A.5		C1	D.3
Telemedicine		A.3	B.1, .2		D.2
Software Used in the Health Care		A.5, A.6			D.1
Big Data Analysis in Health		A.6			

Faculty of Medicine, Minia University: MD Program of Biochemistry

Matrix of Coverage of Course ILOs by Methods of Teaching & Learning

Methods of Teaching & Learning	Intended Learning Outcomes (ILOs)			
	A. Knowledge & Understanding	B. Intellectual Skills	C. Professional & Practical skills	D. General & Transferable Skills
	A	B	C	D
Lecture	A.1 to A.6	B.1,		
Practical			C1	
Assignment	A.4	B.2		D1.D.2,D3

Matrix of Coverage of Course ILOs by Methods of Assessment

Methods of Assessment	Intended Learning Outcomes (ILOs)			
	A. Knowledge & Understanding	B. Intellectual Skills	C. Professional & Practical skills	D. General & Transferable Skills
	A	B	C	D
Written paper based exam	A.1, to A.6	B.1		
Practical computer exam (For SPSS, PowerPoint)			C1	D.1
Oral Exam	A.4, A..6	B.2	C.1	D.2, D.3

Test blueprint for Research methodology course, 1st part MD Biochemistry

Topic	Hour	% of topic	Total No. of items	Written exam (100 marks)		Marks (percentages)	Modified marks (Percentages)
				Knowledge	Intellectual		
Research							
Introduction: - Introduction to research. - Terminology and Rationale - Originality	3	10%	5	4	1	7%	5%
- Study design	4	13.3%	8	3	5	17%	17%
- Sources of Errors in Medical Research - Bias and confounding and its Control.	3	10%	4	2	2	13%	10%
- Validity and reliability	2	6.67%	3	2	1	7%	5%
- The questionnaire design	2	6.67%	3	1	2	5%	5%
- Writing the Research Paper or Manuscript - Protocol Writing	2	6.67%	4	1	3	13%	10%
- Critic technique for the literature review	2	6.67%	2	1	1	7%	5%
- Association and causation	1	3.33%	3	2	1	7%	8%
- Evidence -based approach in medical practice	2	6.67%	1	1		3%	5%
- Ethics of medical research	2	6.67%	2	2		3%	6%
Statistics							
Sampling	1	3.33%	2	1	1	4%	4%
Introduction to Sample Size Calculation	1	3.33%	1	1		2%	2%
Data presentation	1	3.33%	3	2	1	5%	4%
Tests of significance	2	6.67%	2	1	1	8%	8%
Introduction to SPSS	1	3.33%	1	1		3%	3%
Screening	1	3.33%	2	1	1	3%	3%
Total	**30**	**100%**					**100%**

Test blueprint for Uses of computer in Medicine course, 1st part MD Biochemistry

Topic	Hour	% of topic	Total No. of items	Written exam (100 marks)		Marks (Percentages)	Modified marks (Percentages)
				Knowledge	Intellectual		
Use of Computer in Medicine							
General concepts Introduction to Microsoft PowerPoint	4	20%	6	4	2	30%	30%
Health Information Systems (HIS)	4	20%	4	4		20%	15%
Telemedicine	4	20%	6	2	4	25%	30%
Software Used in the Health Care	4	20%	5	4	1	20%	15%
Big Data Analysis in Health	4	20%	1	1		5%	10%
Total	20	100%	20			100%	100%

Course Specifications of Molecular biology (Microbiology and Immunology)

Faculty of Medicine, Minia University: MD Program of Biochemistry

A- Basic Information

Program on which the course is given: MD degree in Medical Biochemistry.

Major or minor element of program: Minor.

Department offering the program: MD degree in Medical Biochemistry.

Department offering the course: Medical Microbiology and Immunology department

Academic year / Level: first part

Code: BC 100

Number of teaching hours:
- **Lectures:** 30 hours
- **Practical/clinical:** 30 hours

     Total: 60 hours

Date of specification approval:

Course Coordinator: Assoc. Prof / Wedad Mahmoud

-Internal evaluators: Prof. Mahmoud Shoukry

                   Prof. Wafaa Khiry Mohamed

 -External evaluator: Prof. Mohamed Elfeqy

B- Professional Information

1) Aim of the course:
a) To enable students to understand the structure of nucleic acids.
b) To enable the student to describe the biological membrane, the role of free nucleotides in signal transduction control, and macromolecules involved in transmission information from gene expression to the formation of functioning proteins.
c) To familiarize the students with basic principles of Molecular biology and protein synthesis.
d) To enable the student to be familiar with molecular Biology Techniques and their clinical implications.

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2) INTENDED LEARNING OUTCOMES (ILOs):

a. Knowledge and Understanding:

By the end of the course, students should be able to:

A1- Describe the chemistry of nucleotides and nucleic acids.

A2- Explain the processes of replication, transcription and translation.

A3- Describe recombinant DNA biotechniques.

A4- Describe Different Sequencing techniques

A5-Describe applications of proteomics and genomics

A6- Memorize the facts and principles of the other relevant basic and clinically supportive sciencesas Medical Biochemistry related to:
- The structure and regulation of DNA &genome
- Transcription, translation and Proteinsynthesis
- Mutation & DNA repair -DNA transferRegulation of gene expression
- Genetic engineering and its applications

A7- State update and evidence based Knowledgerelated to the course:
- The structure and regulation of DNA &genome
- Transcription, translation and Proteinsynthesis
- Mutation & DNA repair
- DNA transfer
- Regulation of gene expression.
- DNA amplification.
- Detection of genes (Nucleic acid hybridizationand Microarray).
- Typing of organisms.

b. Intellectual Skills:

By the end of the course, students should be able to:

B1- Appraise electrophoresis bands and comment on them.

B2- Interpret the photographs of electrophoresis run of Polymerase chain reaction (PCR) products.

Faculty of Medicine, Minia University: MD Program of Biochemistry

B3- Apply the basic and clinically supportive sciences as Medical Biochemistry which are appropriate to Molecular Microbiology related conditions / problem / topics

B4- Plan for quality improvement in the field of medicaleducation and professional practice in Molecular Microbiology.

B5- Design / present case, seminars in common problem related to

- Regulation of DNA & genome
- Transcription, translation and Protein synthesis
- Mutation & DNA repair
- -DNA transfer
- Regulation of gene expression.
- DNA amplification.
- Detection of genes (Nucleic acid hybridization andMicroarray).
- Typing of organisms.

C. Practical Skills:

C1. Perform the following basic lab skills essential tothe course:
   - DNA extraction.
   - Design a primer and adjusting PCR conditions.
   - Blast sequence
   - PCR experiment
   - Gel electrophoresis
   - Probe amplification.

C2. Perform the following advanced lab skills essential to the course:
   - Different types of PCR.
   - Solid phase nucleic acid hybridization.
   - Microarray.
   - Nucleic acid hybridization.

C3. Practice the following noninvasive procedures/experiment:
   -Different types of PCR.
   -Solid phase nucleic acid hybridization.
   -Microarray.
   -Nucleic acid hybridization.
    -Sequencing and mapping

C4. Apply information technology to support decisions incommon situations related to Molecular Microbiology as how to design a primer, adjusting PCR conditions, blast sequence, gel documentation
and analysis.

C5. Write and evaluate competently all forms of professional reports related to Molecular Microbiology (lab reports, experiments reports

D. General and Transferable Skills:

D1- Present information clearly in written, electronic and verbal forms during preparation of seminars.

D2- Communicate ideas and arguments effectively.

D3-Manage time and resources effectively and set priorities.

D4- Apply knowledge of study designs andstatistical methods to the appraisal of clinical studies

D5- Use information technology to manageinformation, access on-line medical information; and support their own education

D6- Work effectively in different health caredelivery settings and systems.

3) COURSE CONTENTS:

4.

Topic	No. Hours	Lecture	Tutorial/Practical
1-Nucleic acid structure.	2	2	
2- Replication, Transcription and Translation.	4	4	
3- Transcription and Translation differences between eukaryotes and prokaryotes.	2	2	2
4- Regulation of gene expression in eukaryotes and in prokaryotes	6	4	2
5- Nucleic acid amplification techniques.	10	4	6
6- DNA sequencing.	8	2	4
7- Proteomics and Genomics.	8	4	4
8- Regulatory RNA (microRNA and siRNA) .	8	4	4
9- Molecular Biology Techniques	12	4	8

Matrix of Coverage of Course ILOs By Contents

	Covered ILOs

Topic	Knowledge	Intellectual	Practical skill	General Skills
1-Nucleic acid structure.	A1,5,6,7	B3,5	-	D1,2,3
2- Replication, Transcription and Translation.	A1,2.6,7	B3,4,5	C1,3	D2.3.4
3- Transcription and Translation differences between eukaryotes and prokaryotes.	A1.2.6,7	B2,3,5	C1,3	D3.4
4- Regulation of gene expression in eukaryotes and in prokaryotes	A2.6,7	B1,2,3,4	C 3,4,5	D1.2.3
5- Nucleic acid amplification techniques.	A3,5,7	B1,2,3,5	C1,3,5	D2.4,6
6- DNA sequencing.	A4,6,7	B1,2,3,5	C2,3,5	D1,2,3.4.5,6
7- Proteomics and Genomics.	A5,6,7	B3.4.5	C1, 3,4,5	D3,4,5
8- Regulatory RNA (microRNA and siRNA) .	A1,2, 6,7	B3,4,5	C1,2,3,4	D2,3.4.5
9- Molecular Biology Techniques	A1,2,3,4,5,6,7	B1,2,34,5	C1,2,3,4,5	D1,2,3,4.5,6

5. Course Methods of teaching/learning AND MATRIX:

1- Lectures for knowledge and intellectual skill outcomes.

2- On line lectures and audios

3- Practical sessions to gain practical skills aided with the practical book.

4-Self-directed learning (SDL) for the topics studied in lectures or related topics; including libraries, E learning (practical photographs and audios of different topics available online for student learning) .

5- Seminars

6- Log book

Methods of Teaching & Learning	Intended Learning Outcomes (ILOs)			
	A. Knowledge & Understanding	B. Intellectual Skills	C. Practical skills	D. General & Transferable Skills
	A	B	C	D
Lecture	A.1, A.2, A.3, A.4, A.5, A.6, A.7	B1,2,3, 4,5		
Practical		B.1,B.2, B.3, B.4, B.5	C1,2,3,4,5	D1,.2, D.4, D.5,6
Self-directed learning	A.1,2,3, A.4, A.5,6,7	B.1, B.2, B.3, B.4, B.5	C,4,5	D.1, D.2.3, D.4, D.5,6
Seminars	A.1,2,3, A.4, A.5,6,7	B.1,2, B.3, B.4, B.5	C4,5	D.1, D.2.,3 D.4, D.5, 6
Logbook	A.1,2,3, A.4, A.5,6,7	B.1,2, B.3, B.4, B.5	C4,5	D.1, D.2.,3 D.4, D.5, 6

6) Student Assessment Methods AND MATRIX:

- Written exams: Short essay, MCQ, case study.

- Practical Exams: OSPE.

- Oral Exams

Methods of Assessment	Intended Learning Outcomes (ILOs)			
	A. Knowledge & Understanding	B. Intellectual Skills	C. Professional & Practical skills	D. General & Transferable Skills
	A	B	C	D
Written exam	A1-A7	B1-B5		
Practical exam		B1-B5	C.1 –C.5	D1.-D6
Oral Exams	A1-A7	B1-B5	-	

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Logbook	A1-A7	B1-B5	C.1 -C.5	D1.-D6

Weighting of Assessments:

Final Written Examination 100 **%**

Oral Examination 100 **%**

Practical Examination 100%

Total 100%

7) List of References

Course Notes

Lectures notes prepared by staff members in the department.

Essential Books (Text Books): Molecular biology (Robert F. Weaver) , Techniques in Molecular Biology (D. Tagu, C. Moussard).

8) Facilities Required for Teaching and Learning

7.1- Appropriate teaching accommodation, including laboratory equipments and photographs

Facilities for field work: hospital visits, and library visits

Computers with net connection

Data Show and overhead projectors

Test blueprint for molecular biology course, 1ˢᵗ part MD Biochemistry

Faculty of Medicine, Minia University: MD Program of Biochemistry

Topic	Hour	% of topic	Total No. of items	Written exam (100 marks)		Marks (percentages)	Modified marks (Percentages)
				Knowledge	Intellectual		
1-Nucleic acid structure	2	6.67%	7	5	2	6.67%	7%
2- Replication, Transcription and Translation.	4	13.33%	13	8	5	13.33%	13%
3- Transcription and Translation differences between eukaryotes and prokaryotes.	2	6.67%	7	4	3	6.67%	7%
4- Regulation of gene expression in eukaryotes and in prokaryotes	4	13.33%	13	6	7	13.33%	13%
5- Nucleic acid amplification techniques.	4	13.33%	13	6	7	13.33%	13%
6- DNA sequencing	2	6.67%	7	3	4	6.67%	7%
7- Proteomics and Genomics.	4	13.33%	13	7	6	13.33%	13%
8- Regulatory RNA (microRNA and siRNA) .	4	13.33%	13	8	5	13.33%	13%
9- Molecular Biology Techniques	4	13.33%	14	9	5	13.33%	14%
Total	30	100%					100%

Course Coordinator: **Head of Department:**

Assoc. Prof / Wedad Mahmoud   **Prof Dr /** Wafaa Khairy Mohamed

Faculty of Medicine, Minia University: MD Program of Biochemistry

Course Specifications of Biochemistry 2nd Part of MD Degree in Biochemistry

2022-2023

University: Minia

Faculty: Medicine

Department: Medical Biochemistry

Course data

1- **Course title:** General Biochemistry&Molecular Biology

2- **Specialty**: Medical Biochemistry.

3- **Department delivering the course:** Medical Biochemistry department.

1.	Course Information	
• **Academic Year/level:** Medical Biochemistry MD.	• **Course Title:** Medical Biochemistry.	• **Code: BC 100**
• **Number of teaching hours:** - **Lectures:** Total of hours 96 ; **2** hours/week - **Practical/clinical:** Total of hours : 4		

2. **Overall Aims of thecourse**	*By the end of the course the student must be able to:* 1. To acquire sufficient knowledge in Medical Biochemistry. 2. To prepare highly trained biochemists in biomedical investigations and laboratory fields. 3. Gain sufficient knowledge about various metabolic processes of carbohydrate, lipid and protein, and the role of minerals and hormones in metabolism, and correlate with various metabolic disease. 4. Gain sufficient knowledge about all molecular basics and different molecular techniques with their applications.

3. Intended learning outcomes of course (ILOs):
Upon completion of the course, the student should be able to:

A- Knowledge and Understanding	**Unit I: General Medical Biochemistry**
	a1-Describe common clinical conditions related to General Medical Biochemistry
	a2-Mention different types ofcarbohydrates, lipids & proteins
	a3- List Biochemical properties, classification and physiological significance of different types of lipids and their biochemicaland laboratory importance.
	a4- Enumerate Different types of amino acids and their significance withtheir genetic and metabolic relevance.
	a5- Discuss Mode of action and kinetics of enzymes and their role in diagnosis of diseases.
	a6-Memorize the facts and principles of the other relevant basic and clinically supportive sciences related to general Medical Biochemistry.
	a7-State the impact of common problems related to the field of general Medical Biochemistry on the society and how good practice canimprove these problems.
	Unit 2: Molecular Biology Describe common clinical conditions related to Molecular Biology:
	A1.Describe Solutions preparation, agarose gel electrophoresis, DNA isolation, restriction enzyme analysis, cloning, polymerase chain reaction (PCR) and bioinformatics.
	A2.Identify DNA as the genetic material, nucleotides, nucleic acid chemistry, supercoiling, hybridization.
	A3.Discuss DNA replication: basic mechanism and enzymology, replication strategies, prokaryotic and eukaryoticpolymerases, priming.
	A4.Describe DNA elongation, termination and DNA repair mechanisms.
	A5Identify Gene structure and transcription in prokaryotic and RNA polymerases.
	A6.Explain Eukaryotic transcription: RNA polymerase

	promoters,enhancers and transcriptional factors. A7.Mention RNA processing: capping, splicing and polyadenylation. A8.State Translation: translation initiation, elongation, terminationand genetic codes. A9.Identify DNA cloning: Endonucleases, vectors, DNA library and expression vectors and polymerase chain reaction.
B- Intellectual Skills	**Unit I: General Medical Biochemistry** B1.Correlates the facts of relevant basic and clinically supportive sciences with conditions and diseases ofgenetics, metabolism and oncology. B2-Interpret and present cases, seminars in common problems related to biochemical study. B3. Appraise management plans and alternative decisions in different situations in the field of general Medical Biochemistry. **Unit 2: Molecular Biology** B1. Apply molecular biology which provides a useful point for examining the effect of the research tools. B2. Correlate pathophysiologic principles with general principles common to medical oncology.
C-Professional and Practical Skills	**Unit I: General Medical Biochemistry** C1.Perform some basic lab skills essential to general Medical Biochemistry. C2.Interpret the symptoms and signs and biochemical laboratory findings of vitamins deficiency diseases. C3.Write and evaluate the laboratory reports. C4.apply information technology to support decisions in common situations related to general Medical Biochemistry. C5.Councill and educate students and junior staff in the lab about conditions related to general Medical Biochemistry. C6. Solve health problems with better understanding of the normal structure and function. **Unit 2: Molecular Biology**

	C1.Perform the following basic lab skills related to MolecularBiology as: 1.Basic concepts of recombinants technology. 2.DNA and RNA isolation. 3.Different types of electrophoresis. 4.Polymerase chain reaction and restriction enzymes.
D- General and transferable Skills	D1-Perform practice-based improvement activities using asystematic methodology. D2-Appraises evidence from scientific studies. D3-Perform data management including data entry and analysis. D4- Facilitate learning of junior students and other health care professionals. D5. Maintain ethically sound relationship with others. D6. Elicit information using effective nonverbal, explanatory,questioning and writing skills

4. Course Contents

Topic	Lecture hours/week	Practical/Clinical hours/week	Total No. ofhours hours/week	
1-GENERAL Medical Biochemistry				
Bioenergetics	2	-	2	
Carbohydrate Metabolism	5	-	5	
Lipid metabolism	5	-	5	

Protein metabolism	5	-	5	
Metabolism of Purine & Pyrimidine Nucleotides	3	-	3	
Integration of metabolism	3	-	3	
Vitamins & Minerals	4	-	4	
Medical Biochemistry Of Extracellular & Intracellular Communication. • Membranes: Structure & Function • Hormone : Action & Signal Transduction	3	-	3	
Enzymes :kinetics , mechanism , Regulation &bioinformatics	4	-	4	

Metabolism of Xenobiotics	2	-	2
Structures & Functions Of Proteins & Enzymes ➢ Amino Acids & Peptides ➢ Proteins: Determination of Primary Structure & Higher Orders of Structure ➢ Myoglobin & Hemoglobin	4	-	4
SPECIAL TOPICS	4	-	4

2-Molecular Biology			
1. Nucleotides	4	-	4
2. Nucleic acid Structure & function	4	-	4
3. DNA Organization& Replication	6	-	6
4. DNA repair	4	-	4
5. RNA synthesis , processing &modification	4	-	4
6. Protein synthesis & genetic code	4	-	4

7. Regulation of gene expression	4	-	4
8. Molecular biology techniques, Molecular genetics	6	2	8
9. Recombinant DNA techniques	6	2	8
10. Human Genome Project, Cancer ,Oncogenes , Tumor Suppressor Genes, Tumor Markers &Apoptosis	6	-	6
Total hrs	96	4	100

5. **Teaching and Learning Methods**	1-Literatures. 2- Seminars and presentations. 3- Laboratory training. 4-Journal club and tutorials.
6-Student Assessment	
A.Student Assessment Methods	1. Written exam to assess the capability of the candidate for assimilation and application of the knowledge included in the course. 2.Oral exam to assess the student intellectual and communication abilities regarding basic knowledge and understanding of the course

	topics, and to help the teaching staff to evaluate the % of achievement of the intended learning outcome of the course. 3-Portfolios. 4-Procedure of the log book
B. Assessment Schedule (Timing of Each Method of Assessment)	Assessment 1: 2 written exam by the end of the course. Assessment 2: Oral exam, after the written exam.
C. Weighting of Each Method of Assessment	**Type of Assessment %** • **Written** examination (100%) 30% short assay, 30% MCQ, 30% case study &problem solving. • **Oral** examination. (100%) **Total** (100%) *N.B. - Score of ≥ 60% of the written exam is essential to allow the student to perform both oral exams* *- For each exam, ≥ 60% is essential to pass*.
8. List of References	
A. Course Notes/handouts	-General Biochemistry and Molecular Biology.
B. Essential Books	**External references for standards (Benchmarks)** 1- Department Books and notes: -Course notes, and handouts 2- Essential Books (Text Books) - Harper's Medical Biochemistry, Robert K.Murray, Daryl K.Granner, PeterA.Mayes, and VictorW. Rodwell (29th edition, 2009) 3- Recommended Books - Lubert Stryer, Medical Biochemistry - Lehninger, Medical Biochemistry

	- Lippincott, Medical Biochemistry 4- Periodicals, Web Sites, ... etc 1-Lubert Stryer, Medical Biochemistry. 2- Lehninger, Medical Biochemistry. 3- Lippincott, Medical Biochemistry.
C. Recommended Text Books	1- Harper's Medical Biochemistry. 2- Robert K.Murray, Daryl. 3- PeterA.Mayes. 4- K.Granner. 5- a Victor W. Rodwell (29th edition, 2020) 6- Lippincott Williams & Wilkins.
D. Periodicals, websites	To be determined and update during the course 1-American Journal of Medical Biochemistry. 2-The Journal of Medical Biochemistry. 3-www.pubmed.com. 4-Cancer

Course Coordinator/s:

- Prof. Salama Rabie Abdel Reheim.
- Prof. Hend Mohmaed AbdelGhany.
- Prof. Ahmed Mohamed Okasha.
- Prof. Maggie Maher Ramzy
- Ass.Prof. Rasha Fouad
- Dr. Samar Hisham

Head of Department:

Prof.Dr./ Salama Rabie Abdel Reheim.

Date of last update & approval by department Council: 5 / 3 / 2023

جامعة/أكاديمية .... : جامعة. المنيا ....

كليه / معهد : .... كليه الطب ....

قسم : الكيمياء الحيوية ....

مسمى المقرر	Biochemistry 2nd part MD
كود	Bc100

A. Matrix of Coverage of Course ILOs By Contents

Contents (List of course topics)	Intended Learning Outcomes (ILOs)			
	A. Knowledge & Understanding	B. Intellectual Skills	C. Professional & Practical skills	D. General & Transferable Skills
	A	B	C	D
1-GENERAL Medical Biochemistry				
Bioenergetics	A.4	B.l	C 1	**D1.D2.D3.D4**
Carbohydrate Metabolism	**A2**	B2	C 2	**D1**
Lipid metabolism	**A2,A3**	**B3**	**C3**	**D1**

Protein metabolism	**A4**	**B3**	C.2	**D1.D2.**
Metabolism of Purine & Pyrimidine Nucleotides	**A6**	B.3,	C.3	D.1, D.2, D.3
Integration of metabolism	**A6**	**B3**	**C6**	**D1.D2.**
Vitamins & Minerals	A.6,	**B2**	C6,	**D3.D4**
Medical Biochemistry Of Extracellular & Intracellular Communication. • Membranes: Structure & Function • Hormone : Action & Signal Transduction	A.7	**B1**	**C1**	**D1.D2.**
Enzymes :kinetics , mechanism , Regulation &bioinformatics	A.5	**B1**	**C2**	**D1**
Metabolism of Xenobiotics	A.7	B2	C1	D.4
Structures & Functions Of Proteins & Enzymes ➢ Amino Acids & Peptides ➢ Proteins: Determination of Primary Structure & Higher Orders of Structure ➢ Myoglobin & Hemoglobin	A.4,A5	B3	C.1	D.4
2-Molecular Biology				

1. Nucleotides	A.1	B.2	C.1	D.4
2. Nucleic acid Structure & function	A.2	B.2	C.1	D.5, D.6
3. DNA Organization& Replication	A.3	B.1	C.1	D.5, D.6
4. DNA repair	A.4	B.2	C.1	D.5, D.6
5. RNA synthesis , processing &modification	A.6	B.2	C.1	D.5, D.6
6. Protein synthesis & genetic code	A.8	B.1	C.1	D.5, D.6
7. Regulation ofgene expression	A.1	B.2	C.1	D.5, D.6
8. Molecular biology techniques, Molecular genetics	A.9	B.1	C.1	D.5, D.6
9. Recombinant DNA techniques	A.9	B.2	C.1	D.4
10. Human Genome Project, Cancer ,Oncogenes , Tumor Suppressor Genes, Tumor Markers &Apoptosis	A9	B1	C.1	D1

B.Matrix of Coverage of Course ILOs by Methods of Teaching & Learning

	Intended Learning Outcomes (ILOs)			
	A. Knowledge & Understanding	B. Intellectual Skills	C. Professional & Practical skills	D. General & Transferable Skills
Lecture	x	x		
Practical			X	
Presentation/seminar				x
Journal club	x	x		x
Training courses & workshops	x	x	X	

c. Matrix of Coverage of Course ILOs by Methods of Student Assessment

Methods of Assessment	Intended Learning Outcomes (ILOs)			
	A. Knowledge & Understanding	B. Intellectual Skills	C. Professional & Practical skills	D. General & Transferable Skills
Written exam	X	X		
Practical exam			X	
Oral Exam	X	X		x
Log book	X	X	X	x

Blueprint of Medical Biochemistry Department

Blueprint for Biochemistry MD, 2nd part, 1st Examination Paper

	Topic	Hours	Knowledge %	Intellectual %	% of topic	Marks%
1	Bioenergetics	2	70	30	**4.5 %**	**4.5 %**
2	Carbohydrate Metabolism	5	70	30	**11.3 %**	**11.3 %**
3	Lipid metabolism	5	70	30	**9.1%**	**11.3%**
4	Protein metabolism	5	75	25	**9.1%**	**11.3%**
5	Metabolism of Purine & Pyrimidine Nucleotides	3	75	25	**6.8%**	**6.8%**
6	Integration of metabolism	3	80	20	**6.8%**	**6.8%**
7	Vitamins & Minerals	4	75	25	**9.1%**	**9.1%**
8	Biochemistry Of Extracellular .Intracellular Communication & Membranes: Structure Hormone : •&Function Action & Signal Transduction	3	75	25	**6.8 %**	**6.8 %**
9	Enzymes :kinetics , mechanism , Regulation &bioinformatics	4	70	30	**9.1%**	**9.1%**
10	Metabolism of Xenobiotics	2	75	25	**4.5%**	**4.5%**
11	Structures & Functions Of Proteins & Enzymes	4	70	30	**9.1%**	**9.1%**

	Topic	Hours				
	Amino Acids & Peptides Proteins: Determination of Primary Structure & Higher Orders of Structure Myoglobin & Hemoglobin					
12	SPECIAL TOPICS	4	80	20	**9.1%**	**9.1%**
	Total	**44**			**100 %**	**100%**

Biochemistry Department
Blueprint for Biochemistry MD2nd part, 2nd Examination Paper

	Topic	Hours	Knowledge %	Intellectual %	% of topic	Marks%
1	1. Nucleotides	4	70	30	**8.3**	**8.3**
2	2. Nucleic acid Structure & function	4	70	30	**8.3**	**8.3**
3	3. DNA Organization & Replication	6	70	30	**12.5**	**12.5**
4	4. DNA repair	4	75	25	**8.3**	**8.3**
5	5. RNA synthesis , processing &modification	4	75	25	**8.3**	**8.3**
6	6. Protein synthesis & genetic code	4	80	20	**8.3**	**8.3**
7	7. Regulation of gene expression	4	75	25	**8.3**	**8.3**

		6				
8	8. Molecular biology techniques, Molecular genetics		75	25	**12.5**	**12.5**
9	9. Recombinant DNA techniques	6	70	30	**12.5**	**12.5**
10	10. Human Genome Project, Cancer ,Oncogenes , Tumor Suppressor Genes, Tumor Markers &Apoptosis	6	75	25	**12.5**	**12.5**
Total		**48**			**100 %**	**100%**

Course coordinators:

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- Prof. Dr. Maggie Maher Ramzy
- Ass.Prof. Rasha Fouad
- Dr. Samar Hisham

Head of   Department

Prof. Dr: Salama Rabie Abdel-Rehim

Date of last update & approval of program & courses specifications:

5/ 3 /2023

Courses	Program Intended Learning Outcomes (ILOs)													
(List of	A. Knowledge & Understanding							B. Intellectual Skills						
courses in 1st and 2nd parts)	A1.	A2	A3	A4	A5	A6	A7	B1	B2	B3	B4	B5	B6	B7	B8
Microbiology and immunology(Molecular biology)	X	x		X	x			x					X		
Use of computer in medicine	X	x	x	X	x	x		x	x	X	x	x	X	x	x
Biostatistics and research methodology	X			X		X		X		X			X	X	X	X

| Medical Biochemistry and Molecular biology | X | X | X | X | | X | | X | | X | X | X | |

Courses (List of courses in 1st and 2nd parts)		Program Intended Learning Outcomes (ILOs)								
		Skills								
		C. Professional & Practical skills					D. General & Transferable Skills			
	C1	C2	C3	C4	C5	D1	D2	D3	D4
Microbiology and immunology(Molecular biology)		x	x		x	X	x	x	X
Use of computer in medicine	X		X		X	X	X	X	
Biostatistics and research methodology	X	X		X		X	X	X	X

Medical Biochemistry and Molecular biology	X		X	X	X		X		X	X	X