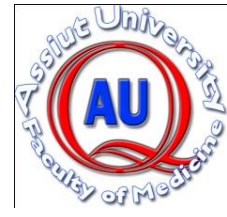




كلية الطب
وحدة ضمان الجودة



Faculty of Medicine
Quality Assurance Unit

MEDICAL MASTER DEGREE PROGRAM AND COURSES SPECIFICATIONS FOR MEDICAL BIOCHEMISTRY

(According to currently applied **Credit point bylaws**)



Medical Biochemistry
Faculty of medicine
Assiut University
2022-2023

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Assiut University
Faculty of Medicine
Quality Assurance Unit (QAU)



كلية الطب
وحدة ضمان الجودة

Master degree of Medical Biochemistry

A. Basic Information

- + Program Title: Master of Medical Biochemistry
- + Nature of the program: Single.
- + Responsible Department: Medical Biochemistry Department.
- + Program Academic Director (Head of the Department):
Prof .Dr. Amany Osama
- + Principle coordinator:
Dr. Aliaa Ali Yousef Mosa / Nashwa Abdelghaffar Abdelrahman
- + Assistant coordinator (s):
 - Dr. Khalid M. Mohany
- + Internal evaluators: Prof. Dr. Soad Fayed
- + External evaluator: Prof Dr. Fathy Mohamed Tash
- + Date of Approval by the Faculty of Medicine Council of Assiut University: 23-9-2014
- + Date of most recent approval of program specification by the Faculty of Medicine Council of Assiut University: 27-11-2022
- + Total number of courses: 5 courses

B. Professional Information

1- Program aims

1. To prepare highly qualified biochemists in appropriate laboratory fields and biomedical investigations.
2. To introduce candidates to the basics of scientific medical research and its ethics to provide an educational environment that encourages creativity and research both fundamental and applied.
3. To enable the candidates to develop basic concepts and principles of human biochemistry logically and clearly to associate and investigate specific biomarkers for different health problems.
4. To enable students to improve their skills.

2- Intended learning outcomes (ILOs) *for the whole program*:

2/1 Knowledge and understanding:

- A- Explain essential facts and principles of relevant basic sciences related to biochemistry.
- B. Mention essential facts of clinical supportive sciences related to biochemistry.
- C. Demonstrate sufficient knowledge of the main subjects related to biochemistry.
- D- Give the recent and update developments in the most important themes related to biochemistry.
- E- Mention the basic ethical and medicolegal principles that should be applied in practice and are relevant to biochemistry.
- F- Mention the basics and standards of quality assurance to ensure good practice in the field of biochemistry.
- G- Mention the ethical and scientific principles of medical research methodology.
- H- State the impact of common problems related to the field of biochemistry on the society and how good practice can improve these problems.

2/2 Intellectual outcomes

- A- Correlate the relevant facts of relevant basic and clinically supportive sciences with reasoning, diagnosis and management of common problems of biochemical practice
- B- Demonstrate an investigatory and analytic thinking approach (problem solving) to common clinical or practical situations related to biochemistry.
- C- Design and /or present a case or review (through seminars/journal clubs.) in one or more of common themes or problems relevant to biochemistry
- D- Formulate management plans and alternative decisions in different situations in the field of biochemistry.

2/3 Skills

2/3/1 Practical skills

- A. Demonstrate competently relevant laboratory skills related to biochemistry.
- B. Use the up to date technology for the conditions related to biochemistry.
- C. Develop plans for performing experiments related to biochemistry.
- D. Carry out common experiments related to biochemistry.
- E. Counsel and educate students, technicians and junior staff, in the lab about conditions related to biochemistry; including handling of samples, devices, safety and maintenance of laboratory equipments.
- F. Use information technology in some of the situations related to biochemistry.
- G. Share in providing health care services aimed supporting patient care, solving health problems and better understanding of the normal structure and function.
- H. Write competently all forms of professional reports related to the biochemistry (lab reports, experiments reports).

2/3/2 General skills

Including:

- Practice-based Learning and Improvement
- Interpersonal and Communication Skills
- Professionalism/
- Systems-based Practice

Practice-Based Learning and Improvement

- A. Perform practice-based improvement activities using a systematic methodology (share in audits and risk management activities and use logbooks).
- B. Appraises evidence from scientific studies.

- C. Conduct epidemiological Studies and surveys
- D. Perform data management including data entry and analysis and using information technology to manage information, access on-line medical information; and support their own education.
- E. Facilitate learning of students, lab technical staff and other health care professionals including their evaluation and assessment.

Interpersonal and Communication Skills

- F- Maintain therapeutic and ethically sound relationship with patients, their families, lab technical staff and other health professionals.
- G- Elicit information using effective nonverbal, explanatory, questioning, and writing skills.
- H- Provide information using effective nonverbal, explanatory, questioning, and writing skills.
- I-Work effectively with others as a member of a team or other professional group.

Professionalism Intended learning outcomes

- J- Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society.
- K- Demonstrate a commitment to ethical principles including provision or withholding of clinical care, confidentiality of patient information, informed consent, and business practices.
- L- Demonstrate sensitivity and responsiveness to others' culture, age, gender, and disabilities.

Systems-Based Practice Intended learning outcomes

- M- Work effectively in relevant academic and health care delivery settings and systems including good administrative and time management.
- N- Adopt cost-effective practice and resource allocation that does not compromise quality of services.
- O- Assist patients in dealing with system complexities.

3- Program Academic Reference Standards (ARS) (Annex 2)

Academic standards for master degree biochemistry

Assiut Faculty of Medicine developed master degree programs' academic standards for different clinical specialties.

In preparing these standards, the General Academic Reference Standards for post graduate programs (GARS) were adopted. These standards set out the graduate attributes and academic characteristics that are expected to be achieved by the end of the program.

These standards were approved by the Faculty Council on 17-6- 2009. These standards were revised and approved without changes by the Faculty Council on 23-9-2014. These standards were recently revised and reapproved without changes by the Faculty Council on 27-11-2022.

4- Program External References (Benchmarks)

1. ACGME (Accreditation Council for Graduate Medical Education).

http://www.acgme.org/acWebsite/navPages/nav_Public.asp

2. (Birmingham University – England- UK)

www.birmingham.ac.uk

Comparison between program and external reference		
Item	Medical Biochemistry program	Birmingham University – England- UK
Goals	Matched	Matched
ILOS	Matched	Matched
Duration	2-4 years	3 years
Requirement	Different	different
Program structure	Different	different

5. Program Structure and Contents

A. Duration of program: 3-5 years

B. Structure of the program:

Total number of points: 180 (20 out of them for thesis)

Didactic 32 (17.8%), practical 126 (70%) thesis 20 (11.1%) elective courses 2 (1.1)

Total 180

First part

Didactic 8 CP (20%), practical in basic sciences 10 CP (25%), practical in speciality 20 CP (50%), elective course 2 CP (5%), total 40

Second part

Didactic 24(20%) practical 96 (80%).Total 120

According the credit points bylaws:

Total courses 160 CP

Compulsory courses: 98.9%

Elective course: 2 credit point: 1.1%

	Points	% from total
▪ Basic science courses	18	10
Humanity and social courses	2	1.1%
▪ Speciality courses	140	77.8
▪ Others (Computer, ...)		
▪ Field training	126	70%
Thesis	20	11.1%

C. Program Time Table

A. Duration of program 3 years maximally 5 years divided into

○ Part 1: (One year)

Program-related basic science courses and ILOs + elective courses. Students are allowed to sit the exams of these courses after 12 months from applying to the M Sc degree. One elective course can be set during either the 1st or 2nd parts.

○ Thesis

For the M Sc thesis;

MSc thesis subject should be officially registered within 6 months from application to the MSc degree,

Discussion and acceptance of the thesis could be set after 12 months from registering the MSc subject;

It should be discussed and accepted before passing the second part of examination)

○ Part 2 (2 years)

Program –related speciality courses and ILOs

Students are not allowed to sit the exams of these courses before 3 years from applying to the MSc degree.

The students pass if they get 50% from the written exams and 60% from oral and clinical/practical exams of each course and 60% of summation of the written exams, oral and clinical/practical exams of each course

Total degrees 1600 marks.

400 marks for first part

1200 for second part
 Written exam 40% - 70%.
 Practical and oral exams 30% - 60%.

D. Curriculum Structure: (Courses):

+ courses of the program:

Modules/ Units delivering courses and student work load list	Course Code			
		Lectur es	training	total
First Part				
<ul style="list-style-type: none"> - Course1: Metabolism Of Blood Cells & Microbiology and Immunology - Course 2: Physiology of Hormones - Course 3: Histopathology & Immunohistochemistry 	MBC204A	4	5	9
		2	2.5	4.5
	MBC203			
		2	2.5	4.5
	MBC205			
Practical training in Speciality course (20 CP)	MBC204B		20	20
Elective courses		2		2
Total of the first part		10	30	40
Second Part		Speciality courses Speciality Clinical Work		
Speciality Courses <u>Course 2: Medical Biochemistry</u> <i>include</i> Unit 1 <i>General and Basic Biochemistry</i> Unit 2: Molecular Biology & Tumor Markers Unit 3: Applied Medical Biochemistry	MBC204 B	24	96	120
Total of the second part	24	96		120
Thesis	20			
Total of the degree	180			

Didactic (lectures, seminars, tutorial)

* Elective courses can be taken during either the 1st or 2nd parts.

Student work load calculation:

Work load hours are scheduled depending on the type of activities and targeted competences and skills in different courses

Elective Course#:

- Medical statistics.
- Evidence based medicine.
- Medicolegal Aspects and Ethics in Medical Practice and Scientific Research
- Quality assurance of medical education
- Quality assurance of clinical practice.
- Hospital management

One of the above mentioned courses are prerequisites for fulfillment of the degree.

Thesis:

20 CP are appointed to the completion and acceptance of the thesis.

6. Courses Contents (Annex 1)

The competency based objectives for each course/module/rotation are specified in conjunction with teaching/training methods, requirements for achieving these objectives and assessment methods.

See Annex 1 for detailed specifications for each course/module

Annex 6 II: Program Matrix

7-Admission requirements

 Admission Requirements (prerequisites) if any :

I. General Requirements:

- a. MBCh Degree form any Egyptian Faculties of Medicine

- b. Equivalent Degree from medical schools abroad approved by the Ministry of Higher Education
- c. One year appointment within responsible department (for non Assiut University based registrars)

II. Specific Requirements:

- Fluent in English (study language)

VACATIONS AND STUDY LEAVE

The current departmental policy is to give working candidate 2 week leave prior to first/ second part exams

FEES:

As regulated by the postgraduate studies rules and approved by the faculty vice dean of post graduate studies and the faculty and university councils.

8-Progression and completion requirements

- + Examinations of the first part could be set at 12 months from registering to the MSc degree.
- + Examination of the second part cannot be set before 3 years from registering to the degree.
- + Discussion of the MSc thesis could be set after 1 year from officially registering the MSc subject before setting the second part exams.
- + The minimum duration of the program is 3 years.

The students are offered the degree when:

1. Passing the exams of all basic science, elective and speciality courses of this program as regulated by the post graduates approved rules by the faculty council.
2. Completing all scheduled CP and log book (minimum 80%).
3. Discussion and acceptance of the MSc_thesis.

9- Program assessment methods and rules (Annex IV)

Method	ILOs measured
Written examinations: Structured essay questions Objective questions MCQ Problem solving	K & I
Clinical: Long/short cases OSCE	K ,I, P &G skills
Structured oral	K ,I &G skills
Logbook assessment	All
Research assignment	I &G skills

9-Program assessment methods and rules

Method	ILOs measured
Written examinations: Structured essay questions Objective questions MCQ Problem solving	K & I
Practical: OSPE	K ,I, P &G skills
Structured oral	K ,I &G skills
Logbook assessment	All
Research assignment	I &G skills

Weighting of assessments:

Courses	Course code	Degrees			
		Written Exam	Oral Exam	Practical Exam	Total
First Part					
Basic Courses:					
- Course1: Metabolism Of Blood Cells & Microbiology and Immunology	MBC204A	100	40	60	200
- Course 2: Physiology of Hormones	MBC203	50	20	30	100
Course 3: Histopathology & Immunohistochemistry	MBC205	50	20	30	100
Second Part					
Specialized Courses:	Course code	written	oral	Practical	Total
Course 2: Medical Biochemistry	MBC204B		200	200	1200
Paper 1		200			
Paper 2		200			
Paper 3		200			
Paper 4		200			
Total of the degree		800	200	200	1200
Elective course		50	50		100

* 25% of the oral exam for assessment of logbook

Total degree 1600

400 marks for first part

1200 for second part

Examination system:

➤ First part:

- Written exam 1 paper 3 hours and 2 papers 2 hours fo + oral & Practical examination

➤ **Second part:**

- Written exam four paper 3 hours for each + oral & Practical examination

-

➤ **Elective courses**

- Written exam one paper 1 hour in Elective course + Oral & Practical exam

10-Program evaluation		
By whom	method	Sample
Quality Assurance Unit	Reports Field visits	#
Internal evaluators	Report	1
External Evaluator (s):According to department council External Examiner (s): According to department council	Reports Field visits	#
Stakeholders	Reports Field visits Questionnaires	#
Senior students	Questionnaires	#
Alumni	Questionnaires	#

#Annex 5 contains evaluation templates and reports (joined in the departmental folder)

11-Declaration

We certify that all of the information required to deliver this program is contained in the above specification and will be implemented.

All course specifications for this program are in place.

Contributor	Name	Signature	Date
Program Principle Coordinator:	Dr. Aliaa/Nashwa		Sept. 2022
Head of the Responsible Department (Program Academic Director):	Prof. Amany Osama		Sept. 2022

Annex 1: specifications for courses

Course1: (Metabolism of blood cells & Microbiology and immunity)

Name of department:

Medical Biochemistry

Faculty of medicine

Assiut University

2022-2023

1. Course data

- + Course Title: Basic Biochemistry.
- + Course code: MBC204A
- + Speciality Basic Biochemistry
- + Number of CP: Didactic 4 practical 5 total 9 CP

Unit 1 Hematology

- + Course Title: Basic Biochemistry.
- + Course code: MBC204A
- + Speciality Basic Biochemistry
- + Department (s) delivering the course :Medical Biochemistry and Clinical Pathology
- + Number of CP: Didactic 2 practical 2 total 4 CP

+ Coordinator (s):

- Course coordinator:

Prof. Amany Osama

- Assistant coordinator (s)

- Dr. Khalid Mohany Dr. Sara Atta
- Dr. Nashwa Dr. Randa Thamir

Date last reviewed: Sept. 2022

+ Requirements (prerequisites) if any

- I. Attendance of at least 60% of practical sections.
- II. Doing at least 5 experiments in each.
- III. Students are able to do experiments and recognized procedures.
- IV. Practical assessment at the end of course.

+ Requirements from the students to achieve course ILOs are clarified in the joining log book.

+ Admission Requirements (prerequisites) if any :
According to approved regulatory rules

2. Unit Aims

- Describe the up to date Hematology
- Acquire proper use of ancillary techniques related to Hematology

3. Course intended learning outcomes (ILOs):

A. Knowledge and understanding

<i>ILOs</i>	<i>Methods of teaching/ Learning</i>	<i>Methods of Evaluation</i>
<p>A. Demonstrate details of Hematology related to medical biochemistry</p> <p>The functional anatomy of lymph nodes. Non-specific reactive hyperplasia. Morphology and causes of follicular hyperplasia, paracortical hyperplasia and sinus histiocytosis. Lymphadenitis, non-specific and specific forms. Lymphomas.</p> <p>- Hodgkin's disease - classification and morphology. Clinical features, staging and survival.</p> <p>- Non Hodgkin's lymphomas, including extranodal lymphomas - classification, morphology, molecular pathology and prognostic factors.</p> <p><u>Spleen</u></p> <p>Causes of splenomegaly. Hypersplenism. Splenic atrophy. Splenic infarction. Splenic rupture. Congenital anomalies. Tumors of the spleen</p> <p><u>Thymus</u></p> <p>Hyperplasia and tumors.</p>	<p>-Lectures -Books -journals -Tutorials - Seminars -Case study Departmental teaching sessions: These occur on a regular basis</p>	<p>Log book Written, and oral examination</p> <p>Attendance of at least 60% of seminars and journal clubs</p> <p>Checklist -log book & portfolio -Procedure/case presentation</p>
<p>B. Mention the following factual basics and principles essential for the course</p>	<p>Didactic</p>	<p>Log book Written, and oral examination</p>
<p>C. State update and evidence based Knowledge related to the course:</p>	<p>Didactic</p>	<p>Log book Written, and oral</p>

		examination
D. Memorize the facts and principles of the other relevant basic and clinically supportive sciences related to course	Didactic	Log book Written, and oral examination
E. Mention the basic ethical and medicolegal principles relevant to the course.	Didactic	Log book Written, and oral examination
F. Mention the basics of quality assurance to ensure good professional skills in his field.		
G. Mention the ethical and scientific principles of medical research	Didactic	Log book Written, and oral examination

B-Intellectual outcomes

<i>ILOs</i>	<i>Methods of teaching/ learning</i>	<i>Methods of Evaluation</i>
A- Correlates the facts of relevant basic and clinically supportive sciences with conditions and diseases of relevance to hematology.	Case study Seminars Observation	Logbook
B. Demonstrate an investigatory and analytic thinking (problem solving) approaches to conditions relevance to hematology.	Case study Seminars Observation	Logbook
C-Design and present audits, cases, seminars in common problems related to speciality of Differential diagnosis of reactive processes of lymph nodes - Role of ancillary techniques in diagnosis of lymphomas	Seminar presentation	Logbook

C-. Practical skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Perform the basic lab skills essential to the Hematology:	<ul style="list-style-type: none"> - Routine work: The most important learning experience will be day-to-day work. Trainees will be closely supervised during training. This close supervision allows for frequent short episodes of teaching. -Departmental teaching sessions: These occur on a regular basis Observation Post graduate teaching 	<ul style="list-style-type: none"> Log book Written, practical and oral examination - chick list Procedure/case presentation

D-General Skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Perform practice-based improvement activities using a systematic methodology(audit, logbook)	<ul style="list-style-type: none"> -Observation -Senior staff experience 	-Log book
B. Appraises evidence from scientific studies.		
C. participate in one audit or survey related to the course		
D. Facilitate learning of junior students and other health care professionals.		

**4. Unit contents (topic s/modules/rotation
Course Matrix**

Time Schedule: First Part

Topic	Covered ILOs			
	Knowledge	Intellectual	Practical skill	General Skills
<p>Hematology related to medical biochemistry</p> <p>The functional anatomy of lymph nodes.</p> <p>Non-specific reactive hyperplasia.</p> <p>Morphology and causes of follicular hyperplasia, paracortical hyperplasia and sinus histiocytosis. Lymphadenitis, non-specific and specific forms.</p> <p>Lymphomas.</p> <p>- Hodgkin's disease - classification and morphology. Clinical features, staging and survival.</p> <p>- Non Hodgkin's lymphomas, including extranodal lymphomas - classification, morphology, molecular pathology and prognostic factors.</p> <p><u>Spleen</u></p> <p>Causes of splenomegaly. Hypersplenism. Splenic atrophy. Splenic infarction. Splenic rupture. Congenital anomalies. Tumors of the spleen</p> <p><u>Thymus</u></p> <p>Hyperplasia and tumors.</p>	A-G	A,C	A	A-D

5. Unit Methods of teaching/learning:

1. Laboratory training
2. Literatures, Seminars & Presentations
3. oral communication & observation Senior staff experience
4. Observation & supervision Seminars, Lectures, Hand on workshops

6. Unit Methods of teaching/learning: for students with poor achievements

- 1.Extra didactic (lectures, seminars, tutorial)
2. Extra laboratory work

7. Unit assessment methods:

- i. Assessment tools:** Practical examination
Written , oral examinations.
Simulation Record review (report), Log book, Chick list,
Senior staff opinion
- ii. Time schedule:** at the end of the first part
- iii. Marks:** 100

8. List of references

- i. Lectures notes**
- ii. Essential books**
Eric J *Topol* Textbook of Cardiovascular Medicine, third edition
Lippincott Williams & Wilkins, 2019
- iii. Recommended books**
Advanced Cardiac Care in the Streets [Raymond V. Taylor BS
EMT-P, Craig B. Key MD EMT-P, Mark Trach MD FACEP] on Amazon.com
1997.
- iv. Periodicals, Web sites, ... etc**
Circulation
JACC Journal of Cardiology
Indian Heart Journal
European Heart Journal

9. Signatures

Contributor	Name	Signature	Date
Program Principle Coordinator:	Dr. Khalid M. Mohany		Sept. 2022
Head of the Responsible Department (Program Academic Director):	Prof. Amany Osama		Sept. 2022

**Course 1
Unit 2
Immunity and Microbiology**

1 Unit data

Name of department:

Medical Biochemistry

Faculty of medicine

Assiut University

2022-2023

1. unit data

Course Title: Metabolism Of Blood Cells &

Microbiology and Immunology.

Course code: MBC204A

Speciality Basic Biochemistry

Number of CP: Didactic 2 practical 2 total 4 CP

Department (s) delivering the course: Medical Biochemistry and Microbiology

Coordinator (s):

-Course coordinator: Prof . Amany Osama

-Assistant coordinator (s)

- Dr.Khalid Mohany
- Dr. Sara Atta
- Dr. Naglaa K Idriss
- Dr. Nashwa

Date last reviewed: Sept. 2022

Requirements (prerequisites) if any :

I. Attendance of at least 60% of practical sections.

II. Doing at least 5 experiments in each.

III. Students are able to do experiments and recognized procedures.

IV. Practical assessment at the end of course.

Requirements from the students to achieve course ILOs are clarified in the joining log book.

Admission Requirements (prerequisites) if any :

According to approved regulatory rules

2. Unit Aims

- Describe the up to date in Microbiology and Immunity
- Acquire proper use of ancillary techniques related to Microbiology and Immunity

3. Unit intended learning outcomes (ILOs):

A. Knowledge and understanding

<i>ILOs</i>	<i>Methods of teaching/ Learning</i>	<i>Methods of Evaluation</i>
A. Demonstrate details of Immunity and microbiology related to medical biochemistry	-Lectures -Books -journals -Tutorials - Seminars -Case study Departmental teaching sessions: These occur on a regular basis	Log book Written, and oral examination Attendance of at least 60% of seminars and journal clubs Checklist -log book & portfolio Procedure/case presentation
Mention the following factual basics and principles essential for the course Immunity and microbiology related to medical biochemistry	Didactic	Log book Written, and oral examination
State update and evidence based Knowledge related to the course: Immunity and microbiology related to medical biochemistry	Didactic	Log book Written, and oral examination
Memorize the facts and principles of the other relevant basic and clinically supportive sciences related to course	Didactic	Log book Written, l and oral examination
Mention the basic ethical and medicolegal principles relevant to the course.	Didactic	Log book Written, l and oral examination
Mention the basics of quality assurance to ensure good professional skills in his field.		
Mention the ethical and scientific principles of medical research	Didactic	Log book Written, l and oral examination

B-Intellectual outcomes

<i>ILOs</i>	<i>Methods of teaching/ learning</i>	<i>Methods of Evaluation</i>
A- Correlates the facts of relevant basic and clinically supportive sciences with conditions and diseases of relevance to Microbiology and Immunity.	Case study Seminars Observation	Logbook
B. Demonstrate an investigatory and analytic thinking (problem solving) approaches to conditions relevance to Microbiology and Immunity.	Case study Seminars Observation	Logbook
C-Design and present audits, cases, and seminars in common problems related to Microbiology and Immunity.	Seminar presentation	Logbook

C-. Practical skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Perform the basic lab skills of Microbiology and Immunity related to Medical Biochemistry.	- Routine work: The most important learning experience will be day-to-day work. Trainees will be closely supervised during training. This close supervision allows for frequent short episodes of teaching. -Departmental teaching sessions: These occur on a regular basis Observation Post graduate teaching	Log book Written, practical and oral examination - chick list Procedure/case presentation

D. General Skills
Practice-Based Learning and Improvement

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Perform practice-based improvement activities using a systematic methodology(audit, logbook)	-Observation -Senior staff experience	-Log book
B. Appraises evidence from scientific studies.		
C. participate in one audit or survey related to the course		
D. Perform data management including data entry and analysis.		
E. Facilitate learning of junior students and other health care professionals.		

Interpersonal and Communication Skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
F. Maintain ethically sound relationship with others.	-Observation -Senior staff experience	-Log book
G. Elicit information using effective nonverbal, explanatory, questioning, and writing skills.		
H. Provide information using effective nonverbal, explanatory, questioning, and writing skills.		
I. Work effectively with others as a member of a health care team or other professional group.		
J. Present a case		
K. Write a report		

Professionalism

<i>ILOs</i>	<i>Methods of teaching/ learning</i>	<i>Methods of Evaluation</i>
M. Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society	-Observation -Senior staff experience	-Log book
N. Demonstrate a commitment to ethical principles including provision or withholding of clinical care, confidentiality of patient information, informed consent, business practices		
O. Demonstrate sensitivity and responsiveness to others' culture, age, gender, and disabilities		

Systems-Based Practice

ILOs	Methods of teaching/ learning	Methods of Evaluation
P. Work effectively in relevant health care delivery settings and systems.	-Observation -Senior staff experience	-360o global rating
Q. Practice cost-effective health care and resource allocation that does not compromise quality of care.		-Check list evaluation of live or recorded performance
R. Assist patients in dealing with system complexities.		-360o global rating - Patient survey

**4. Unit contents (topic s/modules/rotation
Course Matrix**

Time Schedule: First part

Topic	Covered ILOs			
	Knowledge	Intellectual	Practical skill	General Skills
Immunity and microbiology related to medical biochemistry	A - G	A,C	A	A-R

5. Unit Methods of teaching/learning:

1. Laboratory training
2. Literatures, Seminars & Presentations
3. oral communication & observation Senior staff experience
4. Observation & supervision Seminars, Lectures, Hand on workshops

6. Unit Methods of teaching/learning: for students with poor achievements

1. Extra didactic (lectures, seminars, tutorial)
2. Extra laboratory work

7. Unit assessment methods:

- Assessment tools:** Practical examination
 Written , oral examinations.
 Simulation Record review (report), Log book, Chick list,
 Senior staff opinion
- ii. Time schedule:** at the end of the first part
- iii. Marks:** 100

8. List of references

- i. Lectures notes
- ii. Essential books
 Jawetz, Melnick, & Adelberg's Medical Microbiology, 25th Edition, 2020

iii. Recommended books

- Sherris Medical Microbiology, Fifth Edition, 2021.
- Microbiology, 2nd edition: Books: by Richard A. Harvey, Pamela, 2006.

iv. Periodicals, Web sites, ... etc



- Journal of clinical microbiology
- Microbiology
- Journal of Medical microbiology





9. Signatures

Contributor	Name	Signature	Date
Program Principle Coordinator:	Dr. Nashwa		Sept. 2022
Head of the Responsible Department (Program Academic Director):	Prof. Amany Osama		Sept. 2022




Course 2
Physiology of Hormones

1. Course data

-  **Course Title: Physiology of Hormones**
-  **Course code: MBC203**

-  **Speciality... Medical Biochemistry**
-  **Number of CP: 2 Didactic. 2.5 practical total 4.5 CP**
-  **Department (s) delivering the course: Department of Medical Biochemistry, Faculty of Medicine, Assiut University, Egypt.**
-  **Coordinator (s):**
 - **Course coordinator:**

Prof . Amany Osama
 - **Assistant coordinator (s)**
 - **Dr. Aliaa**
 - **Dr. Khalid Mohany**
 - **Dr. Nashwa**

-  **Date last reviewed:9/2022**
-  **General requirements (prerequisites) if any : None**
-  **Requirements from the students to achieve course ILOs are clarified in the joining log book.**

2. Course Aims

- To acquire the uptake Knowledge and practical skills related to physiology of the hormones

3. Course intending learning outcomes (ILOs):

A-Knowledge and understanding

<i>ILOs</i>	<i>Methods of teaching/ Learning</i>	<i>Methods of Evaluation</i>
A. Describe common clinical conditions and diseases related to Body Fluids, Electrolytes and Acid Base Regulation	Lectures -Tutorials - Seminars -Case study	<i>Written , oral , log book</i>
B. Mention the following factual basics and principles essential Body Fluids, Electrolytes and Acid Base Regulation		
C. State update and evidence based Knowledge related to the course: D. Describe homeostatic mechanisms that operate to maintain the osmolality, volume, and ionic composition of the extracellular fluid within normal limits. E. Explain how the tonicity (osmolality) of the extracellular fluid is maintained by alterations in water intake and vasopressin secretion. F. Describe how the volume of the extracellular fluid is maintained by alterations in renin and aldosterone secretion. G. Name the mechanisms that operate to maintain the constancy of plasma concentrations of different substances.		

H. Define acidosis and alkalosis.		
I. List the principal buffers in blood, interstitial fluid, and intracellular fluid, and, using the Henderson–Hasselbalch equation, describe what is unique about the bicarbonate buffer system.		
J. Describe the changes in blood chemistry that occur during acid-base imbalance and the respiratory and renal compensations for these conditions.		
K. Memorize the facts and principles of the other relevant basic and clinically supportive sciences related to Physiology of hormones.		
L. Mention the basic ethical and medicolegal principles relevant to the medical biochemistry.		
M. Mention the basics of quality assurance to ensure good professional skills in his field.		
N. Mention the ethical and scientific principles of medical research		

B. Intellectual outcomes

<i>ILOs</i>	<i>Methods of teaching/ learning</i>	<i>Methods of Evaluation</i>
A. Correlates the facts of relevant basic and clinically supportive sciences with conditions and diseases of relevance to Physiology of hormones.	Lectures -Tutorials - Seminars -Case study	<i>Written , oral , log book, practical exam</i>
B. Demonstrate an investigatory and analytic thinking (problem solving) approaches to conditions relevance to medical biochemistry		
C. Design and present audits, cases, seminars in common problems related to medical biochemistry.		

C. Practical skills

ILOs	Methods of teaching/learning	Methods of Evaluation
A. Perform the following basic lab skills essential to the course:	Lectures -Tutorials - Seminars -Case study	<i>Written , oral , log book, practical exam</i>
B. Use instruments and devices in evaluation of hormones		
C. Interpret the following non invasive/invasive procedures/experiments Hormones		
D. Perform the following non invasive/invasive procedures/experiments Hormones		
E. Write and evaluate of the reports:		
F. Perform the basic experiments in related basic sciences to be utilized in the research work:		
G. Use information technology to support decisions in common situations related to medical biochemistry		

D. General Skills

Practice-Based Learning and Improvement

ILOs	Methods of teaching/learning	Methods of Evaluation
A. Perform practice-based improvement activities using a systematic methodology(audit, logbook)	-Observation -Senior staff experience	-Log book
B. Appraises evidence from scientific studies.		
C. participate in one audit or survey related to the course		
D. Perform data management including data entry and analysis.		
E. Facilitate learning of junior students and other health care professionals.		

Interpersonal and Communication Skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
F. Maintain ethically sound relationship with others.	-Observation -Senior staff experience	-Log book
G. Elicit information using effective nonverbal, explanatory, questioning, and writing skills.		
H. Provide information using effective nonverbal, explanatory, questioning, and writing skills.		
I. Work effectively with others as a member of a health care team or other professional group.		
J. Present a case		
K. Write a report		

Professionalism

<i>ILOs</i>	<i>Methods of teaching/ learning</i>	<i>Methods of Evaluation</i>
L-Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society	-Observation -Senior staff experience	-Log book
M. Demonstrate a commitment to ethical principles including provision or withholding of clinical care, confidentiality of patient information, informed consent, business practices		
N. Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities		

Systems-Based Practice

ILOs	Methods of teaching/learning	Methods of Evaluation
O. Work effectively in relevant health care delivery settings and systems.	-Observation -Senior staff experience	-360o global rating
P. Practice cost-effective health care and resource allocation that does not compromise quality of care.		-Check list evaluation of live or recorded performance
Q. Assist patients in dealing with system complexities.		-360o global rating - Patient survey

**4. Course contents (topic s/modules/rotation
Course Matrix**

Time Schedule: First part

Topic	Covered ILOs			
	Knowledge	Intellectual	Practical skill	General Skills
<ul style="list-style-type: none"> homeostatic mechanisms that operate to maintain the osmolality, volume, and ionic composition of the extracellular fluid within normal limits. 	A,B,D,K-N	A-C	A-G	A-Q
the tonicity (osmolality) of the extracellular fluid is maintained by alterations in water intake and vasopressin secretion.	A,B,E,K-N	A-C	A-G	A-Q
the volume of the extracellular fluid is maintained by alterations in renin and aldosterone secretion.	A,B,F,K-N	A-C	A-G	A-Q
the mechanisms that operate to maintain the constancy of plasma concentrations of different substances.	A,B,G,K-N	A-C	A-G	A-Q
the principal buffers in blood, interstitial fluid, and intracellular fluid, and, using the Henderson–Hasselbalch equation, describe what is unique about the bicarbonate buffer system	A,B,I,K-N	A-C	A-G	A-Q

the changes in blood chemistry that occur during acid-base imbalance and the respiratory and renal compensations for these conditions.	A,B,H, J,K-N	A-C	A-G	A-Q
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5. Course Methods of teaching/learning:

1. Laboratory training
2. Literatures, Seminars & Presentations
3. oral communication & observation Senior staff experience
4. Observation & supervision Seminars, Lectures, Hand on workshops

6. Course Methods of teaching/learning: for students with poor achievements

- 1.Extra didactic (lectures, seminars, tutorial)
2. Extra laboratory work

7. Course assessment methods:

Assessment tools: Practical examination

Written, oral examinations.

Simulation Record review (report), Log book, Chick list,
Senior staff opinion

ii. Time schedule: at the end of the first part

iii. Marks: 100

8. List of references

i. Lectures notes

ii. Essential books

Eric J *Topol* Textbook of Cardiovascular Medicine, third edition
Lippincott Williams & Wilkins, 2009

iii. Recommended books

Advanced Cardiac Care in the Streets [Raymond V. Taylor BS EMT-P,
Craig B. Key MD EMT-P, Mark Trach MD FACEP] on Amazon.com, 1997.

iv. Periodicals, Web sites, ... etc

Circulation

JACC Journal of Cardiology

Indian Heart Journal

European Heart Journal

9. Signatures

Contributor	Name	Signature	Date
Program Principle Coordinator:	Dr. Aliaa		Sept. 2022
Head of the Responsible Department (Program Academic Director):	Prof. Amany Osama		Sept. 2022

Course 3
Histopathology& Immunohistochemistry.

1. Course data

 **Course Title: Histopathology& Immunohistochemistry.**

 **Course code: MBC205**

 **Speciality: Master of Biochemistry**

 **Number of CP: 2 Didactic. 2.5 practical total 4.5 CP**

 **Department (s) delivering the course: Pathology**

 **Coordinator (s):**

- **Course coordinator:**

Prof. Amany Osama


- **Assistant coordinator (s)**

- **Dr. Khalid Mohany**

- **Dr. Aliaa**

- **Dr. Nashwa**

 **Date last reviewed: Sept. 2022**


 **Requirements (prerequisites) if any :**

I. Attendance of at least 60% of practical sections.

II. Doing at least 5 experiments in each.

III. Students are able to do experiments and recognized procedures.

IV. Practical assessment at the end of course.

 **Requirements from the students to achieve course ILOs are clarified in the joining log book.**

2-Course Aims

- 1-To Train in the Laboratory aspects of the cutting and staining using different Cytochemical ,histochemical and Immunohistochemical histological sections.
- 2- Become familiar with the various staining methods and their applications and also appreciate the reflection of the method used on the picture observed.
- 3- Use of departmental protocols for the handling; of specimens including identification, documentation, entering specific data on to computer and measures to prevent specimen mix-ups.
- 4-To acquire Laboratory management: Trainees should take an interest in the management issues occurring in their departments and avail themselves of any opportunity to attend departmental meetings where such issues are discussed.

3. Course intended learning outcomes (ILOs):

A-Knowledge and understanding

<i>ILOs</i>	<i>Methods of teaching/ Learning</i>	<i>Methods of Evaluation</i>
<p>A. Demonstrate details of</p> <ul style="list-style-type: none"> -- Enzyme histochemistry - Immunohistochemistry - techniques of Autoradiography Some special histochemical methods <ul style="list-style-type: none"> ❖ Metachromasia ❖ Schiff's reagents ❖ Azo- dyes - Cytochemistry and histochemistry of protein, nucleic acid and nucleoproteins <ul style="list-style-type: none"> • Carbohydrate and mucosubstance • Lipids 	<p>Lectures</p> <ul style="list-style-type: none"> -Tutorials - Seminars -Case study 	<p>Procedure/</p> <ul style="list-style-type: none"> - stains - Log book - Oral exam - Written exam
<p>B. Get sufficient Knowledge of: Cytochemical methods, their nature, types and limitations</p>		

B. Intellectual outcomes

<i>ILOs</i>	<i>Methods of teaching/ learning</i>	<i>Methods of Evaluation</i>
<p>A. Correlate the facts of basic sciences which are appropriate to Histochemistry in clinical reasoning, diagnosis and management of certain diseases for example: Plan and execute safely a series of experiments :</p> <p>Cytochemical ,histochemical and Immunohistochemical that might help in identification and differentiation between certain cellular types .</p> <p>A spotlight on the <i>Digital imaging techniques that employ computer technology to capture and manipulate histologic images</i></p> <p>B. Demonstrate an investigatory and analytic thinking (problem solving): Analyse experimental and diagnostic results and critically evaluate their strength and validity.</p>	<p>Didactic (lectures, seminars, tutorial)</p>	<p>Written and oral examination</p> <p>-Log book</p>

C. Practical skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
<p>A. Plan and execute safely a series of experiments : Cytochemical ,histochemical and Immunohistochemical.</p> <p>B. Use laboratory-based methods to generate data</p> <p>C. Analyse experimental and diagnostic results and critically evaluate their strength and validity</p> <p>D. Prepare and present technical reports</p> <p>E. Use the scientific literature and databases effectively</p> <p>F- Have A spotlight on the <i>Digital imaging techniques that employ computer technology to capture and manipulate histologic images (Digital Imaging Techniques)</i></p> <p>G- Plan and execute safely a series of experiments using different autoradiographic methods</p>	<p>-Lecture</p> <p>- seminar</p> <p>-Direct observation of the practical work as : Making different types of histochemical, Immunohistochemical staining techniques. And different Autoradiographic methods</p>	<p>log book</p> <p>- Objective structure</p> <p>-Check list on steps of practical training of all steps of staining</p>

D. General Skills
Practice-Based Learning and Improvement

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. perform practice-based improvement activities using a systematic methodology in one of this module's problems: interpretation of the finding after some Cytochemical methods interpretation of the immunohistochemical results after using specific antibodies.	Dissection ,manual processing and staining Observation and supervision Written & oral communications	-Written essays, dissertations,oral presentation in seminars, team working skills through collaborative projects, students representative work, social and cultural activities Log book requirement
B. Locate, appraise, and assimilate evidence from scientific studies related to one of this module's staining techniques		
C. Use information technology to manage information, access on-line medical information; for the research purpose ,preparation of the lectures and seminars		
D. Facilitate the learning of students the different autoradiographic techniques.		

Interpersonal and Communication Skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
E. Create and sustain a ethically sound relationship with students and others as a member of research work team in the processing ,staining and imaging of the slides.	Observation & supervision Didactic	team working skills through collaborative projects, students representative work, Log book requirement
F. Perform the following oral communications: -About the result of the experimental work		
G. Fill the following reports: -Pre-experiment sheet. -Final comment on the results of the experiment		

Professionalism

<i>ILOs</i>	<i>Methods of teaching/ learning</i>	<i>Methods of Evaluation</i>
H. Demonstrate respect, compassion, and integrity; a responsiveness to the needs of students and society that supersedes self-interest; and demonstrate sensitivity and responsiveness to students' culture, gender, and disabilities if are present	Observation & supervision Didactic	Objective structured practical examination 2.student survey
I. Demonstrate a commitment to ethical principles pertaining to provision or withholding of the student and scientific research care, confidentiality of the student information		3-social and cultural activities -Log book requirement

Systems-Based Practice

ILOs	Methods of teaching/ learning	Methods of Evaluation
J. Work effectively in such health care delivery settings and systems related to the module	Observation & supervision Didactic	.student survey Log book requirement
K. Practice cost-effective health care and resource allocation that does not compromise quality of care in this module		
L. Assess students in dealing with system complexity		

**4. Course contents (topic s/modules/rotation
Course Matrix**

Time Schedule: First Part

Topic	Covered ILOs			
	Knowledge	Intellectual	Practical skill	General Skills
Cytochemistry and histochemistry of protein, nucleic acid and nucleoproteins Carbohydrate and mucosubstance Lipids	A,B	A,B	A-G	A- L
Enzyme histochemistry	A	A,B	A	A-L
Immunohistochemistry	A	A,B	A	A- L
Cytochemistry	A	A,B	G	A- L
Some special Histochemical methods	B	A,B		A-L
Digital Imaging Techniques	A	A,B	F	A- L

5. Course Methods of teaching/learning:

- 1-Laboratory training
- 2- Literatures, Seminars & Presentations
- 3- oral communication & observation Senior staff experience
- 4-Observation & supervision Seminars, Lectures, Hand on workshops

6. Course Methods of teaching/learning: for students with poor achievements

1. Extra didactic (lectures, seminars, tutorial)
2. Extra laboratory work

7. Course assessment methods:

- i. Assessment tools:** ...: Practical examination Written and oral examination . Simulation Record review (report), Log book, Chick list , Senior staff opinion
- ii. Time schedule:** At the end of the first part
- iii. Marks:** 100

8. List of references

iii. Recommended books

- 1-Bancroft, and Stevens, (1982)
- 2-Gartener and –Hiatte ,2006
- 3- Basic Histology 2003
- 4- Bloom and Fawcett 1998

iv. Periodicals, Web sites, ... etc

- *Journal of electron microscopy*
- *Egyptian J of Pathology*
- www.ic.ac.uk/pgaf; email: pgmedreg@ic.ac.uk

9. Signatures

Contributor	Name	Signature	Date
Program Principle Coordinator:	Dr. Khalid Mohany		Sept. 2022
Head of the Responsible Department (Program Academic Director):	Prof. Amany Osama		Sept. 2022

"Speciality course 4: Medical Biochemistry

Medical Biochemistry

Faculty of medicine

Assiut University

2022—2023

1. Course data

- + Course Title: Medical Biochemistry
- + Course code: MBC204B
- + Speciality: Basic Biochemistry
- + Number of credit points: Didactic 24 (20%), practical 96 (80 %), total 120

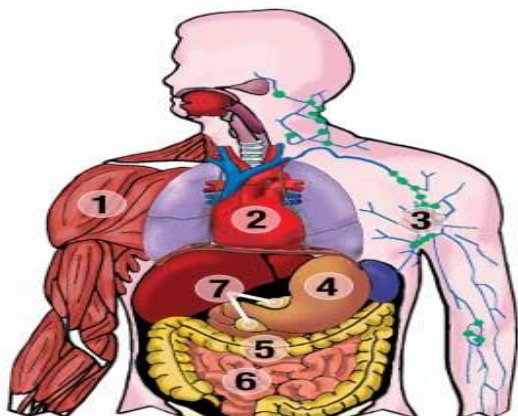
- + Department (s) delivering the course: Medical Biochemistry Department
- + Coordinator (s):
 - Course coordinator: Prof. Amany Osama
 - Assistant coordinator (s) :
 - Dr. Khalid Mohany
 - Dr. Aliaa
 - Dr. Nashwa
- + Date last reviewed: Sept. 2022
- + General requirements (prerequisites) if any :
 - Grade good in the final exam from approved faculty of Medicine (except for students from abroad)
 - Completed his intern year after graduation from medical school
 - One year appointment within responsible department (for non Assiut University based registrars)
- + Requirements from the students to achieve course ILOs are clarified in the joining log book.

2. Course Aims

1. To acquire sufficient knowledge in Medical Biochemistry.
2. To prepare highly trained biochemists in appropriate laboratory fields and biomedical investigations.
2. To introduce candidates to the basics of scientific medical research and its ethics to provide an educational environment that encourages creativity and research both fundamental and applied.
3. To enable the candidates to develop basic concepts and principles of human biochemistry.
4. To enable students to improve their skills.

Course intending learning outcomes (ILOs):

**Unit (1):
Basic Biochemistry**



A-Knowledge and understanding

ILOs	Methods of teaching/ Learning	of	Methods of Evaluation
<p>A. Grasp properly the different physicochemical considerations of physiologic relevance</p> <ul style="list-style-type: none"> • Carbohydrate metabolism • Lipid metabolism • Protein metabolism • Hormone metabolism • Hemoglobin metabolism • Biochemistry of Vitamins • Biochemistry of Enzymes • Biochemistry of Obesity and starvation • Mineral Metabolism • Biochemistry of Fatty Liver • Xenobiotics metabolism • Biochemistry of body fluids • Biochemistry of Cell Membranes • Tissue metabolism (RBCs, Muscles, Collagen, etc 	<p>Didactic (lectures, seminars, tutorial)</p> <p>-Journal club,</p> <p>-Critically appraised topic,</p>		<p>Portfolios</p> <p>Procedure/stains</p> <p>Log book</p> <p>Oral exam</p> <p>Written exam</p>

<ul style="list-style-type: none"> • Purines and Pyrimidine metabolism • Immunochemistry • Oxidant Stress, Antioxidants and Radiation Biology <p>B. Illustrate the classification and physiological significance of different types of carbohydrate</p> <p>C. Identify the biochemical properties, classification and physiologic significance of different types of lipid.</p> <p>D. State the different types of amino acids, how they are polymerize into various versatile types of proteins with their genetic and metabolic relevance.</p> <p>E. Cite the structure and different types of different monomers that form nucleic acids</p> <p>F. List the general view of molecular biology, replication, synthesis of RNA and proteins</p>		
<p>G. Perform a chemical tests for the identification of different types of carbohydrates and proteins.</p> <p>H. performof physical and chemical properties of carbohydrates and proteins</p>	<p>Educational prescription Demonstrations</p>	
<p>I. Appreciate working with a teamwork in the lab.</p> <p>J. Show respect to assisting personnel.</p> <p>K. Work in the lab with great caution to avoid the hazards of chemical on him and to protect his colleague</p>		
<p>L. perform laboratory investigations and establishment of different biochemical enzymes</p>		
<p>M. Perform laboratory investigations and establishment of different biochemical enzymes, hormones and other biochemical indices</p>		

A. Intellectual outcomes

ILOs	Methods of teaching/ Learning	Methods of Evaluation
<p>A. Define the structure, function and metabolic pathways of carbohydrates, lipids, proteins, nucleotides and their micro-molecules and their regulatory mechanisms.</p> <ul style="list-style-type: none"> • Point out the related metabolic disorders and their clinical prints on biochemical and • molecular basis • Point out the functions of hormones and micronutrients, their biochemical, clinical and • laboratory importance and deficiency manifestations of each <p>B. Correlates the facts of relevant basic and clinically supportive sciences with conditions and diseases of relevance to genetics, metabolism, and oncology.</p>	<p>Didactic (lectures) -Critically appraised topic, Educational prescription</p>	<p>Portfolios Log book Oral exam Written Exam</p>
<p>C. Demonstrate an investigatory and analytic thinking (problem solving) approaches to conditions relevance to application of chemoprophylaxis in medicine</p> <p>D. Illustrate the mode of action and kinetics of enzymes and their role in the diagnosis of diseases.</p>		
<p>E. Design and present audits, cases, seminars in common problems related to biochemical study..</p>		

C. Practical skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
<p>A. Demonstrate an understanding of the physio-chemical properties of nucleotides and amino-acids, and their polymers, DNA, RNA, polypeptides and proteins;</p> <p>B. Demonstrate knowledge of the concepts of “genes”, “genomes”, and “genotypes”, their inheritance, and how they are altered by evolution;</p> <p>C. Discuss the processes of DNA duplication, transcription, translation and post-translational modification;</p> <p>D. Be able to describe the common methods of NA and peptide analysis;</p> <p>E. Show understanding of the principles and techniques of gene cloning and genetic engineering;</p> <p>F. Demonstrate understanding of the relationships between genes in the environment and through time.</p> <p>G. Discipline specific skills:</p> <p>H. Show understanding of the experimental techniques available to generate molecular data;</p> <p>I. Be able to describe the methods underpinning the interpretation and integration of molecular data into an ever-expanding larger body of knowledge;</p> <p>J. Demonstrate knowledge of the range of large-scale sequencing projects now being undertaken. Personal and key skills:</p> <p>K. Demonstrate an ability to select and use appropriate tools for molecular analysis;</p> <p>L. Demonstrate the ability to communicate effectively via written assignment.</p> <ul style="list-style-type: none"> ❖ Introduction to molecular biology. Structure and properties of NA 7 genes. ❖ Genomes. ❖ Mutation, Recombination and Transposition. ❖ Genotype, Phenotype and Mendelian Inheritance. ❖ Methods of Molecular Analysis. ❖ DNA Replication. Transcription and Translation. Post-transcriptional Modification. Gene ❖ Silencing. Forward and Reverse Genetics. ❖ The Cell Cycle. ❖ Cloning. Genetic Engineering. Biocatalysis. ❖ The structure of Proteins and Macromolecular complexes. Coordination of Macromolecular 	<p>- seminar</p> <p>-Direct observation of the practical work</p>	<p>log book</p> <p>- Objective structure</p> <p>-Check list</p>

<p>M. Point-out the application of molecular biology in basic and clinical sciences.</p> <p>N. Interpret</p> <ul style="list-style-type: none"> • symptoms, signs and biochemical laboratory findings of vitamins deficiency diseases • the clinical significance of determination of plasma levels of glucose, total 		
<p>O. Identify laboratory reagents and instruments used in biochemistry laboratory Colorimetric estimation of some blood parametars (serum levels of glucose, total proteins, albumin, bilirubin, GPT, GOT, alkaline phosphatase, cholesterol, TG, creatinine and uric acid). Urine analysis (Identify the physiological variations of physical and chemical charactersof normal urine and performing chemical tests to detect abnormal constituents of urine</p>		

D. General Skills

Practice-Based Learning and Improvement

ILOs	Methods of teaching/ learning	Methods of Evaluation
<p>A. Present a thorough background of structural biochemistry, molecular biology and metabolism.</p> <ul style="list-style-type: none"> • The first semester provides the underpinning of quantitative biochemistry, i.e., stoichiometry, acids, bases, thermodynamics and kinetics. • This is followed by a consideration of the structure and properties of amino acids and proteins. Fundamentals of catalysis and enzyme properties and mechanisms follow the development of protein structure. • Molecular biology is developed via consideration of the structure, function and synthesis of DNA, RNA and proteins. Aspects of information transfer and its control are discussed in addition to the topics of regulation of gene expression and biotechnology. • Finally, the structure and properties of carbohydrates and lipids, including glycoproteins, glycolipids and glycosaminoglycans are presented. 	<p>Log book and supervision Written & oral communication Journal clubs Discussions in seminars Scientific meetings participate in seminars</p>	<p>Log book Portfolios Procedure/case presentation</p>

<ul style="list-style-type: none"> ❖ The second Part focuses largely on metabolism. The subject is introduced by a discussion of the principles governing metabolism including bioenergetics, compartmentalization, and the operation and control of pathways. ❖ Major metabolic pathways of carbohydrate metabolism are discussed. ❖ This is followed by a consideration of oxidative metabolism and lipid metabolism (i.e., triglycerides, phospholipids and sterols). ❖ This is followed by signal transduction, membrane biochemistry and biochemistry of hormones. ❖ Then, the metabolism of amino acids, porphyrins and nucleotides are developed with considerable discussion of inborn errors of metabolism. ❖ The course concludes with a discussion of nutritional biochemistry and integration of pathway 		
<ul style="list-style-type: none"> ❖ Special importance is placed on methods and techniques used to address key questions in the macromolecular processes of DNA replication and repair, RNA transcription and processing, protein synthesis, and post-translational modifications. ❖ Students are introduced to principles and applications of molecular techniques and new discoveries in the molecular biology of eukaryotes 		
<ul style="list-style-type: none"> ❖ The biochemical basis for mammalian nutritional requirements will be surveyed. Diets will be analyzed for nutritional adequacy and the consequences of nutritional deficiencies will be elaborated. The relationship between energy expenditure, energy uptake, and weight loss or gain will be studied 		

Interpersonal and Communication Skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
B. Maintain ethically sound relationship with other members of the health care team.	Observation & supervision	Simulation Record review (report)
C. Elicit information using effective nonverbal, explanatory, questioning, and writing skills.		
D. Provide information using effective nonverbal, explanatory, questioning, and writing skills.		
E. Work effectively with others as a member or leader of a team in Infection control unit.		
F. Write a report about type of organism and antimicrobial sensitivity results.		

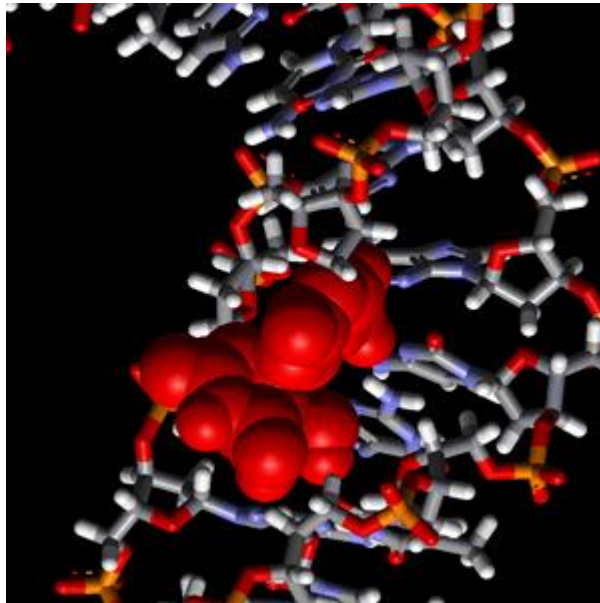
Professionalism

ILOs	Methods of teaching/ learning	Methods of Evaluation
G. Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society	Observation & supervision Didactic Didactic (lectures, seminars, tutorial Educational prescription	Objective structured practical examination 2.Student survey
H. Demonstrate a commitment to ethical principles including provision or withholding of clinical care, confidentiality of patient information, informed consent, business practices		
I. Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities		

Systems-Based Practice

ILOs	Methods of teaching/learning	Methods of Evaluation
J. Work effectively in relevant health care delivery settings and systems as diagnosis of different metabolic diseases.	Observation & supervision Didactic Didactic (lectures, seminars, tutorial Educational prescription	1-student survey 2.portfolios
K. Practice cost-effective health care and resource allocation that does not compromise quality of care (if applied) in performing special techniques as special stains and cultures.		
L. Assist patients in dealing with system complexities.		

Unit (2) Molecular Biology and tumor markers



A-Knowledge and understanding

ILOs	Methods of teaching/ Learning	Methods of Evaluation
<p>A. Outline the following</p> <ul style="list-style-type: none"> ❖ Including solution preparation, agarose gel electrophoresis, DNA isolation, restriction enzyme analysis, cloning, polymerase chain reaction (PCR), and bioinformatics.). 	<p>Didactic (lectures, seminars, tutorial) -Journal club,</p>	<p>1. Portfolios 2. Procedure/stains Log book 3. Oral exam 4. Written exam</p>
<ul style="list-style-type: none"> ❖ At the end of this course student will be able to: DNA as the genetic material, nucleotides, nucleic acid structure, supercoiling, hybridization ❖ DNA Replication: Basic mechanism & enzymology. continuous replication, replication strategies, prokaryotic and eukaryotic DNA polymerases, priming. ❖ DNA Replication (cont.): elongation, DNA Pol III subunit functions, termination. DNA repair mechanisms ❖ Recombination and Transposition ❖ . Homologous recombination, 	<p>-Critically appraised topic, Educational prescription</p>	
<ul style="list-style-type: none"> ❖ Gene structure and transcription in prokaryotes, <i>E. coli</i> RNA ❖ polymerase, Initiation, functions of σ, elongation, termination ❖ Operons, Major shifts in prokaryotic transcription, <i>E. coli</i> σ ❖ subunits, <i>B. subtilis</i> sporulation ❖ Eukaryotic transcription: RNA polymerases, promoters & ❖ enhancers. Eukaryotic transcription factors - general & specific. ❖ Origins of life in the 'RNA world.' RNA 		

<p>Processing: exons &</p> <ul style="list-style-type: none"> ❖ introns, splicing, spliceosomes, SNRPs. ❖ RNA Processing: self-splicing introns, capping, polyadenylation. ❖ 9.RNA editing, trans-splicing, recently discovered small RNAs ❖ Translation: translation initiation, the genetic code ❖ Translation elongation and termination, ribosome & tRNA structure and function. ❖ Basic of Cloning DNA:Endonucleases, Vectors,DNA Library and Expression Vectors ❖ Basic of Cloning DNA: Transformation Techniques- Insertion of Plasmids and Screening Libraries ❖ Basic of Cloning DNA: Amplifying Genes - Polymerase Chain Reaction and DNA 		
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B. Intellectual outcomes

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Apply molecular biology which provides a useful focal point for examining the effect of intellectual property on the dissemination of research tools.	Didactic (lectures, seminars, tutorial) -Journal club,	1.Portfolios 2.Procedure/stains 3.Log book 4.Oral exam 5.Written exam
B. Correlate Pathophysiologic Principles with general principles common to Medical Oncology.	-Critically appraised topic, Educational prescription	
C. Demonstrate proficiency in the follows areas: interpersonal and communication skills; humanistic behaviors; medical ethics; cancer prevention and screening; technical and other skills (develop competence or expertise in the performance and interpretation of Medical Oncology);		

C. Practical skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Emphasizes the techniques and experiments that lead to this information. The course will also provide the students with basic concepts and understanding of recombinant DNA technology	- seminar -Direct observation of the practical work	log book - Objective structure
<ul style="list-style-type: none"> ❖ At the end of this course student will be able to: DNA as the genetic material, nucleotides, nucleic acid structure, supercoiling, hybridization ❖ DNA Replication: Basic mechanism & enzymology. continuous replication, replication strategies, prokaryotic and eukaryotic DNA polymerases, priming. ❖ DNA Replication (cont.): elongation, DNA Pol III subunit functions, termination. DNA repair mechanisms ❖ Recombination and Transposition. Homologous recombination, 		

D. General Skills

Practice-Based Learning and Improvement

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Perform practice-based improvement activities using a systematic methodology(audit, logbook)	Log book and supervision Written & oral communication	Log book Portfolios Procedure/case presentation
B. Appraises evidence from scientific studies as researches, evidence based practice and internet updates.	Journal clubs Discussions in seminars	
C. participate in one audit or survey related to the course	Scientific meetings participate in seminars	
D. Perform data management including data entry and analysis.		
E. Facilitate learning of junior students and other health care professionals of the basics of immunology.		

Interpersonal and Communication Skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
F. Maintain ethically sound relationship with senior staff, colleagues and technicians.	Observation & supervision	Simulation Record review (report
G. Elicit information using effective nonverbal, explanatory, questioning, and writing skills.		
H. Provide information using effective nonverbal, explanatory, questioning, and writing skills.		
I. Work effectively with others as a member of a health care team or other professional group.		
J. Write a report about serologic diagnosis of infectious diseases.		

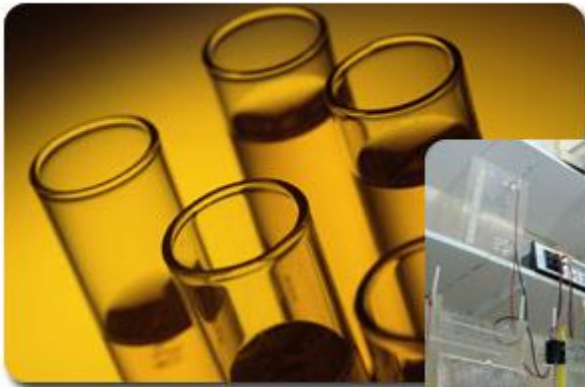
Professionalism

ILOs	Methods of teaching/ learning	Methods of Evaluation
K. Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society	Observation & supervision	Objective structured practical examination 2.Student survey
L. Demonstrate a commitment to ethical principles including confidentiality of patient information, informed consent, business practices		
M. Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities		

Systems-Based Practice

ILOs	Methods of teaching/ learning	Methods of Evaluation
N. Work effectively in relevant health care delivery settings and systems for diagnosis	Observation & supervision Educational prescription	1-student survey 2.portfolios
O. Practice cost-effective health care and resource allocation that does not compromise quality of care (if applied) in performing special techniques as, ELISA, and immunofluorescence.	Didactic (lectures, seminars, tutorial	

Unit (3): Applied Biochemistry



A-Knowledge and understanding

ILOs	Methods of teaching/ Learning	Methods of Evaluation
<p>A. Describe common clinical conditions and diseases related to</p> <ul style="list-style-type: none"> • Tumor Markers • Flow of genetic information (replication, transcription, translation) • Genetic code, DNA mutation and repair. • Regulation of gene expression. • Genetic engineering and recombinant DNA technology. <p>A. Grasp properly the different physicochemical considerations of physiologic relevance</p> <p>B. Illustrate the classification and physiological significance of different types of carbohydrate</p> <p>C. Identify the biochemical properties, classification and physiologic significance of different types of lipid.</p> <p>D. State the different types of amino acids, how they are polymerize into various versatile types of proteins with their genetic and metabolic relevance.</p> <p>E. Cite the structure and different types of different monomers that form nucleic acid</p>	<p>Didactic (lectures, seminars, tutorial) -Journal club,</p>	<p>Portfolios Procedure/stains Log book Oral exam Written exam</p>
<p>G. List the general view of molecular biology, replication, synthesis of RNA and proteins</p>	<p>-Critically appraised topic, -Educational prescription Demonstrate of how to process and stain the specimens in the research</p>	

	laboratory	
H. Perform a chemical tests for the identification of different types of carbohydrates and proteins AND Laboratory investigations and establishment of different biochemical enzymes		
I. Appreciate working with a team work in the lab. J. Show respect to assisting personnel. K. Work in the lab with great caution to avoid the hazards of chemical on him and to protect his colleague		
L-Mention the ethical and scientific principles of medical research		

B. Intellectual outcomes

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Categorize the microbial features important for laboratory diagnosis and those that characterizes a pathogenic strain ·B. Correlate the principle virulence factor(s) with the corresponding host defense mechanisms and To correlate the microbial causative agent with the chemotherapeutic agent(s) of choice C. Compare between the mode(s) of transmission. ·D. Design a scheme for laboratory diagnosis of the microbial diseases	Didactic (lectures, seminars, tutorial)	Written and oral examination Log book

C. Practical skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
<p>A. use instruments and devices in sterilization of culture media, monitoring efficiency of sterilization , centrifugation of clinical samples,</p> <p>❖ Molecular biology is the study of biology at a molecular level... Molecular biology chiefly concerns itself with understanding the interactions between the various systems of a cell, including the interactions between DNA, RNA and protein biosynthesis and learning how these interactions are regulated</p> <p>❖ <u>Bacterial plasmid bacterial phages vectors</u></p> <p>❖ <u>Chromatin immunoprecipitation ChIP assay</u></p> <p>❖ <u>Cloning library construction and screening</u></p> <p>❖ <u>DNA analysis techniques</u></p> <p>❖ <u>DNA microarray gene array</u></p> <p>❖ <u>DNA-protein interactions</u></p> <p>❖ <u>Enzymatic treatment of DNA/RNA</u></p> <p>❖ <u>Recombinant virus and gene therapy RNA transcriptional and post-transcriptional regulation RNAi siRNA gene silencing</u></p> <p>❖ <u>Saccharomyces cerevisiae Yeast protocol Site-directed mutagenesis Telomere and telomerase assay</u></p> <p>❖ <u>Transfection and transduction</u></p>	<p>- seminar</p> <p>-Direct observation of the practical work</p>	<p>log book</p> <p>- Objective structure</p> <p>-Check list</p>

D. General Skills
Practice-Based Learning and Improvement

ILOs	Methods of teaching/ learning
A. Perform practice-based improvement activities using a systematic methodology(audit, logbook)in: Sample processing,	Log book and supervision Written & oral communication Journal clubs Discussions in seminars Scientific meetings participate in seminars
B. Appraises evidence from scientific studies as topics researches and evidence based practice and internet updates .	
C. participate in one audit or survey related to the course	
D. Perform data management including data entry and analysis.	
E. Facilitate learning of junior students and other health care professionals about identification of bacteria and molecular methods for detection.	

Interpersonal and Communication Skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
F. Maintain ethically sound relationship with other members of the health care team.	Observation & supervision	Simulation Record review (report
G. Elicit information using effective nonverbal, explanatory, questioning, and writing skills.		
H. Provide information using effective nonverbal, explanatory, questioning, and writing skills.		
I. Work effectively with others as a member or leader of a team in Infection control unit.		
J. Write a report about type of organism and antimicrobial sensitivity results.		

Professionalism

ILOs	Methods of teaching/ learning	Methods of Evaluation
K. Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society	Observation & supervision Didactic Didactic (lectures, seminars, tutorial Educational prescription	Objective structured practical examination 2.Student survey
L. Demonstrate a commitment to ethical principles including provision or withholding of clinical care, confidentiality of patient information, informed consent, business practices		
M. Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities		

Systems-Based Practice

ILOs	Methods of teaching/ learning	Methods of Evaluation
N. Work effectively in relevant health care delivery settings and systems as diagnosis of different infectious diseases.	Observation & supervision Didactic Didactic (lectures, seminars, tutorial Educational prescription	1-student survey 2.portfolios
O. Practice cost-effective health care and resource allocation that does not compromise quality of care (if applied) in performing special techniques as special stains and cultures.		
P. Assist patients in dealing with system complexities.		

**4. Course contents (topic s/modules/rotation
Course Matrix**

Time Schedule: Second part

Topic	Covered ILOs			
	Knowledge	Intellectual	Practical skill	General Skills
Unit 1: Basic Biochemistry				
Chemistry of Carbohydrate, Lipid and Protein	A,B,I-M	-	-	A-L
Carbohydrate metabolism	A,D,I-M	C	-	A-L
Lipid metabolism	A,B,C	A,C	B,C,D,F	A-L
Protein metabolism	A,C,F	C	A,B,C	A-L
Hormone metabolism	B,C,E	A,B	-	A-L
Hemoglobin metabolism	B,F	C	A-F,E,G-O	A-L
Biochemistry of Vitamins	A,B,I-M	-	-	A-L
Biochemistry of Enzymes	A,D,I-M	C	-	A-L
Mineral Metabolism	A,B,C	A,C	B,C,D,F	A-L
Xenobiotics metabolism	A,C,F	C	A,B,C	A-L
Immunochemistry	B,C,E	A,B	-	A-L
Biochemistry of Fatty Liver	B,F	C	A-F,E,G-O	A-L
Biochemistry of body fluids	A,D,I-M	C	-	A-L
Biochemistry of Cell Membranes	A,B,C	A,C	B,C,D,F	A-L
Tissue metabolism (RBCs, Muscles, Collagen, etc	A,C,F	C	A,B,C	A-L
Oxidant Stress, Antioxidants and Radiation Biology	B,C,E	A,B	-	A-L
Purines and Pyrimidine metabolism	B,C,E	A,B	-	A-L
Unit 2: Molecular biology and tumor makers				
Tumor Markers.	B	A	-	A-O
Flow of genetic information (replication, transcription, translation)	B,E	B	A	A-O
Genetic code, DNA mutation and repair.	B,E	B	-	A-O
Regulation of gene expression.	B	C	-	A-O
Genetic engineering and recombinant DNA technology	A-C,F	A,B	A	A-O
Unit 3: Applied biochemistry				
Describe common clinical conditions and diseases related to medical biochemistry	A	-	-	A-P

5. Course Methods of teaching/learning:

- ❖ Lectures.
- ❖ Practical training in Dep.
- ❖ Control laboratory of Assiut University Hospitals.
- ❖ Case studies (problem solving).
- ❖ Seminars. Journal club. Lecture rooms: available in the department
Laboratories: The Department has 3 laboratories for research with a wide range of
- ❖ instrumentation that is available for training and research .
- ❖ library Computer laboratories with a wide range of software
- ❖ Intranet with a wide range of learning support material

6. Course Methods of teaching/learning: for students with poor achievements

1. Extra Didactic (lectures, seminars, tutorial) according to their needs
2. Extra training according to their needs

7. Course assessment methods:

i. Assessment tools:

- Examination MCQ – A standardized examination using multiple-choice questions (MCQ). The in-training examination and written board examinations are examples.
- Examination Oral – Uses structured realistic cases and patient case protocols in an oral examination to assess clinical decision-making.
- Case /problems – assess use of knowledge in diagnosing or treating patients or evaluate procedural skills.

ii. Time schedule: 2 years

iii. Marks: 1200 marks

8. List of references

iii. Recommended books

- 1-*Bancroft, and Stevens, (1982)*
- 2-Gartener and –Hiatte ,2006
- 3- From gene to protein
- 4 Basics of PCR

9. Signatures

Course Coordinator: Dr. Nashwa	Head of the Department: Prof. Amany Osama
Date: Sept. 2022	Date: Sept 2022

ANNEX 2

Program Academic Reference Standards (ARS)

1- Graduate attributes for basic master degree

The Graduate (after residence training and master degree years of study) must:

- 1-** Have the capability to be a scholar, understanding and applying basics, methods and tools of scientific research and medical audit in the chosen field of medicine.
- 2-** Appraise and utilise scientific knowledge to continuously update and improve clinical practice in related speciality.
- 3-** Acquire sufficient medical knowledge in the basic biomedical, clinical, behavioural and clinical sciences, medical ethics and medical jurisprudence and apply such knowledge in patient care in the field of speciality.
- 4-** Dealing with common problems and health promotion using updated information in the field of speciality.
- 5-** Identify and share to solve health problems in his speciality.
- 6-** Acquire all competencies –including the use of recent technologies- that enable him to provide safe, scientific, and ethical care including update use of new technology in the speciality field.
- 7-** Demonstrate interpersonal and communication skills that ensure effective information exchange with other health professions, the scientific community, junior students and the public.
- 8-** Function as supervisor, and trainer in relation to colleagues, medical students and other health professions.
- 9-** Acquire decision making capabilities in different situations related to his field of practice.
- 10-** Show responsiveness to the larger context of the related health care system, including e.g. the organisation of health care, partnership with health care providers and managers, practice of cost-effective health care, health economics, and resource allocations.

11- Be aware of public health and health policy issues and share in system-based improvement of his practice and related health care.

12- Show appropriate attitudes and professionalism.

13- Demonstrate skills of lifelong learning and maintenance of competence and ability for continuous medical education and learning in subsequent stages in the speciality or one of its subspecialties

2- Competency based Standards for basic master degree graduates

2.1- Knowledge and understanding

By the end of the program, the graduate should demonstrate satisfactory knowledge and understanding of

- 2-1-A-** Established basic, biomedical, clinical, epidemiological and behavioral sciences related to the speciality.
- 2-1-B-** The relation between practice in the speciality and the welfare of society.
- 2-1-C-** Up to date and recent developments in common problems related to the field of speciality.
- 2-1-D-** Ethical and medicolegal principles relevant to practice in the speciality field.
- 2-1-E -**Quality assurance principles related to the good medical practice in the speciality field.
- 2-1-F-** Ethical and scientific basics of medical research.

2.2- Intellectual skills:

By the end of the program, the graduate should be able to demonstrate the following:

- 2-2-A-** Correlation of different relevant sciences in the problem solving and management of common problems of the speciality.
- 2-2-B-** Problem solving skills based on data analysis and evaluation (even in the absence of some) for common situations related to speciality.
- 2.2- C-** Demonstrating systematic approach in studying common themes or problems relevant to the speciality field.
- 2-2-D-** Making alternative decisions in different situations in the field of the speciality.


2.3- Clinical skills

By the end of the program, the graduate should be able to

- 2-3-A -** Provide practical and or laboratory services that can help patient care, solving health problems and better understanding of the normal structure and function.
- 2-3-B-** Demonstrate practical / laboratory skills relevant to that speciality.

2-3- C- Write and comment on reports for situations related to the field of speciality.


2.4- General skills

By the end of the program, the graduate should be able to Competency-based outcomes for practice-based learning and improvement 

2-4-A- Demonstrate practice-based learning and improvement skills that involves investigation and evaluation of their own practice, appraisal and assimilation of scientific evidence, improvements in provided services and risk management.

2-4-B- Use all information sources and technology to improve his practice.


2-4-C- Demonstrate skills of teaching and evaluating others.

Competency-based objectives for interpersonal and communication Skills 

2-4-D- Demonstrate interpersonal and communication skills that result in effective information exchange and teaming with patients, their families, lab technical staff and other health professionals.

Competency-based objectives for Professionalism 

2-4-E- Demonstrate professionalism behaviors, as manifested through a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population.

Competency-based objectives for Systems-based Practice 

2-4-F- Demonstrate an awareness of and responsiveness to the larger context and system of health care and academic services and the ability to effectively use system resources to provide care that is of optimal value.

2-4-G- Demonstrate skills of effective time management.

2-4-H- Demonstrate skills of self and continuous learning.

Annex 3, Methods of teaching/learning

Annex 3, Methods of teaching/learning

	Patient care	Medical knowledge	Practice-based learning/Improvement	Interpersonal and communication skills	Professionalism	Systems-based practice
Didactic (lectures, seminars, tutorial)	X	X		X	X	X
Journal club,	X	X	X			
Educational prescription	X	X	X	X	X	X
Present a case (true or simulated) in a grand round	X	X	X	X	X	
Observation and supervision	X		X	X	X	X
conferences		X	X	X		X
Written assignments	X	X	X	X	X	X
Oral assignments	X	X	X	X	X	X

Teaching methods for knowledge

- ❖ Didactic (lectures, seminars, tutorial)
- ❖ journal club
- ❖ Critically appraised topic
- ❖ Educational prescription (a structured technique for following up on clinical questions that arise during rounds and other venues).
- ❖ Present a case (true or simulated) in a grand round
- ❖ Others

Teaching methods for patient care

- ❖ Observation and supervision /Completed tasks procedure/case logs
- ❖ On-the-job” training without structured teaching is not sufficient for this skill (checklists).
- ❖ Simulation is increasingly used as an effective method for skill/ teamwork training.

Teaching methods for other skills

- ❖ Written communication (e.g., orders, progress note, transfer note, discharge summary, operative reports, and diagnostic reports).
- ❖ Oral communication (e.g., presentations, transfer of care, interactions with patients, families, colleagues, members of the health care team) and/or non verbal skills (e.g., listening, team skills)
- ❖ Professionalism, including medical ethics, may be included as a theme throughout the program curriculum that includes both didactic and experiential components (e.g., may be integrated into already existing small group discussions of vignettes or case studies and role plays, computer-based modules) and may be modeled by the faculty in clinical practice and discussed with the resident as issues arise during their clinical practice.

Annex 4, Assessment methods

Annex 4, ILOs evaluation methods for Master Degree students.

Method	Practical skills	K	Intellectual	General skills			
	Patient care	K	I	Practice-based learning/Improvement	Interpersonal and communication skills	Professionalism	Systems-based practice
Record review	X	X	X		X	X	X
Checklist	X				X		
Global rating	X	X	X	X	X	X	X
Simulations	X	X	X	X	X	X	
Portfolios	X	X	X	X	X		
Standardized oral examination	X	X	X	X	X		X
Written examination	X	X	X	X			X
Procedure/Case log	X	X					

Annex 4, Glossary of Master Degree doctors assessment methods

- ❖ Record Review – Abstraction of information from patient records, such as medications or tests ordered and comparison of findings against accepted patient care standards.
- ❖ Chart Stimulated Recall – Uses the MSc doctor’s patient records in an oral examination to assess clinical decision-making.
- ❖ Mini clinical evaluation: Evaluation of Live/Recorded Performance (single event) – A single resident interaction with a patient is evaluated using a checklist. The encounter may be videotaped for later evaluation.
- ❖ Standardized Patients (SP) – Simulated patients are trained to respond in a manner similar to real patients. The standardized patient can be trained to rate MSc doctor’s performance on checklists and provide feedback for history taking, physical examination, and communication skills. Physicians may also rate the MSc doctor’s performance.
- ❖ Objective Structured Clinical Examination (OSCE) – A series of stations with standardized tasks for the MSc doctors to perform. Standardized patients and other assessment methods often are combined in an OSCE. An observer or the standardized patient may evaluate the MSc doctors.
- ❖ Procedure or Case Logs – MSc doctors prepare summaries of clinical experiences including clinical data. Logs are useful to document educational experiences and deficiencies.
- ❖ PSQs – Patients fill out Patient Survey questionnaires (PSQs) evaluating the quality of care provided by a MSc doctors.
- ❖ Case /problems – assess use of knowledge in diagnosing or treating patients or evaluate procedural skills.
- ❖ Models: are simulations using mannequins or various anatomic structures to assess procedural skills and interpret clinical findings. Both are useful to assess practice performance and provide constructive feedback.
- ❖ 360 Global Rating Evaluations – MSc doctors, faculty, nurses, clerks, and other clinical staff evaluate MSc doctors from different perspectives using similar rating forms.
- ❖ Portfolios – A portfolio is a set of project reports that are prepared by the MSc doctors to document projects completed during the MSc study years. For each type of project standards of performance are set. Example projects are summarizing the research literature for selecting a treatment option, implementing a quality improvement

program, revising a medical student clerkship elective, and creating a computer program to track patient care and outcomes.

- ❖ Examination MCQ – A standardized examination using multiple-choice questions (MCQ). The in-training examination and written board examinations are examples.
- ❖ Examination Oral – Uses structured realistic cases and patient case protocols in an oral examination to assess clinical decision-making.
- ❖ Procedure or Case Logs – MSc doctors prepare summaries of clinical experiences including clinical data. Logs are useful to document educational experiences and deficiencies.
- ❖ PSQs – Patients fill out Patient Survey questionnaires (PSQs) evaluating the quality of care provided by MSc doctors.

Annex 5, Program evaluation tools

By whom	Method	sample
Quality Assurance Unit	Reports Field visits	#
External Evaluator (s):According to department council External Examiner (s): According to department council	Reports Field visits	#
Stakeholders	Reports Field visits questionnaires	#
Senior students	questionnaires	#
Alumni	questionnaires	#

Annex 6, Program Correlations:

I-National Academic reference standards(NARS) for postgraduates versus Program ARS

مصفوفة توافق المعايير القومية القياسية العامة لبرامج الماجستير مع المعايير الأكاديمية المعتمدة من كلية
الطب □ جامعة أسيوط لدرجة الماجستير في الكيمياء الحيوية الطبية

1- Graduate attributes

NARS	Faculty ARS
1- إجادة تطبيق أساسيات و منهجيات البحث العلمي واستخدام أدواته المختلفة	1- Have the capability to be a scholar, understanding and applying basics, methods and tools of scientific research and medical audit in A
2-تطبيق المنهج التحليلي واستخدامه في مجال التخصص	2- Appraise and utilise scientific knowledge to continuously update and improve clinical practice in the Medical biochemistry
3-تطبيق المعارف المتخصصة و دمجها مع المعارف ذات العلاقة في ممارسته المهنية	3- Acquire sufficient medical knowledge in the basic biomedical, clinical, behavioural and clinical sciences, medical ethics and medical jurisprudence and apply such knowledge in patient care in the field of Medical biochemistry.
4-إظهار وعيا بالمشاكل الجارية و الرؤى الحديثة في مجال التخصص	4- Dealing with common problems and health promotion using updated information in the field of Medical biochemistry.
5-تحديد المشكلات المهنية و إيجاد حلولاً لها	5- Identify and share to solve health problems in his speciality.
6-إتقان نطاق مناسب من المهارات المهنية المتخصصة، واستخدام الوسائل التكنولوجية المناسبة بما يخدم ممارسته المهنية	6- Acquire all competencies that enable him to provide safe, scientific, ethical care including update use of new technology in the Medical biochemistry

1- Graduate attributes (Continuous)

NARS	Faculty ARS
7-التواصل بفاعلية و القدرة على قيادة فرق العمل	7- Demonstrate interpersonal and communication skills that ensure effective information exchange with other health professions, the scientific community, junior students and the public. 8- Function as supervisor, and trainer in relation to colleagues, medical students and other health professions.
8-اتخاذ القرار في سياقات مهنية مختلفة	9- Acquire decision making capabilities in different situations related to Medical biochemistry
9- توظيف الموارد المتاحة بما يحقق أعلى استفادة و الحفاظ عليها	10- Show responsiveness to the larger context of the related health care system, including e.g. the organisation of health care, partnership with health care providers and managers, practice of cost-effective health care, health economics, and resource allocations.
10-إظهار الوعي بدوره في تنمية المجتمع و الحفاظ على البيئة في ضوء المتغيرات العالمية و الإقليمية	11- Be aware of public health and health policy issues and share in system-based improvement of practice and related health care. Medical biochemistry
11-التصرف بما يعكس الالتزام بالنزاهة و المصادقية و الالتزام بقواعد المهنة	12- Show appropriate attitudes and professionalism.
12-تنمية ذاته أكاديميا و مهنيا و قادرا علي التعلم المستمر	13- Demonstrate skills of lifelong learning and maintenance of competence and ability for continuous medical education and learning in subsequent stages in Microbiology and Immunology or one of its subspecialties.

2-Academic standards

NARS	Faculty ARS
2-1-أ-النظريات و الأساسيات المتعلقة بمجال التعلم وكذا في المجالات ذات العلاقة.	2.1. A - Established basic, biomedical, clinical, epidemiological and behavioral sciences related to Medical biochemistry
2-1-ب-التأثير المتبادل بين الممارسة المهنية وانعكاسها علي البيئة.	2.1. B- The relation between practice in Microbiology and Immunology and the welfare of society.
2-1-ج-التطورات العلمية في مجال التخصص.	2.1. C- Up to date and recent developments in common problems related to the Medical biochemistry.
2-1-د-المبادئ الأخلاقية و القانونية للممارسة المهنية في مجال التخصص.	2.1. D- Ethical and medicolegal principles relevant to practice in the Medical biochemistry
2-1-هـ- مبادئ و أساسيات الجودة في الممارسة المهنية في مجال التخصص	2.1. E- Quality assurance principle related to the good medical practice in the Medical biochemistry
2-1-و- أساسيات وأخلاقيات البحث العلمي	2.1. F- Ethical and scientific basics of medical research.

2-Academic standards (Continuous)

NARS	Faculty ARS
<p>2-2-أ- تحليل و تقييم المعلومات في مجال التخصص والقياس عليها لحل المشاكل</p>	<p>2.2. A- Correlation of different relevant sciences in the problem solving and management of common problems of the Medical biochemistry</p> <p>2.2. B- Problem solving skills based on data analysis and evaluation (even in the absence of some) for common situations related to speciality.</p>
<p>2-2-ب- حل المشاكل المتخصصة مع عدم توافر بعض المعطيات</p>	<p>2.2. B- Problem solving skills based on data analysis and evaluation (even in the absence of some) for common situations related to Medical biochemistry</p>
<p>2-2-ج- الربط بين المعارف المختلفة لحل المشاكل المهنية</p>	<p>2.2. A- Correlation of different relevant sciences in the problem solving and management of common problems of Medical biochemistry</p>
<p>2-2-د- إجراء دراسة بحثية و /أو كتابة دراسة علمية منهجية حول مشكلة بحثية</p>	<p>2.2. C- Demonstrating systematic approach in studding common themes or problems relevant to the Medical biochemistry</p>
<p>2-2-و- التخطيط لتطوير الأداء في مجال التخصص</p>	<p>2.4. A- Demonstrate practice-based learning and improvement skills that involves investigation and evaluation of their own practice, appraisal and assimilation of scientific evidence, improvements in provided services and risk management.</p>

2-Academic standards (Continuous)

NARS	Faculty ARS
2-2-ز - اتخاذ القرارات المهنية في سياقات مهنية متنوعة	2.2. D- Making alternative decisions in different situations in the field of Medical biochemistry
2-3-أ - إتقان المهارات المهنية الأساسية و الحديثة في مجال التخصص	2.3.A- Provide practical and or laboratory services that can help patient care ,solving health problems and better understanding of the normal structure and function. 2.3. B- Demonstrate practical / laboratory skills relevant to Medical biochemistry
2-3-ب - كتابة و تقييم التقارير المهنية	2.3. C- Write and comment on reports related to the field Medical biochemist
2-3-ج - تقييم الطرق و الأدوات القائمة في مجال التخصص	2.3.A- Provide practical and or laboratory services that can help patient care ,solving health problems and better understanding of the normal structure and function. 2.3. B- Demonstrate practical / laboratory skills relevant to Medical biochemistry

2-Academic standards (Continuous)

NARS	Faculty ARS
2-4-أ-التواصل الفعال بأنواعه المختلفة	2.4. D- Demonstrate interpersonal and communication skills that result in effective information exchange and teaming with patients, their families, lab technical staff and other health professionals.
2-4-ب- استخدام تكنولوجيا المعلومات بما يخدم الممارسة المهنية	2.4. A- Demonstrate Practice-Based learning and Improvement skills that involves investigation and evaluation of their own practice, appraisal and assimilation of scientific evidence, improvements in provided services and risk management. 2.4. B- Use all information sources and technology to improve his practice.
2-4-ج- التقييم الذاتي وتحديد احتياجاته التعليمية الشخصية	2.4. A- Demonstrate Practice-Based learning and Improvement skills that involves investigation and evaluation of their own practice, appraisal and assimilation of scientific evidence, improvements in provided services and risk management. 2.4. B- Use all information sources and technology to improve his practice. 2.4. E-Demonstrate Professionalism behaviors, as manifested through a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population.

2-Academic standards (Continuous)

NARS	Faculty ARS
2-4-2-د- استخدام المصادر المختلفة للحصول على المعلومات و المعارف	2.4. A- Demonstrate Practice-Based learning and Improvement skills that involves investigation and evaluation of their own practice, appraisal and assimilation of scientific evidence, improvements in provided services and risk management.
2-4-2-هـ- وضع قواعد ومؤشرات تقييم أداء الآخرين	2.4. C- Demonstrate skills of teaching and evaluating others.
2-4-2-و- العمل في فريق ، وقيادة فرق في سياقات مهنية مختلفة	2.4. F- Demonstrate an awareness of and responsiveness to the larger context and system of health care and academic services and the ability to effectively use system resources to provide care that is of optimal value.
2-4-2-ز- إدارة الوقت بكفاءة	2.4. G- Demonstrate skills of effective time management.
2-4-2-ح- التعلم الذاتي و المستمر	2.4. H- Demonstrate skills of self and continuous learning.

Comparison between ARS & ILOS for master degree (basic)

(ARS)	(ILOS)
<p><u>2-1- Knowledge and understanding</u> 2-1-A- Established basic, biomedical, clinical, Biochemistry and molecular biology</p>	<p><u>2-1- Knowledge and understanding</u> 2-1-A- Explain the essential facts and principles of relevant basic sciences including Biochemistry of diseases 2-1-B- Mention essential facts of clinical supportive sciences related to Biochemistry 2-1-C- Demonstrate sufficient knowledge of the main subjects related Biochemistry</p>
<p>2-1-B The relation between practice in the Biochemistry and clinical science</p>	<p>2-1-H- State the impact of common problems related to the field of medical biochemistry on the society and how good practice can improve these problems.</p>
<p>2-1-C- Up to date and recent developments in common practice related to the field of medical biochemistry</p>	<p>2-1-C- Demonstrate sufficient knowledge of the main subjects related to biochemistry 2-1-D- Give the recent and update developments in the most important themes related to biochemistry</p>
<p>2-1-D- Ethical and medicolegal principles relevant to practice in the biochemistry</p>	<p>2-1-E- Mention the basic ethical and medicolegal principles that should be applied in practice and are relevant to the field of Medical biochemistry</p>
<p>2-1-E- Quality assurance principles related to the good medical practice in the Microbiology and Immunology field.</p>	<p>2-1-F- Mention the basics and standards of quality assurance to ensure good practice in the field of Medical biochemistry</p>
<p>2-1-F- Ethical and scientific basics of medical research.</p>	<p>2-1-G- Mention the ethical and scientific principles of medical research methodology.</p>

II-Program matrix

Knowledge and Understanding

Course	2/1/A	2/1/B	2/1/C	2/1/D	2/1/E	2/1/F	2/1/G	2/1/I	2/1/I
Course 1: Basic course	√	√	√						
Course 2: <u>Medical</u> <u>Biochemistry</u>	√	√	√	√	√	√	√	√	√

Intellectual Outcomes

Course	2/2/A	2/2/B	2/2/C	2/2/D	2/2/E	2/2/F
Course 1: Basic course	√					
Course 2: <u>Medical</u> <u>Biochemistry</u>	√	√	√	√	√	√

Practical Skills

Course	2/3/1/ A	2/3/1/ /B	2/3/1/ /C	2/3/1/ D	2/3/1/ E	2/3/1/ F	2/3/1/ G
Course 1 Basic course:							√
Course 2: <u>Medical</u> <u>Biochemistry</u>	√	√	√	√	√	√	√

Practical Skills

Course	2/3/1/H	2/3/1/I	2/3/1/J	2/3/1/K	2/3/1/L
Course 1 Basic course:					
Course 2: <u>Medical</u> <u>Biochemistry</u>	√	√	√	√	√

General Skills

Course	2/3/2/ A	2/3/2/ B	2/3/2/ C	2/3/2/ D	2/3/2/ E	2/3/2/ F	2/3/2/ G	2/3/2/ H
Course 1: Basic course						√	√	√
Course 2: <u>Medical</u> <u>Biochemistry</u>	√	√	√	√	√	√	√	√

General Skills

Course	2/3/2/I	2/3/2/ J	2/3/2/ K	2/3/2/ L	2/3/2/ M	2/3/2/ N	2/3/2/ O	2/3/2/ P
Course 1: Basic course	√							
Course 2: <u>Medical</u> <u>Biochemistry</u>	√	√	√	√	√	√	√	√

Annex 7,
Additional information:

Department information:

Our Mission:

Provide candidate with a basic knowledge in modern biochemistry and molecular biology necessary for an understanding of the life sciences at the molecular level in addition to a basic training in the principles of biochemistry and molecular biology techniques

Research

Define the structure , function and metabolic pathways of carbohydrates , lipids,proteins, nucleotides and their micro-molecules and their regulatory mechanisms.

- ❖ **Point out the related metabolic disorders and their clinical prints on biochemical and molecular basis**
- ❖ **Point out the functions of hormones and micronutrients, their biochemical, clinical and**
- ❖ **laboratory importance and deficiency manifestations of each**
- ❖ **Illustrate the mode of action and kinetics of enzymes and their role in the diagnosis of**
- ❖ **diseases.**
- ❖ **Identify the basics molecular biology (structure, function & synthenesis).**
- ❖ **Intellectual skills**
- ❖ **Point-out the application of molecular biology in basic and clinical sciences.**
- ❖ **Interpret symptoms, signs and biochemical laboratory findings of vitamins deficiency**
- ❖ **diseases**
- ❖ **Interpret the clinical significance of determination of plasma levels of glucose, total**
- ❖ **proteins, SGOT, SGPT, bilirubin, albumin, cholesterol, TG, creatinine and uric acid**
- ❖ **Diagnose the type of abnormality of pathological glucose tolerance curve**
- ❖ **Professional/practical skills**
- ❖ **Identify laboratory reagents and instruments used in biochemistry laboratory**
- ❖ **Colorimetric estimation of some blood parametars (serum levels of glucose, total proteins,**
- ❖ **albumin, bilirubin, GPT, GOT, alkaline phosphatase, cholesterol, TG, creatinine and uric**

- ❖ acid).
- ❖ **Urine analysis (Identify the physiological variations of physical and chemical characters of normal urine and performing chemical tests to detect abnormal constituents of urine).**

Opportunities within the department:

Education

The teaching mission of the Department is to provide the best possible training in the areas of Medical Biochemistry and related fields. Our approach is holistic in that we are constantly considering the entirety of the system we study, be it the that reprograms gene expression in an infected cell. We know that all of us are both student and teacher, be we first year undergraduates or senior faculty. Teaching and learning are our constant companions in the classroom, the lab, the ward or the office.

We offer a large number of formal courses as well as practical training and mentoring in the lab and clinic. We are committed to undergraduate and postgraduate training.

Undergraduate Studies

The Department of Medical Biochemistry offers many opportunities for undergraduate students to learn about our discipline. We offer many courses that specifically cater to undergraduates ranging from freshman seminars through to advanced classes for seniors. Undergraduates also are encouraged to obtain research experience in the labs of department faculty. Students interested in doing this should contact individuals whose work falls within their specific area of interest.

Graduate Studies

Courses typically taken are at the advanced graduate level in Medical Biochemistry, genetics besides cell and molecular biology. All students are required to obtain some teaching experience, usually by serving as teaching assistant. The normal time for completion of the MD. is about 2 to 3 years, and for Ph.D is about 4 years.

Seminars

The Department of Medical Biochemistry holds a monthly Research Seminar Series which present current research in biochemistry and GENETICS

Contact Us

General mail should be addressed to:

Department OF Medical Biochemistry

Faculty of Medicine

Assiut University

Egypt

Faculty are most easily found on our **Faculty Research page**
<http://afm.edu.eg/>

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Department quality control insurance for completing the program:

(End of the program Specification)