كلية الطب
جامعة أسيوط

Faculty of Medicine
Quality Assurance Unit

Medical Doctorate (M.D.) Degree Program and Courses Specifications for Medical Microbiology and Immunology

(According to currently applied Credit point bylaws)

Medical Microbiology and Immunology
Faculty of Medicine
Assiut University
Faculty of medicine
2022-2023

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M. D. degree of Medical Microbiology and Immunology

A. Basic Information

- **Program Title: Medical doctorate degree of Medical Microbiology and Immunology.**
- **Nature of the program: Single.**
- **Responsible Department: Medical Microbiology and Immunology Department**
- **Program Academic Director (Head of the Department): Prof. Noha Afifi**
- **Coordinator(s):**
- **Principle coordinator: Prof. Mohamed Aly El-Feky**
- **Assistant coordinator (s) Prof. Shaaban Hashem Ahmed**
  Prof. Ismail Sedeek
  Prof. Enas Abd Al Mageed
  Prof. Nahla Mohamed Kamel
  - **Prof. Michael Nazmy**
  Dr. Mona Hussein Mohammed
  Dr. Omnia Hassan Bakr
- **Internal evaluators: Prof. Amany Gamal Thabet**
- **External evaluator: 1- Prof. Wafaa Khairy (Minia University)**
  2– Prof. Mona Fatouh (Sohag University)

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: 6 courses

B. Professional Information

1- Program aims

1. **Produce students with a systematic understanding of the scientific basis of traditional and novel microbiological concepts.**
2. **Produce students equipped with the knowledge, specialist practical skills and critical awareness to enable them to pursue careers in the microbiological field, whether in the hospital, laboratory, industrial or research setting.**
3. **Enable them to work effectively, in partnership with other health professionals, support staff and service users.**
4. **Equip students with a critical understanding of the current issues and problems at the forefront of medical microbiology that will allow them to make independent, informed judgments in relation to these issues.**
5. **Provide students with the opportunity to participate in, and contribute to, current microbiological research programs within the department, and thus provide the wider microbiological community with new members**
6. **The acquisition of life-long habits of reading, literature searches, consultation with colleagues, attendance at scientific meetings, and the presentation of scientific work that are essential for continuing professional development (CPD).**

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

2/1Knowledge and understanding:

A. Demonstrate in-depth knowledge and understanding of theories, basics and updated biomedical clinical epidemiological and socio behavioral science relevant to his speciality as well as the evidence – based application of this knowledge to practice including patient care.

B. Explain basics, methodology, tools and ethics of scientific medical, clinical research.

C. Mention ethical, medico logical principles and bylaws relevant to his practice in the field of Medical Microbiology and Immunology.

D. Mention principles and measurements of quality assurance and quality improvement in medical education and in practice of Medical Microbiology and Immunology.

E. Mention public health and health policy issues relevant to this speciality and principles and methods of system –based improvement of related to his practice in the field of Medical Microbiology and Immunology.

2/2 Intellectual outcomes

A. Apply the basic and clinically supportive sciences which are appropriate to the Medical Microbiology and Immunology related conditions / problem / topics.

B. Demonstrate an investigatory and analytic thinking "problem – solving "approaches to relevant situations related to Medical Microbiology and Immunology.

C. Plan research projects.

D. Write scientific paper.

E. Participate in clinical or laboratory risk management activities as a part of clinical governance.

F. Plan for quality improvement in the field of medical education and practice in Medical Microbiology and Immunology.

G. Create / innovate plans, systems, and other issues for improvement of performance in his practice.

H. Present and defend his / her data in front of a panel of experts.

I. Formulate management plans and alternative decisions in different situations in the field of Medical Microbiology and Immunology.

2/3 Skills

2/3/1 Practical skills (Patient Care)

A. Master practical skills relevant to Medical Microbiology and Immunology for all common techniques and /or experiments including.

B. Master practical skills with non-routine, laboratory skills and techniques and under increasingly difficult circumstances, while demonstrating, appropriate and effective competency including.

C. Master proficiency in performing available complex laboratory techniques and handling unexpected complications including.

D. Gather essential and accurate information about practical/laboratory skills of Medical Microbiology and Immunology related conditions.

E. Make informed decisions about diagnostic laboratory tests for Medical Microbiology and Immunology related conditions.

F. Develop and carry out diagnostic and teaching plans for all Medical Microbiology and Immunology related conditions / skills.

G. Use information technology to support practical decisions and students education in all Medical Microbiology and Immunology related practical situations.

H. Provide health care or any relevant services aimed at preventing the Medical Microbiology and Immunology related health problems (if applied).

I. Lead other professionals, including those from other disciplines, to provide practical/laboratory-focused care in Medical Microbiology and Immunology related conditions.

J. Write competently all forms of professional reports related to Medical Microbiology and Immunology (lab reports, experiments report,) including reports evaluating these charts and sheets.

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. Demonstrate the competency of continuous evaluation of different types of practice including service provision to patients in the different areas of Medical Microbiology and Immunology.

B. Appraise scientific evidence.

C. Continuously improve his practice including service provision to patients based on constant self-evaluation and life-long learning.

D. Participate in medical audits and research projects.

E. Practice skills of evidence-based Medicine (EBM).

F. Educate and evaluate students, mentors and other health professionals.

G. Design logbooks.

H. Design guidelines and standard protocols for different techniques and procedures.

I. Apply knowledge of study designs and statistical methods to the appraisal of Medical Microbiology and Immunology related studies

J.Use information technology to manage information, access on- line medical information; for the important topics.

Interpersonal and Communication Skills

K- Master interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families, and health professionals, including: -

- Present a case.
- Write a consultation note.
- Inform patients of a diagnosis and therapeutic plan, Completing and maintaining comprehensive timely and legible medical records.
- Teamwork skills.

L. Create and sustain a therapeutic and ethically sound relationship with patients.

M. Elicit and provide information using effective nonverbal, explanatory, questioning, and writing skills.

N. Work effectively with others as a member or leader of a health care team or other professional group.

Professionalism

O. Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society.

P. Demonstrate a commitment to ethical principles including provision or withholding of clinical care, confidentiality of patient information, informed consent, and business practices.

Q. Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities.

Systems-Based Practice

R. Work effectively in academic and health care delivery settings and systems related to speciality including good administrative and time management.

S. Practice cost-effective services provision and resource allocation that does not compromise quality.

T. Advocate for quality patient care and assist patients in dealing with system complexities.

U. Design, monitor and evaluate specification of under and post graduate courses and programs.

V. Act as a chair man for scientific meetings including time management

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

Academic standards for Medical Doctorate (MD) degree in Medical Microbiology and Immunology

Assiut Faculty of Medicine developed MD 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 3/2010. 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

1. **ACGME (Accreditation Council for Graduate Medical Education). http://www.acgme.org/acWebsite/navPages/nav_Public.asp.**
2. **East Carolina University, USA, Ph.D. in Microbiology and Immunology (www.gradschools.com/program-details/east-carolina-university/microbiology-and-immunology-196407_1)**

5- Program Structure

A. Duration of program: 4-6 years

B. Structure of the program:

Total number of credit points: = 420 CP
Master degree: 180 credit point
Didactic #: 37 (30.8%), practical 83 (69.2%), total 120 CP
Thesis (80) and researches (40): 120 CP (50%)

First part
Didactic 10 (100%), practical 0 (0 %), total 10 CP
Second part
Didactic 24, (22.4 %), practical 83 (77.6 %), total 107 CP
Elective courses: 3 credit points
#Didactic (lectures, seminars, tutorial)

According the currently applied bylaws:
Total courses: 120 credit point
Compulsory courses: 117 credit point (97.5%)
Elective courses: 3 credit point (2.5%)

	Credit points	% from total
▪ Basic science courses	10	4.1%
▪ Humanity and social courses	3	1.2%
▪ Speciality courses	107	44.6%
▪ Others (Computer, …)		
▪ Field training	83	34.8%
Thesis	80	33.4%
2 published researches	40	16.7%
Master degree	180	

C-Program Time Table

Duration of program 4 years divided into

- Part 1

Program-related basic science courses

Program-related basic science courses

- Medical statistic

- Research methodology

- Medicolegal Aspects and Ethics in Medical Practice and Scientific Research

Students are allowed to sit the exams of these courses after 6 months from applying to the M D degree.

Students are allowed to sit the exams of the remaining basic science courses after 12 months from applying to the MD degree.

Thesis and 2 published researches

For the M D thesis;

MD thesis subject should be officially registered within 1 year from application to the MD degree,

Discussion and acceptance of the thesis should not be set before 24 months from registering the M D subject;

It could be discussed and accepted either before or after passing the second part of examination

- Part 2

Program –related speciality courses and ILOs

Students are not allowed to sit the exams of these courses before 4 years from applying to the MD degree.

Two elective courses can be set during either the 1st or 2nd parts.

The students pass if they get 50% from the written exams and 60% from oral exams, 60% from 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%.

Clinical/practical and oral exams 30% - 60%.

D-Curriculum Structure: (Courses):

Levels and courses of the program:

Courses and student work load list	Course Code	Core Credit points		
		didactic #	training	Total
First Part				
Basic science courses (10 CP)				
Course 1: Medical Statistics	FAC309A	1		
Course 2: Research Methodology	FAC309B	1		
Course 3: Medicolegal Aspects & Ethics in Medical Practice and Scientific Research	FAC310C	1		
Course 4: Advanced Infection Control	MIC307A	4		
Course 5: Advanced Molecular Microbiology	MIC307B	3		
Elective courses*	3 CP			
- Elective course 1 - Elective course 2				
Thesis	80 CP			
Published researches**	40 CP			
Second Part	Speciality courses 24 CP Speciality Practical Work (log Book) 83 CP			
Speciality Course: Course 6: Advanced Microbiology	**MIC307C**	**24**		
1) Unit 1: Advanced Bacteriology		**8**	**29**	**37**
2) Unit 2: Advanced Virology		**6**	**21**	**27**
3) Unit 3: Advanced Mycology		**4**	**12**	**16**
4) Unit 4: Basic and Clinical Immunology		**6**	**21**	**27**
Speciality Practical Work (83 CP)			**83**	
Total of second part		**24**		**107**

#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 Courses#:

- Advanced medical statistics.
- Evidence based medicine.
- Advanced infection control.
- Quality assurance of medical education.
- Quality assurance of clinical practice.
- -Hospital management

Two of the above-mentioned courses are prerequisites for fulfillment of the degree.

3. Thesis / Researches:

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

**Another 40 points are appointed to acceptance or publication of one research from the thesis in international indexed medical journals or publication of 2 researches from the thesis in local specialized medical journals.

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:**
   - **Master degree in Medical Microbiology and Immunology.**

II. **Specific Requirements:**
   - **Fluent in English (study language)**

VACATIONS AND STUDY LEAVE

The current departmental policy is to give working residents 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 (Medical statistic, Research methodology and Medicolegal Aspects and Ethics in Medical Practice and Scientific Research) could be set at 6 months from registering to the MD degree.

Students are allowed to sit the exams of the remaining essential courses of the first part after 12 months from applying to the MD degree.

Examination of the second part cannot be set before 4 years from registering to the degree.

Discussion of the MD thesis could be set after 2 years from officially registering the MD subject, either before or after setting the second part exams.

The minimum duration of the program is 4 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 MD thesis.
4. Acceptance or publication of one research from the thesis in international indexed medical journals or publication of 2 researches from the thesis in local specialized medical journals.

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

Weighting of assessments:

Courses		Degrees			
	Course code	Written Exam	Oral and/or Practical l Exam		Total
First Part					
Basic science courses:					
Medical Statistics	FAC309A	35	15		50
Research Methodology	FAC309B	35	15		50
Medicolegal Aspects & Ethics in Medical Practice and Scientific Research	FAC310C	35	15		50
Advanced Infection Control	MIC307A	100	20	80	200
Advanced Molecular Biology	MIC307B	135	15		150
Total					500
Second Part					
	Course code	written	Oral	Practical	Total
Speciality Course: Advanced Microbiology	MIC307C	600	120	480	1200
Total of the second part					1200
Elective course 1		50	50		100
Elective course 2		50	50		100

*** 25% of the oral exam for assessment of logbook**

Total degree 1900
500 marks for first part
1200 for second part
Written exam ------ (905 marks).
Clinical/practical and oral exams------- (795 marks

Examination system:

First part:

- Written exam 2 hours in Medical Statistics and Research Methodology + oral examination
- Written exam 1 hours in Medicolegal Aspects and Ethics in Medical Practice and Scientific Research + oral examination
- Written exam 3 hours in Advanced Infection Control + oral and practical examination
- Written exam 3 hours in Advanced Molecular Microbiology + oral examination

Second part:

- Written exam 3 hours in Basic Microbiology
- Written exam 3 hours in Basic and Clinical Immunology
- Written exam 3 hours in Clinical Microbiology
- Written exam 3 hours in Applied Microbiology
- Oral and practical examination

Elective courses

- Written exam one paper 1 hour in Elective course 1 + Oral & Practical exam
- Written exam one paper 1 hour in Elective course 2 + Oral & Practical exam

10-Program evaluation

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 5 contains evaluation templates and reports.

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:	**Prof. Mohammed Ali El-Fekki**		**5/2022**
Head of the Responsible Department (Program Academic Director):	**Prof. Noha Afifi**		**5/2022**

Annex 1, Specifications for Courses / Modules

Annex 1: specifications for courses/ modules

First Part

Course 1: Medical statistics

Name of department: Public Health and Community Medicine
Faculty of medicine
Assiut University
2022-2023

1. Course data

- **Course Title: Medical statistics**
- **Course code: FAC309A**
- **Specialty: offered to all clinical and academic specialties**
- **Number of credit points: 1 credit point**
- **Department (s) delivering the course:** Pubic Health and Community Medicine
- **Coordinator (s):**
  - Course coordinator: Prof. Farag Mohammed Moftah
  - Assistant coordinator (s):
    Prof. Medhat Araby Khalil Saleh
- Date last reviewed: January -2022
- **Requirements (pre-requisites) if any:**
  - Completed Master degree in any of the academic or clinical departments of Medicine.

2. Course Aims

Enable gradute students to use statistical principles to improve their professional work and develop the concept of critical interpretation of data

3. Intended learning outcomes (ILOs):To be able to use statistical principals to manage data

A knowledge and understanding

ILOS	Methods of teaching/ learning	Methods of Evaluation
A. List the types of variables	Lecture and discussion	Written examination
B. Identify the methods of data collection	Lecture and discussion	Written examination
C. Describe the different sampling strategies	Lecture and discussion	Written examination
D. Identify types of tabular and graphic presentation of data	Lecture and discussion	Written examination
E. Identify measures of central tendency and dispersion	Lecture and discussion	Written examination
F. Identify the characters of normal distribution curve.	Lecture and discussion	Written examination
G. Detect the difference between parametric and non-parametric tests	Lecture and discussion	Written examination
H. Identify the concepts of correlation and regression	Lecture and discussion	Written examination

B. intellectual

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Describe the normal curves.	Lecture& Discussions	Written examination
B. Describe and summarize data	Lecture& Discussions	Written examination
C. Select the proper test of significance	Lecture& Discussions	Written examination
D. Interpret the proper test of significance	Lecture& Discussions	Written examination
E. Describe the difference between parametric and non-parametric tests	Lecture& Discussions	Written examination

C. Practical skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Design data entry files.	Tutorial on SPSS	Assignments SPSS exam
B. Validate data entry.	Tutorial on SPSS	Assignments SPSS exam
C. Manage data files.	Tutorial on SPSS	Assignments SPSS exam
D. Construct tables and graphs.	Tutorial on SPSS	Assignments SPSS exam
E. Calculate measures of central tendency and dispersion.	Tutorial on SPSS	Assignments SPSS exam
F. Select, apply and interpret the proper test of significance.	Tutorial on SPSS	Assignments SPSS exam

D general skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Appraise scientific evidence	Discussions	Research assignment
B. Use information technology to manage information, access on-line medical information; for the important topics.	tutorial	Research and audits' assignment

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

Time Schedule: First Part

Topic	Covered ILOs			
	Knowledge A	Intellectual B	Practical skills C	General Skills D
Introduction	A-F	A-D	-	A&B
Tables and graphics	D	A-D	-	A&B
Sampling	C	-	-	A&B
Methodology of data collection	B	-	-	A&B
Type of variables	A	-	-	A&B
Proportion test& Chi-square test	E,F	C&D	-	A&B
Student T test& Paired T test	E,F	C&D	F	A&B
ANOVA test	E,F	C&D	F	A&B
Non parametric tests	E,F	C&D	F	A&B
Discrimination analysis factor analysis	E,F	C&D	-	A&B
SPSS Introduction	A-F	A-D	-	A&B
Data entry and cleaning of data	A	A-D	A-C	A&B
Transforming of variables	A	A&B	A-C	A&B
Descriptive statistics	D	A-D	D&E	A&B
Graphic presentation	D	A&B	D	A&B
Chi square and interpretation of results	E,F	C&D	F	A&B
Correlation Regression	E,F	C&D	F	A&B
Multiple and logistic Regression	E,F	C&D	F	A&B

5. Course Methods of teaching/learning

1) Lectures
2) Assignments
3) Discussions
4) Exercises
5) Tutorial on SPSS v.16

6. Course assessment methods:

i. Assessment tools:

1. Attendance and active participation
2. Assignment
3. Practical SPSS examination
4. Written exam

ii. Time schedule: After 6 months from applying to the M D degree.

iii. Marks: 50 (35 for written exam and 15 for practical exam).

7. List of references

i. Lectures notes

Department lecture notes

ii. Essential books

- Medical Statistics: Book by Ramakrishna HK 2016
- Janet Peacock and Philip Peacock. Oxford Handbook of Medical Statistics (second edition.) Publisher: Oxford University Press, Print Publication Date: Nov 2010 Print ISBN-13: 9780199551286, Published online: Jun 2011. DOI: 10.1093/med/9780199551286.001.0001
- Leslie E. Daly MSc, PhD, Hon MFPHM,, Geoffrey J. Bourke MA, MD, FRCPI, FFPHM, FFPHMI, Interpretation and Uses of Medical Statistics, Fifth Edition, First published:1 January 2000, Print ISBN:9780632047635 |Online ISBN:9780470696750 |DOI:10.1002/9780470696750
- Marcello Pagano, Kimberlee Gauvreau: Principles of Biostatistics second edition published in 2000 by Brooks/Cole and then Cengage Learning. CRC Press, Feb 19, 2018 - Mathematics - 584 pages.

Iii- Recommended books

- Ji-Qian Fang (Sun Yat-Sen University, China) Handbook of Medical Statistics: https://doi.org/10.1142/10259 | September 2017.Pages: 852
- Robert H. Riffenburgh: Statistics in Medicine 4th Edition (2020). EvidenceEvidence Based Medicine How to practice and teach EBM.
- Discovering Statistics Using IBM SPSS Book by Andy Field, 2013.

iii. Periodicals, Web sites, etc

iv. **Periodicals , etc** Statistics in Medicine - Wiley Online Library

v. **Web sites** https://www.phc.ox.ac.uk/research/medical-statistics

8. Signatures

Course Coordinator: - Farag Mohammed Moftah	**Head of the Department:** - Prof. Eman Morsy Mohamed
Date: 10-1-2022	**Date**: 10-1-2022
Associated Coordinator: Prof. Medhat Araby Khalil Saleh	
Date: 10-1-2022	

Course 2: Research Methodology

Name of department: Public Health and Community Medicine
Faculty of medicine
Assiut University
2021-2022

1. Course data

- **Course Title: Research methodology**
- **Course code: FAC309B**
- **Specialty: Offered to all clinical and academic specialties**
- **Number of credit points: 1 credit point**
- **Department (s) delivering the course: Department of public health**
- **Coordinator (s):**
  - **Course coordinator:** Prof. Mahmoud Attia

  Assistant coordinator (s): Prof. Ekram Mohamed
  - Prof. Medhat Araby Khalil
- **Date last reviewed:** January 2022
- **Requirements (prerequisites) if any:**
  - **Completed Master degree in any of the academic or clinical departments of Medicine.**

2. Course Aims

To provide graduate students with the skills of:

- planning and implementing sound research
- writing a scientific research proposal

3. Intended learning outcomes (ILOs)

A knowledge and understanding

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Explain differences between different study designs.	Lecture and discussion Practical sessions Workshops	Written exam Log book assignments Practical exam
B. Identify sources and types of bias in research.	Lecture and discussion Practical sessions	Written exam Log book assignments Practical exam
C. Identify methods of data collection.	Lecture and discussion Practical sessions	Written exam Log book assignments
D. Select and design valid measurement tools for research.	Lecture and discussion Practical sessions Workshops	Written exam Log book assignments Practical exam
E. Explain ethical issues in conducting research on human subjects.	Lecture and discussion Practical sessions Workshops	Written exam Log book assignments
F. List the steps involved in proposal writing.	Lecture and discussion Practical sessions Workshops	Written exam Log book assignments Practical exam
G. Identify a research problem within a conceptual framework.	Lecture Discussion	Written exam Log book assignments

		Practical exam
H. Use the web sources to do a literature search	Practical tutorial on web	Log book assignment
I. Describe the rules of authorship in scientific writing.	Lecture and discussion Practical sessions Workshops	Written exam Log book assignments
J. Select the appropriate study design for the research question.	Lecture Practical sessions	Written exam Practical exam
K. Minimize bias in designing research.	Lecture	Written exam
L. Screening & theoretical background	Lectures	Written exam Practical exam
M. Mention the basic ethics for conducting a research and medicolegal principles relevant to data confidentiality.	lectures seminar	Written exam Practical exam

B. intellectual

Competency and Skills	Methods of teaching/ learning	Methods of Evaluation
A- Apply basic science & knowledge for appraising scientific literature.	Discussions &seminars	Written exam Practical exam
B- Design research and present study data, in seminars.	lecture seminar	log book assignments
C- Design suitable epidemiological study.	lecture seminar	log book assignments
D- Design strategies for resolving ethical concerns in research, law, and regulations.	lecture Workshops	Written exam log book assignments
E- Apply coherently synthesize ideas and integrate lateral and vertical thinking.	lecture Workshops	log book assignments
F- Evaluate screening tests and interpreting their uses in different population.	lecture	Written exam Practical exam

C. Practical skills

Competency and Skills	Methods of teaching/ learning	Methods of Evaluation
A- Conduct epidemiological studies, screening and surveys.	lectures seminar	written exam log book assignments
B- Identify steps required in fielding the study.	Lecture	Assignments Written exam
C- Managing data collection team.	lectures seminar	log book assignments
D- Identify steps required for calculation sensitivity, specificity, positive predictive value, negative predictive value, accuracy of a screening test.	Lecture Practical sessions	Assignments Written exam Practical exam
E- Be able to define and apply the epidemiologic criteria of causality and be able to distinguish between a measure of association and evidence of causality.	Lecture Practical sessions	Assignments Written exam Practical exam
F- Synthesize information from multiple sources for research writing and the ability to perform paper critique .	Lecture Practical sessions	Assignments Written exam Practical exam
G- Identify bias and confounding in epidemiological study designs, their types and ways to control them in various types of biases.	Lecture Practical sessions	Assignments Written exam Practical exam

D General skills
Practice-Based Learning and Improvement

ILOs	Methods of teaching/ learning	Methods of Evaluation
A- Scientific paper and proposal writing skills: be able to write an introduction, objectives and the methodological section.	Tutorial	Written examination
B- Learn authorship ethical rules.	Tutorial	Written examination
C- Perform practice-based improvement activities using a systematic methodology (audit, logbook, critical appraisal)	- Lectures -Practical sessions - Discussion - Readings	critical appraisal
D- Appraise evidence from scientific studies(journal club)	- Lectures -Practical sessions - Discussion - Readings	critical appraisal
E- Conduct epidemiological studies, screening and surveys.	- Lectures -Practical sessions - Discussion - Readings	attendance and participation
F- Facilitate training of junior students and other health care professionals in different screening activities.	Field work Participation in projects	attendance and participation

Interpersonal and Communication Skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
G- Maintain ethically sound relationship with community members.	- Lectures -Practical sessions - Discussion - Readings	Written exams
H- Provide information using effective nonverbal, explanatory, questioning, and writing skills.	- Lectures -Practical sessions - Discussion - Readings	Written exams Practical exams
I- Present results of researches in seminars.	- Lectures -Practical sessions - Discussion - Readings	Log book assignments

Professionalism

ILOs	Methods of teaching/ learning	Methods of Evaluation
J- Demonstrate respect, compassion, and integrity to the needs of society.	- Lectures - Discussion - Readings	Written exams
K- Manage potential conflicts of interest encountered by practitioners, researchers, and organizations.	- Lectures - Discussion - Readings	Written exams
L- Design strategies for resolving ethical concerns in research, law, and regulations.	Lectures - Discussion - Readings	Written exams Practical exams
M- Demonstrate ways to control for confounding in the analysis phase of a study	Lectures - Discussion - Readings	Written exams Practical exams
N- Demonstrate a commitment to ethical principles including confidentiality of participants' information and informed consent.	Lectures - Discussion - Readings	Written exams
O- Assess ethical considerations in developing communications and promotional initiatives.	- Lectures - Discussion - Readings	Written exams

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

Time Schedule: First Part

Topic	Covered ILOs			
	Knowledge **A**	**Intellectual** **B**	**Practical skills** **C**	**General Skills** **D**
Over view on research conduction and research ethics	A&E	A-D	A-C	C-G, I,L&M-O
How to write a research proposal	F,I	E	F	A-C&H
Observational study design	A& D	B & C	D	E & F
Experimental study design	A& D	B & C	B	E & F
Evaluation of diagnostic tests (Screening)	L	A	B& E	F
Systematic reviews and meta analysis	G, H & M	E& F	F	C, D
Confounding, bias & effect modification	B & K	D	E & G	M

5. Course Methods of teaching/learning:

1. Lectures
2. Assignments
3. Discussion
4. Exercises

6. Course assessment methods:

i. Assessment tools:

1. Attendance and participation
2. Log book assignments
3. Written examination
4. Practical examination

ii. Time schedule: After 6 months from applying to the M D degree.

iii. Marks: 50 (35 for written exam and 15 for practical exam).

7. List of references

i. Lectures notes

- Department lecture notes

ii. Essential books

- Research Design: Qualitative, Quantitative and Mixed Methods Approaches 4th Edition by John W. CreswellSAGE Publications, Inc; 4th edition (January 1, 2014)
- Research methodology: A step – by – step Guide for Beginners. Ranjit Kumar, 2020. Second edition https://books.google.com.eg/books?
- Medical Research Essentials Rania Esteitie, McGraw Hill Professional, third edition, Feb 5, 2014 - Medical - 104 pages
- Research Methodology in the Medical and Biological Sciences Petter Laake, Haakon Breien Benestad, Bjorn R. Reino Olsen, 4th edition , Academic Press, Nov 5, 2007 - Science - 512 pages

iv. Recommended books

- Research Methods in Education 7th Edition, by Louis Cohen, Lawrence Manion, Keith Morrison Publisher: Routledge; (April 22, 2011) www.routledge.com/textbooks/cohen7e.
- Research Methodology: A Practical and Scientific Approach Vinayak Bairagi, Mousami V. Munot · 2019, Research Methodology: A Practical and Scientific Approach - Google Books
- Based Medicine How to practice and teach EBM. David Sachett, Sharon E. Straus, W. Scott Richardson , William Rosenberg R.Brain Haynes
- Dissertation workshop open courseware JHSPH

8. Signatures

Course Coordinator: Prof.Mahmoud Attia	**Head of the Department:** Prof. Eman Morsy Mohamed
Date: 10-1-2022	**Date**: 10-1-2022

Course 3: Medicolegal Aspects and Ethics in Medical Practice and Scientific Research

Name of department: Forensic medicine and clinical toxicology
Faculty of medicine
Assiut University

1. Course data

- **Course Title: Medicolegal Aspects and Ethics in Medical Practice and Scientific Research**
- **Course code: FAC310C**
- **Speciality: All Academic Departments (1st part).**
- **Number of credit points: 1 credit point**
- **Department (s) delivering the course: Forensic Medicine and Clinical Toxicology**
- **Coordinator (s):**
  - **Course coordinator:** Prof. Ghada Omran
  - **Assistant coordinator (s)**. Prof. Zaghloul Thabet

- **Date last reviewed: 17/4/2022.**

- **Requirements (prerequisites) if any :**
  - **Completed Master degree.**

2. Course Aims

To describe the basic ethical and medicolegal principles and bylaws relevant to practice in the field of academic specialties

3. Intended learning outcomes (ILOs):

A. knowledge and understanding

Competency and Skills	Methods of teaching/ learning	Methods of Evaluation
A. Mention medical ethics.	Lecture and discussion	Oral &Written exam
B. Explain ethics in research.(human and animal)	Lecture and discussion	Oral &Written exam
C. Mention medical laws.	Lecture and discussion	Oral &Written exam
D. List causes of medical responsibilities.	Lecture and discussion	Oral &Written exam

B. intellectual

Competency and Skills	Methods of teaching/ learning	Methods of Evaluation
A-Design and present case , seminars in common problem In medical responsibilities, medical ethics and ethics in research-	Lecture and discussion	Oral &Written exam

C. Practical skills

Competency and Skills	Methods of teaching/ learning	Methods of Evaluation
A. Write medical and legal reports.	Discussion	Discussion
B. Identify ethics in research.	Discussion	Discussion
C. Identify medical laws.	Discussion	Discussion
D. Identify medical responsibilities.	Discussion	Discussion

D. General skills

Practice-Based Learning and Improvement

Competency and Skills	Methods of teaching/ learning	Methods of Evaluation
A. Make timely and legible medical records	Lecture and discussion	Global rating logbook
B. Acquire the teamwork skills	Lecture and discussion	Global rating logbook

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

Time Schedule: First Part

Topic	Covered ILOs			
	Knowledge A	**Intellectual** B	**Practical skills** C	**General Skills** D
1. Medical ethics	A,C,D	A	A,C,D	A,B
2. Ethics in research	B,C,D	A	B, ,C,D	A,B

5. Course Methods of teaching/learning:

1. Lectures.
2. Discussions.
3. Exercises.

6. Course assessment methods:

i. Assessment tools:

1. Written examination.
2. Attendance and active participation.
3. Oral examination.

ii. Time schedule: After 6 months from applying to the M D degree.

iii. Marks: 50 (35 for written exam and 15 for oral exam).

7. List of references

i. Lectures notes

- Course notes.
- Staff members print out of lectures and/or CD copies.

ii. Essential books

- Bernard Knight and Pekka Saukko (2015: Knight Forensic Pathology. Hodder Arnold press
- Goldfrank, Lewis R.; Howland, Mary Ann; Hoffman, Robert S.; Nelson, Ewis S.; Lewin, Neal A (2019): Goldfrank's Toxicologic Emergencies, 11th ed. McGraw Hill / Medical.
- Medical Ethics Manual. World medical association. Third edition 2015.
- Medical ethics and law. Dominic Wilkinson, 3rd edition 2019.

iii. Recommended books

- Biswas Gautam (2021): Review of Forensic Medicine & Toxicology. 5th ed. Jaypee Brothers Medical Pub.

iv. Journal and web site

- Journals of all Egyptian Universities of Forensic Medicine and Clinical Toxicology.
- All International Journals of Forensic Medicine and Clinical Toxicology which available in the university network at www.sciencedirect.com. As :
  - Forensic Science International Journal.
  - Toxicology Letter.

v. others

8. Signatures

- **Course Coordinator: Prof. Ghada Omran**	- **Head of the Department: Prof. Randa Hussein Abdelhady**
Date: 17-4-2022	**Date: 17-4-2022**

Course 4: Advanced Infection Control

- **Name of department: Medical Microbiology and Immunology.**
- **Faculty of Medicine**
- **Assiut University**
- **2022-2023**

I. Course data

Course Title: Advanced Infection Control.

Course code: MIC307A

Speciality: Medical Microbiology and Immunology.

Number of credit points: Didactic 2 (50%), practical 2(50%).
Total 4.

Department (s) delivering the course: Medical Microbiology and Immunology Department.

Coordinator (s):

a. Course coordinator: Prof. Enas Abdel Mageed

b. Assistant coordinator (s):

Prof. Nahla Mohamed El-Sherbiny
Prof. Entsar Hamed
Dr. Mona Hussein
Dr. Omnia Hassan

3- Date last approved by the Faculty Council:
5-2022

Requirements (prerequisites) if any :
-Completed Master degree in Microbiology & Immunology.

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

2. Course Aims

The purpose of the course is to build on the candidate's previously obtained knowledge in the field of Infection control and expand it to a new dimension in updated detailed view in depth of different interest (i.e. detailed updated knowledge and principles, practical skills , self learning and practice improvement in system base practice and creation)in different eras in Infection Control practice as follows;

1. Prevention of device / procedure related infections:
   -Ventilator associated pneumonia
   -Intravascular catheter related infections
   -Surgical site infections
   -Catheter related urinary tract infections
   -Safe injections
2. Infection control for specific patient care settings:
   -IC measures in operating rooms
   - IC measures in ICUs
   - IC measures in hemodialysis unit
   - IC measures in endoscopy unit
   - IC measures in Burn unit
3. Infection control measures for pharmacy
4. Infection control guidelines for support services:
   -Laundry
   -Kitchen
5. Environmental care infection control issues:
   -Ventilation requirement
   -Construction
6. Advanced occupational safety issues**:**
   -Adult immunization program
   -Work restriction
   -Needle stick incident management follow up for health care workers

3. Course intending learning outcomes (ILOs):

A-Knowledge and understanding

ILOs	Methods of teaching/ learning	*Methods of Evaluation*
A. Describe different clinical conditions and diseases related to Infection control including the following: Device/procedure related infections as: ventilator associated pneumonia, IV catheter related infections, surgical site infections, catheter related UTIs, safe injections. Infections transmitted from ICU, operating rooms, heamodialysis unit, endoscopy unit and burn unit. Risk of infection transmission through support services as laundry and kitchen.	Didactic (lectures, seminars, tutorial) -Journal club, -Critically appraised topic, Educational prescription	Written exam Portfolios Log book Oral exam
B. Mention the details of different diagnostic tools of diseases related to hospital acquired infections : Microscopic examination of samples from patients. Culture of samples on different suitable media. Confirmatory biochemical reactions. Antibiotic sensitivity test for the causative organisms.	In Infection control unit in Assuit University Hospital	Practical supervision by a lecturer of Microbiology and Immunology.
C. State update and evidence based Knowledge related to the infection control as: The Local, national, international guidelines and standards in relation to occupational exposure to infection, device/procedure related infections. Infection control guidelines for support services and environmental care issues	Didactic (lectures)	Written exam Log book Oral exam
D. Memorize the facts and principles of the other relevant basic and clinically supportive sciences related to infection control including: Immunization for adults	Didactic (lectures)	Written exam Log book Oral exam

Screening for health care workers. Construction and engineering requirements in hospitals.		
E. Mention the basic ethical and medico legal principles revenant to the infection control as: Privacy of patients exposed to needle stick injury, counseling and work restrictions. Privacy of data obtained from patients acquiring HAIs.	lectures	Oral exam
F. Explain the basics of quality assurance to ensure good professional skills in Infection control: Standard and evidence based guidelines for infection control measures Standard diagnostic tests for detection of infectious diseases.	lectures, seminars, tutorials and Journal clubs	Written exam Oral exam
G. Mention the ethical and scientific principles of medical research		
H. Explain the impact of common health problems in the field of infection control on the society as HAIs are considered a major problem through: Increasing the patient's morbidity and mortality. Increase the spread of resistant strains to community. Economic burden because the long stay of patients in hospitals.	lectures, seminars, tutorials and Critically appraised topic.	Written exam Oral exam

B-Intellectual outcomes

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Design / present case , seminars in common problem related to advanced Infection Control as: Needle sticks injury. Infection transimission in heamodialysis unit, ICUs, burn unit Case of surgical site infection	-Seminars, -Journal club,	Log book Oral exam
B. Apply the basic and clinically supportive sciences which are appropriate to the HAIs infection as: • Screening program for health care workers • Epidemiology of infectious diseases.	lectures	Written exam Log book Oral exam
C. Demonstrate an investigatory and analytic thinking "problem – solving "approaches to clinical situation related to infection control. How to deal with: • Pregnant women exposure to needle sticks injury. • Health care worker with air borne infection. • Appearance of epidemic of surgical wound infection.	-tutorial	Written exam Log book Oral exam
D. Conduct or share in research projects related to Infection Control.		
E. Write scientific papers.		
F. Participate in the management of risky conditions related to infection control as: • Epidemic with airborne pathogens • Infection of personnel of support services. • Hospital waste management especially sharp objects.	Journal club, tutorial	Written exam Log book Oral exam
G. Plan for quality improvement in the field of medical education and professional practice in Infection Control as: ☒ Update guidelines for infection control measures. ☒ Apply standard diagnostic tests for detection of	Seminars, Journal club	Oral exam

infectious diseases. ☒ Infection control in pharmacy, support services. ☒ Environmental care as ventilation requirements and construction.		
H. Create / innovate plans, systems, and other issues for improvement of performance in Infection Control practice as: . Follow up health care workers with check lists for Safe needle injection and application of standards infection control practices. Prevention of device /procedure related infections.		check lists Oral exam
I. Present and defend his / her data in front of a panel of experts: • The results of screening program for health care workers for a specific organism. • The out come of ventilation system design in operating room on surgical wound infections.	Seminars, Journal club	Written exam Log book Oral exam
J. Formulate management plans and alternative decisions in different situations in the field of Infection Control as: • Hospital waste management plan. Management of outbreaks in hospital care setting.	lectures Seminars, Journal club	Written exam Log book Oral exam

C-Practical skills

ILOs	Methods of teaching/	Methods of Evaluation
A. Perform the following basic lab skills essential to the course: • Isolation and identification of common nosocomial pathogens	Direct observation of the practical work	log book Objective structure Chick lists Practical assessments
B. Perform the following advanced lab skills essential to the course: molecular detection of multidrug resistant genes -Dealing with autoclaves, incubators, and centrifuge for identification of nosocomial pathogens		
C. Use instruments and devices in identification of nosocomial pathogens and multidrug resistant bacteria and monitoring the efficiency of sterilization as autoclaves, incubators, centrifuges, and thermal cycler.		
D. Interpret the following non invasive/invasive procedures/ experiments: Microscopic detection of the organism. Identification of colony morphology on the suitable media Reading antibiotic sensitivity results.		
E. Perform the following non invasive/invasive procedures/ experiments: -Smear preparation and staining -Culture on suitable media -Antibiotic susceptibility testing		
F. Perform the following basic experiments in related basic sciences to be utilized in the research work: • Preparation of different biochemical reactions • PCR		
G. Use information technology to support decisions in common situations related to Health care associated infections and their prevention.		
H. Develop and carry out diagnostic and teaching plans for support of advanced occupational safety issues.		

I. Counsel and educate patients and their family about • Work restriction • Prevention of blood borne pathogen transmission.		
J. Use information technology to support decisions in common conditions related to infection control and prevention of HAIs.		
K. Provide health care services aimed at preventing the following conditions: Prevention of infection transmission in health care facilities Between patients or health care personnel and patients.		
L. Work with health care professionals, including those from other disciplines, to provide patient-focused care as decreasing the risk factors and underlying conditions which make patients more susceptible to nosocomial infections as Respiratory care.		
M. Write and evaluate competently all forms of professional reports related to the infection control (lab reports, experiments reports) • Antibiotic sensitivity reports. • Check list for safe injection practice. • Check list for slandered infection control practices application.		

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 • The management of needle sticks injury and work restriction. • Infection control of specific patients care settings • Prevention of device/procedure related infections • Infection control in support services	Supervision of Written & oral communication Log book Scientific meetings participate in seminars	Portfolios Procedure/case presentation Log book
B. Locate, appraises, and assimilates evidence from scientific studies related to specific patient care settings and prevention of device/procedure related infections from evidence based practice and internet updates.		
C. Apply knowledge of study designs and statistical methods to the appraisal of clinical studies: • Screening program for health care workers and HAIs • Screening for needle stick injuries		
D. Use information technology to manage information, access on-line medical information; and support their own education regarding data on nosocomial infections, surveillance, data entry and statistics.		
E. Lead the learning of students and other health care professionals.		

Interpersonal and Communication Skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
F. Create and sustained therapeutic and ethically sound relationship with patients, nurses and doctors.	Supervision Seminars, Journal club	observation With Record (report) Log book
G. Perform the following oral communications: • Counseling of HCWs with needle stick injury. • Counseling of patients about work restriction. • Communication with clinicians regarding antibiotic treatment of HAIs especially multidrug resistant pathogens.		
H. Fill the following reports: • Antibiotic sensitivity reports. • Check list for safe injection practice. • Check list for slandered infection control practices application.		
I. Work effectively with others as a member or leader of a health care team e.g. in lab or ward Create ethically sound relationship with senior staff, colleagues and technicians.		

Professionalism

ILOs	Methods of teaching/ Learning	Methods of Evaluation
J. Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society that supersedes self-interest.	Lectures Observation &supervision	1. Objective structured clinical examination 2. Patient survey 1. 360o global rating
K. Demonstrate a commitment to ethical principles pertaining to 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

ILOs	Methods of teaching/ learning	Methods of Evaluation
M. Work effectively in different health care delivery settings and systems.		1. 360o global rating
N. Practice cost-effective health care and resource allocation that does not compromise quality of care		1. Check list evaluation of live or recorded performance
O. Advocate for quality patient care and assist patients in dealing with system complexities		1. 360o global rating 2. Patient survey
P. Partner with health care managers and health care providers to assess, coordinate, and improve health care and predict how these activities can affect system performance		

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

Time Schedule: First Part

Topic	Covered ILOs			
	Knowledge	Intellectual	Practical skill	General Skills
Prevention of device / procedure related infection	A,C,D-H	A-D,F,H,J	A-G,K-M	A-P
Infection control for specific patient care setting	A,E-H	A-D,F,H,J	A-G,K-M	A-P
Infection control measures for pharmacy.	F,H	D,G	G,K	A-P
Infection control guidelines for support services.	A,C,F-H	B-D,G,H,J	A-G,K-M	A-P
Environment care infection control issues	C,D,G,H	D,G,I	G	A-P
Advanced occupational safety issues.	C-E,G,H	A-D,F,H,I	G-I,K-M	A-P

5. Course Methods of teaching/learning:

1. **Didactics: Lectures, tutorial,**
2. **Practical training in Medical Microbiology & Immunology Dep.**
3. **Practical training in Microbiology Infection Control laboratory of Assiut University Hospitals.**
4. **Case studies (problem solving).**
5. **Seminars, scientific meeting.**
6. **Journal club.**
7. **Educational prescription.**
8. **Critical appraisal topics.**
9. **Observation & supervision**
10. **Discussion**
11. **Written and oral communication.**

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:

Assessment tools:

- Written Examination; including 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**.**
- Logbook**.**
- Portfolio**.**
- Simulation.
- Record, review reports.
- Check list on steps of practical training of all steps.
- Practical exam.

ii. Time schedule: 12 months

iii. Marks: 200 marks

8. List of references

i. Lectures notes

ii. Essential books

- **ABCs of infection prevention and control, 2018**
- **APIC textbook of infection control and epidemiology,**

  National infection control guidelines, 2018
- **Sherris & Ryan's Medical Microbiology, 8th edition, 2022**
- **Jawetz, Melnick Adelberg's Medical Microbiology 28th edition, 2019**
- **Kaplan Medical USMLE Step 1, Lecture Notes: Immunology and Microbiology, 2020**

iii. Recommended books

IFIC Basic Concepts of Infection Control, 2nd Edition - Revised 2011 (Previously published as Infection Control: Basic Concepts and Training)

iv. Periodicals, Web sites, … etc

- Journal of Hospital infection.
- Indian journal of Medical Microbiology

- Journal of infectious Diseases
- American Journal of Clinical Microbiology
- Indian Journal of Pathology & Microbiology.
- Annual Review of Microbiology.
- Indian Journal of Medical Research.
- Indian Journal of Immunology.
- Journal of Tropical Medicine.
- Clinical Microbiology Reviews.

9. Signatures

Course Coordinator: **Prof. Enas Abdel Mageed**	**Head of the Department:** **Prof. Noha Afifi**
Date:	**Date:**

Course 5: Advanced Molecular Microbiology

- **Name of department: Medical Microbiology and Immunology**
- **Faculty of medicine**
- **AssiutUniversity**
- **2022-2023**

I. Course data

- **Course Title: Advanced Molecular Microbiology**
- **Course code: MIC307B**
- **Specialty: Medical Microbiology and Immunology**
- **Number of credit points: Didactic 2 (66.7%) practical 1 (33. 3%). total 3**
- **Department (s) delivering the course: Medical Microbiology and Immunology Department**
- **Coordinator (s):**
- **Course coordinator: Prof. Mohamed Ali El-Fekki**
- **Assistant coordinator (s) Prof. Shereine Ahmed Abdel-Rahman**
- **Date last approved by the Faculty Council: 5-2022**
- **Requirements (prerequisites) if any :**
- **Completed Master degree in Medical Microbiology & Immunology.**
- **Requirements from the students to achieve course ILOs are clarified in the joining log book.**

2. Course Aims

Molecular biology and expand it to a new dimension in updated detailed view in depth of different interest (i.e. detailed updated knowledge and principles, practical skills , self learning and practice improvement in system base practice and creation)in different eras in molecular biology practice as follows;:

1-The structure and regulation of DNA & genome
2-Transcription, translation and Protein synthesis
3- Mechanisms of DNA replication &replication errors
4-Mutation & DNA repair
5-DNA transfer.
6-Regulation of gene expression.
7-DNA amplification.
8-Genetic diseases and its treatment.
9-Detection of genes (Nucleic acid hybridization and Microarray).
10-Typing of organisms.
11-DNA fingerprinting.
12-DNA mapping.

3. Course intending learning outcomes (ILOs):

A-Knowledge and understanding

ILOs	Methods of teaching/ learning	*Methods of Evaluation*
I. Describe different clinical conditions and diseases related to : -Mutation & DNA repair -Genetic diseases and its treatment. -DNA fingerprinting -DNA mapping -Typing of organisms	Didactic (lectures, seminars, tutorial) -Journal club, -Critically appraised topic,	Portfolios Procedure/stains Log book Oral exam Written exam
J. Mention the details of different diagnostic tools of diseases related to: - Determination of viral load by Real Time PCR. - Detection of bacterial and viral gene using nucleic acid hybridization and microarray. - Typing of organisms. - DNA fingerprinting. - DNA mapping.	Educational prescription Demonstrations	
K. State update and evidence based Knowledge related to the course: - **T**he structure and regulation of DNA & genome - Transcription, translation and Protein synthesis - Mutation & DNA repair - DNA transfer - Regulation of gene expression. - DNA amplification. - Genetic diseases and its treatment. - Detection of genes (Nucleic acid hybridization and Microarray). - Typing of organisms. - DNA fingerprinting.		

- DNA mapping.		
L. Memorize the facts and principles of the other relevant basic and clinically supportive sciences as biochemistry related to: - **T**he structure and regulation of DNA & genome - Transcription, translation and Protein synthesis - Mutation & DNA repair -DNA transfer Regulation of gene expression. Genetic engineering and its applications		
M. Mention the basic ethical and medico legal principles revenant to Molecular Microbiology as: Detection of genetic diseases and DNA fingerprinting.		
N. Explain the basics of quality assurance to ensure good professional skills in Molecular Microbiology as: - Setting up PCR and how to design a primer. - Detection of genes (Nucleic acid hybridization and Microarray). - Typing of organisms. - DNA fingerprinting. - DNA mapping.		
O. Mention the ethical and scientific principles of medical research		
P. Explain the impact of common health problems in the field of Molecular Microbiology on the society as: -Mutation & DNA repair -DNA transfer -Regulation of gene expression -Detection of genetic diseases -DNA fingerprinting. -Typing of organisms.		

B-Intellectual outcomes

ILOs	Methods of teaching/ learning	Methods of Evaluation
K. Design / present case , seminars in common problem related to - Regulation of DNA & genome - Transcription, translation and Protein synthesis - Mutation & DNA repair - -DNA transfer - Regulation of gene expression. - DNA amplification. - Genetic diseases and its treatment. - Detection of genes (Nucleic acid hybridization and Microarray). - Typing of organisms. - DNA fingerprinting. - DNA mapping	Didactic (lectures) -Critically appraised topic, Educational prescription	Portfolios Log book Oral exam Written Exam
L. Apply the basic and clinically supportive sciences as biochemistry which are appropriate to Molecular Microbiology related conditions / problem / topics.		
M. Demonstrate an investigatory and analytic thinking "problem – solving "approaches to clinical situation related to Molecular Microbiology as: Diagnosis and management of genetic diseases Applications of DNA fingerprinting Molecular diagnosis of different diseases.		
N. Conduct or share in research projects.		
O. Write scientific papers.		
P. Participate in the management of risky conditions related to Molecular microbiology.		
Q. Plan for quality improvement in the field of medical education and professional practice in Molecular Microbiology.		
R. Create / innovate plans, systems, and other issues for improvement of performance in Molecular Microbiology practice.		
S. Present and defend his / her data in front of a panel of experts		
T. Formulate management plans and alternative decisions in different situations in the field of Molecular Microbiology.		

C-Practical skills

ILOs	Methods of teaching/	Methods of Evaluation
A. Perform the following basic lab skills essential to the course: - DNA extraction. - Design a primer and adjusting PCR conditions. - Blast sequence - PCR experiment - Gel electrophoresis - Probe amplification. - Separation and curing of plasmid.	- seminar -Direct observation of the practical work	log book - Objective structure -Check list
B. Perform the following advanced lab skills essential to the course: - Different types of PCR. - Solid phase nucleic acid hybridization. - Microarray. - Nucleic acid hybridization. - Flow cytometry.		
C. Use instruments and devices in evaluation of designing a primer, adjusting PCR conditions, blast sequencing, gel electrophoresis.		
D. Interpret the following noninvasive procedures/ experiment : -Different types of PCR. -Solid phase nucleic acid hybridization. -Microarray. -Nucleic acid hybridization. -Flow cytometry. -Sequencing and mapping		
E. Perform the following non invasive procedures/ experiments: -DNA extraction. -Design a primer and adjusting PCR conditions. -Blast sequence -PCR experiment -Gel electrophoresis -Probe amplification. -Separation and curing of plasmid.		

F. Perform the following basic experiments in related basic sciences to be utilized in the research work: -Different types of PCR. -Solid phase nucleic acid hybridization. -Microarray. -Nucleic acid hybridization. -Flow cytometry. -Sequencing and mapping		
G. Use information technology to support decisions in common situations related to Molecular Microbiology as how to design a primer, adjusting PCR conditions, blast sequence, gel documentation and analysis.		
H. Develop and carry out diagnostic and teaching plans for all Molecular Microbiology related conditions / skills		
I. Counsel and educate patients and their family about genetic diseases and their management.		
J. Use information technology to support decisions in common conditions related to Molecular Microbiology as how to design a primer, adjusting PCR conditions, blast sequence, gel documentation and analysis.		
K. Provide health care services aimed at management of genetic diseases		
L. Work with health care professionals, including those from other disciplines, to provide patient-focused care.		
M. Write and evaluate competently all forms of professional reports related to Molecular Microbiology (lab reports, experiments reports,)		

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: -Design a primer and adjusting PCR conditions - DNA extraction. - Blast sequence - PCR experiment - preparation and analysis of Gel electrophoresis - Separation and curing of plasmid	Log book and supervision Written & oral communication Journal clubs Discussions in seminars Scientific	Log book Portfolios Procedure/case presentation
B-Locate, appraises, and assimilates evidence from scientific studies related to health problems.		
C-Apply knowledge of study designs and statistical methods to the appraisal of clinical studies		
D-Use information technology to manage information, access on-line medical information; and support their own education		
E-Lead the learning of students and other health care professionals.		

Interpersonal and Communication Skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
F-Create and sustain a therapeutic and ethically sound relationship with patients	Observation & supervision	Simulation Record review (report
G-Perform oral communications with seniors and professors for interpretation and analysis of data.		
H-Fill the following reports: PCR report		
I-Work effectively with others as a member or leader of a Molecular Microbiology team.		

Professionalism

ILOs	Methods of teaching/ Learning	Methods of Evaluation
J-Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society that supersedes self-interest.	Observation &supervision Didactic , seminars, tutorial Educational prescription	1. Objective structured clinical examination 2. Patient survey 1. 360o global rating
K-Demonstrate a commitment to ethical principles pertaining to 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

ILOs	Methods of teaching/ learning	Methods of Evaluation
M-Work effectively in different health care delivery settings and systems.		1. 360o global rating
N-Practice cost-effective health care and resource allocation that does not compromise quality of care		1. Check list evaluation of live or recorded performance
O-Advocate for quality patient care and assist patients in dealing with system complexities		1. 360o global rating 2. Patient survey
P-Partner with health care managers and health care providers to assess, coordinate, and improve health care and predict how these activities can affect system performance		

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

Time Schedule: First Part

Topic	Covered ILOs			
	Knowledge	Intellectual	Practical skill	General Skills
The structure and regulation of DNA & genome.	C,D	A,B	-	A-P
Transcription, translation and Protein synthesis.	C,D	A,B	-	A-P
Mutation & DNA repair ,DNA transfer.	A,C,D,H	A	-	A-P
Regulation of gene expression.	C,D,H	A	-	A-P
DNA amplification.	B,C,D,F	A,C,H	A-H,M	A-P
Genetic diseases and its treatment.	A,C,E,G,H	A,C,H	H,I,K	A-P
Detection of genes (Nucleic acid hybridization and Microarray).	B,C,F,G	A,H	A-G,J,M	A-P
Typing of organisms.	A-C,F,H	A,C	A-H,K,M	A-P
DNA fingerprinting.	A-C,E-H	A,C,H	A	A-P
DNA mapping.	A,B,C,F	A	D,F,M	A-P

5. Course Methods of teaching/learning:

1. **Lectures.**
2. **Practical training in Medical Microbiology & Immunology Dep.**
3. **Case studies (problem solving).**

4. **Seminars.**
5. **Journal club.**
6. **Didactic (lectures, seminars, tutorial).**
7. **Critically appraised topic**
8. **Direct observation of the practical work.**
9. **Supervision.**
10. **Written & oral communication.**
11. **Discussions.**
12. **Scientific meetings.**
13. **Observation & supervision.**

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.**
- **Objective structure.**
- **Check list on steps of practical training.**
- **Log book.**

- **Written exam.**
- **Portfolios**
- **Procedure/case presentation**
- **Simulation**
- **Record review (report)**
- **Objective structured practical examination.**

ii.Time schedule: 6 months

iii. Marks: 150 Marks

8. List of references

i. Lectures notes

ii. Essential books

- **Molecular Genetics of Bacteria, 5th Edition, 2020, by Larry Snyder and Wendy Champness**
- **Sherris & Ryan's Medical Microbiology, 8th edition, 2022**
- **Jawetz, Melnick Adelberg's Medical Microbiology 28th edition, 2019**
- **Kaplan Medical USMLE Step 1, Lecture Notes: Immunology and Microbiology, 2020**
- **Lippincott's Illustrated Review: Microbiology, 2019**

iii. Recommended books

- **Medical Microbiology. Vol. I to II: Greenwood, Slack, Pleutherer , 16th edition, 2007.**

- Microbiology in Clinical Practice Shanson D.C. 2nd Edition, 2011

iv. Periodicals, Web sites, … etc

Indian journal of Medical Microbiology
Journal of infectious Diseases
American Journal of Clinical Microbiology
Indian Journal of Pathology & Microbiology.
Annual Review of Microbiology.
Indian Journal of Medical Research.

New England Journal of Medicine.
W.H.O. Bulletin.
Journal of American Medical Association.
Lancet.
British Medical Journal.
Journal of Associations of Physicians of India.
Clinical Microbiology Reviews.

9. Signatures

Course Coordinator: **Prof. Mohamed Ali**	**Head of the Department:** **Prof. Noha Afifi**
Date: 5/2022	**Date: 5/2022**

Course 6: Advanced Microbiology

- **Name of department: Medical Microbiology and Immunology Department**
- **Faculty of medicine**
- **Assiut University**
- **2022-2023**

I. Course data

- **Course Title: Advanced Microbiology**
- **Course code: MIC307C**
- **Specialty: Medical Microbiology and Immunology**
- **Number of credit points: Didactic 24 (22.4%) practical 83 (77.6%) . Total 107 CP**
- **Department (s) delivering the course: Medical Microbiology and Immunology Department**
- **Coordinator (s):**
- **Course coordinator: Prof. Mohamed Ali El-Feky**
- **Assistant coordinator (s) -Prof. Shaaban Hashem Ahmed**
  -Prof. Ismail Sedeek
  -Prof. Enas Abd Al Mageed
  -Prof. Nahla Mohamed Kamel
  -Prof. Michael Nazmy
- **Date last reviewed: 5/2022**
- **Requirements (prerequisites) if any :**
- Completed Master degree in Medical Microbiology & Immunology.
- **Requirements from the students to achieve course ILOs are clarified in the joining log book.**

2. Course Aims

The purpose of the course is to build on the candidate' previously obtained knowledge in the field of Microbiology &Immunology and expand it to a new dimension in updated detailed view in depth of different interest (i.e. detailed updated knowledge and principles, practical skills , self learning and practice improvement in system base practice and creation)in different eras/ units such as general, systematic microbiology& immunology in practice as follows:

Unit 1: Advanced Bacteriology:

-General Bacteriology: Structure, morphology, and classification of bacteria, Growth and nutrition of bacteria, Bacterial metabolism, Antibacterial substances and drug resistance in bacteria, Bacterial ecology and virulence, Host parasite relationship, Bacterial cultures and biochemical reactions.

-Systemic Bacteriology: antigenic structure, virulence factors, pathogenesis, mode of transmission and diagnosis of diseases caused by different bacteria.

-Applied Microbiology: System based infections (Urinary tract infections, CNS infections, GIT infections, Bacteriaemia, Respiratory infections, ENT infections, CVS infections…….etc).

Unit 2: Advanced Virology:

-General Virology: General characters of viruses, Methods of virus purification, Virus classification, Virus replication, Virus interference and recombination, -Pathogenesis and host defense in virus infections, Laboratory diagnosis of viral infections, and Antiviral drugs.

-Systemic Virology: Viruses causing diarrhea, Childhood exanthems, Poxviruses, Enteroviruses, Papovaviruses, Respiratory viruses, Hepatitis viruses, Herpesviruses, Arthropod born and other zoonotic viruses, Rabies, Retroviruses, and Persistent viral infections of the CNS.

Unit 3: Advanced Mycology:

-General Mycology: Classification of fungi, fungal spores, reproduction of fungi, Pathogenesis of fungal infections, laboratory diagnosis of fungal diseases and Chemotherapy of fungal infections.

-Systemic Mycology: Superficial mycosis, cutaneous mycosis, Subcutaneous mycosis, Systemic mycosis, and Opportunistic mycosis.

Unit 4: Basic and Clinical Immunology:

Innate immunity, Acquired immunity(Humoral and cellular), Hypersensitivity, Tolerance and Autoimmunity, Transplantation immunology, Tumor immunology, Immunodeficiency, Basic Lab techniques in immunodiagnostics: Advanced Skills in Immunology-based tests as ELISA, ELISPOT, Immunofluoresence, Tissue culture, western blot, Confocal imaging,

3. Course intending learning outcomes (ILOs):

Unit 1: Advanced Bacteriology

A-Knowledge and understanding

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Describe different clinical conditions and diseases related to general and systemic bacteriology including: 1. Antibacterial substances used in treatment of infections and drug resistance in bacteria. 2. Bacterial ecology-normal flora of human body, hospital environment, air, water and milk. 3. Host parasite relationship. 4. The pathogenesis and transmission of the diseases produced by bacteria. 5. The most important bacterial infectious clinical conditions	Didactic (lectures, seminars, tutorial) -Journal club	Log book Oral exam Written exam
B. Mention the details of different diagnostic tools of diseases related to systematic bacteriology including the following: 1. Sample collection 2. Microscopic examination of stained smear 3. Culture on different types of media 4. Biochemical reactions and biotyping 5. Antibiotic sensitivity test 6. Molecular methods as PCR		
C. State update and evidence based Knowledge related to general and systemic bacteriology and applied microbiology**:** 1. Classification of bacteria, 2. Bacterial metabolism, 3.Antibacterial agents and bacterial resistance 4. Virulence factors and pathogenesis of different bacterial infections 5. The most important infections related to the respiratory tract, urinary tract, gastrointestinal tract, CNS and genital tract. 6. Identification of the possible infectious agents associated with different clinical conditions such as fever, skin rash, pyrexia of unknown origin. 7. The most important infectious agents associated with blood transfusion and congenital abnormalities.		
D. Memorize the facts and principles of the other relevant basic and clinically supportive sciences related to advanced bacteriology including: -Epidemiology of infectious diseases -Genetics and molecular biology -Immunity to bacterial infections		
E. Mention the basic ethical and medico legal principles revenant to advanced bacteriology.		

F. Explain the basics of quality assurance to ensure good professional skills in laboratory diagnosis of bacterial infections.		
G. Mention the ethical and scientific principles of medical research		
H. Explain the impact of common health problems in the field of advanced bacteriology on the society as diagnosis and treatment of bacterial infections, management of multidrug resistant bacteria, management of different system infections.		

B-Intellectual outcomes

ILOs	Methods of teaching/ learning	Methods of Evaluation
A-Design / present case , seminars in common problem related to advanced bacteriology in human health and infectious diseases	Didactic (seminars, tutorial). -Journal club. -Critically appraised topic.	log book Objective structure
B. Apply the basic and clinically supportive sciences which are appropriate to bacteriology related conditions / problem / topics as: 1. Epidemiology of infectious diseases. 2. Genetics and molecular biology. 3. Immunology against bacterial infections.		
C. Demonstrate an investigatory and analytic thinking "problem – solving "approaches to clinical situation related to advanced bacteriology as laboratory diagnosis of bacterial infections, antibacterial substances used in treatment of infections and drug resistance in bacteria in addition to other system based infections.		
D-Conduct or share in research projects.		
E-Write scientific papers.		
F-Participate in the management of risky conditions related to advanced bacteriology and applied Microbiology as multidrug resistant bacteria and their management.		
G-Plan for quality improvement in the field of medical education and professional practice in advanced bacteriology.		
H-Create innovate plans, systems, and other issues for improvement of performance in bacteriology practice.		
I-Present and defend his / her data in front of a panel of experts		
J-Formulate management plans and alternative decisions in different situations in the field of advanced bacteriology and applied Microbiology as management of multidrug resistant bacteria.		

C-Practical skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
A. Perform basic lab skills related to bacteriology: 1. Preparation of the different reagent and culture media used in the clinical microbiological laboratory, including their sterilization, labeling and storing. 2. Collection and proper preparation of routine microbiological specimens tested in the microbiological laboratory. 3. Microscopic examination of the clinical samples. 4. Identification of common bacterial pathogens using established clinical microbiological procedures. 5. Differentiation of common bacterial pathogens. 6. Reporting of clinical microbiological results. 7. Following safety and quality assurance procedures. 8. Microbiological examination of water samples 9. Monitoring efficiency of sterilization of autoclave, ethylene oxide. 10. Environmental swabbing of critical care areas and examination of such samples in infection control microbiology laboratory. 11. 5. Diagnosis of all nosocomial infections and selection of the proper antimicrobial after isolation of the causative agent.	-Seminars -Direct observation of the practical work	-log book Objective structure -Check list on steps of practical training
B. Perform the following advanced lab skills essential to the advanced bacteriology: -Determination of antibiotic MIC by serial dilution and agar cup diffusion methods. -Application of basic infection control measures to prevent lab. acquired infections. -Application of the Biosafety levels. -Evaluation of efficiency of disinfectants. -Monitoring efficiency of disinfectants used in hospital and confirm strict implementation of basic I.C. measures by HCW.		
C. Use instruments and devices of common use in bacteriology laboratories such as centrifuges, safety cabinets and incubators…etc		
D. Interpret the following non invasive procedures/ experiments: smears, culture, biochemical reaction, serological, molecular diagnosis of the microorganisms (Gram positive and Gram negative cocci and bacilli), and antimicrobial sensitivity tests.		
E-Perform the following non invasive procedures/ experiments: smears, culture, biochemical reaction, serological, molecular diagnosis of the microorganisms (Gram positive and Gram negative cocci and bacilli), and antimicrobial sensitivity tests.		

F-Perform the following basic experiments in related basic sciences to be utilized in the research work: different types of PCR.		
G-Use information technology to support decisions in common situations related to advanced bacteriology and applied Microbiology.		
H-Develop and carry out diagnostic and teaching plans for all advanced bacteriology and applied Microbiology related conditions / skills		
I-Counsel and educate patients and their family about Antibiotic resistance and the importance of antibiotic sensitivity tests.		
J-Use information technology to support decisions in common conditions related to advanced bacteriology and applied Microbiology.		
K-Provide health care services aimed at preventing the following conditions: ● Emergence of resistant strain ● Outbreaks and epidemics caused by different infectious agents.		
L-Work with health care professionals, including those from other disciplines, to provide patient-focused care.		
M-Write competently all forms of professional reports related to systematic bacteriology (lab reports, experimental reports such as microscopic examination and culture- Antibiotic sensitivity testing).		

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 the common problems (plan and conduct audit cycles).	-Supervision -Written & oral communication. -Journal clubs -Discussions in seminars -Scientific meetings -participate in seminars	-Log book -Portfolios -Procedure/case presentation
B-Locate, appraises, and assimilates evidence from scientific studies related to health problems.		
C-Apply knowledge of study designs and statistical methods to the appraisal of clinical studies.		
D-Use information technology to manage information, access on-line medical information; and support their own education.		
E-Lead the learning of students and other health care professionals.		

Interpersonal and Communication Skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
F. Create and sustain a therapeutic and ethically sound relationship with patients	Observation & supervision	Simulation Record review (report
G. Perform the oral communications with clinician and case presentation.		
H. Fill the following reports: Type of organism and antimicrobial sensitivity results.		
I. Work effectively with others as a member or leader of a health care team.		

Professionalism

ILOs	Methods of teaching/ Learning	Methods of Evaluation
J. Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society that supersedes self-interest.	Observation &supervision Didactic (lectures, seminars, tutorial Educational prescription	1. Objective structured clinical examination 2. Patient survey 1. 360o global rating
K. Demonstrate a commitment to ethical principles pertaining to provision or withholding of clinical care, confidentiality of patient information, informed consent, and business practices. e. g. student must remember that all patient information is privileged and as such strict confidentially must be maintained.		
L. Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities		

Systems-Based Practice

ILOs	Methods of teaching/ learning	Methods of Evaluation
M. Work effectively in different health care delivery settings and systems.	Observation& supervision Didactic (lectures, seminars, tutorial) Educational prescription	360o global rating
N. Practice cost-effective health care and resource allocation that does not compromise quality of care		Check list evaluation of live or recorded performance
O. Advocate for quality patient care and assist patients in dealing with system complexities		1. 360o global rating 2. Patient survey
P. Partner with health care managers and health care providers to assess, coordinate, and improve health care and predict how these activities can affect system performance		

Unit 2: Advanced Virology

A-Knowledge and understanding

ILOs	Methods of teaching/ learning	*Methods of Evaluation*
A. Describe different clinical conditions and diseases related to advanced Virology as: -viral diarrhea -viral hepatitis -respiratory tract infections caused by viruses -persistent viral infections of CNS -viral childhood exanthemas - other viral diseases	Didactic (lectures, seminars, tutorial) -Journal club, -Critically appraised topic, -Educational prescription	Log book Oral exam Written exam
B. Mention the details of different diagnostic tools of diseases related to advanced virology as: -Tissue culture -Hemagglutination test - Virus neutralization test - Detection of viral cytopathic effects -PCR		
C. State update and evidence based Knowledge related to advanced Virology including: Methods of virus purification, Virus classification, Virus replication, Virus interference and recombination, Pathogenesis and host defense in virus		

infections, transmission and infectivity of different viral infections, Laboratory diagnosis of different viral infections, and Antiviral drugs and their side effects.		
D. Memorize the facts and principles of the other relevant basic and clinically supportive sciences related to advanced virology including: -Epidemiology of infectious diseases -Immunity against viral infections		
E. Mention the basic ethical and medico legal principles revenant to the advanced Virology as detection, laboratory diagnosis and treatment of different viral infections.		
F. Explain the basics of quality assurance to ensure good professional skills in the field of laboratory diagnosis and treatment of different viral infections.		
G. Mention the ethical and scientific principles of medical research		
H. Explain the impact of common health problems in the field of advanced Virology on the society as detection, laboratory diagnosis and treatment of different viral infections and prevention and control of such infections.		

B-Intellectual outcomes

ILOs	Methods of teaching/ learning	Methods of Evaluation
A-Design / present case , seminars in common problem related to Advanced Virology including: Methods of virus purification, Virus classification, Virus replication, Virus interference and recombination, Pathogenesis and host defense in virus infections, transmission and infectivity of different viral infections, Laboratory diagnosis of different viral infections, Antiviral drugs and their side effects, and prevention and control of different viral infections.	-Critically appraised topic, -Journal club, seminars,	Log book Oral exam Written exam Problem solving
B-Apply the basic and clinically supportive sciences which are appropriate to the advanced virology related conditions / problem / topics as: -Epidemiology of infectious diseases -Immunity to viral infections		
C-Demonstrate an investigatory and analytic thinking "problem – solving "approaches to clinical situation related to advanced virology as diagnosis, treatment, prevention and control of different viral infections.		
D-Conduct or share in research projects.		
E-Write scientific papers.		
F-Participate in the management of risky conditions related to advanced virology as diagnosis, treatment, prevention and control of different viral infections.		
G-Plan for quality improvement in the field of medical education and professional practice in advanced virology.		
H-Create / innovate plans, systems, and other issues for improvement of performance in advanced virology practice.		
I-Present and defend his / her data in front of a panel of experts		
J-Formulate management plans and alternative decisions in different situations in the field of advanced virology.		

C-Practical skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
A-Perform the following basic lab skills essential to advanced Virology as: -Recognition of tissue culture requirements. -Recognition of types of tissue culture. -Propagation of tissue culture cells -PCR	-seminar -Direct observation of the practical work	Logbook Practical exam Check list for training
B-Perform the following advanced lab skills essential to advanced Virology: -Haemagglutination test - Virus neutralization test - Detection of viral cytopathic effects		
C-Use instruments and devices in diagnosis of viral infections as: Co_2 incubators, inverted microscope.		
D-Interpret the following non invasive procedures/ experiments: -Tissue culture -Haemagglutination test -Virus neutralization test - Detection of viral cytopathic effects -PCR -Serology		
E-Perform the following non invasive procedures/ experiments: -Tissue culture -Haemagglutination test -Virus neutralization test -Detection of viral cytopathic effects -serology - Nucleic acid extraction and PCR product identification		
F-Perform the following basic experiments in related basic sciences to be utilized in the research work: Serological tests and different types of PCR		
G-Use information technology to support decisions in		

common situations related to advanced virology.		
H- Develop and carry out diagnostic and teaching plans for all advanced virology related conditions / skills		
I-Counsel and educate patients and their family about diagnosis, treatment, prevention and control of different viral infections.		
J-Use information technology to support decisions in common conditions related to advanced virology.		
K-Provide health care services aimed at preventing the different viral diseases.		
L- Work with health care professionals, including those from other disciplines, to provide patient-focused care.		
M- Write and evaluate competently all forms of professional reports related to the diagnosis of viral infections (lab reports, experiments reports,)		

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 the common problems (plan and conduct audit cycles)as : Sample processing, microscopic examination, tissue culture, serology and molecular diagnosis.	Log book and supervision Written & oral communication. Journal clubs Discussions in seminars Scientific meetings participate in seminars	Log book Portfolios Procedure/case presentation
B-Locate, appraises, and assimilates evidence from scientific studies related to health problems.		
C-Apply knowledge of study designs and statistical methods to the appraisal of clinical studies		
D-Use information technology to manage information, access on-line medical information; and support their own education		
E-Lead the learning of students and other health care professionals.		

Interpersonal and Communication Skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
F-Create and sustain a therapeutic and ethically sound relationship with patients	Observation & supervision	Simulation Record review (report
G-Perform the following oral communications: With clinician and case presentation.		
H-Fill the following reports: Culture, serology, molecular diagnostic techniques.		
I-Work effectively with others as a member or leader of a health care team e.g. in labor ward		

Professionalism

ILOs	Methods of teaching/ Learning	Methods of Evaluation
J-Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society that supersedes self-interest.	Observation & supervision Didactic (lectures, seminars, tutorial Educational prescription	1. Objective structured clinical examination 2. Patient survey
K-Demonstrate a commitment to ethical principles pertaining to provision or withholding of clinical care, confidentiality of patient information, informed consent, and business practices.		1. 360o global rating
L-Demonstrate sensitivity and responsiveness to others ' culture, age, gender, and disabilities		

Systems-Based Practice

ILOs	Methods of teaching/ learning	Methods of Evaluation
M-Work effectively in different health care delivery settings and systems.	Observation & supervision Didactic (lectures, seminars, tutorial Educationl prescription	1. 360o global rating
N-Practice cost-effective health care and resource allocation that does not compromise quality of care		1. Check list evaluation of live or recorded performance
O-Advocate for quality patient care and assist patients in dealing with system complexities		1. 360o global rating 2. Patient survey
P-Partner with health care managers and health care providers to assess, coordinate, and improve health care and predict how these activities can affect system performance		

Unit 3: Advanced Mycology

A-Knowledge and understanding

ILOs	Methods of teaching/ learning	*Methods of Evaluation*
A. Describe different clinical conditions and diseases related to advanced mycology as: -Superficial mycosis. -Cutaneous mycoses. -Subcutaneous mycosis. -Primary systemic mycosis. -Opportunistic mycosis.	Didactic (lectures, seminars, tutorial)	Log book Oral exam Written exam
B. Mention the details of different diagnostic tools of mycosis as: -Staining of fungal smears -Culture on different mycological media -Biochemical reactions -Phenotypic identification of medically important yeasts and filamentous fungi		
C. State update and evidence based Knowledge related to the advanced mycology as: -Classification of fungi -fungal spores, reproduction of fungi -Pathogenesis of fungal infections -laboratory diagnosis of fungal pathogens -Chemotherapy of fungal infections -Different clinical forms of mycoses.		
D. Memorize the facts and principles of the other relevant basic and clinically supportive sciences related to mycology including: a. Epidemiology of infectious diseases b. Immunity to fungal infections		

E. Mention the basic ethical and medico legal principles revenant to the mycology.		
F. Explain the basics of quality assurance to ensure good professional skills in the field of mycology including: -Recognition , preparation of fungal culture media -Recognition, preparation of fungal stains - Biochemical reactions -Preservation of living fungi -Isolation, identification & phenotyping of candida spp. And medically important filamentous fungi -perform and interpret antifungal susceptibility test.		
G. Mention the ethical and scientific principles of medical research.		
H. Explain the impact of common health problems in the field of mycology on the society as diagnosis and treatment of fungal infections.		

B-Intellectual outcomes

ILOs	Methods of teaching/ learning	Methods of Evaluation
A-Design / present case, seminars in common problem related to advanced mycology as: ● -Antifungal agents and fungal resistance to them ● -Different cases of fungal infections.	• Didactic seminars, tutorials and Journal clubs. • Critically appraised topics.	Log book Objective structure
B-Apply the basic and clinically supportive sciences which are appropriate to mycology related conditions / problem / topics as: ● -Epidemiology of infectious diseases ● -Immunity to fungal infections		
C-Demonstrate an investigatory and analytic thinking "problem – solving "approaches to clinical situation related to suspension, diagnosis and treatment of fungal infections and appropriate use of antifungal drugs.		
D-Conduct or share in research projects.		
E-Write scientific papers.		
F-Participate in the management of risky conditions related to diagnosis and treatment of fungal infections and appropriate use of antifungal drugs.		
G-Plan for quality improvement in the field of medical education and professional practice in the field of mycology.		
H-Create / innovate plans, systems, and other issues for improvement of performance in his/ her practice.		
I-Present and defend his / her data in front of a panel of experts		
J-Formulate management plans and alternative decisions in different situations in the field of diagnosis and treatment of fungal infections and appropriate use of antifungal drugs.		

C-Practical skills

ILOs	*Methods of teaching/ learning*	*Methods of Evaluation*
A-Perform the following basic lab skills essential to the mycology: • Wet mounts examination. • Preparation of a smear for microscopic examination. • Inoculation of culture media with clinical specimens. • Isolation and purification of infecting fungi. • Identification of common fungal pathogens.	• Seminars. • Direct observation of the practical work.	• Log book objective structure. • Check list on steps of practical training for all steps of staining.
B-Perform the following advanced lab skills essential to the mycology: • Performance of biochemical reactions necessary for fungal identification. • Careful microscopic examination to identify fungal genera and species. • Performance and interpretation of in vitro antifungal susceptibility testing. • Molecular methods for detection of fungi		
C-Use instruments and devices as microscopes, incubators in evaluation of: • Patient samples whether positive or negative for fungal infection. • Type of infecting fungus. • In vitro antifungal sensitivity pattern of infecting fungus.		
D-Perform the following non invasive procedures/ experiments: 1. Direct smears. 2. Cultures. 3. Biochemical reactions. 4. Phenotypic identification of fungi 5. Antifungal sensitivity testing.		
D-Interpret the following non invasive procedures/ experiments		

-Direct smears. -Cultures. -Biochemical reactions. -Phenotypic identification of fungi -Antifungal sensitivity testing.		
E-Perform the following basic experiments in related basic sciences to be utilized in the research work: • Selection of proper study design and research methodology. • Computing and internet browsing. • Statistical analysis.		
F-Use information technology to support decisions in common situations related to diagnosis and treatment of fungal infections.		
G- Develop and carry out diagnostic and teaching plans for all mycology related conditions / skills		
H-Counsel and educate patients and their family about: • Risk factors of developing fungal infections. • Alarming signs directing the attention to the possibility fungal infections. • Preventive measures that safeguard against fungal infections.		
I-Use information technology to support decisions in common conditions related to the mycology.		
J-Provide health care services aimed at preventing the following conditions: • Nosocomial mycoses. • Opportunistic mycoses.		
K-Work with health care professionals, including those from other disciplines, to provide patient-focused care.		
L- Write and evaluate competently all forms of professional reports related to the mycology (lab reports, experiments reports,)		

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 the following problems: Sample processing, microscopic examination, culture, serology and molecular diagnosis.	• Log book and supervision. • Written & oral communication • Journal clubs. • Discussions in seminars. • Scientific meetings. • Participation in seminars.	• Log book. • Portfolios. • Procedure/case presentation.
B. Locate, appraises, and assimilates evidence from scientific studies related to health problems.		
C. Apply knowledge of study designs and statistical methods to the appraisal of clinical studies.		
D. Use information technology to manage information, access on-line medical information; and support their own education.		
E. Lead the learning of 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 and supervision.	Recording and report review.
G. Elicit information using effective nonverbal, explanatory, questioning, and writing skills.		
H. Write a report in diagnosis of fungal infection and antifungal sensitivity pattern of causative pathogen.		
I. Work effectively with others as a member of a health care team or other professional group.		

Professionalism

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

Systems-Based Practice

ILOs	*Methods of teaching/ learning*	*Methods of Evaluation*
M. Work effectively in relevant health care delivery settings and systems.	• Observation& supervision. • Didactic (lectures, seminars and tutorials). • Educational prescription	360o global rating.
N. Practice cost-effective health care and resource allocation that does not compromise quality of care.		Check list evaluation of live or recorded performance.
O. Assist patients in dealing with system complexities.		1. 360o global rating. 2. Patient survey.

Unit 4: Basic and Clinical Immunology

A-Knowledge and understanding

ILOs	**Methods of teaching/ learning**	***Methods of Evaluation***
A-Describe different clinical conditions and diseases related to basic and clinical immunology including: -Hypersensitivity -Immunodeficiency. - Autoimmunity - Immune tolerance. - Transplantation immunity. - Tumor immunity. - Prophylaxis and immunotherapy. - Measurement of immunity	Didactic (lectures, seminars, tutorial)	Log book Oral exam Written exam
B-Mention the details of different diagnostic tools of diseases related to basic and clinical immunology as: -Serological tests as ELISA -Serotyping. -protein assay methods as western blot and polyacrylamide gel electrophoresis. - Elispot -Flow cytometry -Immunohistochemistry -Immunofluorescence -Confocal Laser scanning Microscopy	Didactic (lectures, seminars, tutorial)	Log book Oral exam Written exam
C-State update and evidence based Knowledge related to basic and clinical immunology including: -Components of innate immunity -Antigens & their immune recognition -Maturation & activation of lymphocytes -Effector mechanisms of cell mediated immunity -Effector mechanisms of Humoral immunity -Antibodies and their gene diversity -Monoclonal antibodies	Didactic (lectures, seminars, tutorial)	Log book Oral exam Written exam

-The complement system. -Regulation of Immune system -MHC and transplantation immunology -Hypersensitivity reactions -Tumor immunology -Tolerance and autoimmunity -Immuno-deficiency disorders		
D-Memorize the facts and principles of the other relevant basic and clinically supportive sciences related to immunology including: Molecular biology and Genetics Basic and Clinical Bacteriology Basic and Clinical Virology Basic and clinical mycology		
E-Mention the basic ethical and medico legal principles revenant to basic and clinical immunology as: Demonstrate a commitment to ethical principles pertaining to provision or withholding of clinical care, confidentiality of patient information, informed consent, and business practices . i.e. The student must remember that all patient information is privileged and as such strict confidentially must be maintained.	Observation & supervision Didactic (lectures, seminars, tutorial Educational prescription	1.Objective structured clinical examination 2.Patient survey 1.360o global rating
F-Explain the basics of quality assurance to ensure good professional skills in his field. -The students should learn basic and clinical aspects of immunology, techniques in immunodiagnosis and its interpretations.	Observation & supervision Didactic (lectures, seminars, tutorial Educational prescription	1.Objective structured clinical examination 2.Patient survey 1.360o global rating
G-Mention the ethical and scientific principles of medical research -The student must remember that all patient information is privileged and as such strict confidentially must be maintained.		
H-Explain the impact of common health problems in the field of basic and clinical immunology on the society as diagnosis and management of immunological disorders.		

B-Intellectual outcomes

ILOs	Methods of teaching/ learning	Methods of Evaluation
A-Design / present case , seminars in common problem related to basic and clinical immunology: -Components of innate immunity -Antigens & their immune recognition -Maturation & activation of lymphocytes -Effector mechanisms of cell mediated immunity -Effector mechanisms of Humoral immunity -Antibodies and their gene diversity -Monoclonal antibodies -The complement system. -Regulation of Immune system -MHC and transplantation immunology -Hypersensitivity reactions - Tumor immunology -Tolerance and autoimmunity -Immuno-deficiency disorders	Observation & supervision Didactic (lectures, seminars, tutorial Educational prescription	1.Objective structured clinical examination 2.Patient survey 1.360o global rating
B-Apply the basic and clinically supportive sciences which are appropriate to immunology related conditions / problem / topics as Molecular biology and Genetics	Observation & supervision Didactic (lectures, seminars, tutorial Educational prescription	1.Objective structured clinical examination 2.Patient survey 1.360o global rating
C-Demonstrate an investigatory and analytic thinking "problem – solving "approaches to clinical situation related to basic and clinical immunology as: • Hypersensitivity • Immunodeficiency. • Autoimmunity	Observation & supervision Didactic (lectures, seminars, tutorial Educational prescription	1.Objective structured clinical examination 2.Patient survey 1.360o global rating

• Immune tolerance. • Transplantation immunity. • Tumour immunity. • Prophylaxis and immunotherapy.		
D-Conduct or share in research projects.	Observation & supervision Didactic (lectures, seminars, tutorial Educational prescription	1.Objective structured clinical examination 2.Patient survey 1.360o global rating
E-Write scientific papers.		
F-Participate in the management of risky conditions related to immunology as diagnosis and management of immunological disorders.		
G-Plan for quality improvement in the field of medical education and professional practice in immunology.		
H-Create / innovate plans, systems, and other issues for improvement of performance in his practice.		
I-Present and defend his / her data in front of a panel of experts		
J-Formulate management plans and alternative decisions in different situations in the field of basic and clinical immunology.		

C-Practical skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
A-Perform the following basic lab skills essential to basic and clinical immunology: -Serological tests as ELISA -Serotyping. - Elispot -Immunofluorescence	Observation & supervision Didactic (lectures, seminars, tutorial Educational prescription	1.Objective structured clinical examination 2.Patient survey 1.360o global rating
B-Perform the following advanced lab skills essential to basic and clinical immunology: -protein assay methods as western blot and polyacrylamide gel electrophoresis. -Flow cytometry -Immunohistochemistry		
C-Use instruments and devices in evaluation of: immune response, Hypersensitivity, autoimmunity,		

immunodeffieciency, immunetolerance		
D-Interpret the following non invasive procedures/ experiments: -Serological tests as ELISA -Serotyping. -protein assay methods as western blot and polyacrylamide gel electrophoresis. - Elispot -Flow cytometry -Immunohistochemistry -Immunofluorescence -Confocal Laser scanning Microscopy		
E-Perform the following non invasive procedures/ experiments: -Serological tests as ELISA -Serotyping. -protein assay methods as western blot and polyacrylamide gel electrophoresis. - Elispot -Immunofluorescence		
F-Perform the following basic experiments in related basic sciences to be utilized in the research work: -protein assay methods as western blot and polyacrylamide gel electrophoresis. -Immunohistochemistry -PCR		
G-Use information technology to support decisions in common situations related to basic and clinical immunology The student should know how to use different software needed for analysis and interoperation		
H- Develop and carry out diagnostic and teaching plans for all basic and clinical immunology related conditions / skills		
I-Counsel and educate patients and their family about • Hypersensitivity • Immunodeficiency. • Autoimmunity • Immune tolerance.		

• Transplantation immunity. • Tumour immunity. Prophylaxis and immunotherapy		
J-Use information technology to support decisions in common conditions related to basic and clinical immunology		
K-Provide health care services aimed at preventing the following conditions: • Hypersensitivity • Immunodeficiency. • Autoimmunity • Graft rejection • Tumors.		
L- Work with health care professionals, including those from other disciplines, to provide patient-focused care.		
M-Write and evaluate competently all forms of professional reports related to diagnosis of immunological disorders (lab reports, experiments reports,)		

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 the common problems (plan and conduct audit cycles)	supervision Written & oral .communication Journal clubs Discussions in seminars Scientific meetings participate in seminars	Log book Portfolios Procedure/case presentation
B-Locate, appraises, and assimilates evidence from scientific studies related to health problems.		
C-Apply knowledge of study designs and statistical methods to the appraisal of clinical studies		

D-Use information technology to manage information, access on-line medical information; and support their own education		
E-Lead the learning of students and other health care professionals.		

Interpersonal and Communication Skills

ILOs	Methods of teaching/ learning	Methods of Evaluation
F-Create and sustain a therapeutic and ethically sound relationship with patients	Observation & supervision	Simulation Record review (report)
G-Perform the following oral communications: With clinician and case presentation.		
H-Fill the following reports: Serological reports		
I-Work effectively with others as a member or leader of a health care team e.g. in labor ward		

Professionalism

ILOs	Methods of teaching/ Learning	Methods of Evaluation
J-Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society that supersedes self-interest.	supervision Written & oral .communication Journal clubs Discussions in seminars Scientific meetings participate in seminars	1. Objective structured clinical examination 2. Patient survey 3. 360o global rating
K-Demonstrate a commitment to ethical principles pertaining to 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

ILOs	Methods of teaching/ learning	Methods of Evaluation
M-Work effectively in different health care delivery settings and systems.	Observation & supervision Didactic (lectures, seminars, tutorial Educational prescription	1. 360o global rating
N-Practice cost-effective health care and resource allocation that does not compromise quality of care		1. Check list evaluation of live or recorded performance
O-Advocate for quality patient care and assist patients in dealing with system complexities		1. 360o global rating 2. Patient survey
P-Partner with health care managers and health care providers to assess, coordinate, and improve health care and predict how these activities can affect system performance		

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

Time Schedule: Second part

Topic	Covered ILOs			
	Knowledge	Intellectual	Practical skill	General Skills
Unit 1: Advanced bacteriology				
Structure, morphology of bacteria, Nomenclature and classification of microbes	**A-G**	**A-C,E,G**	**A,C,D,F-H,J**	**A-E,H**
Growth, nutrition and metabolism of bacteria	**A-G**	**A-C,E,G**	**A,C,F,H,J,M**	**A-P**
Antibacterial substances and drug resistance in bacteria	**A-H**	**A-J**	**A-M**	**A-P**
Bacterial ecology, virulence and Host parasite relationship	**A-G**	**A-J**	**-**	**A-P**
Bacterial cultures and biochemical reactions	**A-G**	**A-J**	**A-F,G,H,J,M**	**A-H**
diagnosis of the different microorganisms	**A-G**	**A-H**	**A-J**	**A-E,J-P**
antigenic structure and virulence factor	**A-D,G**	**A,B,E**	**-**	**A-P**
pathogenesis and mode of transmission of the diseases	**A-D,G**	**A,B,E**	**-**	**A-P**
important infectious clinical conditions	**A-H**	**A-J**	**A-M**	**A-P**
System based infections	**C, D, G- J**	**A- F, H, K**	**A-D, F, H- J**	**A-P**
Unit 2: Advanced Virology				
General characters, classification of viruses and Methods of virus purification	**A,C,D,G**	**B, E,G**	**A**	**A-P**
Virus replication, interference and recombination	**A,C,D,G**	**B,E,G**	**A**	**A-P**
pathogenesis and host defense in	**A,C,D,G**	**B,E,G**	**-**	**A-P**

virus infections				
laboratory diagnosis of viral infections	**A-H**	**A-J**	**A-L**	**A-E,H**
antiviral drugs	**A-H**	**A-J**	**E,F,G-I,K**	**A-E,H**
Pathogenesis and mode of transmission of viral diseases	**A,B,D,E**	**B, E,G**	**E**	**A-P**
Diagnosis, treatment, prevention and control of viral diseases	**A-H**	**A-J**	**A-K**	**A-P**
Unit 3: Advanced Mycology				
Classification, fungal spores, reproduction of fungi	**A,B,C,E**	**C-E,G**	**B**	**A-P**
Pathogenesis of fungal infections	**A,B,E**	**C-E,G**	**B**	**A-P**
laboratory diagnosis of fungal pathogens	**A-E**	**A-G**	**A-D**	**A-E,H**
Chemotherapy of fungal infections	**A-F**	**H,J**	**D**	**A-P**
diagnosis, treatment, prevention and control of fungal diseases	**A-E**	**A-G**	**A-G**	**A-P**
Unit 4: Basic and Clinical Immunology				
Innate immunity	**C**	**A**	**A-F**	**A-P**
Acquired immunity(Humoral and cellular)	**A-E**	**A-C**	**A-F**	**A-P**
Measurement of immunity	**A-H**	**A-J**	**A-J**	**A-E,H**
Hypersensitivity	**A,C**	**A-C**	**A-F,I,K**	**A-P**
Tolerance and Autoimmunity.	**A,C**	**A-C**	**A-F,I,K**	**A-P**
Transplantation immunology	**A,C**	**A-C**	**A-F,I,K**	**A-P**
Tumor immunology.	**A,C**	**A-C**	**A-F,I,K**	**A-P**
Immunodeficiency	**A,C**	**A-C**	**A-F,I,K**	**A-P**

5. Course Methods of teaching/learning:

1. **Lectures.**
2. **Practical training in Medical Microbiology & Immunology Dep.**
3. **Practical training in Microbiology Infection Control laboratory of Assiut University Hospitals.**
4. **Case studies (problem solving).**
5. **Seminars.**
6. **Journal club.**
7. **Didactic (lectures, seminars, tutorial).**
8. **Critically appraised topic**
9. **Direct observation of the practical work.**
10. **Supervision.**
11. **Written & oral communication.**
12. **Discussions.**
13. **Scientific meetings.**
14. **Observation & supervision.**

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.**

- **Objective structure.**
- **Check list on steps of practical training.**
- **Log book.**
- **Written exam.**
- **Portfolios**
- **Procedure/case presentation**
- **Simulation**
- **Record review (report(**
- **Objective structured practical examination.**

ii. Time schedule: 2-3 years

iii. Marks: 1200 Marks

8. List of references

i. Lectures notes

ii. Essential books

- **Sherris & Ryan's Medical Microbiology, 8th edition, 2022**
- **Jawetz, Melnick Adelberg's Medical Microbiology 28th edition, 2019**
- **Kaplan Medical USMLE Step 1, Lecture Notes 2020: Immunology and Microbiology**
- **Lippincott's Illustrated Review: Microbiology, 2019**
- **Mim's Medical Microbiology and Immunology, Philadelphia, PA, Mosby Elsevier, 6th edition , 2019**
- **Basic immunology by Abul K. Abbas and Andrew H. Lichtman, 10th edition, 2021.**
- ***Janeway's Immunobiology*, 9th edition, 2017**

iii. Recommended books

- **Medical Microbiology. Vol. I to II: Greenwood, Slack, Pleutherer , 16th edition, 2007.**

- Microbiology in Clinical Practice Shanson D.C. 2nd Edition, 2011

iv. Periodicals, Web sites, … etc

- **Indian journal of Medical Microbiology**
- **Journal of infectious Diseases**
- **American Journal of Clinical Microbiology**
- **Indian Journal of Pathology & Microbiology.**

- **Annual Review of Microbiology.**
- **Indian Journal of Medical Research.**
- **Indian Journal of Immunology.**
- **Journal of Tropical Medicine.**
- **New England Journal of Medicine.**
- **W.H.O. Bulletin.**
- **Tubercle.**
- **Indian Journal of Tuberculosis.**
- **Infection Immunity.**
- **Immunology.**
- **International Journal of Leprosy.**
- **Indian Journal of Leprosy.**
- **Journal of American Medical Association.**
- **Lancet.**
- **British Medical Journal.**
- **Journal of Associations of Physicians of India.**
- **Pediatric Infectious Diseases.**
- **American Journal of Epidemiology.**
- **Clinical Microbiology Reviews.**
- **Journal of Hospital infection**

9. Signatures

Course Coordinator: **Prof. Mohamed Ali El-Feki**	**Head of the Department:** **Prof. Noha Afifi**
Date: 5/2022	**Date: 5/2022**

ANNEX 2
Program Academic Reference Standards (ARS)

1- Graduate attributes for medical doctorate in Medical Microbiology and Immunology

***The Graduate (after residence training and medical doctorate years of study) must*:**

1- Demonstrate competency and mastery of basics, methods and tools of scientific research and medical audit in the Medical Microbiology and Immunology field of medicine.

2- Have continuous ability to add knowledge to the Medical Microbiology and Immunology through research and publication.

3- Appraise and utilise relevant scientific knowledge to continuously update and improve practical skills.

4- Acquire excellent level of medical knowledge in the basic biomedical, behavioural and related clinical sciences, medical ethics and medical jurisprudence and apply such knowledge in practical skills and scientific research.

5- Function as a leader of a team to provide appropriate, effective and compassionate reaction when dealing with problems related to Medical Microbiology and Immunology.

6- Identify and create solutions for health problems related to Medical Microbiology and Immunology.

7- Acquire an in depth understanding of common areas of Medical Microbiology and Immunology, from basic practice and related clinical care to application, and possession of required skills to manage independently all problems in these areas.

8- Demonstrate leadership competencies including interpersonal and communication skills that ensure effective information exchange with other health professions, the scientific community and the public.

9- Function as teacher in relation to colleagues, medical students and other health professions.

10- Master decision making capabilities in different situations related to his field of practice.

11- Show leadership responsiveness to the larger context of the related health care systems, including the organisation,

partnership with health care providers and managers, and resource allocations.

12- Demonstrate in depth awareness of public health and related health policy issues including independent ability to improve health care, and identify and carryout system-based improvement of care.

13- Show model attitudes and professionalism.

14- Demonstrate commitment for lifelong learning and maintenance of competence and ability for continuous medical education and learning in subsequent stages and in the Medical Microbiology and Immunology or one of its subspecialties.

15- Use recent technologies to improve his practice in the Medical Microbiology and Immunology field.

16- Share in updating and improving practical practice in the Medical Microbiology and Immunology field.

2- Competency based Standards for medical doctorate in Medical Microbiology and Immunology

2.1- Knowledge and understanding

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

2-1-A- Established, updated and evidence-based theories, basics and developments of Medical Microbiology and Immunology and relevant sciences.

2-1-B- Basic, methods and ethics of medical research.

2-1-C- Ethical and medicologal principles of medical practice related to Medical Microbiology and Immunology field.

2-1-D- Principles and measurements of quality in the Medical Microbiology and Immunology field.

2-1-E- Principles and efforts for maintaining and improvements of public health.

2- Intellectual skills

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

2-2-A- Application of basic and other relevant science to solve Medical Microbiology and Immunology related problems.

2-2-B- Problem solving based on available data.

2-2-C- Involvement in research studies related to the Medical Microbiology and Immunology.

2-2-D- Writing scientific papers.

2-2-E- Risk evaluation in the related clinical practice.

2-2-F- Planning for performance improvement in the Medical Microbiology and Immunology field.

2-2-G- Creation and innovation in the Medical Microbiology and Immunology field.

2-2-H- Evidence – based discussion.

2-2-I- Decision making in different situations related to the Medical Microbiology and Immunology fields.

2.3- Clinical skills

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

- ***Competency-based outcomes for Patient Care:-***

2-3-A- Provide extensive level of practical and or laboratory services that can help patient care ,solving health problems and better understanding of the normal structure and function extensive level means in depth understanding from basic science to

evidence – based clinical application and possession of skills to manage independently all problems in Medical Microbiology and Immunology practice.

2-3-B- Master practical / laboratory skills relevant to Medical Microbiology and Immunology.

2-3-C- Write and evaluate reports for situations related to the field of Medical Microbiology and Immunology.

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- Master practice-based learning and improvement skills that involves investigation and evaluation and improvements of their own practice, appraisal and assimilation of scientific evidence and risk management.

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

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

- ***Competency-based objectives for Interpersonal and Communication Skills***

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

- ***Competency-based objectives for Professionalism***

2-4-E- Master Professionalism behavior, 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 the ability to effectively use system resources to provide relevant services and care that is of optimal value.

2-4-G- Participate in improvement of the education system.

2-4-H- Demonstrate skills of leading scientific meetings including time management.

2-4-O- 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 MD 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 MD students 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 MD 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 MD doctor's performance on checklists and provide feedback for history taking, physical examination, and communication skills. Physicians may also rate the MD doctor's performance.

- Objective Structured Clinical Examination (OSCE) – A series of stations with standardized tasks for the MD doctors to perform. Standardized patients and other assessment methods often are combined in an OSCE. An observer or the standardized patient may evaluate the MD doctors.

- Procedure or Case Logs – MD 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 MD 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 – MD doctors, faculty, nurses, clerks, and other clinical staff evaluate MD doctors from different perspectives using similar rating forms.

- Portfolios – A portfolio is a set of project reports that are prepared by the MD doctors to document projects completed during the MD 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 – MD 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 MD 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:

مصفوفة توافق المعايير القومية القياسية العامة لبرامج الدكتوراه مع المعايير الأكاديمية المعتمدة من كلية الطب □ جامعة أسيوط لدرجة الدكتوراه فى الميكروبيولوجيا الطبية والمناعة

I- General Academic Reference Standards (GARS) versus Program ARS

1- Graduate attributes

Faculty ARS	NAQAAE General ARS for Postgraduate Programs
1- Demonstrate competency and mastery of basics, methods and tools of scientific research and medical audit in Medical Microbiology and Immunology.	1-إتقان أساسيات و منهجيات البحث العلمي
2- Have continuous ability to add knowledge new developments to the Medical Microbiology and Immunology through research and publication.	2-العمل المستمر علي الإضافة للمعارف في مجال التخصص
3- Appraise and utilise scientific knowledge to continuously update and improve practical skills	3-تطبيق المنهج التحليلي والناقد للمعارف في مجال التخصص و المجالات ذات العلاقة
4- Acquire excellent level of medical knowledge in the basic biomedical, related clinical, behavioural and clinical sciences, medical ethics and medical jurisprudence and apply such knowledge in practical skills and scientific research.	4-دمج المعارف المتخصصة مع المعارف ذات العلاقة مستنبطا و مطورا للعلاقات البينية بينها
5- Function as a leader of a team to provide appropriate, effective and compassionate reaction when dealing with problems related to Medical Microbiology and Immunology. 7- Acquire an in depth understanding of common areas of Medical Microbiology and Immunology, from basic practice and related clinical care to application, and possession of skills to manage independently all problems in these areas.	5-إظهار وعيا عميقا بالمشاكل الجارية و النظريات الحديثة في مجال التخصص

6- Identify and create solutions for health problems related to Medical Microbiology and Immunology.	6-تحديد المشكلات المهنية و إيجاد حلولا مبتكرة لحلها
5- Function as a leader of a team to provide appropriate, effective and compassionate reaction when dealing with problems related to Medical Microbiology and Immunology. 7- Acquire an in depth understanding of common areas of Medical Microbiology and Immunology, from basic practice and related clinical care to application, and possession of skills to manage independently all problems in these areas.	7-إتقان نطاقا واسعا من المهارات المهنية في مجال التخصص
16- Share in updating and improving practical practice in the Medical Microbiology and Immunology field. 9- Function as teacher in relation to colleagues, medical students and other health professions.	8- التوجه نحو تطوير طرق و أدوات و أساليب جديدة للمزاولة المهنية
15- Use recent technologies to improve his practice in the Medical Microbiology and Immunology field.	9-استخدام الوسائل التكنولوجية المناسبة بما يخدم ممارسته المهنية
8- Demonstrate leadership competencies including interpersonal and communication skills that ensure effective information exchange with other health professions, the scientific community and the public. 5- Function as a leader of a team to provide appropriate, effective and compassionate reaction when dealing with problems related to Medical Microbiology and Immunology.	10-التواصل بفاعلية و قيادة فريق عمل في سياقات مهنية مختلفة
10- Master decision making capabilities in different situations related to his field of practice.	11-اتخاذ القرار في ظل المعلومات المتاحة

1- Graduate attributes (Continuous)

Faculty ARS	NAQAAE General ARS for Postgraduate Programs
11- Show leadership responsiveness to the larger context of the related health care system, including the organisation, partnership with health care providers and managers, and resource allocations.	12-توظيف الموارد المتاحة بكفاءة و تنميتها والعمل على إيجاد موارد جديدة
12- Demonstrate in depth awareness of public health and related health policy issues including independent ability to improve health care, and identify and carryout system-based improvement of care.	13-الوعي بدوره في تنمية المجتمع و الحفاظ على البيئة
13- Show model attitudes and professionalism.	14-التصرف بما يعكس الالتزام بالنزاهة و المصداقية و قواعد المهنة
14- Demonstrate commitment for lifelong learning and maintenance of competence and ability for continuous medical education and learning in subsequent stages and in the Medical Microbiology and Immunology or one of its subspecialties. 15- Use recent technologies to improve his practice in the Medical Microbiology and Immunology field.	15-الالتزام بالتنمية الذاتية المستمرة و نقل علمه و خبراته للآخرين

2- Academic standards

Faculty ARS	NAQAAE General ARS for Postgraduate Programs
2.1. A- Established updated and evidence-based theories, basics and developments of Medical Microbiology and Immunology and relevant sciences.	2-1-أ- النظريات و الأساسيات والحديث من المعارف في مجال التخصص والمجالات ذات العلاقة
2.1. B- Basic, methods and ethics of medical research.	2-1-ب - أساسيات و منهجيات و أخلاقيات البحث العلمي و أدواته المختلفة
2.1. C- Ethical and medicologal principles of medical practice related to Medical Microbiology and Immunology.	2-1-ج- المبادئ الأخلاقية و القانونية للممارسة المهنية في مجال التخصص
2.1. D- Principles and measurements of quality in the Medical Microbiology and Immunology field.	2-1-د مبادئ و أساسيات الجودة في الممارسة المهنية في مجال التخصص
2.1. E- Principles and efforts for maintaining and improvements of public health.	2-1-هـ - المعارف المتعلقة بآثار ممارسته المهنية على البيئة وطرق تنمية البيئة وصيانتها
2.2. A- Application of basic and other relevant science to solve Medical Microbiology and Immunology related problems.	2-2-أ -تحليل و تقييم المعلومات في مجال التخصص و القياس عليها و الاستنباط منها
2.2. B- Problem solving based on available data.	2-2-ب -حل المشاكل المتخصصة استنادا علي المعطيات المتاحة
2.2. C- Involvement in research studies related to Medical Microbiology and Immunology.	2-2-ج -إجراء دراسات بحثية تضيف إلى المعارف
2.2. D- Writing scientific papers.	2-2-د- صياغة أوراق علمية
2.2. E- Risk evaluation in the related clinical practice.	2-2-هـ تقييم المخاطر في الممارسات المهنية
2.2. F- Planning for performance improvement	2-2-و -التخطيط لتطوير الأداء في مجال

in the Medical Microbiology and Immunology field.	التخصص
2-2-G- Creation and innovation in the Medical Microbiology and Immunology field.	2-2-ز- الابتكار /الإبداع
2.2. H- Evidence – based discussion.	2-2-ح- الحوار والنقاش المبني علي البراهين والأدلة
2.2. I- Decision making in different situations related to Medical Microbiology and Immunology.	2-2-ط -اتخاذ القرارات المهنية في سياقات مهنية مختلفة
2.3. A- Provide extensive level of practical and or laboratory services that can help patient care ,solving health problems and better understanding of the normal structure and function extensive level means in depth understanding from basic science to evidence – based clinical application and possession of skills to manage independently all problems in his field of Medical Microbiology and Immunology practice. 2.3. B- Master practical / laboratory skills relevant to Medical Microbiology and Immunology.	2-3-أ -إتقان المهارات المهنية الأساسية و الحديثة في مجال التخصص
2.3. C- Write and evaluate reports for situations related to Medical Microbiology and Immunology.	2-3-ب- كتابة و تقييم التقارير المهنية.
2.4. A-Master practice-based learning and improvement skills that involves investigation and evaluation and improvements of their own practice, appraisal and assimilation of	2-3-ج -تقييم و تطوير الطرق و الأدوات القائمة في مجال التخصص

scientific evidence and risk management.	
2.4. B- Use competently all information sources and technology to improve his practice.	2-3-د - استخدام الوسائل التكنولوجية بما يخدم الممارسة المهنية
2.4. A-Master practice-based learning and improvement skills that involves investigation and evaluation and improvements of their own practice, appraisal and assimilation of scientific evidence and risk management. 2.4. G- Participate in improvement of the education system.	2-3-هـ -التخطيط لتطوير الممارسة المهنية وتنمية أداء الآخرين

2- Academic standards (Continues)

Faculty ARS	NAQAAE General ARS for Postgraduate Programs
2.4. D- Master interpersonal and communication skills that result in effective information exchange and teaming with patients, their families, technicians and other health professionals.	2-4-أ التواصل الفعال بأنواعه المختلفة
2.4. B- Use competently all information sources and technology to improve his practice.	2-4-ب - استخدام تكنولوجيا المعلومات بما يخدم تطوير الممارسة المهنية
2.4. C- Master skills of teaching and evaluating others. 2.4.G- Participate in improvement of the education system.	2-4-ج - تعليم الآخرين وتقييم أداءهم
2.4. E- Master professionalism behavior, as manifested through a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population. 2.4.0- Demonstrate skills of self and continuous learning.	2-4-د - التقييم الذاتي والتعلم المستمر
2.4. C- Master skills of teaching and evaluating others.	2-4-هـ - استخدام المصادر المختلفة للحصول على المعلومات و المعارف
2.4. F- Demonstrate the ability to effectively use system resources to provide relevant services and care that is of optimal value.	2-4-و - العمل في فريق وقيادة فرق العمل
2.4.H- Demonstrate skills of leading scientific meetings including time management	2-4-ز - إدارة اللقاءات العلمية والقدرة علي إدارة الوقت

II-Program ARS versus program ILOs

Comparison between ARS- ILOS for medical doctorate for Medical Microbiology and Immunology

(ARS)	(ILOs)
2-1- Knowledge and understanding	***2-1- Knowledge and understanding***
2-1-A- Established, updated and evidence-based theories, basics and developments of Medical Microbiology and Immunology and relevant sciences.	**2-1-A**- Demonstrate in-depth knowledge and understanding of theories, basics and updated biomedical, clinical epidemiological and socio behavioral science relevant to Medical Microbiology and Immunology as well as the evidence – based application of this knowledge to practice including patient care.
2-1-B Basic, methods and ethics of medical research. .	**2-1-B-** Explain basics, methodology, tools and ethics of scientific medical, clinical research.
2-1-C- Ethical and medicologal principles of medical practice related to Medical Microbiology and Immunology field.	**2-1-C-** Mention ethical, medico logical principles and bylaws relevant to his practice in the field of Medical Microbiology and Immunology.
2-1-D- Principles and measurements of quality in the speciality field.	**2-1-D-** Mention principles and measurements of quality assurance and quality improvement in medical education and in practice of the concerned speciality.
2-1-E-Principles and efforts for maintaining and improvements of public health.	**2-1-E-** Mention public health and health policy issues relevant to this speciality and principles and methods of system –based improvement of related to his practice in the field of.

continuous (ARS)	continuous (ILOs)
***2-2- Intellectual skills*:**	***2-2- Intellectual skills:***
2-2-A-Application of basic and other relevant science to solve speciality related problems.	**2-2-A-** Apply the basic and clinically supportive sciences which are appropriate to the speciality related conditions / problem / topics.
2-2-B-Problem solving based on available data.	**2-2-B-** Demonstrate an investigatory and analytic thinking "problem – solving "approaches to relevant situations related to speciality.
2-2-C- Involvement in research studies related to the speciality.	**2-2-C-** Plain research projects.
2-2-D Writing scientific papers.	**2-2-D-** Write scientific paper.
2-2-E-Risk evaluation in the related clinical practice.	**2-2-E-** Participate in clinical or laboratory risk management activities as a part of clinical governance.
2-2-F-Planning for performance improvement in the speciality field.	**2-2-F-** Plan for quality improvement in the field of medical education and practice in his speciality.
2-2-G-Creation and innovation in the speciality field.	**2-2-G-** Create / innovate plans, systems, and other issues for improvement of performance in his practice.
2-2-H-Evidence – based discussion.	**2-2-H-** Present and defend his / her data in front of a panel of experts.
2-2-I-Decision making in different situations related to the speciality fields.	**2-2-I-** Formulate management plans and alternative decisions in different situations in the field of the speciality.

continuous (ARS)	continuous (ILOs)
2-3- Clinical skills:	***2/3/1/Practical skills (Patient care :)***
2-3-A- provide extensive level of practical and or laboratory services that can help patient care ,solving health problems and better understanding of the normal structure and function extensive level means in depth understanding from basic science to evidence – based clinical application and possession of skills to manage independently all problems in his field of practice.	**2-3-1-A**- Master practical skills relevant to that speciality for all common techniques and /or experiments including.
2-3-B- Master practical/laboratory skills relevant to that speciality	**2-3-1-B-** Master practical skills with non-routine, laboratory skills and techniques and under increasingly difficult circumstances, while demonstrating, appropriate and effective competency including.
	2-3-1-C- Master proficiency in performing available complex laboratory techniques and handling unexpected complications including.
	2-3-1-D- Gather essential and accurate information about practical/laboratory skills of the speciality related conditions including.
	2-3-1-E- Make informed decisions about diagnostic laboratory tests for the speciality related conditions including.
	2-3-1-F- Develop and carry out diagnostic and teaching plans for all speciality related conditions / skills including.
	2-3-1-G- Use information technology to

	support practical decisions and students education in all speciality related practical situations including. **2-3-1-H-** Provide health care or any relevant services aimed at preventing the speciality related health problems (if applied) including. **2-3-1-I-** Lead other professionals, including those from other disciplines, to provide practical/laboratory-focused care in speciality related conditions including.
2-3-C- Write and evaluate reports for situations related to the field of speciality.	**2-3-1-J-** Write competently all forms of professional reports related to the speciality (lab reports, experiments reports,) including reports evaluating these charts and sheets.

continuous (ARS)	continuous (ILOs)
2-4- General skills	***2/3/2 General skills***
2-4-A- Master Practice-Based Learning and Improvement skills that involves investigation and evaluation and improvements of their own practice, appraisal and assimilation of scientific evidence and risk management.	**2-3-2-A-** Demonstrate the competency of continuous evaluation of different types of practice including service provision to patients in the different areas of his field. **2-3-2-B-** Appraise scientific evidence. **2-3-2-C-** Continuously improve his practice including service provision to patients based on constant self-evaluation and life-long learning. **2-3-2-D**- Participate in medical audits and research projects. **2-3-2-E-** Practice skills of evidence-based Medicine (EBM). **2-3-2-G-** Design logbooks. **2-3-2-H-** Design guidelines and standard protocols for different techniques and procedures.
2-4-B- Use competently all information sources and technology to improve his practice.	**2-3-2-I-** Apply knowledge of study designs and statistical methods to the appraisal of speciality related studies. **2-3-2-J**- Use information technology to manage information, access on-line medical information; for the important topics.
2-4-C- Master skills of teaching and evaluating others.	**2-3-2-F-** Educate and evaluate students, mentors and other health

	professionals.
2-4-D- Master interpersonal and communication Skills that result in effective information exchange and teaming with patients, their families, technicians and other health professionals.	**2-3-2-K**- Master interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families, and health professionals, including:- • Present a case. • Write a consultation note. • Inform patients of a diagnosis and therapeutic plan, Completing and maintaining comprehensive timely and legible medical records. • Teamwork skills. **2-3-2-L-** Create and sustain a therapeutic and ethically sound relationships with patients. **2-3-2-M**- Elicit and provide information using effective nonverbal, explanatory, questioning, and writing skills. **2-3-2-N-** Work effectively with others as a member or leader of a health care team or other professional group.
2-4-E- Master Professionalism behavior, as manifested through a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population.	**2-3-2-O-** Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society. **2-3-2-P-** Demonstrate a commitment to ethical principles including provision or withholding of

	clinical care, confidentiality of patient information, informed consent, and business practices. **2-3-2-Q-** Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities.
2-4-F- Demonstrate the ability to effectively use system resources to provide relevant services and care that is of optimal value. **2-4-G**- Participate in improvement of the education system.	**2-3-2-R-** Work effectively in academic and health care delivery settings and systems related to speciality including good administer and time management. **2-3-2-S-** Practice cost-effective services provision and resource allocation that does not compromise quality. **2-3-2-T-** Advocate for quality patient care and assist patients in dealing with system complexities. **2-3-2-U-** Design, monitor and evaluate specification of under and post graduate courses and programs.
2-4-H- Demonstrate skills of leading scientific meetings including time management	**2-3-2-V-** Act as a chair man for scientific meetings including time management **2-3-2-R-** Work effectively in academic and health care delivery settings and systems related to speciality including good administrative and time management.
0- Demonstrate skills of self and continuous learning.	From A to H**.**

II-Program matrix
Knowledge and Understanding

Course	Program Covered ILOs				
	2/1/A	2/1/B	2/1/C	2/1/D	2/1/E
Course 1: Medical Statistics		✓			✓
Course2: Research methodology					
Course3: Medicolegal aspects& ethics in Medical Practice and Scientific Research	✓				✓
Course 4: Advanced Infection Control	✓	✓	✓	✓	✓
Course 5: Advanced Molecular Microbiology	✓	✓	✓	✓	✓
Course 6: Advanced Microbiology	✓	✓	✓	✓	✓

Intellectual

Course	Program Covered ILOs								
	2/2/A	2/2/B	2/2/C	2/2/D	2/2/E	2/2/F	2/2/G	2/2/H	2/2/I
Course 1: Medical Statistics				✓				✓	
Course2: Research methodology									
Course3: Medicolegal aspects& ethics in Medical Practice and Scientific Research		✓			✓				
Course 4: Advanced Infection Control	✓	✓	✓	✓	✓	✓	✓	✓	✓
Course 5: Advanced Molecular Microbiology	✓	✓	✓	✓	✓	✓	✓	✓	✓
Course 6: Advanced Microbiology	✓	✓	✓	✓	✓	✓	✓	✓	✓

Practical skills

Course	Program Covered ILOs									
	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	2/3/1/ H	2/3/1/ I	2/3/1/ J
Course 1: Medical Statistics		✓							✓	
Course2: Research methodology							✓			
Course3: Medicolegal aspects& ethics in Medical Practice and Scientific Research			✓					✓		
Course 4: Advanced Infection Control	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Course 5: Advanced Molecular Microbiology	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Course 6: Advanced Microbiology	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

General skills

Course	Program Covered ILOs								
	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	2/3/2/I
Course 1: Medical Statistics		✓				✓			
Course2: Research methodology									
Course3: Medicolegal aspects& ethics in Medical Practice and Scientific Research				✓				✓	
Course 4: Advanced Infection Control	✓	✓	✓	✓	✓	✓	✓	✓	✓
Course 5: Advanced Molecular Microbiology	✓	✓	✓	✓	✓	✓	✓	✓	✓
Course 6: Advanced Microbiology	✓	✓	✓	✓	✓	✓	✓	✓	✓

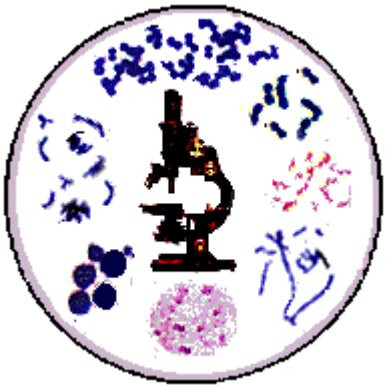
General Skills

Course	Program Covered ILOs						
	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: Medical Statistics			✓			✓	
Course2: Research methodology	✓			✓			
Course3: Medicolegal aspects& ethics in Medical Practice and Scientific Research					✓		
Course 4: Advanced Infection Control	✓	✓	✓	✓	✓	✓	✓
Course 5: Advanced Molecular Microbiology	✓	✓	✓	✓	✓	✓	✓
Course 6: Advanced Microbiology	✓	✓	✓	✓	✓	✓	✓

Course	Program Covered ILOs					
	2/3/2/Q	2/3/2/R	2/3/2/S	2/3/2/T	2/3/2/U	2/3/2/V
Course 1: Medical Statistics						
Course2: Research methodology						
Course3: Medicolegal aspects& ethics in Medical Practice and Scientific Research						
Course 4: Advanced Infection Control	✓	✓	✓	✓	✓	✓
Course 5: Advanced Molecular Microbiology	✓	✓	✓	✓	✓	✓
Course 6: Advanced Microbiology	✓	✓	✓	✓	✓	✓

Annex 7, Additional information:

Department information:



Our Mission:

The mission of the Department of Microbiology and Immunology is to conduct the best possible research and provide the most rigorous and inspiring training in the areas of microbiology, immunology, host-pathogen interaction and related fields. Through such activities, our goal is to improve human and animal health. We hope to present an overview of our research and training activities and to inspire like-minded individuals to join us in our quest.

Research

The traditional focus of the Department of Microbiology and Immunology has been on how microbes survive and cause disease in an animal or human host and how that host's immune system discriminates between self, friend (commensal microbes) and pathogenic microbes. In recent years, the Department has expanded this scope to also include related disciplines such as genetics, biotechnology, and Infection control through inclusion of the infection control lab.

On the side of the microorganism, we study the growth and pathogenesis of viruses, bacteria, and fungi asking questions such as how do these organisms penetrate and survive in their

chosen environment? How do they deal with the host's potent immune response? What distinguishes “good” microbes from “bad” and how do the two interact? What is responsible for latency/persistence and reactivation of infection?

On the side of the host, we are asking questions such as how are self-antigens distinguished from non-self? How are antigens processed and presented to effector cells? What cascades follows antigen presentation? What roles do the various effector cells play in the host's immune response to different diseases? How does tolerance arise during development, how does it break down in autoimmunity and how can we interfere with these processes?

Using a variety of microbial and host systems, we are also addressing fundamental questions of cell development and gene regulation. For example, how do cancer cells lose their self-control? Gene expression, of course, is central to much of biology.

- The Department underwent several expansions by inclusion of the PCR lab., Virology lab and the infection control lab. This is a group of faculty with interests that take us beyond our traditional focus in host and pathogen into even more diverse but complementary areas of biomedical research.

- The Department of Microbiology and Immunology is a community of over 30 individuals, all of whom share a common passion for research and learning. The Department was founded almost 50 years ago and has gone by a number of names since that time, each reflecting a particular stage in the evolution of medicine and the life sciences. Our current name is Medical Microbiology and immunology Department.

Staff members:

Professors:

Prof. Shaban Hashim Ahmed
Prof. Ismail Sedeek Mohamed
Prof. Amany Gamal Thabet
Prof. Ahmed Sadik Ahamed
Prof. Mohamed Aly Mohamed Al-Feky
Prof. Khaled Hassanein
Prof. Enas Abdel-Megeed Mohamed Daef
Prof. Ehsan Abdel-Sabour
Prof. Mona Amin Hassan
Prof. Mohamed Saad Badary
Prof. Salwa Said Ahmed
Prof. Noha Adbel-Haleem Afifi
Prof. Shereen Ahmed Abdel-Rahman
Prof. Nahla Mohamed Al-Sherbeny
Prof. Michael Nazmy Agban

Assistant Professors:

Dr. Shreen Gamal Aldeen Al-Gendy
Dr. Wegdan Abdel-Hameed Mohamed
Dr. Intsar Hamid Ahmed
Dr. Hanaa Nafady
Dr. Mona Salam Embarak
Dr. Magi Abdallah Ibraheem
Dr. Omnia Hassan Bakr
Dr. Mohamed El-Mokhtar
Dr. Amany Mohamed Adawy
Dr. Mona Hussein Mohamed
Dr. Amal Ahmed El-Khawaga
Dr. Helal Fouad

Lecturers:
Dr. Alyaa Ghandour
Dr. Shereen Mohamed
Dr. Shreen Saber
Dr. Rawheia Fathy
Dr. Asmaa Salah Shaltoot
Dr. Ibrahim Sayed
Dr. Hebatallah Ismaeil
Dr. Fatma Sayed
Dr. Dina Oyoon

Opportunities within the department:

Education

The teaching mission of the Department is to provide the best possible training in the areas of microbiology, immunology and related fields. Our approach is holistic in that we are constantly considering the entirety of the system we study, be it the pathogenesis of an autoimmune disease (perhaps microbially triggered) or a pathogen-produced virulence protein 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 Microbiology and Immunology 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 microbiology, immunology, 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 to3 years, and for Ph.D is about 4 years.

Seminars

The Department of Microbiology and Immunology holds a monthly Research Seminar Series which present current research in microbiology

Events and Achievments:

Completed Research Support

- R21AI067868 Shata (P.I.)8/15/06 – 7/31/08

University of Cincinnati

Towards Understanding the Morbidity of HEV

This research project is a collaborative effort among American and Egyptian scientists to study the immunology and virology of hepatitis E virus.

- HC &HB Project
  Ahlam(P.I .) 1/1/1998-1/1/1999

Cement Company

Screening for Hepatitis B and Hepatitis C viruses among workers and their families in Cement Company in Assiut.

- HCV in Egypt
  (Strickland)P.I 1/11996-1/1/2000

Vaccination against Poliomyelitis Farouk Hassanen (P.I.) 1/5/1993-1/12/1994

- **USAID Schistosomiasis Rsearch project** 06-03-61

  1-6-1992 to 28-2-1997,

- **Idiotypic Regulations Of Immune Response**
  Shata(P.I.) 1/1/1991-1/2/1995

To Schistosomiasis Hematobium (Grant No 3/1/34)

Ultrasound and Immunological Assesment of Praziquntel Ahmad Medhat (P.I) 1/7/1991-1/6/1996

Therapy of Patients infected with Schistosoma hematobium

Contact Us

General mail should be addressed to:

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Faculty of Medicine

Assiut University

Egypt

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

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+20-88-2411899

Fax: +20-88-2332278

Department quality control insurance for completing the program:

(End of the program specification)