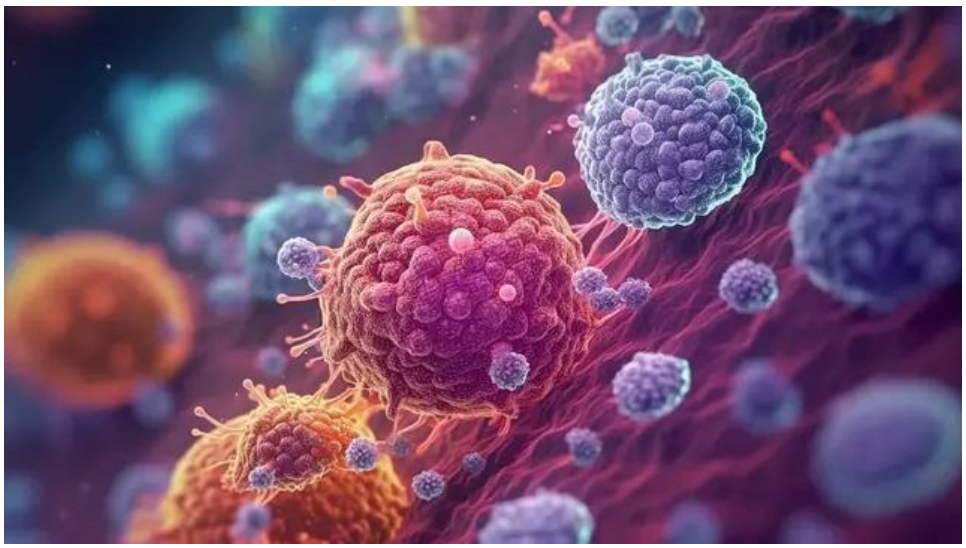
Avicenna Medical & Dental College

AVICENNA
MEDICAL COLLEGE

STUDY GUIDE

2023-2024



Program: MBBS
Year: 3rd Professional Year
Subject: General Pathology & Microbiology
Batch No: M-21
Session: 2023-2024

Department of Medical Education

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Introduction to Study Guide

Welcome to the Avicenna Medical & Dental College Study Guide!

This guide serves as your essential resource for navigating the complexities of your medical education at Avicenna Medical & Dental College. It integrates comprehensive details on institutional framework, curriculum, assessment methods, policies, and resources, all meticulously aligned with UHS, PMDC and HEC guidelines.

Each subject-specific study guide is crafted through a collaborative effort between the Department of Medical Education and the respective subject departments, ensuring a harmonized and in-depth learning experience tailored to your academic and professional growth.



Objectives of the Study Guide

1. **Institutional Understanding:**
    - Gain insight into the college's organizational structure, vision, mission, and graduation competencies as defined by PMDC, setting the foundation for your educational journey.
2. **Effective Utilization:**
    - Master the use of this guide to enhance your learning, understanding the collaborative role of the Department of Medical Education and your subject departments, in line with PMDC standards.
3. **Subject Insight:**
    - Obtain a comprehensive overview of your courses, including detailed subject outlines, objectives, and departmental structures, to streamline your academic planning.
4. **Curriculum Framework:**
    - Explore the curriculum framework, academic calendar, and schedules for clinical and community rotations, adhering to the structured guidelines of UHS & PMDC.
5. **Assessment Preparation:**
    - Familiarize yourself with the various assessment tools and methods, including internal exam and external exam criteria, and review sample papers to effectively prepare for professional exams.
6. **Policies and Compliance:**
    - Understand the institutional code of conduct, attendance and assessment policies, and other regulations to ensure adherence to college standards and accrediting body requirements.
7. **Learning Resources:**
    - Utilize the learning methodologies, infrastructure resources, and Learning Management System to maximize your educational experience and academic success.

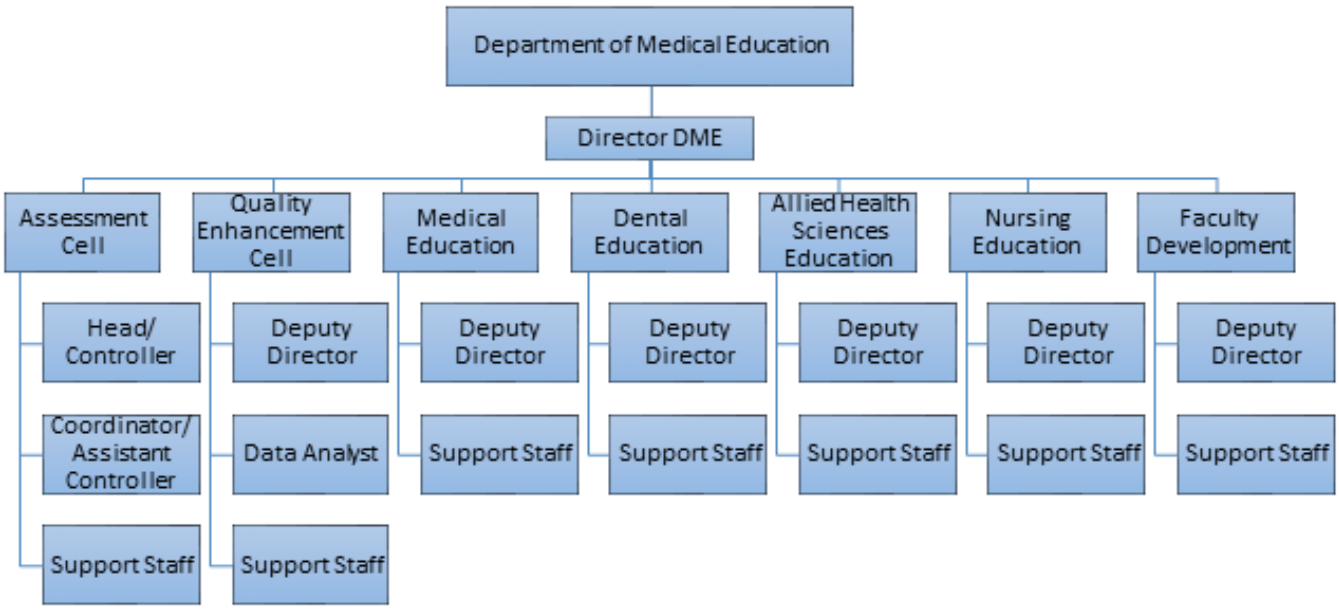
This guide, meticulously developed in collaboration with your subject departments, is designed to support your academic journey and help you achieve excellence in accordance with the highest standards set by PMDC and HEC.

DEPARTMENT OF MEDICAL EDUCATION

The Department of Medical Education (DME) serves as a cornerstone in delivering effective and high-quality education to both undergraduate and postgraduate medical and dental students. The DME is integral to the implementation and adoption of the latest curriculum provided by UHS and is responsible for organizing and managing related academic activities.

The DME will oversee the spirals of PERLs and C-FRC and monitor students' portfolio development and logbook completion. Additionally, the department is developing a mentoring platform and plans to initiate faculty development training which will focus on mentorship, reflective writing, and portfolio development skills. DME has a duty to collaborate with other disciplines to ensure that AVMDC students are not only competent in their respective fields but also well-trained in affective domains such as professionalism, ethics, research, and leadership.

A key responsibility of the DME is to plan and implement an effective training competency acquisition framework in collaboration with the academic council.



General Responsibilities of DME include:

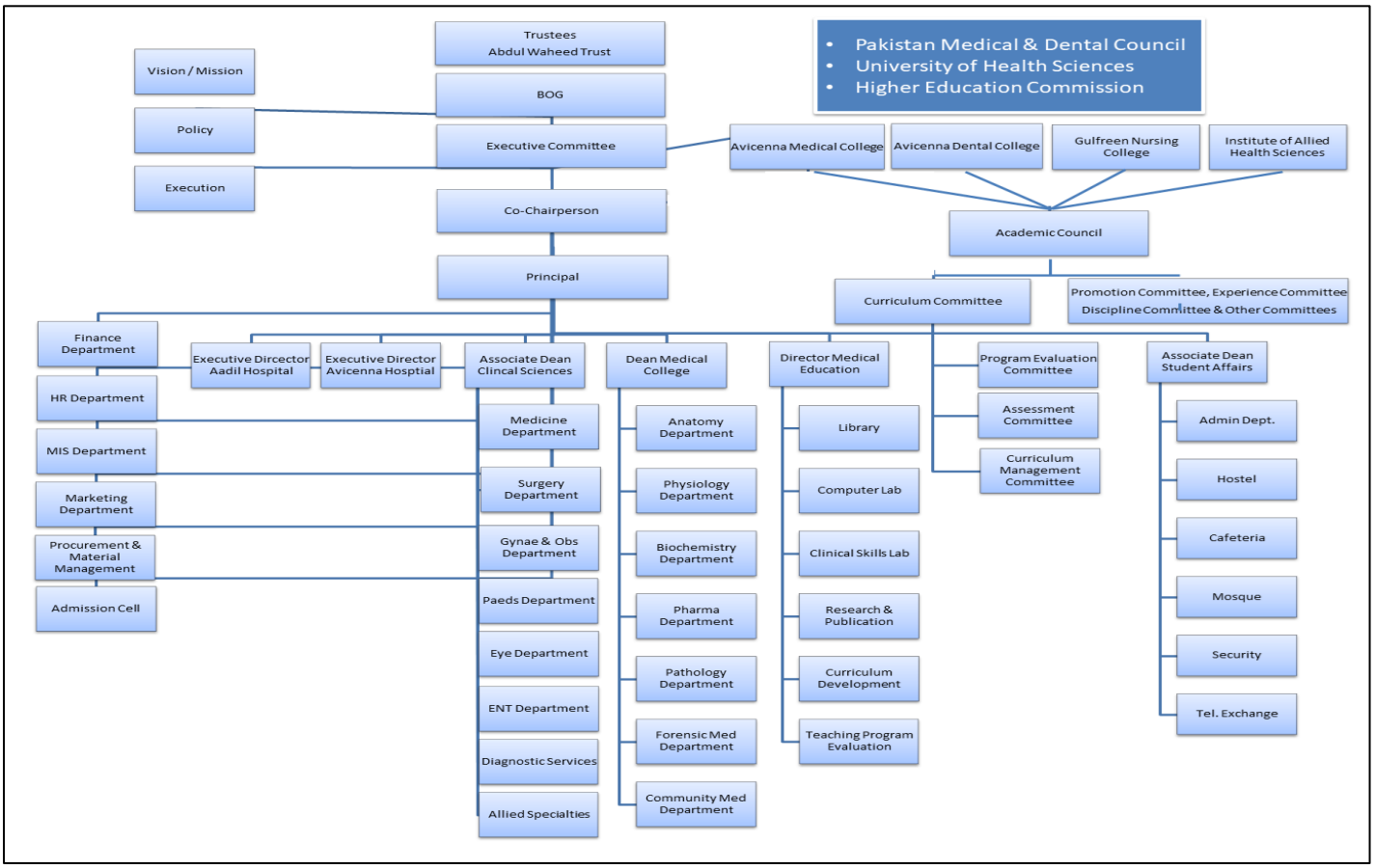
- Contribute and design, train the trainer activities which fulfill the need for undergraduate and postgraduate training.
- Shape and develop medical education research activities of the college.
- Facilitating & organizing workshops, seminars, symposia & conferences.
- Conducting CME activities to leverage culture of awareness, journal club.
- Networking by representing the college, when needed, in national /international meetings or conferences.
- Student counseling.
- Supervising students' academic progress.
- Academic Committees Development and Support.
- Staff Support and Development.
- Curriculum development and reform.
- Collaborate with curriculum committee and faculty members to develop quality instructional material such as modules, lecture, or study guides.
- Standard Operating Procedures for DME development.
- Skill lab management.

- Assessment analysis which includes blue printing, pre-exam review, item analysis and standard setting and provides feedback to concerned faculty and students on the learning outcome achievement.
- Develop and conduct periodical review of process of the program, learning and teaching activities, and assessment process.
- Identify opportunities for use of IT in teaching and learning, assessment and faculty development activities.
- Exam Cell management.
- Quality Assurance Cell management.
- Record keeping of departmental data.
- Leadership and management.
- Participation in overall planning and management of teaching in liaison with the departments.

Faculty	**Department**
Assistant Director / Assistant Professor Medical Education	Dr. Saman Fatima
Coordinator Medical Education	Dr. Javaid Shabkhaiz Rab
Deputy Director / Demonstrator Dental Education	Dr. Salar Arsalan
Deputy Director / Demonstrator Allied Health Sciences	Dr. Talha
Deputy Director / Demonstrator Nursing Education	Dr. Muneeba

Avicenna Medical & Dental College Overview

Institutional Organogram



Vision & Mission

Avicenna Medical & Dental College

Vision

The vision of **Avicenna Medical & Dental College** is to become a college that thrives to achieve improvement in healthcare of masses through creative delivery of educational programs, innovative research, commitment to public service and community engagement in a environment that supports diversity, inclusion, creative thinking, social accountability, life-long learning and respect for all.

Mission

The mission of **Avicenna Medical and Dental College** is to educate and produce competent, research oriented healthcare professionals with professional commitment and passion for life-long learning from a group of motivated students through quality education, research and service delivery for the improvement of health status of the general population.

Message from the Chairman



The Avicenna Medical & Dental College is a project of Abdul Waheed Trust which is a Non-profitable, Non-governmental, Non -political & Social organization, working for the welfare of Humanity and based on Community empowerment. Avicenna Medical College has its own 530 bedded Avicenna teaching Hospital (Not for Profit hospital) within the College Campus & 120 bedded Aadil Hospital, at 15 minutes distance. Separate comfortable hostels for boys & girls are provided on the campus.

Our students benefit from the state of the art College Library with facilities of Internet & online Journals that remain open 15 hours a day, for our students & faculty members. I am particularly pleased with the hard work by the Faculty and Students in the achievement of historic 100% results for all the classes. It is a rare achievement and speaks of dedication of the Faculty and Staff. Our motto is Goodness prevails and we aim at producing Doctors' who are knowledgeable, competent in clinical skills and ethical values.

Avicenna Medical College & Hospital was founded to provide quality health care services to the deserving patients belonging to the rural areas near Avicenna Hospital as well as to provide quality medical education of international standard to our students. The Hospital provides all medical services and Lab diagnostics to the local population at minimal cost. So far by the grace of Allah Almighty the number of patients being treated and operated upon at our Hospital is increasing every day as there is no other public or charity hospital in the circumference of 20km. We have already established two Satellite Clinics in the periphery which are providing outdoor care while admission cases are brought to the Hospital in Hospital transport.

Following the success of our reputable Medical College and Hospital, we were able to successfully establish Avicenna Dental College which is recognized by the Pakistan medical & Dental Council & University of Health Sciences. To date, we have enrolled five batches in our dental college and we aim to achieve the same level of success for our dental students as our medical students.

Chairman
Abdul Waheed Sheikh
Avicenna Medical & Dental College

Message from the Principal

Prof. Dr. Gulfreen Waheed
Principal Medical College
MBBS, FCPS, MHPE, PHD Scholar, (HPE)



As a Co-Founder and Co-Chairperson, I have been involved in planning, construction and accreditation of Avicenna Medical College by the Pakistan Medical and Dental Council (PM&DC) and its affiliation with the esteemed University of Health Sciences (UHS). It is a pleasure to see Avicenna Medical College develop, progress and achieve maximum academic excellence in a short period since its inception in 2009. The institution has lived up to its mission of training and producing medical graduates of international standards. Three batches have passed out as Doctors, who currently are serving in the country and abroad while several have opted for post-graduation and are on road to progress. We have achieved several milestones since 2009 including the recognition of our College for FCPS training by College of Physicians and Surgeons of Pakistan (CPSP), establishment of College of Nursing and Avicenna Dental College.

7-Star Doctor Competencies (PMDC)

According to national regulatory authority PMDC, a Pakistani medical/dental graduate who has attained the status of a 'seven-star doctor' is expected to demonstrate a variety of attributes within each competency. These qualities/ generic competencies are considered essential and must be exhibited by the individual professionally and personally.

1. Skillful / Care Provider.
2. Knowledgeable / Decision Maker.
3. Community Health Promoter / Community Leader.
4. Critical Thinker / Communicator
5. Professional / Lifelong learner.
6. Scholar / Researcher
7. Leader/ Role Model / Manager



About Avicenna Medical College

Avicenna Medical & Dental College is a purpose-built, fully equipped institution with experienced and excellence-driven faculty to train high-quality dental professionals in Pakistan.

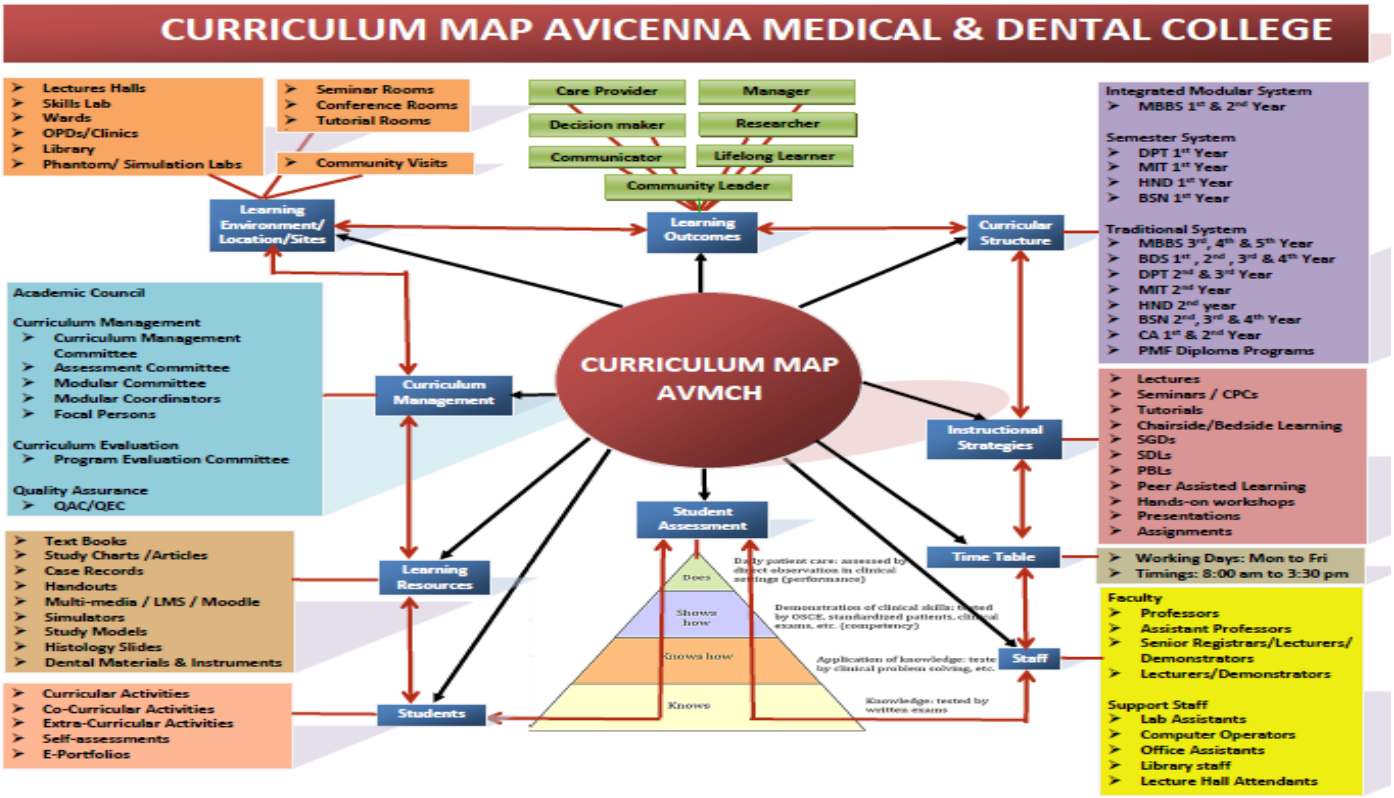
Avicenna Medical & Dental College runs under the umbrella of Abdul Waheed Trust. Abdul Wahid Trust is a non-profit social welfare organization and registered under the Societies Act with the Registrar of Societies. The Trust is legalized through a Trust Deed that bears necessary rectifications. The Trust Deed is further supported by its Memorandum and Article of Association that authorizes the establishment and operation of the Medical College, the Dental College, the Nursing College, the Allied Health Sciences College, and other activities in the healthcare sector.

In 2009, Avicenna Medical & Dental College was recognized by the Pakistan Medical & Dental Council. With the advent of advanced tools and technology in every field of health science, medicine today has shot up to the greater end of the gamut with superior choice and promises in medical therapy in the very vicinity of the common man. AVMDC promises to be one such neighborhood.



Curricular Map

This pictorial, vertical and horizontal presentation of the course content and extent shows the sequence in which various systems are to be covered. Curricular map to cover all the subjects and modules and the time allocated to study of the systems for the undergraduate programs offered at four colleges at campus are as follows:



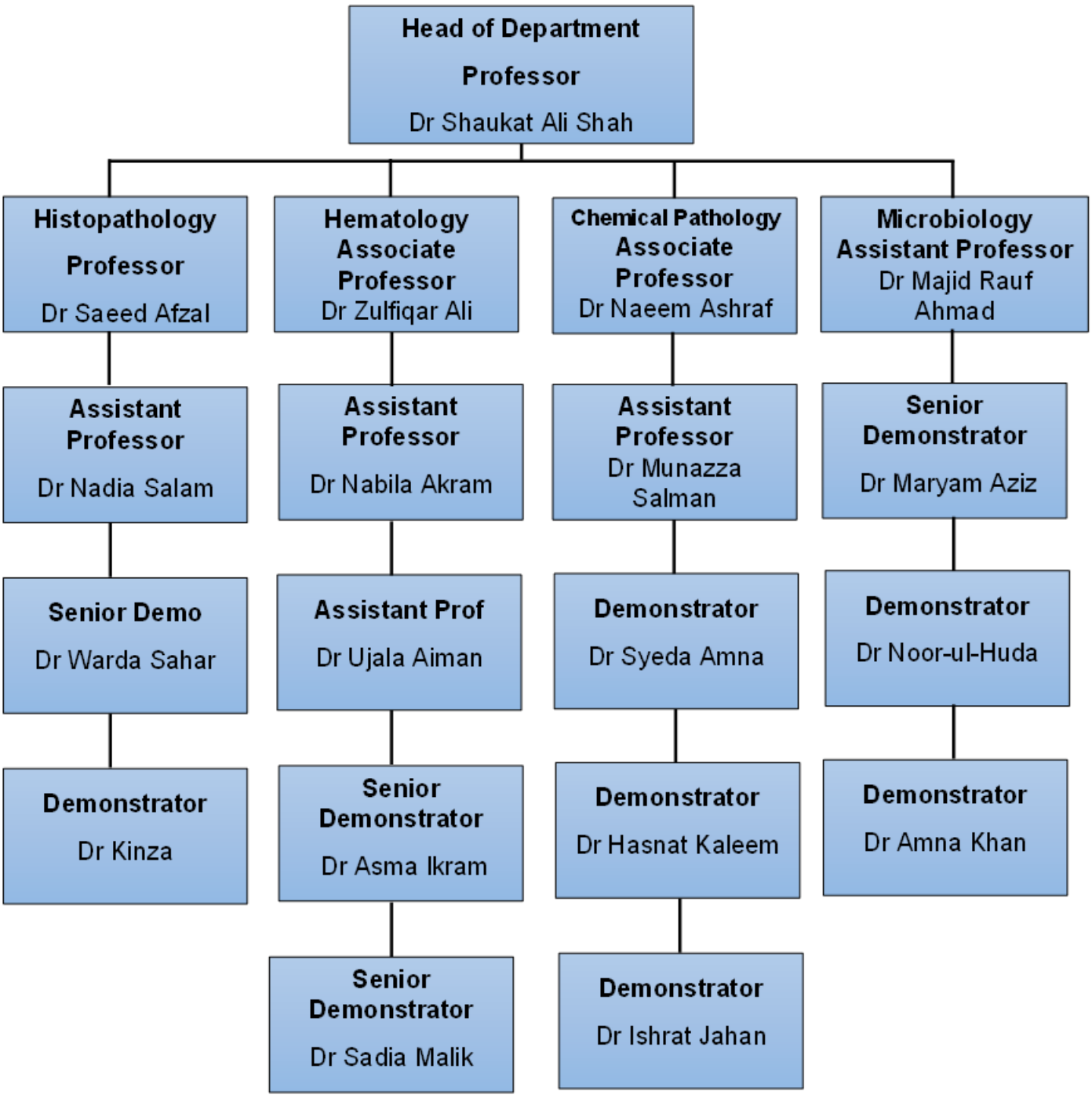
Department & Subject Overview

Note from the Head of Department



Pathology is a branch of medicine that bridges the clinical and non-clinical subjects. Pathologists are called upon to diagnose and confirm many ailments. The department has 3 labs: a Histopathology and Hematology lab, a Microbiology and Chemical pathology lab & a Clinical lab. The Clinical lab works in full coordination with the Avicenna Hospital. The labs are being supervised by professors, experienced in the related specialties. The department has a well-designed museum displaying neatly mounted specimens and several detailed and highly informative charts/ graphs. Highly qualified professors with national & international experience are supervising the pathology labs.

Departmental Organogram (as per PMDC guidelines)



Faculty Members

Name	Designation	Qualification
Dr. Syed Shaukat Ali Shah	Professor	MBBS, MCPS, MPHIL (HISTOPATHOLOGY)
Dr. Saeed Afzal	Professor	MBBS, FCPS (HISTOPATHOLOGY)
Dr. Zulfiqar Ali Memon	Associate Professor	MBBS, MPHIL (HAEMATOLOGY)
Dr. Naeem Ashraf	Associate Professor	MBBS, MPHIL (CHEMICAL PATHOLOGY)
Dr. Majid Rauf Ahmad	Assistant Professor	MBBS, MPHIL (MICROBIOLOGY)
Dr. Nadia Salam	Assistant Professor	MBBS, MPHIL (HISTOPATHOLOGY)
Dr. Nabeela Akram	Assistant Professor	MBBS, MPHIL (HAEMATOLOGY)
Dr. Ujala Ayman	Assistant Professor	MBBS, MPHIL (HAEMATOLOGY)
Dr. Munazza Salman	Assistant Professor	MBBS, MPHIL (CHEMICAL PATHOLOGY)
Dr. Sadia Malik	Senior Demonstrator	MBBS
Dr. Asma Akram	Senior Demonstrator	MBBS
Dr. Warda Sehar	Senior Demonstrator	MBBS
Dr. Maryam Aziz	Senior Demonstrator	MBBS
Dr. Amna Khan	Demonstrator	MBBS
Dr. Hasnat Kaleem	Demonstrator	MBBS
Dr. Syeda Amina	Demonstrator	MBBS
Dr. Noor	Demonstrator	MBBS
Dr. Kinza	Demonstrator	MBBS
Dr. Ishrat Jehan	Demonstrator	BDS

Goal of the Department

The mission of Department of Pathology is to build a prestigious faculty recognized for diagnostic and teaching expertise in the fields of Chemical Pathology. Histopathology, Microbiology and Hematology. It aspires to provide quality assured Pathology services and produce community physicians with required expertise and knowledge in the subject of Pathology for the pathologists at undergraduate and post graduate level.

The goals of Department of Pathology are to impart quality Pathology education to the undergraduate students from 1st year to 4th year MBBS and to provide diagnostic facilities at hospital laboratory along with safe blood transfusion and component therapy services.

Pathology, the study of disease, etiology, signs and symptoms and diagnosis, comprises of four basic disciplines Histopathology, Hematology, Chemical Pathology and Microbiology. Pathology is a bridging discipline between basic sciences and clinical medicine. A good liaison between clinicians and Pathologists is very helpful in diagnosing and treating different diseases.

The Department of Pathology is fully equipped with all required resources essential for teaching and learning of the undergraduate medical students. The facilities include spacious laboratories, a museum and tutorial rooms. Laboratory equipment is having latest technologies to cater for all practical work that is required for teaching.

A large number of investigations both specialized and routine in all disciplines are carried out in the hospital for patient care as well as for research purposes. All lab results are quality assured. Islamabad Blood Transfusion Authority (IBTA) approved blood bank provides services round the clock to the patient.

Course Objectives

GENERAL PATHOLOGY

- Explain cellular responses to injury, inflammation, repair, and neoplasia.
- Correlate microscopic findings with clinical manifestations.

MICROBIOLOGY

- Understand the structure, function, and pathogenesis of microorganisms.
- Identify common pathogens and their associated diseases.
- Discuss diagnosis, prevention, and treatment of infections.

LABORATORY TECHNIQUES:

- Perform basic microbiological procedures and interpret results.

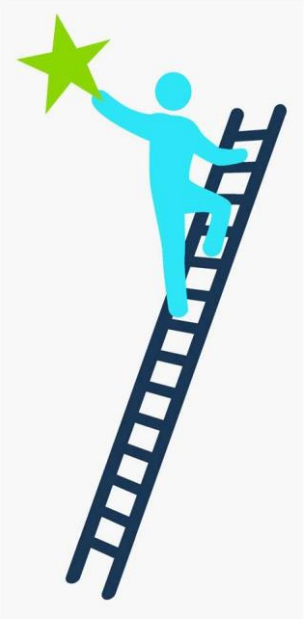
OVERALL COMPETENCIES

After course completion, the student will be able to:

- Analyze: Microscopic findings and correlate them with clinical information.
- Identify: Common pathogens and their associated diseases.
- Apply: Principles of pathology and microbiology to clinical practice.
- Perform: Basic laboratory procedures relevant to pathology and microbiology.

Attendance Requirement & Internal Assessment Criteria

The institution follows the regulations for examinations of the UHS in letter and spirit. The students require **85% attendance** in all academic sessions and **50% marks** in internal assessments and send-up examinations to be eligible for the UHS Professional Examinations.



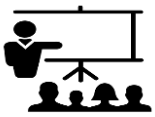
Learning Resources & Pedagogy

Book Recommendations



Sr.	Book Name	Author	Edition
1.	Robbins and Cotrans Pathological Basis of Disease	Kumar, Abbas, Aster	10th
2.	Review of Medical Microbiology and Immunology	Levinson	18th
3.	Medical Genetics	Jorde	6th
4.	Clinical Pathology Interpretations	A.H.Nagi	4th

Traditional & Innovative Teaching Methodologies



Sr.	Pedagogical Methodologies	Description
1.	Lectures	Traditional method where an instructor presents information to a large group of students (large group teaching). This approach focuses on delivering theoretical knowledge and foundational concepts. It is very effective for introducing new topics.
2.	Tutorial	Tutorials involve small group discussion (SGD) where students receive focused instruction and guidance on specific topics.
3	Demonstrations	Demonstrations are practical displays of techniques or procedures, often used to illustrate complex concepts or practices, particularly useful in dental education for showing clinical skills.
4	Practicals	Hands-on sessions where students apply theoretical knowledge to real-world tasks. This might include lab work, clinical procedures, or simulations. Practicals are crucial for developing technical skills and understanding the application of concepts in practice.
5.	Student Presentations	Students prepare and deliver presentations on assigned topics. This method enhances communication skills, encourages students to explore topic in-depth. It also provides opportunities for peer feedback and discussion.
6.	Assignment	Tasks given to students to complete outside of class. Assignments can include research papers, case studies, or practical reports. They are designed to reinforce learning, assess understanding, and develop critical thinking and problem-solving skills.

7.	Self-directed Learning	Students take initiative and responsibility for their own learning process. Students are encouraged to seek resources, set goals, and evaluate their progress. This is a learner-centered approach where students take the initiative to plan, execute, and assess their own learning activities. This method promotes independence, critical thinking, and lifelong learning skills.
8.	Flipped Classroom	In this model, students first engage with learning materials at home (e.g., through videos, readings) and then use class time for interactive activities, discussions, or problem-solving exercises. This approach aims to maximize in-class engagement and application of knowledge.
9.	Peer-Assisted Learning (PAL)	A collaborative learning approach where students help each other understand course material. PAL involves structured peer tutoring, study groups, or collaborative tasks. It enhances comprehension through teaching, reinforces learning, and builds teamwork skills.
10.	Team-based Learning (TBL)	A structured form of small group learning where students work in teams on application-based tasks and problems. Teams are responsible for achieving learning objectives through collaborative efforts, promoting accountability, and deeper understanding of the material.
11.	Problem-based Learning (PBL)	Students work on complex, real-world problems without predefined solutions. They research, discuss, and apply knowledge to develop solutions. PBL fosters critical thinking, problem-solving skills, and the ability to integrate knowledge from various disciplines.
12.	Academic Portfolios	A collection of student's work that showcases learning achievements, reflections, and progress over time. Portfolios include assignments, projects, and self-assessments. They provide a comprehensive view of student development, highlight strengths and areas for improvement, and support reflective learning (experiential learning)

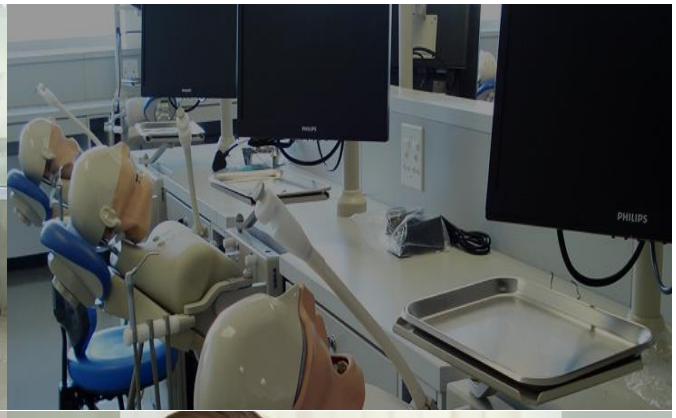


Flipped Classroom

Infrastructure Resources

Sr.	Infrastructure Resources	Description
1.	Lecture Hall	Each year has a dedicated lecture hall, totaling five lecture halls for the five professional years. These halls are equipped with modern audiovisual aids to support effective teaching and learning.
2.	Tutorial Room	The college's tutorial rooms, each with a capacity of 30, are specifically designed to support small group discussions and interactive sessions. These rooms facilitate personalized instruction, enabling more engaged and effective learning through direct interaction between students and instructors.
3.	Lab	The college is equipped with state-of-the-art laboratories for practical and clinical work. Each lab is designed to support various disciplines, to facilitate hands-on learning.
4.	Library on campus	A huge library occupies full floor has 260 seats including study carrels and group-discussion tables. Latest reference books, of Basic and Clinical Sciences along with national & international journals are available in the library.
5.	Digital Library	The digital library offers access to a vast collection of e-books, online journals, research databases, and other digital resources. It supports remote access and provides tools for academic research and learning.
6.	Learning Management System (LMS)	The LMS is a comprehensive online platform that supports course management, content delivery, student assessment, and communication. It provides tools for tracking progress, managing assignments, and facilitates ongoing academic activities.
6.	Phantom Labs	Specialized Phantom Labs are available for advanced simulation and practice in dental procedures. These labs provide high-fidelity models and simulators that help students refine their clinical skills in a controlled environment.
7.	Mess & Cafeteria	The College has its own on-campus Mess which caters to 600 students. All food items including dairy, meat, and vegetables are sourced organically and bought in at the time of cooking, in order to ensure that students get freshly cooked meals at all times Students form the Mess committee which decides the mess menu in consultation with other students. The Mess offers fresh food to all residents three times a day. However, day scholars are also welcome to use the Mess facility at a reasonable cost. Two 50- inch LCD screens provide students an opportunity to get entertained during their meal times.
8.	Gymnasium & Sports	We recognize sports as a pivotal key to shape and maintain students' personality and good health. The College has indoor and outdoor sports facilities to help enhance the cognition and capacity to learn. There is a proper sports section for various games like basketball, football, volleyball, and cricket.

		The gym itself is fully equipped with modern machinery both for students and faculty.
9.	IT Lab	The IT Lab is equipped with modern computers and software available for students who need access for academic purposes.
10.	Auditorium	The college has a spacious auditorium equipped with advanced audio-visual facilities. It is used for large-scale lectures, guest presentations, and academic conferences, providing a venue for students to engage with experts and participate in important educational events.
11.	Examination Halls	The college provides dedicated examination halls that are designed to accommodate a large number of students comfortably. These halls are equipped with necessary facilities to ensure a smooth and secure examination process, including proper seating arrangements, monitoring systems, and accessibility features.






Digital Library & Learning Management System (LMS)

1. The COVID-19 pandemic highlighted the necessity of interactive online teaching for better retention of topics by students. Strategies like online learning management system (LMS), online discussions, online quizzes, assignment design, and flipped learning enhance student engagement in online education when needed.

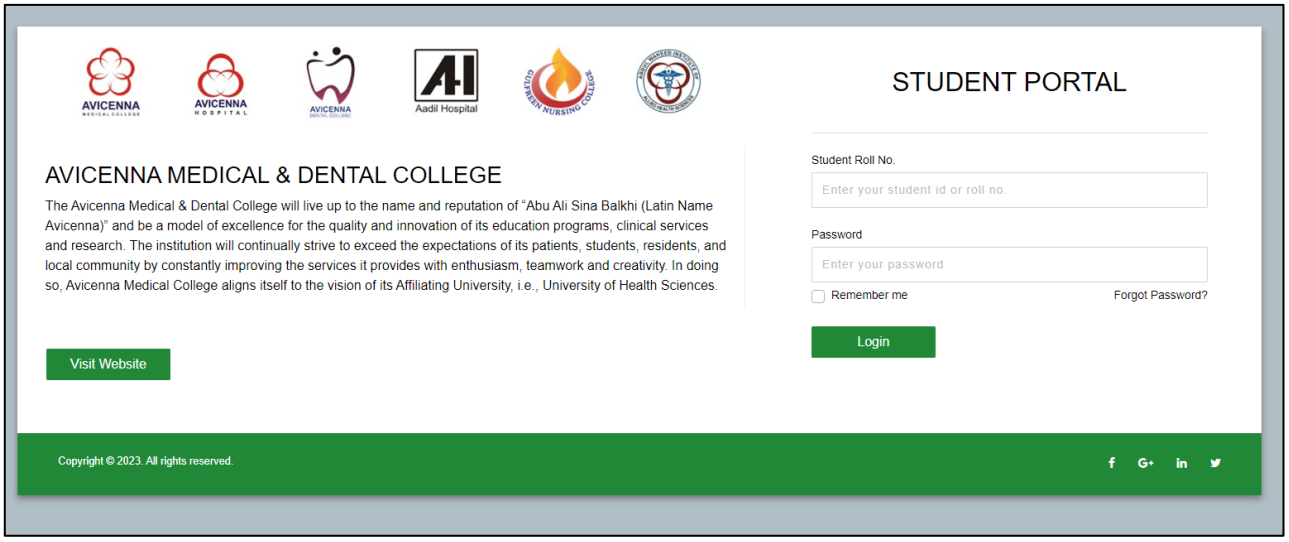
2. Avicenna Medical & Dental College lays emphasis on the provision of learning material and online video lectures, video tutorials in the e-library and learning resource center, which has a dedicated website of Avicenna Medical College to enable the students to develop concepts and clarify their doubts, if they have not been able to do so in the teaching sessions during college hours. The digital library can be approached on http://digital.avicennamch.com/.



3. The institution has also endeavored to link itself with the digital libraries and e-library of the University of Health Science (UHS) and Higher Education Commission (HEC) to enable the students to benefit from the valuable resource material, lectures and knowledge bank at these sites. The links are available with the HEC http://www.digitallibrary.edu.pk/ and learning management system of UHS http://lms.uhs.edu.pk .

4. The Learning Management System (LMS) at Avicenna Medical & Dental College is a comprehensive platform managed by the Department of Student Affairs. It is designed to facilitate effective communication and information exchange between students, parents, faculty, and administrative staff. The LMS portals are specifically tailored to meet the needs of the following stakeholders:

   a. **Students**: For academic resources and scheduling.
   b. **Parents:** For monitoring academic progress and other relevant information.
   c. **Faculty:** For managing course content and academic activities.
   d. **Department of Student Affairs:** For overseeing administrative functions.
   e. **Department of Medical/Dental Education:** For overseeing academic functions.



5. Students can access a comprehensive range of academic resources and information through the student portal. By logging in with their roll number and password, students can:

   - Look at their attendance and results.
   - Review academic activities and weekly timetables/schedules.
   - Access rotation planners and test schedules.
   - Check for any notification, assignment or resource material from their teachers.

6. The information to the parent is duplicated by the issuance of the password and login to the Students Learning Management System which is dedicated to the Academic Program of the students. The parents can view the following by logging in to the mobile app of Avicenna Student Management System:

   a) Syllabus
   b) Table of specifications
   c) Annual Planner
   d) Synopsis
   e) Block Time Table
   f) Weekly training program
   g) Allocation of Marks
   h) Assessment calendar
   i) Results of tests / exams*
   j) Students' attendance record
   k) Fees & fines

Assessment Guidelines

Assessment in medical & dental education is a critical component designed to ensure that medical & dental students acquire the necessary knowledge, skills, and competencies required for effective medical & dental practice.

Assessment drives learning! – George E. Millar

You will encounter a variety of assessment methods, each serving a specific purpose.

- Written examinations, including multiple-choice and essay questions, will test your grasp of theoretical concepts and subject matter.
- Practical assessments will require you to demonstrate your clinical skills and ability to apply knowledge in real-world scenarios.
- Clinical exams will evaluate your communication skills and reasoning abilities through case discussions and problem-solving exercises.
- Clinical skills and work-place based assessments will observe your hands-on proficiency and patient management capabilities.

At Avicenna Medical & Dental College, internal assessments are systematically conducted throughout each academic year of the MBBS program, as per the guidelines established by the University of Health Sciences (UHS). These assessments, overseen by the Assessment Cell, adhere to either the Annual Subject-Based System or the Integrated/Modular System, depending on the curriculum structure.

Notably, beginning with the 2024-25 academic year, the weightage of internal assessments will be increased from 10% to 20%. The UHS administers professional examinations independently, organizing them at designated neutral sites and appointing external examiners to ensure objectivity and fairness.

Internal Assessment Weightage	20%	100 %
External Assessment Weightage	80%	



Internal Assessment

How is Internal Assessment Calculated for your department?

Internal Assessment		**Assessment Methods** (MCQ/SEQ/OSPE/Viva/ Practical)	**Percentage Weightage** (write N/A where not applicable)
Session Exams	Early Session Exam	MCQs SEQs Viva OSPE	70%
	Mid-term Session Exam		
	Late Session/Send up Exam		
Grand Tests			30%
Attendance & Behavior			
			100%

Avicenna Medical College

Examination Marks Scheme 2023-2024

3rd Year MBBS

Form No	MBBS-3 Form-1		MBBS-3 Form-2		MBBS-3 Form-3		MBBS-3 Form-4		MBBS-3 Form-5		MBBS-3 Form-6	
Test Type	Grand Test				Revision Test		Session Exam				Send Up	
Mode of Exam	Theory		Practical		Theory		Theory		Practical		Theory	
Weightage	(1,2)* 30%				0%		(3,4)* 70%				100%	
Pathology 300	MCQ 50, SEQ 50	100	OSPE 25 , Viva 25	50	MCQ 25, SEQ 25	50	MCQ 65, SEQ 70, IA 15	150	OSPE 72 , Viva 63, IA 15		MCQ 65, SEQ 70, IA 15	150
Pharmacology 300	MCQ 50, SEQ 50	100	OSPE 25 , Viva 25	50	MCQ 25, SEQ 25	50	MCQ 65, SEQ 70, IA 15	150	OSPE 50 , Viva 85, IA 15		MCQ 65, SEQ 70, IA 15	150
Forensic Medicine 200	MCQ 50, SEQ 50	100	OSPE 25 , Viva 25	50	MCQ 25, SEQ 25	50	MCQ45, SEQ 45, IA 10	100	OSPE 40 , Viva 50, IA 10		MCQ45, SEQ 45, IA 10	100
Behvioural Science 200	MCQ 55, SEQ 45	100	OSPE 27 , Viva 23	50	MCQ 23, SEQ 27	50	MCQ45, SEQ 45, IA 10	100	OSPE 45 , Viva 45, IA 10		MCQ45, SEQ 45, IA 10	100

NOTE 1 : *If Viva/OSPE is held along with Theory test , The Theory test will get 15% weightage & VIVA / OSPE will get 15% Weightage in Grand Test

NOTE 2 : *If Viva/OSPE is not held for any reason Theory test will get full 30% weightage in Grand Test

NOTE 3 : *If Viva/OSPE is held along with Theory test , The Theory test will get 35% weightage & VIVA / OSPE will get 35% Weightage in Session Exam

NOTE 4 : *If Viva/OSPE is not held for any reason Theory test will get full 70% weightage in Session Exam

Department of Pathology

Department of Pharmacology

Department of Forensic Medicine

Department of Behavioural Sciences

Head of Examination Cell : Ijlal Zehra Zaidi.

Chairman Avicenna:

14/3

PAGE 1

Prof. Dr. Ijlal Zehra Zaidi
Head of Examination Department
Avicenna Medical & Dental College

External Assessment

What to expect in External Exam?

External Assessment	Assessment Methods	Marks	Percentage Weightage
Theory • Total marks • Time	65 MCQs 14 SEQs	65 70	45 %
Practical • Total marks • Time	Viva OSPE	63 72	45 %
Internal Assessment		30	10 %
Total marks		300 Marks	100%

Sample Paper

MCQ

AUTHOR: DR MAJID RAUF AHMAD
DATE: 31-08-2024
DISCIPLINE/SUBJECT: GENERAL PATHOLOGY & MICROBIOLOGY
TOPIC: GENERAL BACTERIOLOGY
LEVEL OF STUDENT: 3RD YEAR
AREA: DIAGNOSIS

Item Writing Template

Stem: A 30-year-old woman with a previous history of rheumatic fever has fever for the past 2 weeks. On examination, you find a new heart murmur. You suspect endocarditis and do a blood culture, which grows a viridans group streptococcus later identified as *S. sanguinis*.
Lead in: Using your knowledge of normal flora, what is the most likely source of this organism?

Option:

a) Duodenum
b) Skin
c) Throat*
d) Urethra
e) Vagina

Mark the key with an Asterix*

COGNITIVE LEVEL: Recall
DIFFICULTY LEVEL: Moderate
IMPORTANCE: Need to Know
REFERENCE: **Levinson 18th edition.**

SEQ/SAQ

AUTHOR: DR MAJID RAUF AHMAD
DATE: 02/09/2024
DISCIPLINE/SUBJECT: GENERAL PATHOLOGY & MICROBIOLOGY
TOPIC: STAPHYLOCOCCUS
LEVEL OF STUDENT: 3RD YEAR
AREA: Pathogenesis

Scenario: A 70-year-old woman has a postoperative wound infection responding poorly to antibiotic therapy. Over the next 3 days she develops confusion, nausea, vomiting, diarrhea, chills, and myalgias. On examination, she is febrile; the wound site is erythematous with necrotic, purulent exudate. Laboratory studies show neutrophilia with left shift. Gram stain of the wound exudate shows gram-positive cocci in clusters.

Questions	Marks
a) Name the causative agent?	**0.5**
b) Explain how it caused this disease?	**2.5**
c) Enlist important virulent factors produced by this organism.	**2.0**

Key	Marks
a) ***Staphylococcus aureus*****.**	**0.5**
b) It produces a toxin called **Toxic shock syndrome toxin** (TSST) which causes toxic shock, especially in tampon using menstruating women or in individuals with wound infections. Toxic shock also occurs in patients with nasal packing used to stop bleeding from the nose. ***TSST is produced locally by S. aureus in the vagina, nose, or other infected site. The toxin enters the bloodstream, causing a toxemia. TSST is a Superantigen and causes toxic shock by stimulating the release of large amounts of IL-1, IL-2, and TNF*****.**	**2.5**
c) 1-Enterotoxin 2-Toxic shock syndrome Toxin 3-Exfoliatin 4-Alpha toxin 5-P-V Leukocidin 6-Coagulase 7-fibrinolysin 8-hyaluronidase 9-proteases 10-nucleases 11-Lipases 12- Protein A 13- Teichoic acid 14-Polysaccharide capsule (write at least 10)	**2.0**

COGNITIVE LEVEL: Recall
DIFFICULTY LEVEL: Moderate
IMPORTANCE: Must Know
REFERENCE: **Levinson 18th edition**

OSPE COVER SHEET

Station Title: Coagulase test

Type of Station: Observed

Discipline / Specialty: General Pathology & Microbiology

Marks: 6

Class Level: 3rd Year MBBS

Time: 4 minutes

Estimated difficulty: Difficult

Exam: Send up

Taxonomy level: Understanding & Application (Applying Knowledge in Practical Situations)

List of resources required:

1. Response sheet 2. Pen/Ball point 3. Table 4. Chair/Stool

Instructions for the Candidate: Perform the following task.

Perform slide coagulase test on the growth on nutrient agar.

Key:

For Examiner:

Topic Specification: Microbiology---coagulase test

Key:

Place a drop of normal saline on each end of the slide and emulsify a colony from culture of test organism in each of the drop and make suspension. (2)
Add a drop of plasma to one and mix gently. (2)
Look for clumping within 10 seconds.
Result: clumping coagulase positive, no clumping coagulase negative. (2)

CURRICULUM DETAILS

Curricular Framework including Allocation of Hours (PMDC)

Basic & Clinical Medical Sciences / Preclinical & Para Clinical Years			
1st & 2nd Professional Year	**3rd Professional Year**	**4th Professional Year**	**5th Professional Year**
Anatomy 500 Hours	**General & Special Pathology** 500 Hours	**Eye** 150 Hours	**General Surgery** 600 Hours
Physiology 450 Hours	**Pharmacology** 300 Hours	**ENT** 150 Hours	**General Medicine** 600 Hours
Biochemistry 250 Hours	**Forensic Medicine & Toxicology** 100 Hours	**General & Special Pathology** 500 Hours	**Paediatrics** 300 Hours
General Education 450 Hours • Quran Kareem – 50 Hours • Pakistan Studies / Ideology & Pakistan Constitution – 25 Hours • Islamiyat / Ethics – 25 Hours • Professionalism – 25 Hours • Communication Skills -25 Hours • English Expository Writing – 25 Hours • Arts & Humanities (One Course) -25 Hours • Co-curricular activities – 200 Hours	**Psychiatry & Beh. Sciences** 150 Hours	**Community Medicine & Public Health** 200 Hours	**OBS &Gynae** 300 Hours
	Pre-clinical Operative Dentistry 80 Hours	**Research Methodology & Evidence Based Medicine** 100 Hours	**Surgical specialties** 225 Hours • Neurosurgery • Vascular surgery • Adult Cardiac surgery • Paediatrics surgery • Thoracic surgery • Plastic surgery
			Medical specialties 225 Hours • Neurology • Rheumatology • Geriatrics • Endocrinology • Pediatrics Cardiology • Infectious Diseases • Oncology

Academic Planner

Avicenna Medical & Dental College
Calendar 2023- 2024
3rd Year MBBS

January 2024

	Su	Mo	Tu	We	Th	Fr	Sa	
		1	2	3	4	5	6	
	7	8	9	10	11	12	13	
	14	15	16	17	18	19`	20	1
	21	22	23	24	25	26	27	2
	28	29	30	31				3

February 2024

	Su	Mo	Tu	We	Th	Fr	Sa	
					1	2	3	3
	4	i5	6	7	8	9	10	4
	11	12	13	14	15	16	17	5
	18	19	20	21	22	23	24	6
	25	26 Path	27	28	29			7
								8

March 2024

	Su	Mo	Tu	We	Th	Fr	Sa	
						1	2	
	3	4 Ph	5	6	7	8	9	4
	10	11 FM	12	13	14	15	16	5
	17	18 BS	19	20	21	22	ii 23	6
	24	25 Path	26	27	28	29	30	7
	31							8

April 2024

	Su	Mo	Tu	We	Th	Fr	Sa	
8		1 Ph	2	3	4	5	6	11
Eid-ul-Fitr	7	iii 8	iii 9	iii 10	iii 11	iii 12	iii 13	12
9	14	15	16 wt1	17 FM	18	19`	20	13 ESE+V
10	21	22 BS	23	24	25	26	27	14 ESE+V+OSPE
11	28	29 Path	30					15 OSPE

May 2024

	Su	Mo	Tu	We	Th	Fr	Sa	
				iv 1	2	3	4	15
	5	6 Ph	7	8	9	10	11	16
	12	13 Ph	14	15	16 FM	17	18	17
	19	20 Path	21	22 BS	23ospe	24 ospe	25	Eid-ul-Adha+Su.V
	26	27 ospe	28 v	29 ospe	30	31		Su.V

June 2024

	Su	Mo	Tu	We	Th	Fr	Sa	
							1	ix- Rabi Ul Awal-15th Sep,2024
	2	3 FM	4 wt2	5	6	7	8	x- Quaid-e-Azam Day/Christmas- 25th Dec,2024
	9	10 BS	11	12	13	14	15	**Vacations**
	16	vi 17	vi 18	vi 19	20	21	22	Spring Vacations-7th April,2024- 14th April,2024
	23	24	25	26	27	28	29	Summer Vacations-15th June,2024- 21st July,2024
Su.V	30							Winter Vacations-22nd Dec-29th Dec,2024

July 2024

	Su	Mo	Tu	We	Th	Fr	Sa	
Su.V		1	2	3	4	5	6	19
Su.V	7	8	9	10	11	12	13	20
Su.V	14	15	vii 16	vii 17	18	19`	20	21
18	21	22 Path	23	24	25	26	27	22
19	28	29 Ph	30	31				23 MSE

August 2024

	Su	Mo	Tu	We	Th	Fr	Sa	
					1	2	3	24 MSE
	4	5 FM	6	7	8wt3	9	10	25 MSE
	11	12 BS	13	viii 14	15	16	17	26 MSE
	18	19 Path	20	21	22	23	24	27 OSPE+Viva
	25	26 Ph	27	28 FM	29 FM	30 FM	31	28

September 2024

	Su	Mo	Tu	We	Th	Fr	Sa	
	1	2 FM	3 Ph	4 Ph	5 Ph wt4	6 Ph	7	
	8	9 Ph	10 Path	11 Path	12 Path	13 Path	14	
	ix 15	16 Path	17BS	18 BS	19	20 BS	21	
	22	23 o/v	24 o/v	25 o/v	26 o/v	27	28	
	29	30						

October 2024

	Su	Mo	Tu	We	Th	Fr	Sa	
28			1	2	3	4 FM	5	32
29	6	7 BS	8	9	10 wt5	11	12	33
30	13	14Path	15	16	17	18	19	34 SendUp
31	20	21 Ph	22	23	24	25	26	35 SendUp
32	27	28 FM	29	30	31			OSPE

November 2024

	Su	Mo	Tu	We	Th	Fr	Sa	
						1	2	
	3	4 BS	5	6	7 wt6	8	9	
	10	11 Ph	12	13	14FM	15	16	
	17	18 Patho	19	20	21 BS	22	23	Winter Vac.
	24	25Ph	26o/v	27o/v	28o/v	29o/v	30	

December 2024

	Su	Mo	Tu	We	Th	Fr	Sa	
	1	2	3	4	5	6	7	
	8	9	10	11	12	13	14	
	15	16	17	18	19	20	21	
	22	23	24	x25	26	27	28	
	29	30	31					

SESSION START: 12th Feb,2024

Gazetted Holidays

- **i- Kashmir Holiday** - 5th Feb,2024
- **ii- Pakistan Day** -23rd March,2024
- **iii - Eid- Ul- Fitr-**7th April-14th April,2024
- **iv- Labor Holiday-** 1st May,2024
- **v- Youm-e-Takbeer Holiday**-28th May,2024
- **vi- Eid- Ul- Adha**- 17th June-19th June,2024
- **vii- Ashura**- 16 &17 July,2024
- **viii- Independence Day-** 14th Aug,2024
- **ix- Rabi Ul Awal**-15th Sep,2024
- **x- Quaid-e-Azam Day/Christmas-** 25th Dec,2024

Vacations

- **Spring Vacations-**7th April,2024- 14th April,2024
- **Summer Vacations**-15th June,2024- 21st July,2024
- **Winter Vacations**-22nd Dec-29th Dec,2024

Events

- **White Coat Ceremony**-17 April,2024
- **Sports Day-** 6 March
- **Funfair-**
- **Trips and Tours-**

Session Exam

- **Early Session-** 13th May,2024 - 29th May,2024
- **Mid Session**-28th Aug,2024 - 26th Sep,2024
- **Send Up**-14th Nov,2024 - 29th Nov,2024

Allocation of Hours

KNOWLEDGE			SKILL	ATITTUDE	TOTAL %	Mode of information transfer				TOTAL HOURS
Cognitive Domain			Psychomotor Domain	Effective Domain		MIT				
C1	C2	C3	P	A		Lecture	Tutorial	Practical	Clinical Rotation	Hour
44%	17%	13%	17%	9%	100%	198 hours	11 hours	33 hours		242 HOURS

Table of Specification

AVICENNA

DEPARTMENT OF MEDICAL EDUCATION

Subject: General Pathology - 3rd Yr MBBS
TABLE OF SPECIFICATION
PMDC Requirement =
TOTAL LECTURES: 231

Code:
Date: 4 MARCH 2024
AVICENNA Curriculum Hour = 242 Hours

Sr. No.	Topic	LEARNING OBJECTIVES	KNOWLEDGE Cognitive Domain			SKILL Psychomotor Domain	ATTITUDE Effective Domain	TOTAL %	Mode of information transfer MIT				TOTAL HOURS	Lecture Topics	References	Practicals
			C1	C2	C3	P	A		Lecture	Tutorial	Practical	Clinical Rotation	Hour			
1	GENERAL BACTERIOLOGY	The student will be able to: 1. Define a prokaryotic cell and list the differences between prokaryotic and eukaryotic cell 2. Describe the structure of a bacterial cell and explain the function of its components 3. Explain why cell wall forms the basis for classification of bacteria 4. Describe the structure and function of the glycocalyx, flagella (types of), axial filaments, fimbriae, pili, and plasma membrane, along with their importance in bacteria							1 1 1		1 1 1			LECTURE TOPICS 1- Eukaryotes & Prokaryotes. Introduction to microbes. 2-Structure of Bacterial Cells (Cell wall, Gram stain)		PRACTICAL TOPICS 1. Study of Microscope 2. Sample Collection and Transport 3- Gram Staining
		The student will be able to: 1. Define bacterial growth, including binary fission 2. Compare the phases of microbial growth and describe their relation to generation time 3. Compare and contrast aerobic respiration, anaerobic respiration, and fermentation 4. Define the atmospheric requirements of obligate aerobes, microaerophiles, facultative anaerobes, obligate anaerobes, and capnophilic bacteria							1 1 1 1		1 1 1 1			3- Structure of Bacterial Cells (Plasmids, Transposons, Bacterial spore) 4-Bacterial Growth 5-Classification of Medically Important bacteria 6-The Human Microbiome		4- Culture Media 5-Blood Culture 6- Anaerobic Culture 7-Sterilizaton and Disinfection
		The student will be able to: 1. Briefly explain the components of DNA, and explain its functional relationship to RNA and protein 2. Define and classify mutations by type, and describe their prevention or repair 3. Compare the mechanisms of genetic recombination in bacteria: transformation, conjugation, and transduction. 4. Define the functions of plasmids and transposons. 5. Relate the mechanisms for genetic change (mutation and recombination) to microbial evolution (natural selection).							1 1 1					7-Pathogenesis(Principles, definitions, types of infection) 8-Pathogenesis (determinants of pathogenesis,stages of pathogenesis) 9-Bacterial Exotoxins and Endotoxins		
		The student will be able to: 1. Describe microbial classification and apply the rules of scientific nomendature for bacterial names							1					10-Stages of Infectious disease, Koch's Postulates		
		The student will be able to: 1. Define normal, resident and transient flora 2. Define commensals, mutualism and parasitism. 3. List the human factors that determine normal flora 4. Describe the nature of the microbiota on the various sites of the body 5. Explain the useful as well as the harmful effects of the normal microbial biota on the human body							1 1 1					11-Host defenses 12-Genetics (Introduction, Mutations, Transfer of DNA within bacterial cells) 13-Genetics (Conjugation, Transduction, Transformation)		
		The student will be able to: 1. Differentiate between pathogenicity and virulence. 2. List the steps required in establishment of infection by bacteria 3. Understand basic mechanisms by which bacteria can cause disease and the determinants of bacterial pathogenicity.							1					14-Antibacterial Drugs(ANTIMICROBIAL DRUG STEWARDSHIP, PRINCIPLES OF ANTIMICROBIAL THERAPY, BACTERICIDAL & BACTERIOSTATIC ACTIVITY)	Levinson 17TH edition chapter 1-11	
		The student will be able to:														

		1. Define first and second line of host defense 2. Describe the role of skin, mucous membranes in innate immunity. 3. List and describe the stages in inflammation, phagocytosis and the consequences of complement activation 4. Describe parts of the immune system and the role they play in the innate non-specific immunity and adaptive specific immunity							1 1					15-Antibacterial Drugs (Penicillins, Cephalosporins, Monobactams, Carbapenems, Vancomycin) 16-Antibacterial Drugs (Inhibitors of protein synthesis, Inhibitors of Nucleic acid synthesis, chemoprophylaxis, probiotics)		
		The student will be able to: 1. List the main methods in diagnosis of infectious diseases caused by different type of microorganisms 2. Explain the importance of these methods in diagnosis with the main advantages and disadvantages of each type of test 3. Ensure the type, storage and transportation of specimen in appropriate tests							1					17- Approach to Laboratory Diagnosis,methods, microscopy, culture, serological and molecular diagnostic methods.		
		The student will be able to: 1. Define broad spectrum antibiotic, bacteriostatic, and bactericidal 2. List the modes of action of antimicrobial drugs. 3. Explain why the commonly used antimicrobial drugs are specific for bacteria. 4. State the mode of action of various antimicrobial agents							1					18-Antibacterial Drugs: Resistance (principles, genetic and non-gentic basis of resistance)		
		The student will be able to: 1. Enlist the mechanisms of antimicrobial drug resistance 2. Explain how antibiotic resistance develops. Genetic and non-genetic mechanisms 3. To understand the spread of resistant microbes. 4. To describe antibiotic susceptibility testing							1					19-Antibacterial drugs: Resistance (Antibiotic sensitivity testing, MIC, MBC, antibiogram)		
		The student will be able to 1. Differentiate between active and passive immunity, natural and artificial immunity 2. Define booster immunization, toxoid, antitoxin, Killed, live and attenuated vaccine, Conjugated and unconjugated vaccine 3. Explain the principles of vaccination and the role of vaccination program in the prevention of epidemics							1 1					20-Bacterial Vaccines 21-Sterilization & Disinfection		
		The student will be able to 1. Define Sterilization, Disinfection and Antisepsis. 2. Describe the physical and chemical methods of sterilization and disinfection commonly used in the microbiology laboratory and the hospital. 3. Compare and contrast moist and dry heat in terms of the time of treatment and suitable applications 4. Describe how microorganisms are mechanically removed by filtration 5. Explain how radiation kills cells								1				TUTORIAL TOPICS BACTERIAL CELL STRUCTURE/ EXOTOXINS & ENDOTOXINS/ ANTIMICROBIALS		
		TOTAL	3%	2%	1%	2%		8%	21 hours	1 hours	7 hours		29 hours			
2	Gram Positive Cocci/ Rods	The student will be able to: 1. Describe the morphology and cultural characteristics of the following Gram Positive Bacteria: A. Staphylococcus B. Streptococcus Pyogenes C. Group B Streptococcus and Streptococcus viridans D. Streptococcus pneumoniae E. Bacillus anthracis and cereus F. Clostridium Species G. Lysteria and Cornybacterium H. Actinomyces 2. Explain the pathogenesis, clinical presentation, Laboratory diagnosis, and prevention of Gram Positive 3. State the different classification of Streptococcus							1 1 1 1 1 1 1 1 1 1		1			LECTURE TOPICS 1. Staphylococcus Aureus 2-Staphylococcus Epidermidis, saprophyticus, MRSA, VRSA 3- Streptococcus, Types, Classification. 4. Streptococcus pyogenes, Group B streptococcus 5-Enterococcus, Streptococcus viridans, pneumoniae 6- Bacillus anthracis, cerus 7- Clostridium species - 1 8-Clostridium species - 2 9-Listeria, Corynebacterium, Actinomycetes 10-Actinomycetes	Levinson 17TH edition chapter 15,17,22	PRACTICAL TOPICS 1-Biochemical Tests (Catalase , Coagulase test)

		4. Explain Post Streptococcal disease													
		TOTAL	3%	1%	1%	1%	1%	7%	10 hours		1 hours		11 hours			
3	Gram Negative PART 1	The student will be able to: 1. Describe the morphology and cultural characteristics of the following Gram Negative Bacteria: A. Neisseria B. E. coli C. Salmonella D. Shigella/Klebsiella E. Vibrio/proteus F. Campylobacter/ Helicobacter G. Pseudomonas H. Haemophilus I. Brodetella/ Legionella 2. Explain the pathogenesis, clinical presentation, Laboratory diagnosis, and prevention of Gram Negitive bacteria 3. Discuss the significance of Gram Negative Bacteria associated with Meningitis and UTIs 4. Discuss the pathogenesis of Typhoid fever							1 1 1 1 1 1 1 1 1 1 1 1 1		1 1 1 1			LECTURE TOPICS 1. Neisseria - 1 2. Neisseria - 2 3. Enterobacteriaceae 4. E. coli 5- Salmonella 6-. Shigella 7- Klebsiella 8-Vibrio 9-Protues 10- Campylobacter/ Helicobacter 11-Pseudomonas 12-Haemophilus 13- Bordetella 14-Legionella 15-Bacteriodes & Prevotella	Levinson 17TH edition chapter 16,18,19	PRACTICAL TOPICS 1-Biochemical tests (oxidase, 2- urease and sugar tests 3- Widal Test 4-serological tests (agglutination
		TOTAL	3%	1%	1%	1%	1%	7%	15 hours			4 hours	19 hours			
4	Gram Negative PART 2	The student will be able to: 1. Descibe the Morphology, cultural characteristics, pathogenesis, laboratory diagnosis, and prevention of the following Gram Negative Bacteria: A. Brucella/Francisella B. Yersinia/Pasteurella C. Tuberculosis D.Mycobacterium Leprae E. Mycoplasma F. Spirochetes G. Chlamydia H. Rickettsiae 2. Explain the importance of the Acid fast/ Tuberculin test 3. Explain the significance of Ghon lesions/ Ghon Focus 4. Differentiate between tuberculous and leproid leprosy 5. Detail the classification and life cycle of Chlamydia							1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1	1			LECTURE TOPICS 1. Brucella 2-Francisella/ Pasteurella 3- Yersinia 4-.Tuberculosis (introduction, important properties) 5- MTB (Pathogenesis, PPD) 6-Tuberculosis(Treatment, MDR, XDR) 7-Atypical Mycobacterium (Runyon classification) 8- Mycobacterium Leprae 9. Mycoplasma 10-Spirochetes (introduction, Treponema) 11-Treponema (Pathogenesis) 12-Treponema (Laboratory diagnosis) 13-Borrelia (Lyme disease) 14-Leptospira 15-Chlamydia trachomatis 16-Chalmydia pneumonia 17-Chalmydia psittaci 18- Rickettsiae rickettsii 19-Other rickettsial species (Weil-felix) 20-Coxiella burnetti TUTORIAL TOPICS Mycobacterium tuberculosis	Levinson 17TH edition chapter 20,21,23,24,25,26	PRACTICAL TOPICS 1. Zeihl-Neelsen (ZN-Staining)
		TOTAL	3%	2%	1%	2%		8%	20 hours	1 hours	1 hours		22 hours			
		The student will be able to: 1. Differentiate between bacteria and fungus 2. Detail the structure of Fungi 3. State the classification of fungi							1 1 1 1					LECTURE TOPICS 1. Basic Mycology 2. Dermatophytes 3-Sporothrix 4-Candida		

5	MYCOLOGY	4. Detail laboratory tests for diagnosis of fungal presence 5. Detail the morphology and cultural characterists for the following fungi: A. Dermatophytes B. Candida, Cryptococcus C. Aspergillus, Mucor/Rhizopus 6. Classify dermatophytes 7. Explain the concept of Opportunistic fungi, along with their names 8. State the general properties of systemic fungi 9. State the cultural charcteristics, pathogenesis, and laboratory diagnosis of systemic fungi							1 1 1 1 1 1					5-Cryptococcus 6-Aspergillus 7-Mucor/ Rhizopus 8-Coccidiiodes 9-Histoplasma/ Blastomyces 10-Paracoccidiiodes	Levinson 17TH edition chapter 47-50	
		TOTAL	3%	1%	1%	1%	1%	7%	10 hours				10 hours			
6 PARASITOLOGY	Intestinal and Urogenital Protozoa	The student will be able to: 1. Name the common intestinal and urogenital protozoa that infect humans 2. Outline the life cycle of Entamoeba histolytica, Giardia, Cryptosporidium, and Trichomonas indicating the stages that cause pathogenic effects and are of diagnostic importance 3. Identify points in Life cycle where preventive measures are applicable 4. Describe the mechanism of pathogenesis, clinical features, mode(s) of transmission, prevention and control 5. Describe the laboratory methods of diagnosis of these organisms							1 1 1 1 1		1 1 1			LECTURE TOPICS 1. Entamoeba 2. Giardia 3-Crytosporidium/ Trichomonas 4-Plasmodium malariae(Introdcution, Life cycle) 5-Plasmodium malariae (Pathogenesis, treatment, prevention)	Levinson 17TH edition chapter 51-56	PRACTICAL TOPICS 1. Examination of Urine 2. Examination of Stool 3-Blood film for Malarial Parasite
	Blood and Tissue Protozoa	The student will be able to: 1. Enlist the blood and tissue protozoa 2. Describe the morphology of each type of blood and tissue protozoa. 3. Explain the epidemiology and distribution of blood and tissue protozoa. 4. Describe the life cycle, pathogenesis and clinical manifestations of each type of blood and tissue protozoa 5. Describe the diagnosis of each of them							1 1 1 1 1 1					6-Trypanasoma 7- Leishmania 8-Toxoplasma 9-Cestodes (Taenia solium, saginata) 10-Cestodes (Diphyllobothrum, Echinococcus) 11-Trematodes		
	Cestodes	The student will be able to: 1. State the general characteristics of the phylum Platyhelminthes. 2. Classify Cestodes. 3. Describe the general morphology of an adult cestode. 4. Describe the epidemiology, life cycle, pathogenesis and clinical manifestations of each type of cestode 5. State the methods of diagnosis used to identify cestode infections.							1 1 1 1 1 1					12-Enterobius vermicularis 13-Trichuris trichiura 14-Ascaris lumbricoides 15-Hookworms 16-Strongyloides stercoralis 17-Trichinella		
	Trematodes	The student will be able to 1. Enumerate trematodes. 2. Detail the general features, species and life cycle of Genus Schistosoma. 3. Briefly describe the clinical spectrum, lab diagnosis and management of Schistosomiasis.							1 1 1					18-Wucheria bancrofti 19-Onchocerca 20-Overview of Parasitc infections		
	Nematodes	The student will be able to: 1. Classify Nematodes. 2. Describe the morphology of various nematodes 3. Describe the epidemiology, life cycle, pathogenesis and clinical manifestations of each type of nematodes. 4. Describe the methods of diagnosis used in the identification of nematodes								1				TUTORIAL TOPICS Blood and tissue protozoa		
		TOTAL	4%	1%	1%	1%		7%	20 hours	1 hours	3 HOURS		24 hours			
	Structure/ classification	The student will be able to: 1. State the basic structure of viruses 2. Explain the symmetry of viruses 3. State the importance of the envelope 4. Classify DNA and RNA viruses							1 1 1 1					LECTURE TOPICS 1. Structure/ classification 2-Viral replication 3-Viral Pathogenesis 4-Host defenses (viruses)		PRACTICAL TOPICS 1-Serological tests (complement fixation test)
	Replication/lab diagnosis	The student will be able to: 1. Explain how viruses replicate in host cell 2. Enumerate the steps of replication 3. Explain the difference of replication between different viruses							1 1 1 1					5-Viral Laboratory diagnosis 6-Viral vaccines 7-Herpes simplex virus 8-Varicella zoster virus		2-ELISA 3-PCR

7 VIROLOGY		4. Laboratory diagnosis of viruses							1					9-Cytomegalovirus	LEVINSON 17TH EDITION CHAPTER 28-46	
	Herpesvirus	The student will be able to: 1. Differentiate herpesviruses 2. Understand Herpes simplex virus/ varicella zoster virus/ CMV/ EBV 3. State pathogenesis and important features of Herpesvirus							1 1 1 1					10-Epstein-Barr virus 11-Human influenza virus 12-Cornavirus 13-Measles/ mumps		
	Influenza	The student will be able to: 1. State the importance of Influenza virus 2. Understand the difference between Antigenic shift and antigenic drift 3. Detail important characterisnts of Swine flu and bird flu 4. State the prevention of influenza epidemic							1 1 1 1 1					14-Rubella virus 15-Rabies virus 16-Poliovirus 17-Hepatitis B, DVIRUS 18-Hepatitis A,E		
	Measles, mumps, rubella	The student will be able to: 1. State the viruses which spread through respiratory tract 2. Explain the pathogenesis of measles, mumps, and rubella 3. State the preventive measures for these viruses 4. State any associated complications of contracting the virus							1 1 1 1 1					19-Hepatitis C virus 20-Arbovirus (Dengue virus) 21-Tumor virus 22-Slow viruses and prions 23-HIV		
	Polio and Rabies	The student will be able to: 1. Detail the modes of transmission 2. Explain the pathogenesis 3. State the preventive measures being taken worldwide and especially in Pakistan 4. State important properties								1				TUTORIAL TOPICS **Hepatitis Viruses**		
	Hepatitis A, D,E	The student will be able to: 1. Differentiate hepatitis viruses 2. State important properties of Hepatitis A and E 3. Ennumerate important viral markers 4. State the pathogenesis														
	Hepatitis B, C	The student will be able to: 1. State important properties of hepatitis B, and C 2. Ennumerate viral markers of hepatitis B 3. State the pathogenesis 4. Give preventive measures										1 1 1				1-Serological tests (complement fixation test)
	Arbovirus (dengue)	The student will be able to: 1. Discuss the nature of arboviruses 2. Explain the characteristics of Dengue fever and dengue hemmoraghic fever 3. State the Laboratory diagnosis for dengue fever/ NS-1														2-ELISA 3-PCR
	HIV	The student will be able to: 1. State the important properties of HIV 2. Explain the process of replication of HIV 3. Explain the pathogenesis 4. State the laboratory diagnosis and preventive														
		TOTAL	3%	1%	1%	1%	1%	7%	23 HOURS	1 hours	3 HOURS		27 HOURS			
		The student will be able to: 1. Define "pathology" and explain its four basic pillars							1					LECTURE TOPICS 1-Introduction to pathology/overview of cellular responses		PRACTICAL TOPICS
		2. State different cellular responses of injury and draw a flow chart to explain stages of cellular response to stress							1					2-Causes of cell injury		
		3. Define adaptations; briefly discuss its types along with their definitions and mechanisms, with examples							1					3. Morphologic Alterations in Cell Injury		
		4. Discuss types of cell injury							1					4. Mechanisms of Cell Injury		
									1					5-Oxidative Stress: Accumulation of Oxygen-Derived Free Radicals		
		5. Differentiate between reversible and irreversible injury							1					6- Clinicopathologic Correlations: Selected Examples of Cell Injury		
		5. Elaborate on different causes of cell injury							1		1			7. Necrosis		1. Necrosis
		6. Explain sequential development of morphologic and biochemical changes in cell injury							1					8- Apoptosis		
									1					9-Mechanisms of apoptosis		
		7. Describe the biochemical and morphological aspects of Reversible injury							1					10-Autophagy		
		8. Describe necrosis according to following headings: definition, types, morphology							1					11-Cellular adaptations (hypertrophy, hyperplasia)		
	ury	9. Discuss basic principles of cell injury							1					12-Metaplasia, anaplasia		

8	Cell inj	10. Discuss how ATP depletion causes cell injury 11. Describe cell injury caused by Mitochondrial damage 12. Describe the cell injury caused by influx of calcium 13. Describe cell injury caused by Oxygen derived free radicals 14. Explain cell injury due to defects in membrane permeability 15. Explain cell injury due to DNA and protein damage 16. Explain different Mechanisms of ischemic cell injury 17. Explain Mechanisms of chemical injury 18. Explain Ischemia-reperfusion injury 19. Define apoptosis 20. State the causes of apoptosis 21. Explain Morphologic and biochemical changes in apoptosis 22. Detail clinicopathological correlations of apoptosis 23. Explain following in detail: Lipids, proteins, hyaline change, glycogen and pigments 24. Define calcification 25. Differentiate between pathologic and metastatic calcification							1 1 1	1 1	1 1 1			13-Intracellular accumulations (lipids, proteins) 14-Intracellular accumulations (glycogen,pigments) 15-Pathological calcifications TUTORIAL TOPICS Cellular injury (causes, mechanisms)	Robbins Pathology 10TH edition chapter 2	2- Pigmentation 3-Calcification 4-. Gangrene
		TOTAL	3%	1%	1%	1%	1%	7%	15 HOURS	1 hours	4 HOURS		20 HOURS			
9	Inflammation	The student will be able to 1. Define inflammation 2. Discuss and compare Acute and chronic inflammation, with examples 3. State the causes of inflammation 4. Discuss the recognition of microbes and dead cells inflammation 5. Detail the events of acute inflammation 6. Explain different reactions of blood vessels in acute inflammation 7. Discuss Leukocytes recruitment to site of inflammation 8. Explain leukocyte infiltration 9. Explain Phagocytosis and clearance of offending agent 10. Discuss Termination of acute inflammatory response 11. Explain Morphologic patterns of acute inflammation 12. Enumerate General characteristics of mediators of acute inflammation 13. Detail principle mediators of acute inflammation 14. State the outcomes of acute inflammation 15. Define chronic inflammation 16. Enlist causes of chronic inflammation 17. Explain Morphology of chronic inflammation 18. Discuss cells of chronic inflammation (macrophages, lymphocytes, other cells) 19. Explain Mediators of chronic inflammation 20. Describe Granuloma and granulomatous inflammation 21. Understand the significance of Fever, acute phase proteins, and leukocytosis in inflammation							1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			LECTURE TOPICS 1. Overview of Inflammation: Definitions and General Features 2-Acute Inflammation 75 Reactions of Blood Vessels in Acute Inflammation 75 Changes in Vascular Flow and Caliber 75 3-Increased Vascular Permeability (Vascular Leakage) 76 Responses of Lymphatic Vessels and Lymph Nodes 76 4-Leukocyte Recruitment to Sites of Inflammation 5-Phagocytosis and Clearance of the Offending Agent 6-Mediators of Inflammation 85 Vasoactive Amines: Histamine and Serotonin 86 Arachidonic Acid Metabolites 86 7-Cytokines and Chemokines 88 Complement System 90 Other Mediators of Inflammation 92 8-Morphologic Patterns of Acute Inflammation 93 Serous Inflammation 93 9-Fibrinous Inflammation 93 Purulent (Suppurative) Inflammation and Abscess 94 10- Ulcers 11-Outcomes of Acute Inflammation 12-Chronic Inflammation 96 Causes of Chronic Inflammation 96 13-Morphologic Features 96 Cells and Mediators of Chronic Inflammation 97 14-Role of Macrophages 97 Role of Lymphocytes 98 Other Cells in Chronic Inflammation 99 15-Granulomatous Inflammation 100 Systemic Effects of Inflammation 101 TUTORIAL TOPICS Steps of acute inflammation	robbins Pathology 10TH edition chapter no.3 page no. 69-100	PRACTICAL TOPICS 1. Acute Inflammation-1 2. Acute Inflammation-2 3-Chronic Inflammation

		TOTAL	3%	1%	1%	1%	1%	7%	15 HOURS	1 hours	3 hours		19 hours			
10	Repair	The student will be able to 1. Define repair and regeneration 2. Describe Cell types according to proliferation during tissue regeneration 3. Explain Mechanisms of tissue repair and liver regeneration 4. Explain the process of Repair by connective tissue deposition 5. State the steps of Scar formation 6. Explain Angiogenesis; deposition and remodeling of connective tissue 7. Enlist Factors that influence tissue repair 8. Describe Healing of skin wounds: primary and secondary intention 9. Discuss abnormalities in tissue repair							1 1 1 1 1 1	1				LECTURE TOPICS 1. Tissue Repair and regeneration. Factors influencing wound healing 2- Cell and Tissue Regeneration 103 Cell Proliferation: Signals and Control Mechanisms 103 3-Mechanisms of Tissue Regeneration 104 Repair by Connective Tissue Deposition 105 4-Steps in Scar Formation 105 Angiogenesis 106 Deposition of Connective Tissue 107 Remodeling of Connective Tissue 107 5-Healing by first and second intention 6-Wound contraction, complication of wound healing, formation of granulation tissue TUTORIAL TOPICS **Mechanisms of tissue repair**	robbins Pathology 10TH edition chapter no.3 page no. 100-110	
		TOTAL	4%	1%		1%	1%	7%	6 hours	1 hours			7 hours			
11	Hemodynamic Disorders	The student will be able to 1. Define edema and effusions 2. Explain the Pathophysiological categories of edema 3. Discuss Morphology of edema 4. Briefly explain definition and morphology of hyperemia and congestion 5. Explain hemostasis 6. Discuss the Role of platelets in hemostasis 7. Discuss the Role of coagulation cascade in hemostasis 8. Discuss the Role of endothelium in coagulation 9. Explain the Factors that limit coagulation 10. Detail Hemorrhagic disorders 11. Explain Thrombosis; give details of Virchow's triad, HIT syndrome, and antiphospholipid antibody syndrome 12. Explain the morphology and fate of thrombus 13. Discuss clinical features of thrombosis 14. Define embolism 15. Enlist types of embolism 16. Define and explain Infarction, along with morphologic features 17. Define and classify Shock 18. Describe pathogenesis of septic shock with the help of a flow chart 19. Explain morphology of shock							1 1 1 1 1 1 1 1	1	1 1			LECTURE TOPICS 1. Edema and effusions 2. Hyperemia and Congestion 3. Hemostasis, role of platelets 4-Coagulation Cascade, Endothelium 5-Hemorrhagic Disorders (Thrombosis) 6-DIC, Embolism 7-Infarction 8- Shock TUTORIAL TOPICS **Hemorrhagic disorders**	Robbins Pathology 10TH edition chapter no.4	PRACTICAL TOPICS 1-Congestion & Infarction 2. Thrombosis
		TOTAL	3%	1%	1%	1%	1%	7%	8 HOURS	1 hours	2 HOURS		11 HOURS			
	Immunity:introduction, definitions	1. Understand the organization of the immune system 2. Explain the role of the lymphatic system in the immune response 3. Distinguish between innate and acquired immunity 4. Distinguish between: a. antigens and antibodies b. antigen and epitope c. B lymphocytes and T lymphocytes d. antibodies and B cell receptors e. primary and secondary immune responses 5. Discuss acquired immunity 6. Explain specific antigen recognition by B lymphocytes and T lymphocytes 7. Compare the production and functions of class I MHC and class II MHC molecules							1		1			LECTURE TOPICS 1. Immunity: Introduction, definitions 2- Innate immunity components of innate immunity 3-Immunogens/ Haptens adjuvants 4-APC (Macrophages, dendritic cells) 5-Cells of immune system 6-origin of lymphoid cells, receptor diversity 7-B cells , Antibody structure 8-Antibody diversity, allotypes , isotypes , idiotypes		PRACTICAL TOPICS 1-Serological tests

		8. Distinguish between the variable (V) and constant (C) regions of an antigen receptor			9-T Cells, Tcell receptor structure,	
	Innate Immunity	Student should be able to: 1. Know the different barriers that constitute the immune system 2. Know the pattern recognition receptors 3. Explain the effector mechanisms of the innate immune cells 4. Enlist the important inflammatory mediators, cytokines and explain their role in immunity	1		10-T cell activation 11- T cell effector function (helper t cells) 12-Cytotoxic T Cells, Regulatory T cells, Superantigens 13-B cell activation. Class switching 14-Types of Antibodies, Monoclonal antibodies	
	Adaptive immunity : Lymphocyte Antigen Receptors	Student should be able to: 1. Explain lymphocyte receptor diversity 2. Differentiate between different types of B and T cells, and their receptors 3. Detail the structure of Antibodies 4. Explain clonal selection theory and class switching	1		15-MHC proteins 16-Transplant rejection, graft vs host disease 17-Antigen-Antibody reactions in Laboratory (Agglutination, precipitation, ELISA) 18-ABO blood groups and transfusion reaction 19-Hypersensitivity type I	
	Adaptive immunity : T cell Mediated Immunity	Student should be able to: 1. Explain activation of T cells 2. State the T cell effector functions 3. Details the tests for the evaluation of cell-mediated immunity	1		20-Hypersensitivity type II and III 21-Hypersensitivity type IV 22-Tolerance (central and peripheral) 23-Autoimmune diseases (causes and mechanism)	
12 Diseases of the immune system	Adaptive immunity : B cells and Antibodies	Student should be able to: 1. Explain the process of B cell maturation and activation 2. Differentiate between primary and secondary immune response 3. Detail the structure, functions and properties of various antibodies 4. Describe monoclonal antibodies 5. Detail the tests for evaluation of B cell mediated immunity and antibodies	1		24-SLE,Rheumatid arthritis 25-Sjögren Syndrome 229 Systemic Sclerosis (Scleroderma) 231 Inflammatory Myopathies 234 Mixed Connective Tissue Disease 234 26-Immunodeficieny (Primary) 27- Immunodeficiency (secondary) 28-Amyloidosis **TUTORIAL TOPICS**	LEVINSON 17TH EDITION CHAPTER NO. 57-68
	Major Histocompatibility Complex and Transplantation	Student should be able to: 1. Describe MHC, along with its structure, classes and function 2. Discuss the role of MHC in immune response 3. Compare and contrast the functional aspects of MHC classes I and II 4. Discuss the role of MHC in transplantation and graft rejection – explain the importance of HLA typing in transplantation	1	1		
	Complement	Student should be able to : 1. Discuss activation and regulation of complement 2. Discuss the biological effects of complement 3. Discuss the clinical effects of complement	1			
	Antigen-Antibody Reactions in the Laboratory	Student should be able to : 1. Enlist the various serological tests, along with their major uses 2. State the principles of each test, explain how it is performed, and deatil the interpretation of their results 3. Explain Rh status and Hemolytic disease of the newborn	1			
	Hypersensitivity	Student should be able to: 1. Define hypersensitivity and enlist the types of hypersensitivity reactions 2. Describe type 1,2,3, and 4 hypersensitivity reactions and associated diseases 3. Discuss the role of T lymphocytes and antibody as mediators of hypersensitivity	2		Hypersensitivity	
	...e and Autoimmune Disease	Student should be able to: 1. Describe tolerance, and distinguish between B and T cell tolerance 2. Describe autoimmunity	1			

	Toleranc	3. Describe the mechanism of development of autoimmune diseases														
	Tumor immunity	Student should be able to : 1. Define tumor immunity 2. Describe the mechanism of tumor immunity														
	Immunodeficiency	Student should be able to : 1. Define immunodeficiency 2. Enlist important congenital immunodeficiencies, with their examples 3. Enlist important acquired immunodeficiencies with examples of each							1							
		TOTAL	3%	1%	1%	1%	1%	7%	12 HOURS	1 hours	1 hour		14 HOURS			
13	Neoplasia	The student will be able to: 1. Draw and explain different stages of cell cycle. Also discuss the regulation of cell cycle. 2. Explain role of growth factors and signal transduction on cell proliferation 3. Define neoplasia 4. Differentiate between benign and malignant neoplasm 5. Understand the nomenclature of benign and malignant neoplasm 6. Detail the different characteristics of benign and malignant tumors 7. Discuss the global impact of cancer 8. Tabulate different occupational cancers along with their occurrence 9. Discuss evidence-based role environmental factors, age, chronic disorders and genetic predisposition in carcinogenesis 10. Describe the basic principles of carcinogenesis 11. Discuss the role of genetic and epigenetic alterations in carcinogenesis 12. Describe cellular and molecular hallmarks of cancer 13. Explain how self-sufficiency in growth signals contribute to carcinogenesis 14. Define oncogenes, proto-oncogenes and oncoproteins, with their examples 15. Explain how insensitivity to growth inhibition contributes to carcinogenesis 16. Define and give examples of tumor suppressor genes 17. Describe Warburg effect with the help of a diagram							1 1 1 1 1 1 1 1 1 1 1 1 1		1 1 1			LECTURE TOPICS 1. Growth factors and receptors 2. Cell cycle 3. Nomenclature, Characteristics of Benign and Malignant Neoplasms 4-Characteristics of Benign and Malignant Neoplasms 5-. Local Invasion 273 Metastasis 273 Pathways of Spread 274 6-. Epidemiology of Cancer 7-Molecular Basis of Cancer: Role of Genetic and Epigenetic Alterations 8-Cellular and Molecular Hallmarks of Cancer 284 Self-Sufficiency in Growth Signals: Oncogenes 284 Oncoproteins and Cell Growth 286 9-Insensitivity to Growth Inhibition: Tumor Suppressor Genes 291 Growth-Promoting Metabolic Alterations: The Warburg Effect 299 Evasion of Cell Death 302 10-Limitless Replicative Potential: The Stem Cell-Like Properties of Cancer Cells 303 Angiogenesis 305 11-Invasion and Metastasis 306 Invasion of Extracellular Matrix 307 Vascular Dissemination, Homing, and Colonization 308 12-Evasion of Immune Surveillance 309 Tumor Antigens 309 Antitumor Effector Mechanisms 311 Mechanisms of Immune Evasion by Cancers 311 13-Genomic Instability 314 Cancer-Enabling Inflammation 315 Dysregulation of Cancer-Associated Genes 316 14-Chromosomal Changes 316 Epigenetic Changes 319 Noncoding RNAs and Cancer 320 15-Carcinogenic Agents and Their Cellular Interactions 320 Chemical Carcinogenesis 321 16-Direct-Acting Carcinogens 322 Indirect-Acting Carcinogens 322 17-Radiation Carcinogenesis 323 Ultraviolet Rays 323 Ionizing Radiation 323 18-Microbial Carcinogenesis 323 Oncogenic RNA Viruses 324 Oncogenic DNA Viruses 324 Helicobacter pylori 327	Robbins Pathology 10TH edition chapter 7	PRACTICAL TOPICS 1. Benign Epithelial Tumors 2. Malignant Epithelial Tumors 3. Benign Mesenchymal Tumors 4. Malignant Mesenchymal Tumors

		18. Explain the molecular events in the process of metastasis 19. Explain the steps involved in chemical carcinogenesis 20. Ennumerate direct and indirect acting carcinogens 21. Explain radiation carcinogenesis 22. Explain with help of a prototype organism different steps of microbial carcinogenesis 23. Define and explain the mechanism of cancer cachexia 24. Describe different paraneoplastic syndromes 25. Describe the grading and staging of tumors 26. Explain the uses and application of the following methods for diagnosis of cancer: a. Histologic and cytologic methods b. Immunohistochemistry c. Flow cytometry d. Molecular and cytogenetics diagnostics 27. Describe the nature and application of different tumor markers 28. Describe the role of different tumor antigens in carcinogenesis 29. Describe how tumor cells escape the immune surveillance mechanisms							1 1 1 1 1					19-Clinical Aspects of Neoplasia 328 Clinical Manifestations 328 20-Grading and Staging of Tumors 330 21-Laboratory Diagnosis of Cancer 331 Molecular Profiles of Tumors: The Future of Cancer Diagnostics 334 22-Tumor markers TUTORIAL TOPICS **Molecular basis of cancer**		
		TOTAL	3%	2%	1%	2%		8%	19 hours	1 hours	4 hours		24 hours				
14	Genetic Disorders	The student will be able to: 1. Define "mutation" and describe its types 2. Enlist autosomal dominant and autosomal recessive disorders 3. Describe the pattern of inheritance in genetic disorders 4. Tabulate different X-linked disorders 5. Discuss the pattern of inheritance of X-linked disorders 6. Describe the molecular and biochemical basis of following disorders: a. Marfan syndrome b. Familial hypercholesterolemia c. Ehlar-Danlos syndrome d. Lysosomal storage diseases e. Sickle cell anemia f. Thalassemia's g. Hemophilia h. Down syndrome							1 1 1					LECTURE TOPICS 1-Genes and human disease/ mutation 2-Mendelian Disorders / Transmission Patterns of Single-Gene Disorders 3-Autosomal dominant disorders 4-Autosomal recessive disorders 5-X-linked disorders 6-Biochemical and Molecular Basis of Single-Gene (Mendelian) Disorders 7-Disorders Associated With Defects in Structural Proteins 148 Marfan Syndrome 148 Ehlers-Danlos Syndromes (EDSs) 8-Disorders Associated With Defects in Receptor Proteins 151 Familial Hypercholesterolemia 9-Disorders Associated With Enzyme Defects 154 Lysosomal Storage Diseases 154 Glycogen Storage Diseases (Glycogenoses) 160 10-Complex multigenic disorders 11-Chromosomal Disorders 164 Normal Karyotype 164 Structural Abnormalities of Chromosomes 165 Cytogenetic Disorders Involving Autosomes 166 12-Downs syndrome 13-Cytogenetic Disorders Involving Sex Chromosomes 170 Klinefelter Syndrome 170 Turner Syndrome 171 Hermaphroditism and Pseudohermaphroditism 173 14-Single-Gene Disorders With Nonclassic Inheritance 15-Molecular Genetic Diagnosis 180 Diagnostic Methods and Indications for Testing 180 Laboratory Considerations 180 Indications for Analysis of Inherited Genetic Alterations 180 Indications for Analysis of Acquired Genetic Alterations 181	Robbins Pathology 10TH edition chapter 5	

		i. Klinefelter syndrome j. Turner syndrome 7. Discuss the following diagnostic methods and indications for testing: a. PCR and detection of DNA sequence alterations b. molecular analysis of genomic alterations c. polymorphic markers and molecular diagnosis d. RNA analysis and next generation sequencing							1	1				16-PCR and Detection of DNA Sequence Alterations 181 Molecular Analysis of Genomic Alterations 182 Fluorescence In Situ Hybridization (FISH) 182 Cytogenomic Array Technology 183 17-Polymorphic Markers and Molecular Diagnosis 184 Epigenetic Alterations 184 RNA Analysis 185 18-Next-Generation Sequencing (NGS) 185 Bioinformatics 185 Clinical Applications of Next-Generation DNA Sequencing 186 Future Applications 187 TUTORIAL TOPICS Autosomal dominant/ Autosomal recessive disorders		
		TOTAL	3%	1%	1%	1%		6%	4 HOURS	1 HOURS			5 HOURS			
TOTAL			44%	17%	13%	17%	9%	100%	198 hours	11 hours	33 hours		242 HOURS			

List of Practical

Practical	Student Learning Objectives	Mode of Information (MOIT)	Learning Domain (KSA-Model)	Assessment Method (No. of Questions)			
				MCQ	SEQ	Viva	OSPE or Practical
Study of Microscope	By the end of this practical, the student will be able to • Know parts of microscope. • Would be able to use microscope.	Teaching /Practical	C3	1			1
Sterilization and Disinfection	By the end of this practical, the student will be able to • Know concept of sterilization • disinfection	Teaching /Practical	C3	1	1		1
Sample Collection and Transport	By the end of this practical, the student will be able to • assess sample collection different specimens	Teaching /Practical	C3	1			1
Gram Staining	By the end of this practical, the student will be able to • perform gram stain • tell the limitations of gram stain	Teaching /Practical	C3	1			1
Ziehl-Neelsen (Zn-Staining)	By the end of this practical, the student will be able to • tell indication of ZN stain • perform ZN stain	Teaching /Practical	C3	1		1	1
Culture Media	By the end of this practical, the student will be able to • identify different culture medias	Teaching /Practical	C3	1		1	1
Blood Culture	By the end of this practical, the student will be able to • know the indications of blood culture	Teaching /Practical	C3	1		1	1

	• procedure of blood sampling for blood culture						
Anaerobic Culture	By the end of this practical, the student will be able to • know the principle of anaerobic culture	Teaching /Practical	C3	1		1	1
Biochemical tests • **Coagulase Test** • **Catalase Test** • **Oxidase Test** • **Motility Test** • **Urease Test** • **Sugar Sets**	By the end of this practical, the student will be able to • Know different biochemical test • Their principles • Their procedures	Teaching /Practical	C3	1	1	1	1
Serological tests • **Agglutination Tests** • **Complement Fixation Test** • **Enzyme-Linked-Immunosorbent-Assay (ELISA)** • **Polymerase Chain Reaction (PCR)**	By the end of this practical, the student will be able to • Know the principles of serological tests • Their procedures		C3	1	1	1	1
Widal test	By the end of this practical, the student will be able to • Know the historical context of Widal test. • Know that it's not performed now.	Teaching /Practical	C3	1			1
Examination of Urine	By the end of this practical, the student will be able to • Identify WBC, RBC, Epithelial cells, cast on microscopic examination	Teaching /Practical	C3	1			1
Examination of Stool	By the end of this practical, the student will be able to • Draw diagrams of various eggs/ ova of parasites	Teaching /Practical	C3	1			1

Blood Film for Malarial Parasite	By the end of this practical, the student will be able to • Know the procedure of preparation of blood films	Teaching /Practical	C3	1	1		1
Necrosis	By the end of this practical, the student will be able to • The principle and definition of necrosis. Identify diagram of necrosis.	Teaching /Practical	C3	1	1		1
Gangrene	By the end of this practical, the student will be able to • Know the definition of gangrene • Identify gangrene on microscope.	Teaching /Practical	C3	1		1	1
Congestion and Infarction	By the end of this practical, the student will be able to • Know the definition of congestion and infarction. • Identify infarction on microscope.	Teaching /Practical	C3	1	1	1	1
Thrombosis	By the end of this practical, the student will be able to • Know about thrombosis. • Identify microscopic slides.	Teaching /Practical	C3	1	1	1	1
Pigmentation	By the end of this practical, the student will be able to • Know the definition of gangrene • Identify microscopic slides.	Teaching /Practical	C3	1	1	1	1
Calcification	By the end of this practical, the student will be able to • Know about calcification • Identify microscopic slides	Teaching /Practical	C3	1	1	1	1
Acute Inflammation	By the end of this practical, the student will be able to	Teaching /Practical	C3	1	1	1	1

	• Know the definition of acute inflammation. • Identify microscopic slides.						
Chronic Inflammation	By the end of this practical, the student will be able to • Know the definition of chronic inflammation. • Identify microscopic slides.	Teaching /Practical	C3	1	1	1	1
Benign Epithelial Tumors	By the end of this practical, the student will be able to • Know about benign epithelial tumors. • Identify microscopic slides.	Teaching /Practical	C3	1			1
Malignant Epithelial Tumors	By the end of this practical, the student will be able to • Know about malignant epithelial tumors. • Identify microscopic slides.	Teaching /Practical	C3	1			1
Benign Mesenchymal Tumors	By the end of this practical, the student will be able to • Know about benign mesenchymal tumors. • Identify microscopic slides.	Teaching /Practical		1			1
Malignant Mesenchymal Tumors	By the end of this practical, the student will be able to • Know about malignant mesenchymal tumors. • Identify microscopic slides.	Teaching /Practical		1		1	1
				26	12	13	26

Assessment Schedule

Avicenna Medical College
3rd Year MBBS (M-21)
1st Term Test Schedule

Week	Date	Day	Subject	Test	Topic	Reference
1st	12-Feb-24	Mon	All Subjects	Lecture	Lecture Time Divided	
2nd	19-Feb-24	Mon	All Subjects	Lecture	Lecture Time Divided	
3rd	26-Feb-24	Mon	Pathology	Grand Test+Key Discussion+Viva	Cell Injury	Robbins Pathology 10th Ed: Chapter 2
	27-Feb-24	Tue	Pathology	OSPE		
4th	04-Mar-24	Mon	Pharmacology	Grand Test+Key Discussion+Viva	General Pharmacology	Katzung ed. 14 Ch:1-5
	05-Mar-24	Tue	Pharmacology	OSPE		
5th	11-Mar-24	Mon	For. Medicine	Grand Test+Key Discussion+Viva	Law , legal procedures, medical jurispudence and Forensic Psychiatry	NRA (1st edition), pages 1-23 Parikh (7th edition), pages 441-463.
	12-Mar-24	Tue	For. Medicine	OSPE		
6th	18-Mar-24	Mon	Beh. Science	Grand Test+Key Discussion+Viva	Section A: Behavioural Sciences & their relevance to healthcare	Handbook of Behavioural sciences, 3rd Edition, MH Rana, Page no 1-33
	19-Mar-24	Tue	Beh. Science	OSPE		
7th	25-Mar-24	Mon	Pathology	Grand Test+Key Discussion+Viva	General Bacteriology/ Gram Positive Bacteria	Levinson 17th edition Part I & Chapter 15, 17, 22

	26-Mar-24	Tue	Pathology	OSPE		
8th	01-Apr-24	Mon	Pharmacology	Grand Test+Key Discussion+Viva	ANS	Katzung ed. 14 ch:9-10
	02-Apr-24	Tue	Pharmacology	OSPE		
Eid- Ul- Fitr Holidays: 7th April ,2024 - 14th April ,2024						
9th	15-Apr-24	Mon	All Subjects	Lecture	Lecture Time Divided(Wed &Thu lectures)	
	16-Apr-24	Tue	Ward Test-1			
	17-Apr-24	Wed	For. Medicine	Grand Test+Key Discussion+Viva	Personal Identity, DNA Identification, Thanatology	NRA(1st Edition), Pages 31-45 Parikh (7th Edition), pages 55-86. Nasib R. Awan (1st Edition), Pages 91-105, Parikh (7th Edition), pages 137-163.
	18-Apr-24	Thu	For. Medicine	OSPE		
10th	22-Apr-24	Mon	Beh. Science	Grand Test+Key Discussion+Viva	Section B: Medical Ethics & professionalism	Handbook of Behavioural sciences, 3rd Edition, MH Rana, Page no 35-61
	23-Apr-24	Tue	Beh. Science	OSPE		
11th	29-Apr-24	Mon	Pathology	Grand Test+Key Discussion+Viva	Inflammation/ Healing & Repair/ Haemodynamics	Robbins Pathology 10th Ed: Chapter 3, 4
	30-Apr-24	Tue	Pathology	OSPE		
12th	06-May-24	Mon	Pharmacology	Grand Test+Key Discussion+Viva	CVS	Katzung ed.14 Ch:9,10
	07-May-24	Tue	Pharmacology	OSPE		
Early Session: 13th May,2024 - 29th May,2024						
13th	13-May-24	Mon	Pharmacology	ESE+VIVA	Syllabus covered till E.S	
13th	14-May-24	Tue	Day Off			
13th	15-May-24	Wed	Day Off			

13th	**16-May-24**	**Thu**	**Forensic Medicine**	**ESE+VIVA**	**Syllabus covered till E.S**
13th	**17-May-24**	**Fri**	**Day Off**		
13th	**18-May-24**	**Sat**	**Day Off**		
14th	**19-May-24**	**Sun**	**Day Off**		
14th	**20-May-24**	**Mon**	**Pathology**	**ESE+VIVA**	**Syllabus covered till E.S**
14th	**21-May-24**	**Tue**	**Day Off**		
14th	**22-May-24**	**Wed**	**Beh. Science**	**ESE+VIVA**	***Behavioural Sciences & their relevance to healthcare, Medical ethics & professionalism***
14th	**23-May-24**	**Thu**	**OSPE**		
14th	**24-May-24**	**Fri**	**OSPE**		
14th	**25-May-24**	**Sat**	**Day Off**		
15th	**26-May-24**	**Sun**	**Day Off**		
15th	**27-May-24**	**Mon**	**OSPE**		
15th	**28-May-24**	**Tue**	**Youm-e-Takbeer Holiday-28th May,2024**		
15th	**29-May-24**	**Wed**	**OSPE**		
End Of 1st Term					

Week	Date	Day	Subject	Test	Topic	Reference

16th	03-Jun-24	Mon	For. Medicine	Grand Test+Key Discussion+Viva	Autopsy, General Trauma and Regional injuries	NRA (1st Edition), Pages 46-69, 118-130 Parikh (7th Edition), pages 87-120, 211-231, 287-315.
	04-Jun-24	Tue	For. Medicine	OSPE		
	04-Jun-24	Tue	Ward Test-2			
17th	10-Jun-24	Mon	Beh. Science	Grand Test+Key Discussion+Viva	Section C- 1st Half : Psychology in medical practice	Handbook of Behavioural sciences, 3rd Edition, MH Rana, Page no 63-123
	11-Jun-24	Tue	Beh. Science	OSPE		
Summer Vacations+ Eid- Ul- Adha: 15th June ,2024 - 21st July ,2024						
18th	22-Jul-24	Mon	Pathology	Grand Test+Key Discussion+Viva	Gram Negative Bacteria/ Mycology/ Parasitology	Levinson 17th edition chapter 16, 18-26. Part V, Part VI
	23-Jul-24	Tue	Pathology	OSPE		
19th	29-Jul-24	Mon	Pharmacology	Grand Test+Key Discussion+Viva	Blood & GIT	Katzung ed. 14, CH:26,28
	30-Jul-24	Tue	Pharmacology	OSPE		
20th	05-Aug-24	Mon	For. Medicine	Grand Test+Key Discussion+Viva	Accidents in home and environment, Firearm injuries and Road Traffic Accidents	NRA(1st Edition), Pages 70-75, Parikh (7th Edition), pages 232-243, 332-364, 317-331 NRA(1st Edition), Pages 59-65, 116-117.
	06-Aug-24	Tue	For. Medicine	OSPE		
	08-Aug-24	Thu	Ward Test-3			
21st	12-Aug-24	Mon	Beh. Science	Grand Test+Key Discussion+Viva	Section C- 2nd Half : Psychology in medical practice&Section D	Handbook of Behavioural sciences, 3rd Edition, MH Rana, Page no 108-140
	13-Aug-24	Tue	Beh. Science	OSPE		
22nd	19-Aug-24	Mon	Pathology	Grand Test+Key Discussion+Viva	Neoplasia/ Genetics	Robbins Pathology 10th edition chapter 5, 7
	20-Aug-24	Tue	Pathology	OSPE		

23rd	26-Aug-24	Mon	Pharmacology	Grand Test+Key Discussion+Viva	CNS	Katzung ed. 14 CH
	27-Aug-24	Tue	Pharmacology	OSPE		
Mid Session Exam: 28th Aug,2024 - 26th Sep,2024						
23rd	28-Aug-24	Wed	Forensic Medicine	RT-1	Law, legal procedures, Medical Jurisprudence, Forensic psychiatry, Personal identity, and thanatology	NRA (1st edition), pages 1-23 Parikh (7th edition), pages 441-463. NRA(1st Edition), Pages 31-45 Parikh (7th Edition), pages 55-86. Nasib R. Awan (1st Edition), Pages 91-105, Parikh (7th Edition), pages 137-163.
23rd	29-Aug-24	Thu	Forensic Medicine	RT-2	Medicolegal Autopsy, General truama and Regional injuries	NRA (1st Edition), Pages 46-69, 118-130 Parikh (7th Edition), pages 87-120, 211-231, 287-315.
23rd	30-Aug-24	Fri	Forensic Medicine	RT-3	Accidents in home and environment, Firearm injuries and Road traffic accidents	NRA(1st Edition), Pages 70-75, Parikh (7th Edition), pages 232-243, 332-364, 317-331 NRA(1st Edition), Pages 59-65, 116-117.
23rd	31-Aug-24	Sat	Day Off			
24th	01-Sep-24	Sun	Day Off			
24th	02-Sep-24	Mon	Forensic Medicine	MSE	Syllabus covered till mid session	
24th	03-Sep-24	Tue	Pharmacology	RT-1		
24th	04-Sep-24	Wed	Pharmacology	RT-2		

24th	05-Sep-24	Thu	Pharmacology	RT-3		
24th			Ward Test-4			
24th	06-Sep-24	Fri	Pharmacology	RT-4		
24th	07-Sep-24	Sat	Day Off			
25th	08-Sep-24	Sun	Day Off			
25th	09-Sep-24	Mon	Pharmacology	MSE	Syllabus covered till mid session	
25th	10-Sep-24	Tue	Pathology	RT-1	Cell Injury	Robbins Pathology 10th Ed: Chapter 2
25th	11-Sep-24	Wed	Pathology	RT-2	General Bacteriology/ Gram Positive Bacteria	Levinson 17th edition Part I & Chapter 15, 17, 22
25th	12-Sep-24	Thu	Pathology	RT-3	Inflammation/ Healing & Repair/ Haemodynamics	Robbins Pathology 10th Ed: Chapter 3, 4
25th	13-Sep-24	Fri	Pathology	RT-4	Gram Negative Bacteria/ Mycology/ Parasitology Neoplasia/ Genetics	Levinson 17th edition chapter 16, 18-26. Part V, Part VI Robbins Pathology 10th edition chapter 5, 7
25th	14-Sep-24	Sat	Day Off			
26th	15-Sep-24	Sun	Day Off			
26th	16-Sep-24	Mon	Pathology	MSE	Syllabus covered till mid session	
26th	17-Sep-24	Tue	Beh Sciences	RT-1	Section A&Section B	Handbook of Behavioural sciences, 3rd Edition, MH Rana, Page no 1-62
26th	18-Sep-24	Wed	Beh Sciences	RT-2	Section C&Section D	Handbook of Behavioural sciences, 3rd Edition, MH Rana, Page no 63-140
26th	19-Sep-24	Thu	Day Off			

26th	20-Sep-24	Fri	Beh Sciences	MSE	Syllabus covered till mid session
26th	21-Sep-24	Sat	Day Off		
27th	22-Sep-24	Sun	Day Off		
27th	23-Sep-24	Mon	OSPE+VIVA		
27th	24-Sep-24	Tue	OSPE+VIVA		
27th	25-Sep-24	Wed	OSPE+VIVA		
27th	26-Sep-24	Thu	OSPE+VIVA		
End Of 2nd Term					

Week	Date	Day	Subject	Test	Topic	Reference
28th	30-Sep-24	Mon	All Subjects	Lecture	Lecture Time Divided	
	01-Oct-24	Tue	All Subjects	Lecture	Lecture Time Divided	
	03-Oct-24	Thus	For. Medicine	OSPE	Asphyxia, Sexual Offenses and related crimes	Nasib R. Awan (1st Edition), Pages 76-84, 103-115, Parikh (7th Edition), pages 367-437, 165-190
	04-Oct-24	Fri	For. Medicine	Grand Test+Key Discussion+Viva		
29th	07-Oct-24	Mon	Beh. Science	Grand Test+Key Discussion+Viva	Section E ;Psychosocial aspects of haelth & disease	Handbook of Behavioural sciences, 3rd Edition, MH Rana, Page no 143-228
	08-Oct-24	Tue	Beh. Science	OSPE		
	10-Oct-24	Thus	Ward Test-5			

30th	14-Oct-24	Mon	Pathology	Grand Test+Key Discussion+Viva	Immunology/ Virology	Levinson 17th Edition Part III, Part IV, Part VII
	15-Oct-24	Tue	Pathology	OSPE		
31st	21-Oct-24	Mon	Pharmacology	Grand Test+Key Discussion+Viva	ENDO	Katzung ed. 14
	22-Oct-24	Tue	Pharmacology	OSPE		
32nd	28-Oct-24	Mon	For. Medicine	Grand Test+Key Discussion+Viva	General and Special Toxicology	Parikh 7th Edition, pages 507-691
	29-Oct-24	Tue	For. Medicine	OSPE		
33rd	04-Nov-24	Mon	Beh. Science	Grand Test+Key Discussion+Viva		
	05-Nov-24	Tue	Beh. Science	OSPE		
	07-Nov-24	Thus	Ward Test-6			
34th	11-Nov-24	Mon	Pharmacology	Grand Test+Key Discussion+Viva		
	12-Nov-24	Tue	Pharmacology	OSPE		
Send-Up: 14th Nov,2024- 29th Nov,2024						
End Of 3rd Term						


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