First Year MBBS

Seventeenth Batch: 2024-29

MODULE I

GENERAL BASIC SCIENCES

CELL BIOLOGY

MODULE II

MUSCULOSKELETAL SYSTEM

BLOOD AND LYMPHOID TISSUE

MODULE III

CARDIOVASCULAR AND RESPIRATORY SYSTEM

STUDY GUIDE

2025

BAHRIA UNIVERSITY MEDICAL COLLEGE, BUHSCK

TABLE OF CONTENTS

MESSAGE FROM THE DESK OF PRINCIPAL & DEAN

Major General (R)
Prof Dr. Shehla M. Baqai HI(M)
MBBS, FCPS (Obstetrics & Gynaecology), FICS, MCPS-HPE
Bahria University Health Sciences Campus Karachi

Heartiest congratulations and welcome to the Bahria University Health Sciences. Selection in medical college is the evidence of shear hard work, incessant struggle and relentless efforts towards achieving the goals. State of the art facilities and adroit faculty of this college will ensure smooth transition from medical student to a highly trained practitioner. The logical convergence towards the aim will be explained stepwise in the study guide, which includes forthcoming activities, content and learning strategies.

The highly proficient teaching faculty will provide necessary guidance related to learning objectives, effective use of teaching tools and integrated teaching methods. The curriculum also includes small group interactive methods like Problem Based Learning (PBL), which is a modern and scientific teaching strategy. The study programs support social and moral development of a medical student besides achieving academic excellence. A team of highly trained and professional teachers acts as mentors to guide students on social and academics related affairs.

The mandate of medical education is to equip medical professionals with requisite knowledge, skills and attitude. As a medical student, it is expected of you to keep an exemplary character and honest morality. Plan and strive hard with full sincerity and devotion. This marks the beginning of your professional career where attitude defines your altitude and acts as a panacea in practical life.

I wish and pray a bright and successful future along with smooth sailing during your five-year stay at Bahria University health sciences.

Maj. Gen. Prof. Shehla M. Baqai HI(M)
Principal, BUMC & Dean-HS, BU
Bahria University Health Sciences
Campus Karachi

MESSAGE FROM THE DESK OF VICE PRINCIPAL

Dr. Khalid Mustafa,
MBBS, MPhil
Bahria University Medical College, BUHSCK

Dear Students,

Welcome to the Bahria University Health Sciences Karachi, where you will spend five years of your life in pursuit of knowledge.

This study guide will give you a road map for the forthcoming activities including the objectives, contents, learning strategies and assessment of your educational course; which we regard as essential. Use this study guide as a reference for your "Code of Conduct". It gives policies and rules pertaining to examinations, electives, attendance and rotations etc.

A competent team of experienced professional teaching faculty will guide you towards learning goals in different clinical settings through effective use of different tools of teaching and assessment. You will be encouraged to integrate your learning across the disciplines. Examination questions will not be confined to one discipline but we will assess your knowledge and understanding of i.e. surgery, anatomy, physiology, genetics and pathology simultaneously. Remember this when studying; because one book and one discipline will not suffice.

Teaching in wards, outpatient departments, and clinics, problem solving interactive teachings, workshops and small group discussions will be used to help you learn and understand.

Medical science is rapidly changing based on evidence; keeping abreast is our personal responsibility. Use the library frequently, which has virtual access to thousands of journals and books through PERN (Pakistan Educational Research Network).

You as medical student are expected to demonstrate professional and responsible behavior towards your teachers, colleagues, health professionals and patients.

I wish all of you best of luck for your future and pray that you all work hard and make yourself and everyone around you, proud.

Dr. Khalid Mustafa
Vice Principal, Medical College
Bahria University Healt
Sciences Campus Karachi

ABOUT BAHRIA UNIVERSITY MEDICAL COLLEGE

Bahria University Medical College was established in 2008. Twelve batches of students have passed out and received their MBBS degrees. The College has a beautiful custom built basic sciences wing which also houses the Dental College, an auditorium, a library, video link facilities, a skills laboratory and an advanced multi-discipline laboratory for doing research for MPhil leading to Ph.D. programs.

The clinical teaching wing is PNS SHIFA, a tertiary care hospital which takes care of Armed Forces Personnel, their families, parents and civilian patients. There is a large variety of clinical cases for students to see and learn from. Emergency and intensive care facilities are available. About 1500 patients visit PNS Shifa daily. The outpatient departments in all disciplines are in full use and well organized. Where patients are seen promptly, investigations like laboratory tests, X rays and advanced imaging techniques are available on site. Patients are referred to the concerned department. Doctors work as a team to ensure best care of the patient.

Students will be taken on by teams of doctors and taught clinical management in the best possible setting i.e. the bedside of the patient, in the operation theatre, OPD, emergency room, ICU, CCU and labor room. They will also be taken into the community during their rotation with Community Health Sciences Department, the Students will be taught research 2 methodology and expected to do research work. Students will be observed and continuously provided feedback to improve cognitive and professional skills and behavior. It is expected that students will make a seamless transit from basic sciences to clinical sciences. Each year is organized in 3 modules of 12 weeks each. Each module is assessed separately. It is mandatory for students to appear in the end of module tests or they will not be allowed to sit the annual examinations.

Basic Science Education is assessed at the end of 1st and 2ndyear. Clinical training is spread over three years with frequent continuous assessments including end of rotation evaluation. The professional examinations Held in 4th year are Ophthalmology, Otorhinolaryngology (ENT), Medicine, Surgery, Gynecology & Obstetrics, and Pediatrics, are held in the final year (5th Year). In clinical programs, medical students will spend a designated number of hours in clinical settings of various disciplines including medicine, surgery, pediatrics, gynecology & obstetrics, ENT and ophthalmology Medical students will be required to maintain BUHSCK “Log Book” a record of their learning activities throughout the clinical years from 3rd to 5th year. The BUMDC Log Book is also to be used for case discussions and assessment.

Strictly prohibited!
Use of mobile phones in teaching sessions, wards, clinics, examination halls

BUHSCK GUIDE

The Study guide serves as a useful handy resource, helping you to navigate your journey at the Health Science Campus

The Study guide is more than an academic guide.

It not only highlights what, as a student, you should aim to achieve as you work through the curriculum, but also provides essential information about various administrative protocols that you as students of Bahria University are expected to follow.

Vision Statement

To become a knowledge and creativity-driven international university that contributes towards the development of society.

Mission Statement

To produce medical professionals who are humane, ethical and competent physicians and researchers by ensuring excellence in medical education, applied research and practices, in a collegiate environment supported through national and international linkages, to improve the health of community and society.

Program Learning Outcomes (PLOs)

The MBBS programs aims to produce medical graduates who are able to:

1. Recognize signs and symptoms of common illnesses in population of different ages from different settings, and provide cost effective treatment to alleviate suffering
2. Recognize signs and symptoms of chronic and acute illnesses, and refer to appropriate health care provider for appropriate management
3. Obtain accurate medical history that covers essential aspects of history that relates to individual's health
4. Conduct a complete and focused physical examination in adults and children in a respectful and logical manner
5. Communicate effectively with patients, relatives, attendants to gather accurate information that will lead to appropriate diagnosis and treatment
6. Demonstrate team work with colleagues, health care team in both college and health care settings
7. Perform procedures and skills in accordance with established protocols and standards
8. Counsel on health promotion to improve the health of individuals, and families including marginalized population
9. Inculcate and demonstrate ethical and moral values in patient care, research and professional development
10. Develop life-long learning skills to keep pace with the exponential growth of information in the field of sciences relevant to health of the individual and population at large

11. Engage in research activity aimed at improvement of quality of health care including behavior modification of individual and community for quality life.

Competencies

The graduate doctor must be a:

Care provider
Provide care on ethical principles in different settings, emergencies; applies scientific principles of basic, clinical and behavioral sciences to formulate diagnosis; suggest essential investigations, cost effective drugs for treatment. Perform physical examination, basic skills, procedures according to protocol.

Communicator
Interview patients, families skillfully to gather information for formulating diagnosis, treatment; counsel patients, families, communities on health maintenance and promotion; communicate effectively with health care team including peers, supervisors

Advocate for health promotion
Counsel individuals, families, communities on improved lifestyle; maintenance and promotion of health

Professional
Value and Display behaviors befitting to the profession such as honesty, empathy, punctuality, patience, respect for patients and their families, colleagues; accepting one's limitations

Critical thinker
Engage in research projects, assignments, surveys. Search for evidence; analyze facts, data, pros and cons to identify and solve problems. Reflect and write articles, short notes, commentaries.

Lifelong learner
Seek and update knowledge from multiple sources; Consult scientific evidence including journals, web-based knowledge and others; discussion with scholars, practitioners, colleagues; reflection; participation in activities; continuously improve computer skills

Team Worker
Respect and value the contribution of the health team; collaborate with the team to provide efficient patient care.

POLICIES AND COMMITTEES

This section summarizes some key aspects of policies in vogue at Bahria University. The student is advised to read the detail in the latest edition of Bahria University's Student Handbook

Student's Code of Conduct

Every student shall observe the following code of conduct in the University premises, in the University administered hostels (on and off-campus) and places of other activities being held under the auspices of the University:

- Loyalty to Pakistan and refraining from doing anything which is repugnant to its honor and prestige in any way.
- Respect for convictions and traditions of others in matters of religion, conscience and customs while observing own religious duties/customs.
- Truthfulness and honesty in dealing with other people.
- Respect for elders and politeness to all, especially to women, children, elders, the weak and the helpless.
- Special respect for teachers and others in authority in the CUs and BU.
- Cleanliness of body, mind, speech and habits.
- Helpfulness to fellow beings.
- Devotion to studies and prescribed co-curricular activities.
- Observance of thrift and protection of public property.
- Observance of the rules and regulations of the CU in force from time to time.

Prohibited Acts & Misconduct/Ill-Discipline

The following acts shall be unacceptable, and their commission shall be construed as misconduct or ill-discipline:

- Breach of the Code of Conduct.
- Smoking in the areas prohibited by the University.
- Consumption or possession of alcoholic drinks or other intoxicating drugs within the CU/ vicinity or while attending off-site instructions, sports, cultural tours or survey camps.
- Organizing or taking part in any function inside the campus, or organizing any club or society of students, except were permitted and in accordance with the prescribed rules and regulations.
- Collecting donations or receiving funds or pecuniary assistance for or on behalf of the CU except with the written permission of the Head of the CU or any other person authorized in this behalf.
- Staging, inciting or participating in or abetting any walk-out, strike or other form of agitation against BU, its CUs or students, teachers, officers or authorities; inciting others to violence; disruption of the peaceful atmosphere in any way; making inflammatory speeches or gestures which may cause resentment; issuing of pamphlets or cartoons which cast aspersions on the students, teachers, staff or University authorities/bodies; doing anything in a way likely to promote rift and hatred amongst the students; issuing statements in the press; making false accusations against or lowering the prestige of BU or its students, teachers, administrators, staff or bodies.
- Disobeys the lawful orders of a teacher or other person in authority.
- Habitually neglects work or absents from the classroom without valid reason.
- Willfully damages public property or the property of fellow students or any teacher or employees of BU and its CUs.

- Does not pay the fees, fines, or other dues payable under the laid down rules and regulations; uses indecent language; wears immodest dress; makes indecent remarks; gestures; behaves in a disorderly manner; commits any criminal, immoral or dishonorable act (whether committed within the CU or outside) or any act which is prejudicial to the interests of BU and its CUs; and/or
- Commits an act of sexual harassment, as defined in the HEC's document 'Policy Guideline against Sexual Harassment in Institutions of Higher Learning'.

Action against Misconduct

Every member of the faculty shall have the power to check any disorder or improper conduct, or any breach of the rules, by students in any part of the campus or outside when the visit is sponsored or organized by it. Misconduct in a classroom when a student is under the charge of a teacher shall not be allowed and a punitive action such as a fine, removal from the classroom or a punishment of greater magnitude may be imposed as decided by the authority so empowered. The Student Advisor, the Admin Officer or any other employee authorized by the Head of the CU shall be responsible for the maintenance of good behavior and law and order amongst the students on the premises of the CU.

Penalties:

A student guilty of an act of indiscipline shall be liable to the penalties specified below or promulgated through written orders/notifications:

Penalty Code	Penalty	Awarding Authority	Appellate Authority
1	Removal from classroom, laboratory, or field work, for a maximum period of two contact hours	Teacher In-Charge	HOD
2	Expulsion from games or field work for not more than one week	Games/ Field Work In-Charge	Director
3	Expulsion from educational visits and sports tours	DD (Admin & Coord) or an officer authorized by the Head of the CU	Director
4	Suspension from classes for a period not exceeding two weeks	Director/ Principal	Head of the CU
5	Monetary penalties	Director/ Principal	Head of the CU
6	Removal from a position of authority on the advice of the Student Advisor / HOD	Director/ Principal	Head of the CU
7	Expulsion from the hostel	Head of the CU	Next Higher Authority
8	Cancellation of remission of fees/assistantship/scholarship etc.	Head of the CU	Next Higher Authority
9	Rustication for one or more semester	Head of the CU with concurrence of BUHO	Rector
10	Expulsion from the CU	Head of the CU with concurrence of BUHO	Rector

Procedure In case of breach of discipline:

A teacher, a staff member or a BU Officer in whose presence or in relation to whom an act of indiscipline has been committed or who gets to know of such act, may deal with the case him/herself, or if in his/her view the case is one which can be more appropriately dealt by another authority or which warrants a penalty of greater magnitude than they are competent to impose, shall refer the case to the Student Advisor or Deputy Director (Admin & Coord) or the higher authority as the case maybe.

All cases of serious breach of discipline shall be referred to the Disciplinary Committee for investigation which, after due process of investigation, will either impose the penalties if within its powers or recommend them to the Campus Head/Head of the CU/Rector, as the case may be.

When a case against a student is referred to the Disciplinary Committee, it may, if it deems fit, suspend the student from the classes till the finalization of the case, with the approval of the Head of the CU.

Appeals

An appeal against the penalty may be filed by the student with the Appellate Authority within 30 days of announcement of the punishment. No appeal by a student shall be entertained unless it is presented within 30 days from the date of communication of the decision, provided that the Rector may, for valid reasons, extend this period.

No appeal shall lie against the decision of an authority imposing a penalty other than rustication or expulsion except on the grounds that such authority imposed a penalty which it was not competent to impose.

An appeal on the grounds that an authority imposed a penalty which it was not competent to impose, shall lie with the body or person of higher authority than the one who imposed the 44 penalty.

Compensation for loss

The Head of the CU, or any teacher or officer to whom he may delegate the powers, may instruct a student to pay compensation for any loss or damage to property belonging to the CU/University, public authority, a fellow student or an employee of the CU/University, caused by a willful act or gross negligence of the student. If the student does not pay such compensation within a specified period, the Head of the CU will proceed against the student in the manner as prescribed in these rules.

Offences during examination

Cases of indiscipline in or around the Examination Hall, and use of unfair means, shall be dealt with by the Examination Committee.

Dress code:

Male students:

1. Dress/Casual Trousers
2. Jeans (Plain blue) without an image, graphics, and write ups
3. Casual Shirts (Half/ Full sleeves)
4. T Shirts without any messages, images, graphics, and write ups
5. Dress/Casual shoes or Joggers with socks (no sandals)
6. Shalwar Kameez with shoes (only on Friday)
7. Suit/ Combination

8. Coat/ Pullovers/ Sweaters/ Jackets in winter

Female students:

1. Shalwar Qameez (no sleeveless)
2. Hijab, Abaya, Chaddar etc
3. Full length Jeans(no tights) with long shirt/ kurta (knee length)
4. Light jewelry and light makeup
5. Shoes, Sandals and Joggers
6. Dupatta/ Scarf is compulsory with all dresses

NOTE: All BUHSC students are expected to wear white coat during classes, laboratory and hospital rotations, as well as outside the campus, when on official visit.

Student card
Students shall be issued ID Cards. The students shall be required to wear their ID Cards in the campus and show them to the authorized persons on demand.

Loss of ID card
In case ID card is lost, it should be immediately reported to Admin Office who will make arrangements for re-issue of a new card by the University after payment of fine.

Personal behavior
The University expects that all students should sustain professional manner when interacting with colleagues and others. The University recognizes that personalities, characters, and management styles may differ but, notwithstanding these differences, as a minimum standard, all are expected to:

- Work co-operatively with each other to achieve objectives and establish good working relationships.
- All should behave and speak professionally, respectfully, and courteously at all times.
- Tidiness and cleanliness must be always adhered to within the Campus premises which will help us maintain a safe, clean, and professional learning environment.
- Use the college's property, facilities, supplies, and other resources in the most effective and efficient manner.
- Unacceptable behavior such as aggressive or abusive behavior, shouting or personal insults or spreading rumors or gossip, or insulting someone is to be avoided at all costs. All these matters, if experienced, should be reported to the vice principal or your mentor or a senior faculty member.

Punctuality:
Students are expected to arrive in class well in time. All cell phones, smartphones, and other electronic devices (e.g., pagers, iPods) must be turned off and hidden from view during class time. Talking and other disruptive behaviors are not permitted while classes are in session. If the students miss a class, they are themselves responsible for the missed part of the course. It is the student's responsibility to contact a classmate or teacher to determine and cover what was missed.
At BUMC classes start immediately after holidays. There is no lag period after leave. There will be no relaxation for students who are absent. **Please inform your parents of this and make your travel arrangements accordingly**. Avoid taking leave for personal reasons like weddings during the academic year.

Conduct in library

The University campuses have well stocked libraries, and time spent by the students there will meet your research requirements in a calm place. The libraries also provide electronic access through the internet to databases throughout the world.

Library also provides plagiarism detection services

While using the library, Mobile Phones/ iPods/ laptops should be kept on silent mode. Sleeping, listening/ watching drama and music etc, while staying at library is prohibited.

Rules for borrowing books

1. Students are permitted to borrow 3 books at a time for a maximum period of 14 days. Books borrowed may be re-issued on completion of the time period.
2. A valid University card is must for borrowing the Book(s) and other material
3. Textbooks will be issued for 7 working days only but may be reissued the next day of the due date
4. For the Book(s) returned after the due date, a fine of Rs.10/- per day would be charged.
5. Book Bank books will be issued for a period of whole/ one semester.
6. Writing, underling or marking any book is strictly prohibited. Library books are carefully examined on return and the borrower will be held responsible for any damage
7. Following library material will not be issued and must be consulted in the library:
    a. Reference Material.
    b. Thesis/ Project Reports.
    c. Audio/ Video cassettes/ CDs/ DVD's.
    d. Magazines and periodicals.
    e. Newspapers.

Library Timings

DAY	TIMINGS
WEEKDAYS: MON- FRI	8:30 AM to 8:30 PM
WEEKENDS	9:00 AM to 8:30 PM

Conduct in the hospital

When you are working in the hospital be quiet, avoid rowdiness and unnecessary laughter and chatter. Remember the patients need peace, quiet and their rest. You must always weara white coat. Ladies will wear their dupattas inside the white coat and the gentlemen's ties must be tucked inside the shirt so that infection is not carried from one area to the next. Shoe covers, sterile aprons, caps and gowns must be worn where appropriate. Be polite to the patients, greet them appropriately and inquire after their health and wish them well. All nursing staff must be addressed appropriately and politely. Don't hang around once your work is done. Do not eat or drink inside the wards and treatment areas. Avoid making phone calls and put your phones on the silent mode.

Conduct in cafeteria and common rooms

Campus has a cafeterias with a variety of food items and snacks available at reasonable rates

Students are expected to show care, courtesy towards the cafeteria staff as well as to others.

Place garbage and recyclables in the appropriate containers.

This behavior will maintain a clean and enjoyable environment for all.

Academic misconduct and disciplinary committee

The Discipline Committee is responsible for maintaining discipline (both academic as well as conduct), and deals with all cases of indiscipline on the part of students.

It recommends award of penalties/ punishments and renders advice to the Director on administrative matters needed to maintain a peaceful environment on the campus. Intimation will be sent to BUHO for all penalties awarded to a student

Members of the committee

Chairperson	Brig (Retd) Prof. Syed Pervez Ashgar, BUMC
Secretary	Dr. Jaweria Zeesha, BUMC
Members	• Prof. Dr. Khalid Aziz, Principal, BUCPT • Prof. Dr. Ahmed Omer, BUDC • Prof. Dr. Yasmeen Mehar, BUMC • Sr. Associate Prof. Abida Razzaq, VP PNNC
Co-opted member	Varies according to the case

Students are to avoid the following:

a) Unauthorized use of University's name or logo which is property of university.
b) Harassment, sexual or otherwise, or intimidation of any member of university.
c) Coming late for classes. The student may be considered absent and marked accordingly.
d) Improper/inappropriate dress
e) Loud and aggressive behavior in Cafeteria or Common rooms or within the premises of BUHS or PNS Shifa.
f) Non clearance of bills/dues. Non-clearance of dues may prevent student from appearing in the professional examination. The student may also be refused permission to attend classes.

Use of mobile phone

a) Use of mobile phone for photography at cafeteria is restricted.
b) Library is 'NO Mobile Zone' area.
c) Use of mobile in class room is prohibited.
d) Students are not allowed to use mobile phone for photography/ video capturing during farewell parties.
e) Making videos, images, Vlogs etc are monitored through CCTV cameras installed inside and outside building.

Smoking

Student guilty of an act of smoking in the premises of Bahria University/ Constituent Unit or while entering/ attending offsite instructions like sports, cultural tours or survey campus shall be liable to the penalties asunder:

Occasion	Penalties
1st occasion of offence on act of smoking.	Fine of Rs.5000/- along with warning letter with copy to parents from Director Campus
2nd or onward occasion of offense(s).	Fine of Rs.10,000/- along with warning letter (s) with copy to parents from DG Campus on each offence.

.

Student guilty of an act of possession/ consumption/ usage/ supplying of intoxication drugs/ Alcoholic drinks in premises of CU and or entering CU or events of BU being intoxicated and or

during official/ informal offsite events of the University shall be liable to expulsion from the CU.

Criminal conviction

a) Applicants are required to inform BU of any criminal conviction. Full details are to be provided.
b) The University reserves the right to refuse admission to any applicant with a criminal conviction that may jeopardize the reputation of the University.
c) Failure to declare any criminal conviction by a student already enrolled in BU shall result in immediate cancellation of his/her admission.
d) Where admission to the program is denied on the basis of the criminal conviction, the applicant will be notified of the decision in writing by respective Campuses/CUs

Academic misconduct

Following acts shall constitute academic misconduct:

a) Cheating.
b) Fabrication.
c) Misuse
d) Forgery.
e) Plagiarism.
f) Facilitating academic misconduct.
g) Academic Dishonesty.

The student is advised to refer to their Student Handbook to become fully cognizant of these terms.

Penalties for academic misconduct

TYPE OF MISCONDUCT	PENALTY
Attempt (Successful/ unsuccessful) to know contents of question papers through unfair means prior to examination	***Minor punishment*** a Warning letter (Copy to parents) b. Fine of Rs.2,000. ***Major punishment*** a. Expulsion from the University b. Fine Rs. 5000/00. c. Letter to parents
Possession of written material, relevant to the subject/paper concerned. • Writing on palm, arm or anywhere on the candidate's body or clothes whether the written material is relevant or irrelevant to the concerned paper. • Possession of Mobile phones, Smartwatches, PDAs and other electronics devices, whether or not carrying any relevant or irrelevant material in the memory.	a. Grade 'F' in the subject. b. Fine Rs 5,000. c. Warning, copy to parents. d. Mobile phones/electronic devices to be confiscated. (will be returned after investigation
Giving/receiving assistance or allowing any other candidate to copy from his/her answer books.	***Minor Punishment*** a. Cancellation of the relevant paper. b. Fine Rs 2,000/-. c. Letter of Warning.

	Major Punishment a. Grade 'F' in the subject.(for students involved) b. Fine Rs 5,000/- c. Letter of Warning.
Removing a leaf from answer book. Taking the whole or a part of an answer book or a continuation sheet into or out of examination hall.	a. Grade "F" in the subject. (for students involved) b. Fine Rs. 5,000. c. Letter of warning
Substituting the whole or a part of an answer book or a continuation sheet not duly issued to him for the examination;	a. Grade 'F' in the subject. (For students involved) b. Fine Rs 5,000. c. Letter of Warning.
Forging, mutilating, altering, erasing or otherwise tampering with marked answer scripts	a. Grade "F" in the subject. (for students involved) b. Fine Rs 5,000. c. Letter of Warning
Impersonation	a. Grade "F" in all subjects of relevant semester studied at BU (including the impersonator/facilitator, if a student of BU). b. Expulsion from the university (including the impersonator/ facilitator, if a student of BU). c. In case the impersonator/facilitator is an ex-student of BU or not a BU student, an FIR may be lodged for the offence, asper law of the land.
Using abusive or obscene language in answer book	a. Grade 'F' in the relevant course. b. Fine Rs 5,000. c. Letter of Warning.
Refusing to obey the Invigilator or Head Invigilator in the Examination Hall and misbehaving, resorting to misconduct, or creating any kind of disturbance in or around the Examination Hall	***Minor Punishment*** a. Grade 'F' in the course. b. Fine Rs 5,000. c. Letter of Warning. ***Major Punishment*** a. Rustication for one Semester. b. Grade 'F' in the course. c. Fine Rs5,000/ d. Letter of Warning.
Communicating or attempting to communicate with Examiners with the intention of influencing them in the award of marks.	a. Cancellation of relevant paper. b. Fine Rs 5,000. c. Letter of Warning.
Possession of firearms, knives etc. inside and in the close vicinity of Examination Hall	a. Expulsion from the University. b. Fine Rs 5,000. c. Letter of Warning.

Sexual Harassment

All students are required to educate and familiarize themselves about the act/actions categorized as "Sexual Harassment" may it be physical, verbal or while utilizing electronic media and refrain from it being a punishable offence.

Higher Education Commission has issued very strict policy guideline against "Sexual Harassment in Higher Education Institutions (HEI)".

All such policies are strictly applicable and followed in Bahria University.

All students are therefore required to go through the entire policy's contents which are available with campus (concerned HODs) and University/ HEC website.

- The Protection against Harassment of Women at Workplace Act, 2010
- The Protection against Harassment of Women at Workplace (Amndt) Ac& 2022.
- HEC Policy on Protection against Sexual Harassment in HEIs effective 01 July 2020

Committee for protection against sexual harassment in BUHSCK

FOCAL PERSONS	
Prof. Dr. Khalid Mustafa Vice Principal, BUMC Professor of Pharmacology	Cell 0300-21 30868 Phone: 021-35319491-9, ext: 1038 & 1070 Email: khalid.bumdc@bahria.edu.pk drkhaiidmm@yahoo.com
Prof. Dr. Shazia Shakoor HOD, Physiology	Phone: 021-35319491-9 Ext: 1056 Email: shazia.bumdc@bahria.edu.pk shazia2304@hotmail.com
INQUIRY COMMITTEE	
Prof. Shama Asghar, Chairperson Professor of Operative Dentistry Chairperson	Cell 0334-3078082 Phone: 021-35319491-9 ext: 1121 Email: sham.burndc@bahria.edu.pk sham.asqhar24@gmail.com
Prof. Dr. Nasim Karim Principal, BUHS-PGI HOD Pharmacology Member	Cell 0332-3151774 Phone: 021-35319491-9, ext: 1057 & 1072 Email: nasimkarim.bumdc@bahria.edu.pk
Dr Aini Samreer Sr. Associate Professor, Gyn & Obs Member	He 0333-3763592 Phone: 021-35319491-9 ext: 1064 Email aini.bumdc@bahria.edu.pk drsam222@yahoo. Com
APPELLATE BODY	
Capt (R) Noaman Imam PN Director Campus Chairman	Cell 0336-9369222 Phone: 021-35319491-9 Ext: 1001 Email: dac.burndc@bahria.edu.pk
Prof. Farzeen Tanwir Vice Principal, BUDC HOD Periodontology Member	Cell 0336-1802464 Phone: 021-35319491-9 Ext: 1104 Email: farzeentanwir21@ gmail.com
Prof. Saifullah Shaikh Professor of Physiology Member	Cell 0333-2279425 Phone: 021-35319491-9 Ext: 1066 Email: dr.saif74@yahoo.com

Code of conduct for protection against harassment of woman at the work place

1. An informal approach to resolve a complaint of harassment may be though mediation between the parties involved and by providing advice and counseling on a strictly confidential basis.
2. A complainant or a staff member designated by the complainant for the purpose may report an incident of harassment informally to her supervisor, or a member of the Inquiry committee, in which case the supervisor or the committee member may address the issue at her discretion in the spirit of this Code. The request may be made orally or in writing.
3. If the incident or the case reported does constitute harassment of a higher degree and the officer or a member reviewing the case feel that its needs to be complainant, the case can be taken as a formal complaint.
4. A complainant does not necessarily have to take a complaint of harassment through the informal channel. She can launch a formal complaint at any time.
5. The harassment usually occurs between colleagues when they are alone, therefore usually, it is difficult to produce evidence. It is strongly recommended that staff should report offensive behavior immediately to someone they trust, even if they do not wish to make a formal complaint at the time.

HEC policy on protection against sexual harassment in higher education institutions

1. Higher Education Institutions ("HEIs") are highly consequential institutions in society that are dedicated to the pursuit and dissemination of knowledge. Members of the HEI community have several important rights and privileges, central among which is the right to pursue inquiry and search for knowledge without hindrance from unlawful or otherwise unacceptable constraints. The HEC, takes very seriously the freedom of teachers, researchers, scholars, students to live and work in a safe environment in which their dignity is protected.
2. Protection against sexual harassment is important not only because it threatens the freedom and conduciveness of the environment and the institutions of higher learning. At a more fundamental level, such conduct is unacceptable because its violet personal dignity and shall not be tolerated at HEIs in Pakistan under any circumstance.
3. All administrators, deans, managers, faculty, department chairs, directors of schools or program and others in supervisory or leadership positions have an obligation to be familiar with and to uphold this policy and its procedures along with informing members of their staff about its existence.
4. In order to ensure protection of women against harassment complaint may be lodge by any person who has experienced sexual harassment with either the focal person or with any member of the Sexual Harassment Inquiry Committee.

Students grievances oversight committee

There shall be a Student Grievances Oversight Committee (SGOC), at CU level for each department, to address grievances of students against any teacher, instructor, or administrative staff, with respect to matters of code of conduct, grades, or any administrative matter. The committee shall comprise:

a) Head of CU.
b) HOD.
c) CU Exam-In-charge.
d) Two (2) seniors-most FMs of the department.

If grievance is about the award of a grade, the procedure shall be as follows:

a) The student must submit the grievance, in writing, within seven working days of the receipt of the grade, to the HOD who shall forward it to the SGOC

b) The SGOC shall hear both sides and will give its decision, which shall be final and binding on all parties, within five working days or before the start of registration for the new semester, whichever is earlier.

ATTENDANCE POLICY FOR STUDENTS

Attendance policy for regular students.
PMDC rules for eligibility in annual examinations.

- Minimum attendance requirement is 85% in each subject: attendance is for lectures, demos,practicals, clinics, PBLs, PSILs, CPC, presentations etc: indoor and outdoor
- The attendance is not simply for lectures.
- No shortfall in attendance will be condoned in any case by any authority

Attendance is maintained by the Attendance Department at BUMC.

All students should try and achieve 100% attendance. Every teaching session is essential. Forclinical students remember a disease being demonstrated may not be seen during the rest of your stay in the college again. You will make the mistake of a life time by missing the opportunity to attend a clinical demonstration. You must have at least 75% attendance in to be permitted to sit for the professional examination.

- Lecture Attendance is marked at the start of the class.
- Students who come more than 10 minutes late are marked absent.
- A random head count is done to ensure correct entry of attendance.
- The attendance sheet is signed by the teacher and sent to Attendance Department.
- The attendance is entered into the spreadsheet as soon as possible on that day.
- No correction will be made later than 24 hours as the system is then locked.

Attendance for clinics, demonstrations, and practical's etc.

- Student signs the attendance sheet in front of the teacher.
- The teacher countersigns it daily.
- Weekly attendance is given by the CR to the Attendance Department - every Monday.
- Attendance submitted later than Friday of the current week will not be accepted.

The University rules permit a 15% short fall for genuine reasons of personal ill health of a lifethreatening nature or unavoidable circumstances such as death of a blood relative. This 15%relaxation is not so that you can take a holiday.

<u>If you have less than 85% attendance even for reasons of health, you will be asked to repeat the year. Maintaining adequate attendance is your personal responsibility.</u>

Attendance policy for students repeating a year.

Students who have been asked to repeat the year either because of poor attendance or failure in the professional examination or supplementary examination will attend the classes of the failed subject(s).

- Their previous year attendance will not be considered.
- If their attendance is less than 85% in their current class they will not be allowed to appearin the next examination.
- If a student is repeating one subject then the attendance must be equal to or more than 85% in that subject. This includes all practical classes, demonstrations, PBL sessions, lecturesand clinical classes.

Attendance policy for students appearing in supplementary exams.

1. Only students who have appeared in a professional examination are allowed to appearin the supplementary examination**.**
2. Those who were not eligible for the annual exam are not eligible for the supplementaryexam.
3. Those who did not avail the chance will have to repeat the year and cannot appear inthe supplementary.
4. Students will be provisionally promoted to the next class while preparing for thesupplementary examination.
5. Attendance will be marked in the class to which they have been promoted.
6. The student will prepare for the supplementary exam in his/her own time.
7. In case the student fails to pass the supplementary exam he/she will revert to the previous class and the attendance in the new class will be counted in the class to whichthey revert.
8. Those students who do not attend classes will be marked absent and may face ashortage of attendance and will be asked to repeat the year.

Eligibility criteria for appearing in annual professional examinations

A student will be eligible to appear in the annual professional examination if he/she fulfills thefollowing criteria:

1. 85% attendance
2. Must have cleared all financial dues
3. Must have appeared in all three end-of-module examinations
4. No breach of discipline should have occurred for which the Disciplinary Committee hasadvocated a punishment

RESEARCH

BU has a strong emphasis on research and students are not only taught research methodology as part of their curriculum, but also actively engage in research work, under the supervisor of faculty members.

BUHSC has a Research Advisory Committee that has been specifically formulated to guide students in every aspect of their research, from synopsis writing through to publications in peer reviewed journals.

THE MODULES

Organization of modular curriculum and teaching

Each Academic Year is divided into three Modules

- **First Year - Modules - I,II,III**
- **Second Year - Modules - IV,V,VI,**
- **Third Year - Modules - VII,VIII,IX,**
- **Fourth Year - Modules - X,XI,Xll,**
- **Final Year - Modules - XIII,XIV,XV**

The Examining subjects are

- **FIRST AND SECOND YEAR MBBS**
  - Anatomy
  - Physiology
  - Biochemistry

- **THIRD YEAR MBBS**
  - General Pathology Pharmacology
  - Forensic Medicine

- **FOURTH YEAR MBBS**
  - Special pathology,
  - Community Health Sciences Ophthalmology
  - Otorhinolaryngology

- **FINAL YEAR MBBS**
  - Medicine (including Dermatology and Psychiatry),
  - Surgery (including Orthopedics, Urology, Anesthesiology and Radiology)
  - Pediatric medicine
  - Obstetrics and Gynecology

You will be taught clinical subjects from 3rd year as this need to be taught in great detail and the final year is not sufficient. **The attendance for the subjects of medicine, surgery, gyne/obs and pediatrics will be counted from third year.** You will also be taught ethics, Islamiat, Pakistan Studies and communication skills.

A weekly schedule is placed on the notice board.

LEARNING METHODS

Following Learning Strategies encourage active learning

- PBL
- PSIL
- Journal Club
- Interactive lecture,
- Practicals,
- Demonstrations,
- Dissection Hall Teaching
- Clinical Skills learning Skills Lab,.
- Small group discussions
- Bed Side Teaching
- Field / Community field Trips
- Self-Study with feedback
- Seminars, Workshops

The program emphasis on

Problem Based Learning (PBL):

This is a small group activity in which the discussion revolves around a real life problem using the Seven Jump process. Students are expected to consult various learning resources to develop better understanding of the subject. PBL sessions contribute towards internal assessment. Students are expected to attend all PBL sessions.

Self-Directed Study:

Student may achieve the objectives by assuming responsibilities of their own learning. By sharing and discussing with peers, working individually, seeking information from LRC, teachers and resources persons within and outside the college. This is possible by utilizing scheduled self-study period in college, and time outside the college.

Problem Based Learning (PBL): What is it?

It is a student-centered approach encouraging deeper learning. Students learn about a problem by working in groups. In first encounter, a problem which is close to real life situation is given. The problem is generally discussed in two sessions.

Frist Session: Learners in small groups, using existing knowledge, discuss (in the presence of facilitator) and list what they do not know or are not sure of, about the problem, the list is known as learning goals objectives.

Self-Study: Learners have approximately three days, during which learners search for new information required to achieve the learning objectives listed. In this process, learners are encouraged to consult various learning resources in addition to the textbooks. This does not require a tutor.

Second Session: Students present their solution and review what they have learnt. Students engage in self-peer, and tutor review of the classes. Learners discuss learning issues and

application of new knowledge to the problem and summarize by integrating prior and new knowledge in understanding the problem.

ASSESMENT POLICY

The student at BUHS will be assessed by following strategy

1. **Continuous / Formative Assessment done throughout the Year**
    - Practical journals, PBL sessions
    - Quizzes and tests
      Reflective, constructive feedback is provided

2. **Internal Assessment based upon 03 end of module exams**

Each year is organized in 3 modules. Each module is assessed separately. It is mandatory for students to appear in the end of module exams

End of Module Exam comprises of

- Knowledge assessment by MCQs & SAQs;
- Skills & attitude are assessed by OSPE / OSCEs

The internal evaluation will contribute 20% towards final results
Student not appearing in end of module exams will lose internal evaluation marks

3. **Summative Assessment**
    1. The written examination comprises of three papers (paper 1, 2 & 3). Each paper has
        - MCQs section
        - SAQ section divided into 03 parts (A, B & C)

    2. Practical Examination will consists of 03 OSPE sessions

Eligibility criteria for appearing in annual professional examinations
A student will be eligible to appear in the annual professional examination if he/she fulfills the following criteria:

1. **85% attendance**
2. **Must have cleared all financial dues**
3. **Must have appeared in all three end-of-module examinations**
4. **No breach of discipline should have occurred for which the Disciplinary Committee hasadvocated a punishment**

PASS PERCENTAGE

For all examinations of MBBS courses the percentage of passing marks in each subject shall be 65% i.e. 65 % in theory and 65% in practical.

POLICY FOR ELECTIVES

- Electives are not mandatory nor are they a part of the curriculum. Electives are considered add on extra-curricular activities with benefits for selection for jobs or postgraduate training after MBBS.
- The Electives Rotation will be of four weeks duration.
- It will be planned at least six months in advance during the 3rd or 4th Year.
- The Elective will be planned during the **SUMMER HOLIDAYS** preferably.
- The institution or department will be of the student's choice.
- During the elective the student will not get credit for attending lectures at BUMDC.
- It is the student's responsibility to ensure that his/her overall attendance record is not affected adversely by the elective.
- The student will not proceed on an elective without informing the vice principal.
- The student will sign a waiver to the effect that any shortfall in attendance is his /her own responsibility and will be dealt with as per rules of Bahria University
- The adequacy of education during the elective is the student's own responsibility.
- Permission to attend an elective is given by the Chairperson Student Affair Department designated for this purpose at BUMDC. This simply implies that the college authorities are aware that the student is away for this period so that admission is not cancelled.
- The student will ensure that the Elective Supervisor completes an evaluation report at the end of the elective.
- BUHSCK will not provide any financial assistance for the elective.

STUDENT AFFAIRS AND STUDENT ASSIST PROGRAM

Chairperson of student affairs is assigned to cooperate with students and parents concerning academic and non-academic matters and can be contacted according to availability or after setting an appointment.

Students' Affairs office

The Students' Affairs Office coordinates administrative co-curricular and extracurricular activities. Students are advised to approach the coordinator student affairs (CSA) for any academic or non-academic matter.

Liaison with parents

The Students Affairs Office also serves as a bridge between the College Administration and parents.

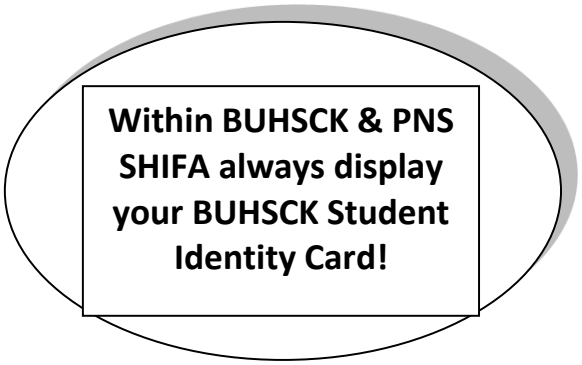
Students' progress reports will be mailed to parents on request at the conclusion of every term and annual examination. Similarly, the issue of short attendance, college discipline, and violation of college rules and regulations are handled by this Office.

CLUBS FOR EXTRACURRICULAR ACTIVITIES

Different clubs for extracurricular activities are established for students to participate.

1. Literary and debates society
2. Arts and dramatics society
3. Adventure club

4. Event club
5. Community support club
6. Sports club
7. Media club
8. Music club



WHOM TO CONTACT?

Administration BUMC

Prof. Dr. Khalid Mustafa, Vice Principal

Prof. Dr. Saifullah Shaikh, Academic Coordinator

Brig. (R) Shahid Ali Khan, Clinical Coordinator, BUMC

Prof. Dr. Yasmin Taj, Head of Attendance Department.

Surg. Cdre. Dawood Ahmed, Liaison Officer, PNS SHIFA

Ms. Marvi Bhutto, Chairperson, Student Affairs

MENTORING PROGRAM

BUHSCK has student assisting programs such as mentoring. Mentors have been already assigned at the start of the teaching program in first year. The students will meet the assigned mentor in the mentor's office to discuss academic, non-academic, experiences, problems for advice and guidance.

Mentors	Senior Mentor	Program Manager
Dr. Muhammad Talha Khan, CHS	Prof Talea Hoor, Pharmacology	Maj. Gen. (R) Prof. Shehla M. Baqai HI(M) Principal/ Dean
Dr. Faryal Gul, Medicine		
Dr. Hira Faisal, Pathology		
Dr. Zehra Tapal, Physiology	Dr Sehrish Shafique, Medicine	
Dr. Shadman Nasreen, CHS		
Dr. Wajiha Niaz, Eye		
Dr. Tayabba, Biochemistry	Dr. Sadia Rehman, Biochemistry	
Dr. Zainab Fakhr-ul-Qamar, Medicine		
Dr. Haya Farrukh, Forensic Medicine		
Dr. Fatima Zehra, Physiology		

Following will be the meeting schedule:	Duration	Summary submitted to
Mentors (12 minutes with each student)	2 hours / week	Department of Medical Education
Supervisors (with the mentors)	1 hour / fortnightly	
Program Manager (with supervisors)	Last Friday of every month	

Following students will be supervised by mentors as follows:-

S.NO	Senior Mentor	Mentors	Enrollment numbers
1.	Dr. Fareeha Shahid, CHS	Dr. Muhammad Talha Khan, CHS	06-102025-001 **to** 06-102025-020
2.		Dr. Faryal Gul, Medicine	06-102025-021 **to** 06-102025-045
3.		Dr. Hira Faisal, Pathology	06-102025-049 **to** 06-102025-075
4.	Dr. Quratulain Jawaid, Anatomy	Dr. Zehra Tapal, Physiology	06-102025-076 **to** 06-102025-100
5.		Dr. Shadman Nasreen, CHS	06-102025-102 **to** 06-102025-130
6.		Dr. Wajiha Niaz, Eye	06-102025-132 **to** 06-102025-146
7.	Prof. Aisha Qamar, Anatomy	Dr. Tayabba, Biochemistry	06-102025-147 **to** 06-102025-166
8.		Dr. Zainab Fakhr-ul-Qamar, Medicine	06-102025-167 **to** 06-102025-183
9.		Dr. Haya Farrukh, Forensic Medicine	06-102025-184 **to** 06-102025-199
10.		Dr. Fatima Zehra, Physiology	06-102025-200 **to** 06-102025-220

INTRODUCTION TO DEPARTMENTS

- **Primary Disciplines**
  - Anatomy
  - Physiology
  - Biochemistry

- **Parallel Discipline**
  - Community Health Sciences

Department of Anatomy

The Department of Anatomy at Bahria University Health Sciences comprises of well trained and experienced faculty members. The subject of Anatomy is one of the core basic science subjects. The teaching methodology adopted is integrated.

For student learning, the department includes spacious and well-equipped museum, dissection hall, histology laboratory and a micro technique section.

S.NO	Name	Designation
1.	Prof. Yasmeen Mahar	Professor / HOD
2.	Prof. Dr. Aisha Qamar	Senior Professor
3.	Prof. Dr. Tasneem Fatima	Professor
4.	Dr. Quratul Ain Omaeer	Sr. Asso. Prof.
5.	Dr. Ayesha Mehwish	Assistant Professor
6.	Dr. Jawaria Zeeshan	Assistant Professor
7.	Dr. Syed Wajahat Hasib	Assistant Professor
8.	Dr. Shahab Shafi	Senior Lecturer
9.	Dr. Mahail Khan	Senior Lecturer
10.	Dr. Huma Azmat	Senior Lecturer
11.	Dr. S. Bilal Yousuf	Lecturer
12.	Dr. Areeba Younus	Lecturer
13.	Dr. Arooba Akram	Lecturer
14.	Dr. Sara Saeed	Lecturer
15.	Dr. Gul E Zehra	Lecturer

Department of Physiology

Human Physiology is the branch of medicine that deals with the study of functions of human body. It is intimately related with Human Anatomy, Biochemistry, Pharmacology, pathology, Behavioral Sciences. For student learning, the physiology laboratory is very well equipped with latest and modern gadgets, apparatus and instruments.

The learning resources include books, interactive CDs, colorful transparencies, and internet facilities.

S.NO	Name	Designation
1.	Prof. Dr. Shazia Shakoor	Senior Professor / HOD
2.	Prof. Dr. Shaikh Abdul Saeed	Senior Professor
3.	Porf. Dr. Iram Siddiqa	Professor
4.	Prof. Saifullah Shaikh	Professor
5.	Dr. Hina Moazzam	Associate Professor
6.	Dr. Sassi Kanwal	Sr. Asst. Prof
7.	Dr. Fatima Zehra	Sr. Asst. Prof
8.	Dr. Rabia Siddiqui	Assistant Professor
9.	Dr. Sana Akbar	Assistant Professor
10.	Dr. Shazia Junaid	Assistant Professor
11.	Dr. Noor ul Ain	Assistant Professor
12.	Dr. Shadman Nasreen	Senior Lecturer
13.	Dr. Zahra Tapal	Senior Lecturer
14.	Dr. Syeda Faryal Zaidi	Lecturer
15.	Dr. Zakia Aamir	Lecturer
16.	Dr. Saira Hassan Askarey	Lecturer
17.	Dr Muhammad Usman Tayyab	Lecturer

Department of Biochemistry

Biochemistry is the science concerned with the chemical basis of life. The key objective of biochemistry is to learn molecular basis of all biochemical process. Biochemistry encompasses large areas of cell biology, molecular biology and molecular genetics. Biochemistry and medicine are intimately related. Health depends on a harmonious balance of biochemical reactions occurring in the body, and disease reflects abnormalities in biomolecules, biochemical reactions and biochemical processes. Biochemical approaches are often fundamental in illuminating the causes of disease and in designing appropriate therapies.

Biochemistry department has a spacious and well equipped laboratory along with one preparation room.

S. No.	Name	Designation
1.	Prof. Dr. Hasan Ali	Senior Professor / HOD
2.	Prof. Mehreen Latif	Principal / Professor
3.	Dr. Sana Ahmed	Associate Professor
4.	Dr. Sadia Rehman	Associate Professor
5.	Dr. M. Faraz Anwar	Sr. Asst. Prof
6.	Dr. Zara Sami	Assistant Professor
7.	Dr. Misbah Riaz	Assistant Professor
8.	Dr. Afsheen Zehra	Assistant Professor
9.	Dr. Madiha Fiaz	Lecturer
10.	Dr. Tayyaba	Lecturer
11.	Dr. Amna Akhter	Lecturer
12.	Dr. Muhammad Mussa	Lecturer
13.	Dr. Saba Basit	Lecturer

Department of Community Health Sciences

The department of community medicine is responsible for training medical students from the first year to fourth year. During this period, students will learn about the holistic concepts of health including physical, mental, social and spiritual health. Students will be exposed to important concepts of anthropology, behavioral sciences, biostatistics, epidemiology, research methodology, demography, psychology, health economics, sociology, health planning, national health policy, health system and other health related issues.

The department of community medicine plans to equip its students with current concepts in research and their applications. Students will be required to complete one research project of public health importance during their training period which will be published in national and international journals. For student learning, also available are models (manikins),charts at community medicine museum

S. No.	Name	Designation
1.	Prof. Dr. Inayat Hussain Thavar	Senior Professor / HOD
2.	Prof. Farid Midhet Mahmood	Senior Professor
3.	Dr. Fareeha Shahid	Associate Professor
4.	Dr. Talha Khan	Assistant Professor
5.	Dr. Fouzia Shariq	Assistant Professor
6.	Dr. Farrukh Zehravi	Assistant Professor
7.	Dr. Ayesha Ayaz	Assistant Professor
8.	Dr. Hira Shaikh	Senior Lecturer
9.	Dr. Mishal Haque	Lecturer
10.	Dr. Sukaina Abbas	Lecturer

Department of Medical Education (DME)

Department of Medical Education is an academic and administrative department that aims to provide educational information and facilitate standards implementation and enhancement in health care delivery. It provides a platform for activities in the areas of curriculum planning and delivery, teaching and learning, student assessment, mentoring and counseling, capacity development, and continuing professional development. Department of Medical Education, BUMDC provides a wide range of educational services to faculty and a disciplined approach to manage academic challenges. This department emphasizes on evidence-based education for improving professional medical and dental education. Following faculty members are serving in this department

S. No.	Name	Designation
1.	Maj. Gen. Prof. Shehla M. Baqai HI(M)	Joint Director, DME-Additional responsibility
2.	Dr Khadija Farrukh	Assistant Professor & HOD
3.	Dr Shazia Fakhir	Assistant Professor

CURRICULUM GUIDELINES

Module I General Basic Sciences Cell Biology
Duration 10 Weeks

Module II A Musculoskeletal System
Duration 9 Weeks

Module II B Heme and Immune system
Duration 4 Weeks

Module III A Cardiovascular System
Duration 6 Weeks

Module III B Respiratory System
Duration 6 Weeks

Learning Objectives

Module-I
General Basic Sciences
Cell Biology

Duration 10 Weeks

Course Learning Outcomes (CLOs)

1. Relate the major systems of the human body and their structures to the common clinical conditions, recognize histological tissue types along with key developmental processes and associated disorders
2. Relate the structure, function, cycle & division of cell to the associated clinical conditions
3. Demonstrate lab safety protocols and recall the basic equipment and solutions required to perform experimental procedures.

Objectives

GENERAL BASIC SCIENCES (GBS)

1. Describe the functional organization of human body (K)
2. Discuss anatomical terms, planes and sections (K)
3. Perform the body movements in different planes (S & A)
4. Correlate the classification of bones with clinical correlates and outline the distinctive characteristics of common types of fractures (K)
5. Relate the classification of cartilage with their location in human body (K)
6. Relate the classification of joints and their movements with clinical correlates (K)
7. Classify muscles based on their location, shape, action, development and type of fibers (K)
8. Explain the structural organization of nervous system (K)
9. Explain the concepts of homeostasis and physiological control systems (K)
10. Differentiate between positive feedback and negative feedback systems, and discuss feed forward system with examples (K)
11. Describe the divisions of body fluids into intracellular, extracellular and intravascular compartments (K)
12. Discuss the concept of energy in relation with diet(K)
13. Discuss the importance of BMR and RQ with respect to clinical scenario(K)
    - SDA
    - Balance Diet
    - Nutritional requirements in pregnancy, lactation & newborn
14. Discuss the role of balance diet and caloric requirement (K)
15. Introduction to laboratory instruments and interpret the laboratory hazards with their clinical significance. (S & A)
16. Demonstrate the basic skills of history taking and general physical examination on a standardized patient. (S & A)
17. Relate osmosis, osmotic pressure, surface tension and viscosity with their importance in body fluids (K) (K)
18. Perform the preparation of different solution and its types (S & A)
19. Elaborate the role of pH and dissociation constant (K)
    - Buffering capacity
    - Ionization of water, weak acids, bases
    - Titration curve of weak acids
    - Only application of H-H equation
    - Acid base regulation in human body
    - Biochemical mechanism for control of water and electrolyte balance
20. Explain the buffers and biomedical importance with their mechanism of action (K)
21. Identify pH of different solutions in lab (S & A)

22. Operate a microscope correctly according to standard operating procedures with knowledge of it's parts and their functions (S & A)
23. Relate the parts of kymograph with their functions. (S & A)
24. Analyze experimental data using major hardware and software components of power lab (S & A)
25. Relate the use and function of basic histological stains (K)
26. Demonstrate the steps of tissue processing; Fixation, Embedding, Sectioning and Staining (S & A)
27. Classify amino acids and their biomedical importance & explain the structure, physical, chemical properties and functions of amino acids with respect to clinical scenario (K)
28. Classify proteins on the basis of functions, physical & chemical properties (K)
    - Classification based on nutrition
    - Importance of proteins/ amino acids in maintenance of body pH
    - Dissociation, titration and importance of amino acids
    - Biochemical role of plasma protein with their clinical disorders
    - Immunoglobulin with their structure and biomedical importance
29. Discuss the structural levels of proteins and correlate the structural abnormalities of proteins with (K)
    a. Amyloidosis
    b. Prions
    c. Denaturation
30. Discuss the clinical importance of proteins in nutrition (covered in nutrition/ medicine)
31. Perform general tests for detection of amino acids in accordance with established protocols and standards (S & A)
32. Perform the separation of amino acids in a given solution by given protocols of paper chromatography (S & A)
33. Perform general tests for detection of proteins/individual protein in accordance with established protocols and standards (S & A)
34. Identify male and female genital organs on the given model (K)
35. Discuss gametogenesis (oogenesis and spermatogenesis) (K)
36. Discuss the uterine and ovarian cycle (K)
37. Explain the events of the first week of development (K)
38. Discuss artificial reproductive techniques (K)
39. Explain the events of second week of development (K)
40. Relate the events of 3rd week of development with its abnormalities (K)
41. Correlate the process of development of primitive streak with congenital malformations (K)
42. Relate the embryological anomalies with 4th week of development (K)
43. Relate the changes during fetal period with congenital abnormalities (K)
44. Relate the abnormalities of placenta with its normal developmental process (K)
45. Explain the types and process of formation of twins (K)
46. Explain teratogens and their effect on developing fetus (K)

CELL BIOLOGY

47. Describe the structure, function & biochemical composition of cell membrane, sub cellular organelles & cytoskeleton(K)

- Biochemistry of eukaryotic & prokaryotic cell
- Related inherited disorder
- Signaling pathways and receptors

48. Correlate the physiological and biochemical aspects of cell membrane with fluid mosaic model (K) (K)
49. Differentiate various modes of transport across the cell membrane (K) (K)
50. Perform osmotic fragility test (S & A)
51. Interpret the effect of different reagents on red cell membrane (S & A)
52. Explain the cell cycle and differentiate between the stages of mitosis and meiosis (K)
53. Relate different types of cell junctional complex with their functional importance (K)
54. Describe various cell signaling mechanisms with examples (K)
55. Relate the microscopic features of covering and glandular epithelium and their surface modifications with their functional importance (K)
56. Identify the epithelial tissues on a given slide (squamous, cuboidal, columnar and transitional tissues) (K)
57. Explain the microscopic features of connective tissues (K)
58. Differentiate between types of connective tissues: loose areolar, adipose, dense regular and irregular connective tissues on the given slide (K)
59. Describe the microscopic structure of the skin, its components (sweat and sebaceous glands, hair follicles, nails, sensory receptors, and fascia), and categorize burns by their severity. (K)
60. Identify the microscopic features of skin on a given slide (K)
61. Discuss structure and biomedical role of nucleosides and nucleotides (K)
    - Chemistry of purines and pyrimidine, their types, structure and function
    - Derivative of purines and pyrimidine and their role in health and disease with implementation in research case
62. Describe the structure, function and different types of DNA & RNA (K)
63. Perform DNA extraction of onion cell with standard protocols (S & A)

CLINICAL SCIENCES

64. Relate the various forms of edema with changes in body fluid compartments
65. Relate the abnormalities at cellular and genetic level with organelles and normal genetic makeup
66. Describe morphology of reversible and irreversible cell injury.
67. Discuss structural and functional characteristics of different types of immunoglobulins
68. Explain the clinical manifestation of hypoproteinemia

BIOMEDICAL ETHICS

69. To introduce medical students to the discipline of Bioethics
70. To discuss various historical events which led to the evolvement of Bioethics

FAMILY MEDICINE

71. Describe the concept of family medicine and general practice
72. Identify the principles of family medicine as bio-psycho-social model as (patient – centered communication psychosocial awareness, patient education)
73. Explain about comprehensive care
74. Recognize the importance of continuity of care

75. Discuss the different clinical consultation models
76. Demonstrate various types of communication skills
77. Practice good communication skills to understand doctor-patient relationship

MODULE I

PLOs	MIT	CLOs	Anatomy	Physiology	Biochemistry	Bioethics	Assessment tools
1, 2, 4, 5, 6, 8, 9, 10	LGIS	1,2	4-8,35,37-40,53,55-60	1,9,10, 11,47,48, 49,52,53, 54	12,13,14,17,19,20,27, 28,29,30,47,48,49,61, 62		MCQs, SAQs, OSPE, Viva
	SGD	1,2	4-8,35,37-40,53,55-60	1,9,10, 11,47,48, 49,52,53, 54	12,13,14,17,19,20,27, 28,29,30,47,48,49,61, 62	69,70	MCQs, SAQS, interactive sessions grading sheet
	DEMO /DIS	1,2	2,3,34,36				MCQs, SAQs, OSPE, Viva
	PBL	1,2	45,42	9, 10, 11	61		PBL assessment sheet
	Lab Skills	3	22,25,26	16, 22 - 24,50, 51	15, 18,21,31,32,33,63		OSPE, Viva
	Assignments	1,2	22,25,26	9, 10, 11, 48 – 51, 65	61		Assignment grading sheet
	Self-study	1,2	2,3,34,36, 4-8,35,37-40,53,55-60	65	17,19,29,30,62		Assignment grading sheet
	Students' presentations	1	2,3,34,36	9,10, 11, 48 -51, 65			Presentation grading sheet
	Case studies	1,2					

MIT: Mode of information transfers
LGIS: Large group Interactive session
SGD: Small group discussion
Demo: Demonstration
DIS: Dissections
PBL: Problem based learning

Module II A

Musculoskeletal System

Biochemistry of Carbohydrates, Minerals & Vitamins

Duration 9 weeks

Course Learning Outcomes (CLOs)

4. Analyze the anatomy of the musculoskeletal system by correlating the gross features of the upper and lower limbs with clinical conditions and interpreting the microscopic structure of bones, muscles, and cartilage for health and disease
5. Develop concepts of physiological and biochemical aspects of the musculoskeletal system.
6. Apply the biochemical knowledge of carbohydrates and vitamins along to clinical scenarios

Objectives

78. Demonstrate the general features and attachments of: (K)
    a. Clavicle
    b. Scapula
    c. Humerus
    d. Radius
    e. Ulna
    f. Bones of hand
79. Relate the microscopic features of different types of cartilage with their location (K)
80. Compare the microscopic features of different types of cartilage on the given slides (K)
81. Explain the microscopic features of compact and spongy bone (K)
82. Distinguish between the microscopic features of compact and spongy bone on the given slides (K)
83. Explain the microscopic features of skeletal and smooth muscles (K)
84. Differentiate between the microscopic features of skeletal and smooth muscles on the given slides (K)
85. Relate the anterior and posterior axio-appendicular muscles with their clinical correlates (K)
86. Discuss the muscles of the pectoral region and Clavipectoral fascia (K)
87. Correlate the clinical conditions with the articulating bones, types, ligaments and movements of: (K)
    a. Acromioclavicular and Sternoclavicular joints
    b. Shoulder joint (rotator cuff muscles and shoulder girdle)
    c. Elbow joint
    d. Superior and Inferior radioulnar joints
    e. Wrist joint
    f. Joints of hand
88. Relate the aberrations of normal development and involution of mammary gland with its structure, neurovascular supply, lymphatic drainage and clinical importance (K)
89. Explain the boundaries and contents of axilla (K)
90. Correlate the neurovascular supply of the muscular compartment of arm with clinical anatomy (K)
91. Relate the injuries at various levels of brachial plexus with its formation and branches
92. Compute the equilibrium potential of various ions that maintain the resting membrane potential of a cell membrane**. (K)**

93. Describe stages of action potential along with ionic basis using the aid of a diagram (K)
94. Classify the nerve fiber types according to myelination, diameter and conduction velocity (K)
95. Discuss the characteristic properties of a nerve fiber on the basis of: Strength duration curve, all or one law, summation, conductivity, excitability, infatiguability, refractory period, accommodation. (K)
96. Identify different types of polyneuropathies (K)
97. Describe the process of degeneration and regeneration in a nerve fiber (K)
98. Explain the anterior and posterior muscular compartments and the neurovascular supply of forearm (K)
99. Discuss the boundaries and contents of the cubital fossa (K)
100. Relate the extent, relations and branches of axillary, brachial, radial and ulnar arteries with clinical conditions (K)
101. Enumerate the arteries taking part in the anastomosis around scapula and elbow joint (K)
102. Illustrate and label neuromuscular junction (S)
103. Discuss the components of neuro muscular junction and events taking place during neuromuscular transmission. (K)
104. Explain different neuromuscular inhibitors and stimulators at different stages of neurotransmission (K)
105. Correlate different disorders of neuromuscular junction with its functions. (K)
106. Correlate the clinical anatomy of flexor and extensor retinacula with their attachments and structures passing superficial and deep to them (K)
107. Discuss the features of palmar aponeurosis and its clinical significance (K)
108. Correlate the spaces of hand with their surgical importance
109. Relate the neurovascular supply and actions of intrinsic muscles of hand with their clinical correlates (K)
110. Explain the superficial and deep palmar arches of hand (K)
111. Relate fractures and dislocation of bones and joints of upper limb with neurovascular injuries (K)
112. Explain the types of muscle on their functional basis (K)
113. Describe the events leading to contraction and relaxation on molecular basis in skeletal muscle and differentiate between isotonic and isometric muscle contraction (K)
114. Explain the properties of skeletal muscle and differentiate between fast and slow muscle fibers (K)
115. Explain the role of physical medicine
116. Distinguish between the cutaneous supply and dermatomes of upper limb
117. Perform the surface marking of following structures on a standardized subject (S&A)
    a. Brachial artery
    b. Radial artery
    c. Ulnar artery
    d. Superficial and deep palmar arches

e. Median nerve
f. Radial nerve
g. Ulnar nerve
h. Flexor and extensor retinacula

118. Interpret the radiographs of upper limb (S)
119. Explain the muscles and neurovascular supply of back (K)
120. Demonstrate the general features and attachments of hip bone, femur, tibia, fibula and bones of foot (S)
121. Correlate the boundaries of greater and lesser sciatic foramina with structures passing through them (K)
122. Explain the muscles and neurovascular supply of the gluteal region (K)
123. Correlate the muscular compartments of thigh and their neurovascular supply with clinical anatomy (K)
124. Correlate the boundaries and contents of the femoral triangle, saphenous opening and adductor canal with clinical conditions (K)
125. Correlate the formation of Lumbosacral plexus with its clinical conditions (K)
126. Correlate the clinical conditions with the articulating bones, types, ligaments and movements of: (K)
    - Hip joint
    - Knee joint
    - Superior and inferior tibiofibular joint
    - Ankle joint
    - Small joints of foot

127. Enumerate the arteries taking part in the formation of cruciate, trochanteric and anastomosis around the knee joint (K)
128. Describe the types of muscular disorders (K)
129. To record EMG during voluntary muscle contractions, and investigate how contractile force changes with increasing demand. (S)
130. To examine the activity of antagonist muscles and the phenomenon of coactivation. (S &A)
131. To stimulate the median nerve at the wrist and record muscle activity from the Abductor pollicis brevis (a thumb muscle) (S & A)
132. Relate the neurovascular supply and actions of muscles of anterior, lateral and posterior compartment of leg with their clinical correlates (K)
133. Enumerate the structures forming the boundaries of popliteal fossa and its contents (K)
134. Explain the extent, branches and tributaries of popliteal vessels (K)
135. Relate the fractures of bones and dislocations of joints of lower limb with their normal anatomy (K)
136. Describe the functional properties of smooth muscle (K)
137. Describe the hormonal and nervous control of smooth muscle contraction. (K)
138. Differentiate between the contraction of smooth, skeletal and cardiac muscle. (K)
139. Identify postmortem changes of muscles after death
140. Discuss the attachment of flexor retinaculum and superior and inferior extensor retinacula and structures passing deep to them with clinical correlates (K)
141. Explain the extent and branches of femoral, posterior & anterior tibial artery (K)
142. Relate compartment syndrome of lower limb with the fascial compartments (K)
143. Explain the course, extent and tributaries of long and short saphenous veins (K)

144. Correlate the muscle layers of foot with their functional anatomy (K)
145. Correlate the arches of foot with their clinical importance (K)
146. Distinguish between the cutaneous supply and dermatomes of lower limb (K)
147. Explain the development of limbs (K)
148. Demonstrate the surface anatomy of the following structures on a standardized patient (S & A)
    - Popliteal artery
    - Superficial and deep peroneal nerve
    - Tibial nerve
    - Superior and inferior extensor retinacula
    - Flexor retinaculum
    - Dorsalis pedis artery
    - Plantar arch
149. Interpret the radiographs of lower limb with clinical conditions(S)
150. Define carbohydrate and classify them (K)
151. Define the following terms
    a) Stereoisomer
    b) Enantiomer
    c) Epimer
    d) Anomer
    e) d& l and D & L sugars
    f) Mutarotation
    g) Chemical and physical properties of CHO (K)
152. Discuss the biomedical importance of carbohydrate with respect to clinical scenario. (K)
153. Discuss the structure and function of: Monosaccharies; Disaccharide; Oligosaccharide; Polysaccharide (K)
154. Elaborate the functions and biochemical importance of different Glycosaminoglycans (K)
155. Differentiate b/w Glycaemic index(GI) &Glycaemic load (GL) (K)
156. Perform analysis of normal and abnormal urine constituents according to established protocols (S & A)
157. Plan dietary chart for slim, overweight, obese and diabetic patient keeping in account of the GI & GL of different food items. (S & A)
158. Perform the detection of different carbohydrate in given sample in accordance to established standards. (S & A)
159. Discuss the sources, absorption, regulation, biochemical function and clinical aspect of: (K)

a) Macro mineral: (sodium, potassium, calcium, chloride, phosphate, sulphur)
b) Micro mineral: iron, zinc, magnesium, selenium ,iodine, copper ,manganese) Chromium, Cadmium

BIOMEDICAL ETHICS

160. To introduce the importance of confidentiality and privacy in patient physician Relationship
161. To discuss the instances when privacy and confidentiality can be breached

MODULE-II A

PLOs	CLOs	MIT	Anatomy	Physiology	Biochemistry	Bioethics	Assessment tools
1, 2, 4, 5, 6, 8, 9, 10	4,5,6	LGIS	79,81,83,85-91,98-100,107,108,110,111,116,119,121,124-127,132-135,140-143,145-147	92-97, 102-105, 112-114,128, 136-139	150,151,152, 153,154,155, 159	83-84	MCQs, SAQs, OSPE, Viva
	4,5,6	SGD	79,81,83,85-91,98-100,107,108,110,111,116,119,121,124-127,132-135,140-143,145-147	92-96, 102-105, 112-115,128-131, 136-139	150,151,152, 153,154,155, 159	83,84	MCQs, SAQS, interactive sessions grading sheet
	4,5,6	DEMO/DIS	78,85,87,90,98,106,107,109,117,118,120,123,124,126,132,144,148,149				MCQs, SAQs, OSPE, Viva
	4,5,6	PBL	111,142		159		PBL assessment sheet
	4,5,6	Lab Skills	80,82,84,148,149	129-131, 138	156, 157, 158		OSPE, Viva
	4,5,6	Assignments	111,125	128	155		Assignment grading sheet
	4,5,6	Self-study	111,142	128	154		Assignment grading sheet

Module-II B

HEME & IMMUNE SYSTEM

Duration 04 Weeks

Course Learning Outcomes (CLOs):

7. To Recognize the gross and microscopic features of reticuloendothelial system with clinical conditions
8. To Comprehend the composition of blood and its components along with the methods of visualizing and computing them using physiological and biochemical knowledge
9. To understand the various mechanisms of defense of the body, along with its clinical correlation

Objectives

162. Describe different components of lymphoid system, (K)
163. Discuss the composition and functions of blood (K)
164. Explain hematopoiesis and its stages (K)
165. Explain the importance of stem cells, progenitor cells, reticulocyte count (K)
166. Discuss factors which regulate hematopoiesis (K)
167. Describe the morphological features of RBCs and changes in anemia with the help of red cell indices (K)
168. Discuss the structure, function and types of hemoglobin and factor affecting and regulating the oxygen binding capacity of Hb(K)
169. Discuss the chemistry and biosynthesis of porphyrins with respect to clinical scenario (K)
170. Discuss the biochemical aspect of different porphyrias with their clinical correlation(K)
171. Discuss the degradation of heme, formation of bile pigment and bile salts, transport and excretion (K)
172. Discuss the biochemical basis of mechanism of development of different types of jaundice with their implementation to research (K)
173. Discuss haemoglobinopathies and their biochemical causes (Hb-S, thalassemia) (K)
174. Discuss the iron metabolism and Hemochromatosis & Hemosiderosis (K)
175. Describe Polycythemia and its types (K)
176. Demonstrate methods of drawing a blood sample for hematological investigation on a mannequin in skills lab (S& A)
177. Determine the erythrocyte sedimentation rate and Rouleaux formation in human subject (S& A)
178. Calculate PCV (hematocrit) by micro hematocrit method (S& A)
179. Estimate haemoglobin in human blood by Sahli's haemoglobinometer (S& A)
180. Compute the RBCs with hemocytometer (S& A)
181. Explain the macroscopic and microscopic features of: (K)
    a. Thymus
    b. Lymph nodes
    c. Tonsils
    d. Spleen
182. Relate the secondary lymphoid tissues in the body with their clinical importance
183. Classify white blood cells on the basis of morphology and function (K)
184. Describe the defense mechanism of the human body against invading agents. (K)
185. Identify the functional significance of monocyte macrophage system (K)
186. Correlate immune tolerance with MHC complex and HLA typing (K)
187. Classify white blood cell disorders (leukemia and lymphoma) and compare pathologic features of each category
188. Discuss complement system and its mechanism of action (K)

189. Describe the pathophysiology of hypersensitivity reactions along with its types (K)
190. Describe the basis of autoimmunity and relate it to various autoimmune diseases. (K)
191. Define transplantation and its types. (K)
192. Compute total leukocyte count with the help of hemocytometer. (S& A)
193. Distinguish different types of leucocyte on the given slides. (S& A)
194. Understand the basis of major and minor blood groups. (K)
195. Relate the basis of Rh system with Rh incompatibility. (K)
196. Enlist the components of blood which can be separated and used in clinical practice
197. Discuss the hazards of blood transfusion. (K)
198. Describe the steps in primary and secondary hemostasis (K)
199. Describe natural and clinical anticoagulants and their differences (K)
200. Describe antiplatelet, anticoagulant and thrombolytic drugs (K)
201. Explain the fibrinolytic system of the body & factors affecting it (K)
202. Determine the relation of bleeding disorders with normal hemostasis (K)
203. Estimate bleeding time, clotting time, APTT and PT. (S& A)
204. Estimate total platelet count by using a Hemocytometer (S& A)
205. Determination of blood group in human blood (Blood typing) (S& A)
206. Describe medico legal importance of blood group (K)
207. Discuss the biochemical role and clinical aspect of following. (K)
    a. Fat soluble Vitamin: A, D, E, K
    b. Water soluble vitamin: Vitamin C, B1, folic acid, thiamine, pyridoxine, riboflavin, nicotinic acid, pantothenic acid, biotin, and B12)

FAMILY MEDICINE

208. Demonstrate blood pressure monitoring in skills lab and apply on patients/simulator
209. Illustrate the sites of checking pulse and explain its practical implications
210. Examine fever by using thermometer and assess its clinical interpretation
211. Demonstrate checking of respiratory rate in adults and children with its medical significance
212. Illustrate the use of pulse oximeter for oxygen saturation and explain its importance

MODULE-II B

PLOs	**CLOs**	**MIT**	**Anatomy**	**Physiology**	**Biochemistry**	**Assessment tools**
1, 2, 4, 5, 6, 8, 9, 10	7,8,9	LGIS	181,182	162-168, 175, 182-192, 195--202	168, 169, 170, 171, 172, 173, 174, 207	MCQs, SAQs, OSPE, Viva
	7,8,9	SGD	181,182	162-168, 175-180, 182-202	168, 169, 170, 171, 172, 173, 174, 207	MCQs, SAQS, interactive sessions grading sheet
	7,8,9	DEMO/DIS				MCQs, SAQs, OSPE, Viva
	7,8,9	PBL		189,203	174, 207	PBL assessment sheet
	7,8,9	Lab Skills	181	176-179, 193, 194,204-206		OSPE, Viva
	7,8,9	Assignments	181,182	191, 192, 197, 207	173	Assignment grading sheet
	7,8,9	Self-study		191, 192, 197, 207	169, 171, 173	Assignment grading sheet
	7,8,9	Case studies	181,182	167,196		

Module-III A

CARDIOVASCULAR SYSTEM

Duration 06 weeks

Course Learning Outcomes (CLOs)

10. Correlate the gross & microscopic anatomical features of cardiovascular system and its functionality with clinical conditions
11. Correlate the developmental anatomy of cardiovascular system with congenital anomalies.
12. Associate the chemistry of lipids and aspects of enzymology with clinical disorder

Objectives

213. Relate the movements of thoracic cage with the bones and joints (K)
214. Correlate the outlet syndrome with the margins of thoracic inlet and outlet and the structures passing to and from them (K)
215. Analyze the divisions, boundaries and contents of mediastinum in the light of their clinical correlates (K)
216. Relate the intercostal spaces and their contents and thoracocentesis (K)
217. Correlate the gross external and internal structure of heart with cadaveric specimen (K)
218. Explain the fibrous skeleton of heart (K)
219. Correlate the neurovascular supply of heart in relation to coronary heart diseases (K)
220. Explain microscopic features of cardiac muscle (K)
221. Identify the microscopic features of cardiac muscle on a given slide (K)
222. Correlate the normal development of cardiovascular system with congenital anomalies (K)
    a. Atrial septal defect
    b. Ventricular septal defect
    c. Tetralogy of Fallot
    d. Patent ductus arteriosus
    e. Transposition of great vessel
223. Relate fetal circulation with the changes that occur at birth (K)
224. Explain the phases of action potential in a cardiac muscle (K)
225. Describe the pacemaker action potential and conduction pathway (K)
226. Perform precordial examination on a standardized patient (S & A)
227. Record the normal heartbeat of frog. (S & A)
228. Study the effect of drugs, ions and temperature on frog's heart. **(S & A)**
229. Interpret the information gained in normal electrocardiogram on a standardized patient **(S & A)**
230. Interpret ECG changes in health and angina, myocardial infarction, AV Blocks and arrhythmias (S & A)
231. Discuss enzymes, their general properties and classification Terms: co-enzymes, apoenzymes, holoenzymes, metalloenzymes, cofactor & their importance (K)
232. Described the mechanisms of enzyme catalyzed reactions and various factors affecting enzyme activity (K)
233. Describe various types of enzyme inhibition and how the enzyme activity is regulated (K)
234. Discuss the various isoenzymes with their biochemical role and clinical importance (K)
235. Perform the activity of different factors on salivary amylase (S & A)

236. Describe electrical and mechanical changes that take place during cardiac cycle along with volume and pressure changes (K)
237. Correlate normal and abnormal heart sounds with cardiac cycle (K)
238. Document the main determinants of cardiac output (K)
239. Justify the relation between venous return and cardiac output (K)
240. Describe cardiac output, preload, after load and ejection fraction in relation with Frank- Starling law. (K)
241. Record blood pressure on a standardized patient by various methods including power lab (S & A)
242. Outline the determinants of mean arterial pressure (K)
243. Calculate heart rate by examination of arterial pulse (S & A)
244. Calculate the target heart rate (S & A)
245. Describe right and left heart failure (K)
246. Relate the position, extent and branches of ascending aorta, arch of aorta and descending aorta with their clinical correlates
247. Differentiate between the gross and microscopic features of elastic arteries, muscular arteries and arterioles along with histological alterations occurring in the intima during atherosclerosis or arteriosclerosis
248. Distinguish between the gross and microscopic features of large, medium and small sized veins
249. Differentiate between the gross and microscopic features of continuous, fenestrated and sinusoidal capillaries
250. Explain the gross and microscopic features of lymph vessels
251. Distinguish between the microscopic features of artery and vein on the given slides
252. Discuss the extent and relations of pulmonary trunk, superior and inferior vena cava
253. Perform the surface marking of heart borders, heart valves, arch of aorta and superior vena cava on a standardized patient (S&A)
254. Differentiate between the normal and added heart sounds on standardized patients and mannequins in skills lab (S&A)
255. Explain hemodynamic mechanisms and correlate them with determinants of blood flow (K)
256. Define blood pressure, systolic, diastolic, pulse and mean arterial pressure. (K)
257. Describe role of vasomotor center in nervous control of blood pressure (K)
258. Explain the compensatory mechanisms (short, intermediate and long-term) of blood pressure regulation. (K)
259. Discuss the pathophysiology of Hypertension. (K)
260. Classify antihypertensive agents.
261. Describe the pulmonary, systemic circulation (K)
262. Discuss the role of Starling forces in capillary exchange and microcirculation in the tissues, alveoli and glomeruli. (K)
263. Relate the prevention of lymph edema with the role of lymphatic system. (K)
264. Discuss causes and clinical manifestation of acute and chronic arterial ischemia. (K)
265. Describe the factors which modify venous circulation. (K)
266. Classify shock and describe the stages of shock. (K)
267. Demonstrate the effect of exercise on cardiovascular system. (S & A)
268. Discuss the biomedical functions of lipids and their classifications (K)

269. Define, classify fatty acids and their biomedical importance (K)

a) Discuss the essential fatty acids and their biomedical importance

270. Discuss the sources, properties, and biomedical role of cholesterol and TG (K)
    - Ketone bodies
    - Phospholipids
    - Glycolipids
    - Sphingolipids
    - Bile acid and salt

271. Discuss the role of different lipoproteins in the development of atherosclerosis. (K)
272. Discuss the various properties of lipids such as saponification and rancidity. (K)
273. Discuss the biochemical role of eicosanoids (prostaglandins, leukotrienes, thromboxanes and prostacyclins) (K)
274. Discuss lipid per oxidation and its significance (K)
275. Perform detection of lipids and fatty acids in given sample (S & A)
276. Describe free radical formation with their clinical significance. (K)
277. Perform milk analysis by separating different components of residue and filtrate. (S& A)
278. Perform CSF analysis by separating different components according to standard protocols and techniques. (S&A)

FAMILY MEDICINE

279. Calculation of BMI and its interpretation
280. Assessment of general physical examination in adults and pediatric population
281. Explain the protocols used during a general physical examination
282. Outline the necessary steps to prepare the patient for general physical examination
283. Apply the skills for general physical examination on patients/simulator

MODULE III A

PLOs	CLOs	MIT	Anatomy	Physiology	Biochemistry	Assessment tools
1, 2, 4, 5, 6, 8, 9, 10	10,11,12	LGIS	213-220, 222, 223, 246 -250, 252	224,225, 229, 230, 236-240, 242,245, 255-267	231, 232, 233, 234, 268, 269, 270, 271, 272, 273, 274, 276	MCQs, SAQs, OSPE, Viva
	10,11,12	SGD	213-220, 222, 223, 246 -250, 252	224, 225, 229-230, 236-240, 255-267	231, 232, 233, 234, 268, 269, 270, 271, 272, 273, 274, 276	MCQs, SAQS, interactive sessions grading sheet
	10,11,12	DEMO/ DIS	216-218,253,254			MCQs, SAQs, OSPE, Viva
	10,11,12	PBL	219,222	233, 239, 266	234, 270	PBL assessment sheet
	10,11,12	Lab Skills	221,251	229-233, 244,246, 247,257, 270	235, 275, 277, 278	OSPE, Viva
	10,11,12	Assignments	,222,252	262, 267	234	Assignment grading sheet
	10,11,12	Self-study	222,253,254	262, 263, 267	268,270	Assignment grading sheet
	10,11,12	Case studies	219,222	233		

Module-III B

RESPIRATORY SYSTEM

Duration 06 weeks

Course Learning Outcomes (CLOs):

13. Relate the morphology, microscopic features, and developmental anatomy of the upper and lower respiratory tracts to respiratory disorders, and associated congenital malformations
14. To understand the functional organization, mechanics, volumes and capacities of respiratory system
15. To comprehend the diffusion and transport of gases, along with the disorders of respiration

Objectives

284. Explain the gross features of nasal cavity (K)
285. Explain the anatomical location, structure and the functions of paranasal air sinuses (K)
286. Explain the gross anatomical features of nasopharynx and laryngopharynx (K)
287. Relate the cartilage, joints, ligaments, membranes, cavity, muscles, and neurovascular supply of larynx with its clinical correlates (K)
288. Relate the respiratory muscles and accessory muscles of respiration with pump handle and bucket handle movements (K)
289. Analyze the parts, attachments, apertures and neurovascular supply of diaphragm with its clinical correlates (K)
290. Relate the gross structure and neurovascular supply of trachea and bronchial tree with clinical correlates (K)
291. Discuss the surfaces, borders, fissures, lobes, root and neurovascular supply of the lungs and bronchopulmonary segments with clinical correlates (K)
292. Relate the gross and microscopic changes that occur in respiratory system in relation to COVID – 19 (K)
293. Explain the microscopic features of upper and lower respiratory tract (K)
294. Differentiate between the microscopic features of trachea, bronchus and lungs on the given slide (K)
295. Correlate the layers, functions and neurovascular supply of pleura with clinical conditions (K)
296. Explain the development of: (K)
    - Nose
    - Paranasal sinuses
    - Larynx
    - Trachea
    - Lungs and bronchial tree
    - Pleura
    - Diaphragm
297. Explain the drainage and tributaries of azygos and hemiazygos system of veins (K)
298. Analyze the lymphatic drainage of thorax in relation to the thoracic and right lymphatic duct (K)
299. Discuss the functional organization of human respiratory tract (K)
300. Explain the mechanics of respiration (K)
301. Describe compliance of lungs and its significance (K)
302. Describe the biochemical composition of pulmonary surfactant and its roles (K)
303. Relate infant respiratory distress syndrome (IRDS) with the role of surfactant (K)
304. Discuss Ventilation perfusion ratio among different zones of lung. (K)
305. Discuss pulmonary volumes, capacities and their importance in pulmonary functional studies (K)

306. Classify obstructive and restrictive lung diseases and their effects on pulmonary function tests. (S & K)
307. Name the different parts of a mechanical ventilator
308. Enlist the bronchodilator drugs
309. Perform the examination of respiratory system on a standardized patient and record the normal respiratory pattern in voluntary apnea, hyperpnea, deglutition, coughing (S & A)
310. Observe, record and compute pulmonary volumes and capacities and compare the observed values with average values with the help of power lab(S & A)
311. Measure parameters of forced expiration that are used in evaluating pulmonary function (S & A)
312. Evaluate Peak Expiratory flow rate on a standardized patient (S & A)
313. Discuss the mechanism of development of pulmonary edema and its clinical manifestation
314. Discuss diffusion of gases across the respiratory membrane (K)
315. Describe effects of physiological shunts and physiologic dead space (wasted ventilation) on pulmonary gas exchange. (K)
316. Interpret oxyhemoglobin dissociation curve and discuss the factors responsible for its shift (K & S)
317. Discuss modes of transport of oxygen & carbon dioxide in lungs and peripheral tissues (K)
318. Observe the respiratory monitoring of a critically ill patient
319. Discuss nervous and chemical regulation of respiration (K)
320. Describe the mechanisms for the shift in alveolar ventilation as a result of ascent to high altitude (K)
321. Describe the significance of the feed forward control of ventilation (central command) during exercise (K)
322. Discuss different types of hypoxia (K)
323. Discuss the role of oxygen therapy in case of disturbance in ventilation perfusion ratio
324. Explain diving physiology and decompression sickness (K)
325. Demonstrate the effect of exercise on respiratory system. (S & A)
326. Perform the surface marking of pleura, lungs and trachea on a standardized patient (S&A)
327. Differentiate between normal and added breath sounds by auscultation of lung fields on a standardized patient, and mannequin in skills lab (S&A)
328. Interpret the radiological features of cardiovascular and respiratory system with normal anatomical features on given X-rays, CT scan and MRI (S&A)

MODULE-III B

PLOs	CLOs	MIT	Anatomy	Physiology	Biochemistry	Assessment tools
1, 2, 4, 5, 6, 8, 9, 10	13,14,15	LGIS	248-293,295, 298	300-306 , 315-326	302,303	MCQs, SAQs, OSPE, Viva
	13,14,15	SGD	248-293,295, 298	300-308 , 315-326	302, 303	MCQs, SAQS, interactive sessions grading sheet
	13,14,15	DEMO/ DIS	289,291, 326,327, 328			MCQs, SAQs, OSPE, Viva
	13,14,15	PBL	298	303,305,318	303	PBL assessment sheet
	13,14,15	Lab Skills	294,327, 326	310-313		OSPE, Viva
	13,14,15	Assignments	248-293	305-306		Assignment grading sheet
	13,14,15	Self-study	248-298	305-306		Assignment grading sheet
	13,14,15	Case studies	298	318		

COMMUNITY HEALTH SCIENCES

Objectives

- Explain the interrelationships between a multitude of factors that can impact on a public health problem including environmental, cultural, social, behavioral, economic, and ethical factors.
- Identify the determinants which influence on health of all age group.
- Evaluate the role of health education program in promotion and maintenance of health.
- Recognize the responsibilities of partners for delivering health care
- Explore the application of social marketing utilization for the betterment of public health
- Discuss Health Promotion-Issues, challenges and opportunities
- Recognize strategies for the improvement of Health Education and related activities in Pakistan' Health Program.
- Identify various methods of communication skills and convey positive information with the help of health education materials.

Teaching Strategies	Assessment Tools
Discussion LGIS SGD	Assignment Quizzes BCQs and SEQs

Block Teaching

- Introduction and orientation to CHS
- Concept of health, Definition of health
- Concept of disease and its causation
- Natural History of Disease
- Introduction to health systems in Pakistan
- Health system in Pakistan
- Partners in Health Pakistan
- Examples of effective health promotion activities
- Approaches used in Health education contents, principles, objectives
- Stages of health education
- Evaluating a health education program
- (IEC) and (BCC) Definitions, concepts & applications
- Health of school age children
- Communication methods, barriers and Skills in health education
- Planning & Organizing health education program
- Health Promotion-Issues, challenges and opportunities
- Health education and related activities in Pakistan's' Health Program
- Social marketing basic concept application and examples

Departmental exam of Community Medicine will be conducted at the end of the session

COMMUNICATION, LEADERSHIP AND PROFESSIONALISM

At the end of each academic year student will be able to

Learning objectives	Instructional strategies
• Discuss different styles of communication • Reflect on different methods of communication to decide when each is most suitable • Share the understanding about Leadership • Discuss research based definition of leadership • Describe the principles and practice of leadership in health care • Discuss the different types of leadership • Behave in an ethical manner that inspires trust amongst patients, coworkers, and the public • Function effectively as a team member • Exhibit honesty and integrity in all interaction	• Small group discussion video presentation with multiple scenarios • Role play, • Demonstration on Standardized patients, • Small group exercises, • Student's presentations. • PBL, PSIL, Journal club

COURSE OUTLINE OF COMPUTER SKILLS

Duration: 32 hours.

Course outcomes:

Enable students to:

- Use computer technology as a tool for communication and collaboration
- Use computers for problem solving
- Create productivity materials related to their profession.
- Use computer technology for personal and professional growth.
- Use computer technology for research and generating new knowledge
- Develop confidence and an attitude for the use of computer.

Learning and teaching approaches.

- It is expected that all of the sessions be implemented practically in the computer lab.
- Course is based on interactive exploration technique using lecture, demonstration and practice approach.
- Each session is of 2 hours, total 32 hours.

Course outline

Session #	Topic	Subtopic
1.	Interfacing with computer	Components of system. • Hardware components • Software components. Navigating windows • Operating system. • Control panel, Help File storage and management. • Types of files and extension. • File compression. Data transfer between storage devices.
2 to 5.	Using productivity software. MS Word.	• General introduction. • Creating, saving, and opening documents. • Formatting and editing pages, text, and paragraphs. • Adding pictures to pages (clip art and from file). • Working with tables, charts, and graphs. • Working with diagrams (using the 'draw' feature). • Print preferences, printer properties, and printing a document. • Using preset and advance features of MS word to write research article/ CV/ newsletter/ certificates.
6 & 7	Connecting to internet.	Introduction to internet & world wide Web. • Web browsers, addresses, and links. • Search engines. • Searching for information. • Searching and saving web sources. • Uploading and downloading documents. • Working with online collaboration applications (Google Docs, Google scholar, EndNote.)
8 to 11.	Using productivity software (MS power point.	• General introduction to multimedia application. • Creating, saving, and opening presentations. • Viewing and working with slides • Building presentations (adding, moving/sorting, and duplicating slides). • Making slides look good (applying templates and changing color schemes, slide layout, and background). • Adding pictures and artistic effects (inserting and compressing pictures, applying borders to pictures and other objects, adding 3D effects). • Adding sounds, movies, and links • Adding animations and special effects (applying slide transitions, adding and customizing animations, adding action buttons, turning off animations). • Setting up and playing presentations (printing presentations, setting time). • Using MS power point to create a presentation.
12.	Threats.	Types of threats.

		• Viruses. • DoS attack. • Phishing. • Spoofing. • Social engineering. Approaches to deal with viruses. Computer ethics, copy right, plagiarism.
13 to 16.	MS Excel/spreadsheet.	• General introduction to spreadsheets interface. • Creating, saving, and opening spreadsheets. • Using worksheets (renaming and adding worksheets). • Adding and working with information (formatting cells, adding comments, inserting hyperlinks). • Changing the look of information with spreadsheets (cell alignment, changing font face and size, adding background color to cells and rows, inserting picture). • Doing mathematics (formulas: addition, subtraction, average, logic formula, etc.). • Making charts & graphs (formatting, i.e. background, legend, color of bars, creating pictograph). • Including print properties. • Using MS Excel to create a spreadsheet document.

PAPERWISE DISTRIBUTION OF TOPICS FOR INTEGRATED ASSESSMENT

MODULE I

PAPER	TOPICS	LEARNING OBJECTIVE NUMBER
PAPER - I	Microscope, Tissue processing & staining, Cell, Cell, junctional complex, Epithelium, Connective tissue, microscopic features of integumentary system Cell membrane, cell organelles and cytoskeleton Nutrition, laboratory instruments and laboratory hazards, osmosis, osmotic pressure, surface tension and viscosity with their importance in body fluids, solution preparation, role of pH and dissociation constant, Buffering capacity, Ionization of water, weak acids, bases, Titration curve of weak acids, Only application of H-H equation, Acid base regulation in human body, Biochemical mechanism for control of water and electrolyte balance, buffers and biomedical importance with their mechanism of action, Identification of pH, structure, function & biochemical composition of cell membrane, sub cellular organelles, Biochemistry of eukaryotic & prokaryotic cell, Related inherited disorder Signaling pathways and receptors, fluid mosaic model, various modes of transport across the cell membrane.	22,25,26,53,55-60 47, 48, 52 12,13 14, 17, 19, 20, 47, 48, 49, 15, 18, 21
PAPER- II	Anatomical terms, planes, sections and movements Classification of cartilage, bones, muscles, joints structural organization of cardio vascular, respiratory urinary and nervous system Functional organization of human body, homeostasis, Feedback & feed forward mechanism, Body fluid compartments Genetics Genetics structure and biomedical role of nucleosides and nucleotides, Chemistry of purines and pyrimidine, their types, structure and function, Derivative of purines and pyrimidine and their role in health and disease, structure, function and different types of DNA & RNA, DNA extraction of onion cell, paper chromatography	2-8 1,9,10,11 61, 62 32, 63
PAPER- III	• Identification of male and female genital organs, gametogenesis, uterine and ovarian cycle	34-38

	• Events of the first, second, third and fourth week of development with associated congenital malformations • Artificial reproductive techniques • Embryonic and fetal period, placenta, twins, and teratogenesis Cell signaling mechanism Cell junctional complex Modes of transport across cell membrane Classification of amino acids and proteins, their biomedical importance, structure, physical, chemical properties and functions Importance of proteins/ amino acids in maintenance of body pH, Dissociation, titration and importance of amino acids, Biochemical role of plasma protein with their clinical disorders, Immunoglobulin with their structure and biomedical importance, structural levels of proteins and abnormalities of proteins with Amyloidosis, Prions, Denaturation, Perform general tests for detection of amino acids and proteins	49,53,54 27, 28, 29, 30 31,33

MODULE II

PAPER	TOPICS	LEARNING OBJECTIVE NUMBER
PAPER- I	• Anterior and posterior axio-appendicular muscles, muscles of the pectoral region and Clavipectoral fascia • Acromioclavicular, sternoclavicular, shoulder, elbow, superior & Inferior radioulnar, wrist , and joints of hand • Axilla • Compartment of arm and forearm with clinical anatomy • Injuries at various levels of brachial plexus with its formation and branches • Cubital fossa • Branches of axillary, brachial, radial and ulnar arteries , anastomosis around scapula and elbow joint • Flexor and extensor retinacula • Palmar aponeurosis, Spaces of hand, intrinsic muscles of hand	85-87,89-91,98-101,106-111,116-118,119

	• Superficial and deep palmar arches of hand • Fractures and dislocation of bones and joints of upper limb • Cutaneous supply and dermatomes of upper limb • Surface marking and radiographs of the structures of upper limb • Muscles of the back • Resting membrane potential • Action potential • Nerve fiber & its properties • Neuromuscular junction • Properties of various types of muscle fibers • Contraction of skeletal muscles • Different types of skeletal muscles • Functional properties of smooth muscles • Contraction of smooth muscles & its regulation • Post mortem changes of skeletal muscles Carbohydrate and Classification terms, Stereoisomer, Enantiomer, Epimer, Anomer, d& l and D & L sugars, Mutarotation, Chemical and physical properties of CHO Biomedical importance of carbohydrates, Structure and function of Monosaccharies; Disaccharide; Oligosaccharide; Polysaccharides, Functions and Biochemical importance of different Glycosaminoglycans, Differentiate b/w Glycaemic index(GI) & Glycaemic load (GL), Detection of carbohydrates	(II-A) 92-97,102-105,112-115,128,136-139 II-A 150, 151, 152, 153, 154, 155, 158
PAPER- II	• Greater and lesser sciatic foramina, muscles and neurovascular supply of the gluteal region, muscular compartments of thigh • Boundaries and contents of the femoral triangle, saphenous opening and adductor canal • Lumbosacral plexus • joints of lower limb • Cruciate, trochanteric and anastomosis • Muscles of anterior, lateral and posterior compartment of leg , popliteal fossa • Extent, branches and tributaries of popliteal vessels • Fractures of bones and dislocations of joints of lower limb	121-127,132-135,140-146,148, 149

	• Flexor retinaculum, superior and inferior extensor retinacula • femoral, posterior & anterior tibial artery , compartment syndrome of lower limb • long and short saphenous vein • Muscle layers of foot , arches of foot • cutaneous supply and dermatomes of lower limb • surface anatomy and radiology of the structures of lower limb • Composition & functions of blood • Hemopoiesis/erythropoiesis • RBCs & red cell indices • Anemia & polycythemia • Blood grouping (ABO & Rh system) • Mismatch of blood grouping Structure, function and types of hemoglobin and factor affecting and regulating the oxygen binding capacity of Hb, chemistry and biosynthesis of porphyrins biochemical aspect of different porphyrias degradation of heme, formation of bile pigment and bile salts, transport and excretion, biochemical basis of mechanism of development of different types of jaundice, haemoglobinopathies and their biochemical causes (Hb-S, thalassemia) Dietary plan	II- B (163-167, 175, 194- 198) II-B 168, 169, 170, 171, 172, 173, 174, 157
PAPER- III	• General features and attachments of bones of upper limb, microscopic features of different types of cartilage, compact and spongy bone, skeletal and smooth muscles, • Aberrations of normal development and involution of mammary • General features and attachments of hip bone, femur, tibia, fibula and bones of foot • Development of limbs • Macroscopic and microscopic features of Thymus, Lymph node, Tonsils, Spleen • Secondary lymphoid tissues • WBC classification & their functions • Defense mechanism (inflammation) • Function of neutrophils & free radicals • Monocyte-macrophage system • Immune tolerance & MHC complex • Complement system • Hypersensitivity • Autoimmunity & transplantation • Hemostasis • Natural and artificial anticoagulants	78-84,88,147,181,182 II- B (183-191) II A 156, 159 II B 207

	• Bleeding disorders Sources, absorption, regulation, biochemical function and clinical aspect of Macro mineral: (sodium, potassium, calcium, chloride, phosphate, Sulphur), Micro mineral: (iron, zinc, magnesium, selenium, iodine, copper ,manganese, Chromium, Cadmium) Biochemical role and clinical aspect of Fat soluble Vitamin: A,D,E,K, water soluble vitamin: Vitamin C, B1, folic acid, thiamine, pyridoxine, riboflavin, nicotinic acid, pantothenic acid, biotin, and B12), Urine analysis	

MODULE III

PAPER	TOPICS	LEARNING OBJECTIVE NUMBER
PAPER- I	• Movements of thoracic cage with the bones and joints, thoracic outlet syndrome, margins of thoracic inlet and outlet • Mediastinum, intercostal spaces and their contents • Gross external and internal structure of heart, fibrous skeleton of heart • Neurovascular supply of heart • Ascending aorta, arch of aorta and descending aorta • Pulmonary trunk, superior and inferior vena cava • Surface marking of heart, heart valves, aorta and superior vena cava on a standardized patient • Auscultation the normal heart sounds on a standardized patient • Drainage and tributaries of azygos and hemiazygos system of veins • Lymphatic drainage of thorax • Properties of cardiac muscle • Cardiac muscle action potential	213-219,252-254,297,298 III-A (224, 225, 230,236-240,242,245)

	• Conductive pathway & pacemaker action potential • ECG • Cardiac cycle • Heart sounds & murmurs • Cardiac output & its determinants Biomedical functions of lipids and their classifications, Define, classify fatty acids and their biomedical importance, essential fatty acids and their biomedical importance, cholesterol, Ketone bodies, Bile acid and salts, role of different lipoproteins in the development of atherosclerosis, detection of lipids and fatty acids	III-A 268, 269, 270,271,275
PAPER- II	• Microscopic features of cardiac muscle (K) • Correlate the normal development of cardiovascular system with congenital anomalies • Fetal circulation • Gross and microscopic features of elastic arteries, muscular arteries and arterioles, large, medium and small sized veins, continuous, fenestrated and sinusoidal capillaries • Gross and microscopic features of lymph vessels • Gross and microscopic changes that occur in respiratory system in relation to COVID – 19 • Microscopic features of upper and lower respiratory tract • Pleura with clinical correlates • Describe the development of respiratory system • Mean arterial pressure & its determinants • Blood pressure and its regulation • Hypertension, right & left heart failure • Hemodynamics/ local control of blood flow • Microcirculation/ Pulmonary, splanchnic & systemic circulation • Lymphatic system • Shock • Functional organization of respiratory system • Mechanics of respiration • Pulmonary ventilation • Ventilation perfusion ratio Physical and chemical properties of lipids, identification of fats biochemical role of eicosanoids (prostaglandins, leukotrienes, thromboxanes and prostacyclins), lipid per oxidation and its significance, free radical formation, Phospholipids, Glycolipids, Sphingolipids, Milk analysis, CSF analysis	220-223 247-251, 292-296 III-A 270,272, 273, 274, 276, 277, 278 III-B 302, 303 III-A (255- 267) III-B (299-301,304-308,311)

PAPER- III	• Gross features of nasal cavity, paranasal air sinuses, nasopharynx and laryngopharynx, larynx, Diaphragm • respiratory muscles and accessory muscles of respiration • Gross structure of trachea and bronchial tree, lungs and bronchopulmonary • Surface marking, auscultation and radiographs of structures of respiratory system • Pulmonary volumes & capacities & clinical significance • Diffusion of gases • Transport of gases • Regulation of respiration • Effect of exercise on CVS & respiration • Respiratory changes at high altitude & deep sea • Hypoxia Enzymes, properties and classification, Terms: co-enzymes, apoenzymes, holoenzymes, metalloenzymes, cofactor, mechanisms of enzyme catalyzed reactions and various factors affecting enzyme activity, various types of enzyme inhibition and regulation, various isoenzymes with their biochemical role and clinical importance, Enzyme analysis	284-291 326-328 III-B (314-325) III-A 231, 232, 233, 234, 235

LEARNING RESOURCES

RECOMMENDED BOOKS

Anatomy

1. K.L. Moore, Clinically Oriented Anatomy
2. B. Young, J.W. Heath Wheather's Functional Histology
3. Keith L. Moore. The Developing Human
4. Medical Histology by Laiq Hussain
5. Langman's Medical Embryology
6. Junqueira's Basic Histology
7. Clinical Anatomy by Regions - Richard S. Snell

Physiology

8. Arthur C. Guyton, John E. Hall., Textbook of Medical Physiology
9. Sherwood, Lauralee. Human Physiology: from cells to systems

Biochemistry

10. Robber K. Murray, Daryl K. Granner, Peter A. Mayes, Victor W. Rodwell. Harper's Biochemistry
11. Pamela C. Champe, Richard A. Harvey. Lippincott's Illustrated Review of Biochemistry

CHS

12. K. Park, Parks Textbook of Preventive & Social Medicine
13. Muhammad Ilyasetal, Community Medicine and Public Health
14. Kumza JW, Bohnenblust SE. Basic Statistics for the Health Sciences

Family Medicine

15. Oxford Handbook of Family Practice.

ACADEMIC CALENDAR

BAHRIA UNIVERSITY HEALTH SCIENCES CAMPUS KARACHI

First Professional MBBS

Batch 2024-2029

Academic Calendar

SESSION STARTS

11th February 2025 (Tuesday)

FIRST MODULE (10 WEEKS)

Pre-Vacation Session (07 Weeks)

Module Starts	-	11th February 2025 (Tuesday)
Module Breaks	-	28th Mar 2025 (Friday)
Eid-ul-Fitr Vacations*	-	31st Mar 2025 to 4th Apr 2025 (Monday to Friday)

Post-Vacation Session (03 Weeks)

Module Starts	-	7th Apr 2025 (Monday)
Module Ends	-	25th Apr 2025 (Friday)
Theory Examination	-	28th, 29th & 30th Apr 2025 (Monday, Tuesday & Wednesday)
OSPE / Viva Examination	-	2nd, 5th & 6th May 2025 (Friday, Monday & Tuesday)

SECOND MODULE (13 WEEKS)

Pre-Vacation Session (05 Weeks)

Module Starts	-	7th May 2025 (Wednesday)
Module Breaks	-	6th Jun 2025 (Friday)
Eid-Ul-Adha & Annual Vacations*	-	9th Jun 2025 to 20th Jun 2025

Post-Vacation Session (09 Weeks)

Module Starts	-	23rd Jun 2025 (Monday)
Module Ends	-	15th Aug 2025 (Friday)
Theory Examination	-	18th, 19th & 20th Aug 2025 (Monday, Tuesday & Wednesday)
OSPE / Viva Examination	-	21st, 22nd & 25th Aug 2025 (Thursday, Friday & Monday)

THIRD MODULE (12 WEEKS)

Module Starts	-	26th Aug 2025 (Tuesday)
Module Ends	-	14th Nov 2025 (Friday)
Theory Examination	-	17th, 18th & 19th Nov, 2025 (Monday, Tuesday & Wednesday)
OSPE / Viva Examination	-	20th, 21st & 24th Nov & 1st Dec, 2025 (Thursday, Friday & Monday)

FINAL EXAMINATION: - **December 2025 / January 2026**

PROF. DR. SAIFULLAH SHAIKH
Academic Coordinator (Medical)
BUHSCK

DR. KHALID MUSTAFA
Vice Principal (Medical)
BUHSCK

*** Subject to Sighting of Moon**