STUDENT STUDY GUIDE

Parallel Module

MBBS
Academic Year 2023-24

Liaquat University
of Medical & Health
Sciences, Jamshoro

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PREFACE

The MBBS curriculum is designed to prepare the medical student to assume the role of the principal carer for patients. The majority of instruction in the various basic and clinical science disciplines is focused on attaining this objective. The amount of material and specificity that the student must acquire in order to complete the MBBS programme as a whole is substantial. Subject-based instruction affords students the chance to develop comprehensive and profound understanding of each respective subject. However, this instructional framework might result in the student failing to recognize the interconnectedness of knowledge across different disciplines, their interrelation, and most significantly, their significance in the context of patient care.

Over the years, numerous inventive approaches have been devised to tackle these obstacles. One such approach is the integration of instruction at multiple levels, which eliminates and reduces boundaries within subjects, both vertically and horizontally, across phases. LUMHS, while acknowledging the merits of these methodologies, has endeavoured to seize the opportunity to comprehend the interdependencies and minimize duplication in the subjects being instructed through the implementation of an integrated modular approach.

The cardiovascular system, musculoskeletal system, and respiratory system are few examples of system-based modules in an integrated modular curriculum that connects basic scientific knowledge to clinical problems. By means of integrated instruction, subjects are presented as a unified whole. Students can enhance their comprehension of basic scientific principles through consistent application of clinical examples in their learning. A skills lab provides early exposure to the acquisition of skills, case-based discussions, and self-directed learning are all elements of an integrated teaching programme.

LEARNING STRATEGIES

The following instructional and learning strategies are implemented to foster greater comprehension:

- ❖ Interactive Lectures
- ❖ Small group sessions
- ❖ Case-Based Learning (CBL),
- ❖ Self-Study,
- ❖ Practical,
- ❖ Skills lab sessions,
- ❖ Demonstrations
- ❖ Field visits

INTERACTIVE LECTURES

In large group, the lecturer actively involves the students by introducing the topic or common clinical conditions and explains the underlying phenomena by questions, pictures, videos of patients' interviews, exercises, etc. in order to enhance their learning process.

SMALL GROUP TEACHING (SGT):

This strategy is helpful for the students to make their concepts clear, and s acquiring skills or attitudes. These sessions are organized with the help of specific tasks such as patient case, interviews or discussion topics. Students are than encouraged to exchange their ideas and apply knowledge gained from lectures, tutorials and self-study. The facilitator employs probing questioning, summarization, or rephrasing techniques to enhance the understanding of concepts.

CASE- BASED LEARNING:

A format of small group discussion that centres on a sequence of questions derived from a clinical scenario, with the aim of facilitating learning. Students engage in discussions and provide answers by applying pertinent knowledge acquired in clinical and basic health sciences throughout the curriculum.

PRACTICAL:

Basic science practical related to anatomy, biochemistry, pathology, pharmacology and physiology are scheduled to promote student learning by application.

SKILLS LAB SESSION:

Skills relevant to respective module are observed and practiced where applicable in skills laboratory.

SELF DIRECTED LEARNING:

Students take on the responsibility of their own learning by engaging in independent study, collaborating and talking with classmates, accessing knowledge from the Learning Resources available, teachers, and other experts. Students can make use of the designated self-study hours provided by the college.

FIELD VISITS:

Students visit community health areas to understand the common diseases and their preventive measures.

HOSPITAL POSTINGS:

Students attend tertiary care hospital postings and learn common diseases and their management.

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STUDY GUIDE

A study guide is a strategic and effective approach to:

- ❖ Provide students a detailed framework of the modules organization
- ❖ Support students in organising and managing their studies throughout academic year.
- ❖ Provide students information on assessment methods and the rules and regulations that apply.

- It outlines the outcomes which are expected to be achieved at the end of each module.
- Ascertains the education strategies such as lectures, small group teachings, demonstration, tutorial and case based learning that will be implemented to achieve the module objectives.
- Provides a list of learning resources for students in order to increase their learning.
- Emphasizes information on the contribution of attendance, end module tests, block examinations and annual examinations on the student's overall performance.
- Includes information on the assessment methods that will be held to determine every student's achievement of objectives.

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ASSOCIATE PROFESSOR/ CHAIRMAN	
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SENIOR REGISTRAR	
03	Dr. Muhammad Raza Memon
04	Dr. Adeel Memon
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MEDICAL RESEARCH	
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COMMUNICATION SKILLS & PROFESSIONALISM	
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The Parallel Module in the MBBS curriculum is designed to offer a holistic and multidisciplinary approach to medical education by integrating various non-clinical subjects throughout the duration of the undergraduate medical program. These subjects are strategically incorporated alongside the core clinical and basic sciences to provide medical students with a well-rounded and comprehensive skill set essential for their future roles as healthcare professionals.

The Parallel Module spans from the first year to the final year of the MBBS program and covers a range of diverse subjects, including Community Medicine, Behavioural Sciences, Information Technology, Ethics, Research, Communication Skills, Professionalism, Pakistan Study, and Islamiyat.

Community Medicine: Focuses on understanding the health needs of communities, preventive medicine, and public health interventions. It equips students with the knowledge and skills needed to address health issues on a community-wide scale.

Behavioral Sciences: Explores the psychological and social aspects of patient care, emphasizing effective communication, empathy, and the doctor-patient relationship.

Information Technology: Provides students with essential skills in utilizing technology for medical purposes, including electronic health records, medical databases, and other digital tools relevant to healthcare.

Ethics: Addresses ethical principles and dilemmas in healthcare, guiding students in making morally sound decisions and fostering a sense of responsibility and integrity in medical practice.

Research: Introduces the fundamentals of research methodology and encourages students to engage in scientific inquiry, fostering a culture of evidence-based medicine.

Communication Skills: Focuses on developing effective communication skills, including doctor-patient communication, interprofessional communication, enhances teamwork and recognizing the importance of clear and empathetic communication in healthcare settings.

Professionalism: Emphasizes the development of a professional attitude, adherence to standards and codes of conduct in the medical profession leading to the cultivation of a compassionate and patient-centred approach in medical practice.

Pakistan Study and Islamiyat: Provides a contextual understanding of the social, cultural, and religious aspects of the region, helping students appreciate the diverse factors that influence healthcare delivery in their specific cultural context.

By integrating these parallel modules into the MBBS curriculum, students are not only equipped with the necessary clinical knowledge but also develop essential non-clinical skills, attitudes, and values that contribute to their overall competence as future healthcare professionals. This multidimensional approach aims to produce well-rounded physicians capable of addressing the complex and evolving challenges in the field of medicine and contribute meaningfully to the well-being of individuals and communities.

2 COMMUNITY MEDICINE

1st Year MBBS – Spiral 1

S #	1st year - Spiral 1	Lectures	Field visits
1	Basics of Community Medicine	6	-
2	Immunology and EPI	2	1
	Field visit to EPI Center	-	
3	Food & Nutrition	8	-
4	Information, Education & Communication	5	-
5	Musculoskeletal system • School health services • Accident and injuries	2	1
	Field visit to Primary school	-	
	Total lectures	**23**	**2**

BASICS OF COMMUNITY MEDICINE

Learning Outcomes

- The sessions are designed to introduce the basics of Community Medicine and Public health sciences.
- The sessions will cover the Introduction about community medicine and difference between clinical and community medicine.
- The sessions will also clear the concept of health and diseases and their determinants and help in understanding the level of prevention.
- During sessions various National and International health issues and their agendas will be taught.
- At the end of these sessions, students will be able to understand the basics of community medicine, its role and importance for clinicians.

Rationale

Community Medicine is main branch of medicine concerned with the health of people. Its aim is to protect and promote the health and well-being of the community through Primary Health Care approach. Community Medicine plays an important role for making effective intervention and prevention strategies; it is also helpful for greater understanding of the risk factors of chronic disease processes and their effects on function and quality of life. So the essential mission of teaching Community Medicine is to contribute in the development of a well-formed health professionals.

S #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY
1.	• Define different definition of public health/Community Medicine • Learn evolution of public health, it importance in today's world • Discuss the basic functions of Public health/community Medicine • Define the difference between clinical and community medicine • Discuss the Non-Governmental organizations, International agencies and National Programs of Pakistan	**PAR-S-1-CM-1** Introduction to Community Medicine & public Health	

S. #	Learning Objectives	Topic	Teaching Strategy
2.	• Explain the concept of disease and health • Discuss the Spectrum of health and Iceberg phenomenon of disease • Explain the Health Dimensions • Explain determinants of health with special focus on social determinants of health	**PAR-S-1-CM-2** Concept of Health & Disease: Health & its dimension and Determinants of Health	
3.	• Learn about health delivery system of Pakistan • Define the Primary Health Care and its elements. • Discuss the Alma Ata Declaration and Universal Health Care, Astana declaration	**PAR-S-1-CM-3** Health Delivery System of Pakistan (PHC)	
4.	• Explain natural history of disease • Discuss the ice berg phenomenon	**PAR-S-1-CM-4** Natural history of diseases and ice berg phenomenon	

5.	• Explain the concept of disease causation
	  o Ecological triad
	  o Web causation
	• Define the level of prevention
	  o Primodial
	  o Primary
	  o Secondary
	  o Tertiary
		PAR-S-1-CM-5
		Level of Pevention	

6.	• Discuss the Indicator vs health index
	• Define Uses of indicators
	• Identify the Characteristics of good health indicator
	• Explain the Common indicators metrics
	• Describe the Types of indicators
	• Index
	  I. Human development index(HDI),
	  II. Human poverty index(HPI)
		PAR-S-1-CM-6
		Health Indicators
			Lecture

IMMUNOLOGY AND EPI

Learning Outcomes

By the end of Immunology & EPI sessions, the students will be able:

1. To learn about Expanded program of immunization program, EPI Schedule and current situation of EPI in Pakistan.
2. To understand cold chain of vaccine and role of immunization.
3. To describe hazards of unsafe injections and role of health education in prevention of blood born disease.

S. #	Learning Objectives	Topic	Teaching Strategy
1.	• Describe the main features of the Expanded Program on Immunization • Discuss the EPI vaccination coverage status in Pakistan. • Explain mechanism of cold chain and maintenance of vaccines.	**PAR-S-1-CM-7** Expanded Program of immunization	Lecture
2.	• Explain injection safety. • Describe hazards) of unsafe injections and its prevention. • Discuss the blood born disease hepatitis B,C and HIV) due to unsafe injections • Explain the role of health education in prevention of blood born disease.	**PAR-S-1-CM-8** Unsafe injections; hazards and its prevention	

FOOD & NUTRITION

Learning Outcomes

At the end of Nutrition and health sessions, students will be able to:

- Comprehend the public health importance of Nutrition.
- Identify the universal factors of Malnutrition in children < 5 and over 5 years of age.
- Understand the nutritional requirement for different ages and gender.
- Identify the factors for micro and macronutrient deficiencies in Pakistan

S #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY
1.	• Define balanced diet • Describe the different focus groups in a balanced diet. • Understand the importance of a balanced diet • Explain the food pyramid	**PAR-S-1-CM-9** Balanced Diet	
2.	• Describe the importance of knowledge of nutritional requirements at different age groups. • Enumerate the routine dietary requirements and nutritional values at different age groups. • Describe the routine dietary needs of pregnant and lactating mothers.	**PAR-S-1-CM-10** Nutritional requirements for different ages and gender	
3.	• Describe micro and macro-nutrient components. • Comprehend the importance of micro and macro nutrient components. • Enumerate the different factors of micro and macronutrient deficiencies. • Describe the burden of micro and macronutrient deficiency in Pakistan	**PAR-S-1-CM-11** Micro and macro nutritional Deficiencies	
4.	• Describe the malnutrition • Classify the types of malnutrition among children under and over 5 years. • Discriminate between the risk factors responsible for malnutrition among children under and over 5 years of age. • Discuss the epidemiology of Malnutrition in Pakistan. • Discriminate between Kwashiorkor and Marasmus • Discuss the strategies for controlling malnutrition in Pakistan	**PAR-S-1-CM-12** Malnutrition in under and over five years age children	Lecture
5.	• Define the nutritional status, growth and development. • Describe the purpose of nutritional assessment. • Discriminate between internal and external methods of nutritional assessment in children and adults. • Enumerate different nutritional indices in adults	**PAR-S-1-CM-13** Nutritional status assessment	
6.	• Describe food surveillance and its important components • Describe the importance of a food surveillance system. • Enumerate different food-borne diseases and their preventive strategies	**PAR-S-1-CM-14** Food Surveillance	
7.	• Define food preservation, fortification and adulteration. • Describe the public health importance of food preservation and fortification.	**PAR-S-1-CM-15**	

S. #	Learning Objectives	Topic	Teaching Strategy
	• Discriminate between food adulteration and fortification	Food preservation, fortification and adulteration	
8.	• Describe the global epidemiology of food borne diseases. • Classify food born disease • Determine the factors responsible for spread of food borne diseases. • Discuss the prevention of food born disease	**PAR-S-1-CM-16** Food borne diseases	

INFORMATION, EDUCATION & COMMUNICATION

Learning Outcomes:

- The sessions are designed to introduce the basics of Communication and Health Education
- The sessions will enable the graduates to understand the importance of Health Education and its role in prevention of diseases and promotion of Health of the communities
- The sessions will also equip the students with various skills of Communication and modes/methods of transferring health related knowledge to others, which will lead to positive behavior change.
- Social Sciences and its role in Public Health will also be covered, which will ultimately help graduates in understanding and applying the holistic approach of HEALTH

Rationale:

Health Education and Communication is an important specialty of Community Medicine, which aims to spread health awareness amongst masses through well trained healthcare providers. The graduates may apply the knowledge and skills in protection and promotion of health and well-being of the community, which makes it possible that "Prevention is better than Cure".

S. #	Learning Objectives	Topic	Teaching Strategy
1	• Explain the basics of Health Education • Describe the Aims and Objectives of Health Education • Discuss the importance of Health Education	**PAR-S-1-CM-17** Health Education: Concept, Aims and Objectives	
2	• Know about the content and matter used for Health Education • Discuss various Principles of Health Education • Describe the Stages of Health Education	**PAR-S-1-CM-18** Content, Principles and Stages of Health Education	
3	• Know and define term Communication and its various Methods • Elaborate the Barriers of Communication • Highlight the role and skills of Social Marketing in Health Education	**PAR-S-1-CM-19** Communication Methods, Barriers and skills including social Marketing in Health Education	Lecture
4	• Know how to organize a Health Education Program • Explain the Terms of IEC, KAP and BCC, through an example • Know the Steps of: Planning, Organizing and Evaluating the health education program	**PAR-S-1-CM-20** Planning, Organizing and evaluating a Health Education Program	
5	• Be familiar with the field of Social Sciences and its role in Health • Discuss various types of Families	**PAR-S-1-CM-21** Introduction, Types of Families, Social evils	

S. #	Learning Objectives	Topic	Teaching strategy
	• Discuss the social evils and its consequences on Health	including Juvenile delinquency	

SCHOOL HEALTH SERVICES & ACCIDENTS AND INJURIES

Learning Outcomes

By the end of session, the students will be able to:

1. Describe school health services and discuss the musculoskeletal problems among school children.
2. Describe accidents, injuries its types and preventive strategies.

S. #	Learning Objectives	Topic	Teaching strategy
1.	• Define School health services and its importance. • Define the essential health components of school health. • Describe the effect of poor sitting posture on musculoskeletal system. • Describe the duties of school medical officer. • Learn about preventive strategies regarding diseases related to school health.	**PAR-S-1-CM-22** School Health Services	Lecture
2.	• Define the term accidents and injuries. • Learn about the global, regional and local statistics of accidents. • Define the types of accidents. • Identify the common causes of road traffic accidents. • Learn about preventive strategies to overcome the causes.	**PAR-S-1-CM-23** Accidents and Injuries	
Primary school		**Field visit**	

Liaquat University of Medical & Health Sciences, Jamshoro

2nd Year MBBS – Spiral 1

S. #	2nd year - Spiral 1	Number of Lectures
1	Medical Demography	3
2	Epidemiology	10
3	Biostatistics	7
4	Research Methodology	5
	Total lectures	**25**

MEDICAL DEMOGRAPHY

Learning Outcomes

By the end of the course, the participants must be able to:

- Comprehend the basic concepts and definition of Demography
- Describe the concept of population or demographic transition.
- Interpret the population pyramid
- Understand the determinants of fertility and mortality.
- Describe different indicators of population and vital statistics

Rationale

The aim of this course is to provide students with essential information related to Demography and population change, demographic transition, vital and population statistics, determinants of fertility and mortality in a population, interpreting the population pyramid and different information we can get from population pyramid.

S. #	Learning Objectives	Topic	Teaching strategy
1.	• Define population and population studies • Comprehend the basic concepts and definition of Demography • Discuss the population doubling time • Describe the concept of population or demographic transition. • Describe and interpret the population pyramid • Compare the population pyramid of developing and developed countries.	**PAR-S-1-CM-1** Introduction to demography	Lecture
2.	• Define population and vital statistics. • Define fertility and mortality. • Describe the determinants of fertility and mortality. • Describe different indicators of population statistics. • Describe indicators of vital statistics • Determine the factors affecting fertility-related statistics.	**PAR-S-1-CM-2** Demographic indicators	
3.	• Define urbanization • Understand the importance of social mobilization • Determine the social implication of high population growth	**PAR-S-1-CM-3** Urbanization and social mobilization	

EPIDEMIOLOGY

Learning Outcomes

At the end of Epidemiology sessions, students will be able to;

- Demonstrate proficiency in the use of common data sources in descriptive epidemiology and be aware of their strengths and weaknesses.
- Describe epidemiological measures, calculate basic measures, and describe epidemiological patterns of disease occurrence.
- Classify epidemiological study designs and the most appropriate circumstances to use them.
- Describe, implement, and correctly calculate the different measures of occurrence and effects of disease.
- Understand the merits and demerits of epidemiological studies
- Distinguish between association and causation and be aware of the relevant issues in deducing causation from observational designs.
- Verify the ability to review and evaluate observational studies.
- Summarize screening principles and the conditions in which a screening program could be most suitable.

Rationale

This course aims to provide students with a fundamental understanding of epidemiology, including the measurement and interpretation of disease incidence patterns; the use of routine data sources, their advantages, and disadvantages; the design of epidemiological studies and when to use them; and epidemiological causal models.

S. #	Learning Objectives	Topic	Teaching strategy
1.	• Define epidemiology • Describe the basic terminology and concept of epidemiology • Understand the objectives and approaches of epidemiology. • Understand the concept of descriptive epidemiology. • Describe the concept & importance of time place, & person.	**PAR-S-1-CM-4** Introduction to Epidemiology	
2.	• Define surveillance and its role in Epidemiology. • Define outbreak • Discuss the steps of an outbreak investigation. • Describe the Epidemic Curve. • Understand the concept of Epidemic, Endemic, Pandemic and Sporadic.	**PAR-S-1-CM-5** Surveillance and investigation of epidemics	
3.	• Define the measure of occurrences and effects of diseases. • Describe Proportions, Risk, Rate, Ratio and Odds • Understand the concept of prevalence and incidence. • Describe the concept of Crude, specific and standardized rates	**PAR-S-1-CM-6** Measures of occurrence of diseases	Lecture
4.	• Define the principles of causation. • Determine the concept of necessity and sufficiency. • Describe the different models of causation. • Discuss Bradford Hill's criteria of causation.	**PAR-S-1-CM-7** Causation in Epidemiology	
5.	• Discuss the epidemiological study design. • Differentiate between observational and experimental studies. • Identify the key concept of descriptive epidemiology. • Differentiate between Descriptive and analytical studies. • Determine how and when to select appropriate study design	**PAR-S-1-CM-8** Introduction to epidemiological study design	
6.	• Describe case reports and case series.	**PAR-S-1-CM-9**	

	Learning Objectives	Topic	
	• Define cross-sectional study • Discuss the uses of the cross-sectional study. • Compare the relative strengths and weaknesses of Cross-sectional studies	Case-report, Case series, and Cross-sectional study	
7.	• Define the case-control study. • Describe the advantages and limitations of case-control studies. • Analyze and interpret the Odd ratio.	**PAR-S-1-CM-10** Case-control study	
8.	• Define the cohort study • Discuss the importance, uses, and limitations of the cohort study • Analysis and interpretation of relative risk and rate ratio	**PAR-S-1-CM-11** Cohort Study	
9.	• Define Experimental Studies. • Differentiate randomized control trail and non-randomized control trials. • Discuss the importance of randomized control trials.	**PAR-S-1-CM-12** Experimental studies	
10.	• Define screening • Discuss the type of screening • Understand the concept of sensitivity and specificity. • Describe the predictive values.	**PAR-S-1-CM-13** Screening	

BIOSTATISTICS

Learning Outcomes

By the end of sessions, the students will be able to:

- Define Biostatistics and different types of data.
- Describe the different sources of data and their management.
- Classify Variables and Discuss the scales of measurements
- Describe measures of central tendency and measures of dispersion.
- Understand the normal distribution curve
- Classify different sampling techniques

Rationale

This course aims to provide students with a fundamental understanding of Biostatistics, including the measurement of mean, mode, median, range, standard deviation, and variance; the management and use of routine data. Sampling technique and data interpretation using statistical tests.

S. #	Learning Objectives	Topic	Teaching strategy
1.	• Define basic concepts and uses of biostatistics. • Define the data and its types • Define variables and their different types • Describe the different methods of data presentation	**PAR-S-1-CM-14** Introduction to Biostatistics and Data	
2.	• Describe the different sources of health-related data. • Discuss the importance of data management • Describe the collection and registration of vital events in Pakistan. • Define and describe the purpose of a health management information system.	**PAR-S-1-CM-15** Sources and Management of Data	Lecture

S. #	Learning Objectives	Topic	Teaching Strategy
3.	• Define the measures of central tendency. • Define and compute Mean, Mode, and Median • Construct data tables that facilitate the calculation of mean, mode, and median. • Apply the concept of central tendency measures in raw data.	**PAR-S-1-CM-16** Measures of Central Tendency	
4.	• Define the measures of dispersion. • Explain the purpose of measures of dispersion • Define and compute Variance, standard deviation, range, and interquartile range • Construct data tables that facilitate the calculation of Variance and standard deviation • Apply the concept of measure of dispersion in raw data.	**PAR-S-1-CM-17** Measure of Dispersion	
5.	• Define the normal distribution. • Describe the purpose and importance of normal distribution in biostatistics. • Describe the normal distribution curve	**PAR-S-1-CM-18** Normal Distribution	
6.	• Define the statistical tests • Describe the different statistical tests. • Distinguish between categorical and continuous measures. • Describe the interpretation of data analyzed through t-test and Chi-square test	**PAR-S-1-CM-19** Statistical tests interpretations	
7.	• Define sampling • Describe the purpose and importance of sampling. • Describe different methods of sampling. • Differentiate between probability and non-probability sampling.	**PAR-S-1-CM-20** Sampling	

RESEARCH METHODOLOGY

Learning Outcomes

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

• Define research and differentiate between qualitative and quantitative research.
• Describe the different errors and biases in research.
• Describe the purpose of conducting research and the steps in research
• Describe the steps in writing a research proposal.
• Classify the type of questionnaire and develop questionnaire.
• Determine the steps of data entry using statistical software (SPSS)

Rationale

This course aims to provide students with a fundamental understanding of research methods, errors in research, and biases. How to write a research proposal, literature search, data entry, and statistical analysis. How to write a research paper.

S. #	Learning Objectives	Topic	Teaching Strategy
1.	• Define research and research methods. • Define the survey methodology • Differentiate between qualitative and quantitative research. • Describe the purpose of conducting research.	**PAR-S-1-RM-1** Introduction to Research Methodology	Lecture

2.	• Define different errors in research. • Define validity and reliability • Define confounder and its impact on research • Determine different biases in research	**PAR-S-1-RM-2** Errors in epidemiological research	
3.	• Define the research proposal • Describe the major components of the research proposal. • Understand how to write a good research question. • Distinguish the purpose statement, a research question or hypothesis, and a research objective. • Describe the SMART objectives in writing a research proposal.	**PAR-S-1-RM-3** How to write a research proposal	
4.	• Understand the role of the questionnaire in the data collection process. • Describe the steps in developing a good survey questionnaire. • Design a research questionnaire.	**PAR-S-1-RM-4** Developing a research questionnaire	
5.	• Determine the steps of data entry using statistical software. • Understand the basics of operating SPSS. • Describe how to analyze data using SPSS	**PAR-S-1-RM-5** Data entry and Statistical analysis	

3rd Year MBBS – Spiral 2

S #	3rd year MBBS	Number of Lectures	Field Visit
1	Communicable diseases (Prevention and Control of Infectious diseases)	17	-
2	Occupational Health	6	1
3	Environmental Health	12	1
4	Food and Nutrition	3	-
5	Information, Education & Communication	4	-
6	Medical Demography	3	-
7	Epidemiology	10	-
8	Biostatistics	7	-
Total lectures		**62**	**2**

COMMUNICABLE DISEASES
(PREVENTION AND CONTROL OF INFECTIOUS DISEASE)

Learning Outcomes

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

• Understand the basics of communicable disease and its epidemiology
• Discuss the emerging and re-emerging diseases and provide examples.
• Explain the differences among outbreak, epidemics, endemics and pandemics with examples.
• know the different infectious disease control programs in Pakistan
• Understand the chain of transmission of infection and its role in infectious disease control.
• Understand the different infectious agent and their mode of transmission and the disease that they cause.
• Differentiate winged and winless insects
• Apply the control and prevention measures of specific infections.

Rationale

Globally, Infectious diseases continues to keep on increasing the list of global public health threats. Understanding the transmission of infections and their effective control is an important public health issue. The purpose of this course is to introduce students to infectious disease/communicable diseases and the agents that cause them. This course will clear the difference between communicable disease and non-communicable disease, distinguish among outbreak, epidemics, endemic, pandemics and emerging and re-emerging disease, explore the different kinds of organisms that cause disease and will be helpful for understanding the control and prevention of specific infection and introduce students to differentiate winged and wingless insect and apply control and preventive measure of specific infection.

S #	Learning Objectives	Topic	Teaching Strategy
1.	• Define communicable disease and other basic definitions regarding the infectious disease • Differentiate between infection, contamination, pollution, infestation • Classify the communicable disease • Discuss the infectious disease control programs in Pakistan	**PAR-S-2-CM-1** Introduction to communicable disease and basic concept and infectious disease control program in Pakistan	
2.	• Explain chain of infection • Describe the various route of transmission of infectious diseases • Describe the preventive and control measures of infectious diseases	**PAR-S-2-CM-2** Chain of transmission & Its role in infectious disease control	
3.	Discuss the steps of investigation of epidemics (Epidemic endemic, pandemic and steps of investigation of epidemics, explain with examples)	**PAR-S-2-CM-3** Steps of investigation of epidemics	
4.	• Define arthropods and classify the wing & wingless insects. • Discuss common disease transmitted by wing and wingless insects • Discuss control and preventive measures of wing and wingless insects of medical importance • Know Insecticides and their public health importance	**PAR-S-2-CM-4** Arthropods and their Public Health Importance	Lecture
5.	• Discuss the problem statement of malaria • Define the malaria and vectors of malaria • Describe the epidemiology of Malaria • Discuss the preventive and control measures of malaria	**PAR-S-2-CM-5** Epidemiology & control measure of Malaria	
6.	• Define the Leishmaniasis and its types • Explain the epidemiology of Leishmaniasis • Discuss the preventive and control measures of Leishmaniasis	**PAR-S-2-CM-6** Epidemiology & control measure of Leishmaniasis	
7.	• Discuss the problem statement of influenza • Explain the epidemiology of influenza • Define and describe the mode of transmission of influenza • Discuss the preventive and control measures of influenza	**PAR-S-2-CM-7** Epidemiology & control measure of Influenza	
8.	• Define the yellow fever • Explain the epidemiology of yellow fever • Discuss the importance of yellow fever to Pakistan • Discuss the preventive and control measures of yellows fever	**PAR-S-2-CM-8** Epidemiology & control measure of yellow fever	

9.	• Discuss the problem statement of chicken pox • Define chickenpox and describe the mode of transmission of chickenpox • Explain epidemiology of chickenpox • Discuss the preventive and control measures of chickenpox	**PAR-S-2-CM-9** Epidemiology & control measure of Chickenpox	
10.	• Discuss the problem statement of Measles, Mumps, Rubella • Explain the epidemiology of Measles, Mumps, Rubella • Define and describe the modes of transmission of Measles, Mumps, Rubella • Describe diagnosis of mumps. • Discuss the preventive and control measures of Measles, Mumps, Rubella	**PAR-S-2-CM-10** Epidemiology & control measure of Measles, Mumps, Rubella	
11.	• Discuss the problem statement of typhoid fever • Define the typhoid fever • Explain the epidemiology of typhoid fever • Discuss the preventive and control measures of Typhoid fever	**PAR-S-2-CM-11** Epidemiology & control measure of Typhoid	
12.	• Discuss the problem statement of Whooping Cough • Explain the epidemiology of Whooping Cough • Define Whooping Cough and describe the mode of transmission of Whooping Cough • Discuss the preventive and control measures of Whooping Cough	**PAR-S-2-CM-12** Epidemiology & control measure of Whooping Cough	
13.	• Discuss the problem statement of amoebiasis • Know public health importance of amoebiasis • Discuss the Important factors of Agent/Host/Environment responsible for occurrence of amoebiasis • Discuss the preventive and control measures of amoebiasis	**PAR-S-2-CM-13** Epidemiology and control measure of Amoebiasis	
14.	• Know the burden of hookworm infestation • Describe the epidemiological determinants related to agent/host/ environment • Discuss the various preventive and control measures of hookworm infestation	**PAR-S-2-CM-14** Epidemiology and control measure of hookworm infestation	
15.	• Discuss the problem statement of Meningitis • Explain the epidemiology of Meningitis • Define Meningitis and describe the mode of transmission of Meningitis • Discuss preventive & control measures of Meningitis	**PAR-S-2-CM-15** Epidemiology & control measure of Meningitis	
16.	• Discuss the problem statement of dengue fever • Discuss the type of dengue fever • Explain the epidemiology of dengue fever • Discuss the preventive and control measures of dengue fever	**PAR-S-2-CM-16** Epidemiology & control measure of Dengue Fever	
17.	• Discuss the problem statement of Sexually Transmitted disease & HIV/AIDS • Define Sexually Transmitted disease & HIV/AIDS • Explain the epidemiology of Sexually Transmitted disease & HIV/AIDS • Discuss the preventive and control measures of Sexually Transmitted disease & HIV/AIDS	**PAR-S-2-CM-17** Epidemiology & control measure of Sexually Transmitted disease (STDs) & HIV/AIDS	

OCCUPATIONAL HEALTH

Learning Outcomes:

By the end of Occupational health sessions, student should be able to:

- Understand the basics of occupational health and its importance in public health
- Discuss the legislation of occupational health in Pakistan
- Explain the common occupational health hazards of agricultural and industrial sectors
- know the medical and engineering methods for prevention of occupational health hazards
- Apply the control and prevention measures of occupational hazards

S #	Learning Objectives	Topic	Teaching Strategy
1.	• Define occupational health. • Discuss the occupational health hazard • Discuss the occupational health services in Pakistan • Describe the legislation of occupational health in Pakistan.	**PAR-S-2-CM-18** Introduction to occupational health and safety	**Lecture**
2.	• Discuss the agriculture health hazards • Define pneumoconiosis • Differentiate the types of pneumoconiosis on basis of dust • Discuss the preventative and control measures of pneumoconiosis	**PAR-S-2-CM-19** Occupational health hazards in agricultural workers	**Lecture**
3.	• Discuss the industrial health hazards. • Define lead poisoning • Discuss the preventive and control measures of lead poisoning	**PAR-S-2-CM-20** Occupational health hazards in industrial workers. Lead poisoning	**Lecture**
4.	• Define ergonomics, importance of ergonomics in occupational health • Describe the absenteeism • Discuss the medical methods of prevention of occupational hazards. • Discuss the engineering methods of prevention of occupational hazards	**PAR-S-2-CM-21** Preventive measures of occupational health hazards	**Lecture**
5.	• Explain features and magnitude of cancer problem in Pakistan. • Describe different causes of cancer • Explain screening of cancer • Describe risk factors of cancer. • Explain control measures & prevention of cancer	**PAR-S-2-CM-22** Epidemiology & control measures of cancer	**Lecture**
6.	• Describe the Epidemiology, Personal protection and management • Discuss types of snakes according to toxin production: hemolytic toxins, musculo-toxins and neuro-toxin • Differentiate between signs and symptoms of different snake-bites • Discuss preventive measures against snake bites.	**PAR-S-2-CM-23** Snake bite	**Lecture**
Industry and Social Security Hospital (after lecture number 4)		**Field visit**	

ENVIRONMENTAL HEALTH

Learning Outcomes

- This course has been designed to introduce the basics of environmental health
- The course will cover the environmental public health practice
- The course focus on the relationship between the environment and health
- This will teach the main categories of environmental health hazards and the principles of hazard management
- This course will teach the main types of environmental pollution and the basic principles of pollution management
- At the end of this course, students will be able to understand the basics of environmental health, its hazards and their prevention and importance for clinicians

S. #	Learning Objectives	Topic	Teaching strategy
1.	• Define water purification • Learn the methods of water purification • Explain the best method in different situations • Describe the advantages and disadvantages of each method	**PAR-S-2-CM-24** Methods of purification of water	
2	• Define WHO criteria for purification of water • Learn about different pathogens causing water pollution as per WHO criteria • Discuss the water surveillance • Describe the physical, chemical, biological and bacteriological quality of water	**PAR-S-2-CM-25** World Health Organization (WHO) criteria for purification of water	
3.	• Learn about hydrological cycle • Define water pollution • Explain sources of water pollution and types	**PAR-S-2-CM-26** Hydrological cycle & sources of water pollution	
4	• Describe different types of health hazards arising from consuming polluted water • Explain various water borne diseases caused due to consuming polluted water	**PAR-S-2-CM-27** Health Hazards arising from consuming polluted water; water borne disease	Lecture
5.	• Describe rapid and slow sand filters • Explain the role of rapid and slow sand filtration in water purification	**PAR-S-2-CM-28** Slow sand & rapid sand filters	
6	• Define radiation and its hazards • Describe the relative hazards to humans when exposed to alpha, beta and gamma rays • Discuss the preventive measures of radiation hazards	**PAR-S-2-CM-29** Radiation Hazards	
7.	• Define waste and its types • Explain the public health importance of various types of wastes • Learn about different sources of wastes • Learn about different methods of collection and disposal of refuse	**PAR-S-2-CM-30** **Disposal of waste** Introduction, Public Health importance of waste management. methods of collection & disposal of refuse	

S. #	Learning Objectives	Topic	Teaching Strategy
8.	• Explain the methods of human excreta disposal • Describe the hazards of improper excreta disposal • Explain different methods of sewage disposal	**PAR-S-2-CM-31** Methods of disposal of human excreta & sewage	
9.	• Learn about sources of hospital wastes • Explain different types of hospital waste • Learn about different methods for prevention and control of hospital wastes and treatment of hospital waste	**PAR-S-2-CM-32** Hospital Waste management	
10.	• Learn about the relationship between health and housing • Learn about the criteria of healthful housing	**PAR-S-2-CM-33** Healthful housing	
11.	• Define noise and noise pollutionTo understand types and sources of noise pollution • Describe preventive and control measures of noise pollution	**PAR-S-2-CM-34** Noise pollution	
12.	• Describe the effects of extreme heat and extreme cold on human body • Describe how to manage the effects of heat and cold extremes	**PAR-S-2-CM-35** Effect of health and cold extremes	
Water treatment Plant (After lecture number 5)			**Field visit**

FOOD & NUTRITION

Learning Outcomes

At the conclusion of this course, students will be able to:

• Comprehend the public health importance of Nutrition.
• Understand the nutritional requirement for different ages and gender.
• Identify the factors for micro and macronutrient deficiencies in Pakistan.
• Identify the risk factors of Malnutrition in children < 5 and over 5 years of age
• Classify the types of malnutrition among children under and over 5 years.
• Differentiate food preservation, fortification and adulteration.

S. #	Learning Objectives	Topic	Teaching Strategy
1.	• Define balanced diet • Explain the importance of a balanced diet • Explain the food pyramid • Describe different focus groups in a balanced diet • Enumerate the routine dietary requirements and nutritional values at different age groups. • Describe the routine dietary needs of pregnant and lactating mothers. • Define the nutritional status, growth and development. • Describe the purpose of nutritional assessment. • Explain and discriminate between internal and external methods of nutritional assessment in children and adults. • Enumerate different nutritional indices in adults	**PAR-S-2-CM-36** Balanced Diet and Nutritional status assessment	Lecture

S #	Learning Objectives	Topic	Teaching Strategy
2.	• Describe micro and macro-nutrient components. • Comprehend the importance of micro and macro nutrient components. • Enumerate the different factors of micro and macronutrient deficiencies. • Describe the burden of micro and macronutrient deficiency in Pakistan. • Describe the malnutrition • Classify the types of malnutrition among children under and over 5 years. • Discriminate between the risk factors responsible for malnutrition among children under and over 5 years of age. • Discuss the epidemiology of Malnutrition in Pakistan. • Discriminate between Kwashiorkor and Marasmus • Discuss the strategies for controlling malnutrition in Pakistan	**PAR-S-2-CM-37** Micro and macro nutritional Deficiencies And Malnutrition in under and over five years age children	
3.	• Define food preservation, fortification and adulteration. • Describe the public health importance of food preservation and fortification. • Discriminate between food adulteration and fortification. • Define food poisoning • Describe what causes food poisoning • Explain the effects of food poisoning	**PAR-S-2-CM-38** Food preservation, fortification and adulteration/Food Poisoning	

INFORMATION, EDUCATION & COMMUNICATION

Learning Outcomes

- This course has been designed to introduce the basics of Health Education and Communication.
- The course will enable the graduates to understand the importance of Health Education and its role in prevention of diseases and promotion of Health of the communities
- This course will also equip the students with various skills of Communication and modes/methods of transferring health related knowledge to others, which will lead to positive behavior change.
- Social Sciences and its role in Public Health will also be covered in this course, which will ultimately help graduates in understanding and applying the holistic approach of HEALTH

Rationale:

Health Education and Communication is an important specialty of Community Medicine, which aims to spread health awareness amongst masses through well trained healthcare providers. The graduates may apply the knowledge and skills of this module in protection and promotion of health and well-being of the community, which makes it possible that "Prevention is better than Cure".

S #	Learning Objectives	Topic	Teaching Strategy
1	• Explain the Health Education • Discuss the importance of Health • Describe the Aims and Objectives of Health Education • Discuss various Principles of Health Education • Describe the Stages of Health Education	**PAR-S-2-CM-39** Health Education: Concept, Aims and Objectives, Principles and Stages of Health Education	Lecture

2	• Describe term Communication and its various Methods • Elaborate the Barriers of Communication and discuss how to overcome it.	**PAR-S-2-CM-40** Communication Methods, Barriers and skills in Health Education	
3	• Know how to organize a Health Education Program • Explain the Terms of IEC, KAP and BCC, through an example • Know the Steps of: Planning, Organizing and Evaluating the health education program	**PAR-S-2-CM-41** Planning, Organizing and evaluating a Health Education Program	
4	• Define Family • Discuss various types of Families • Discuss the social evils and its consequences on Health	**PAR-S-2-CM-42** Types of Families, Social evils including Juvenile delinquency	

MEDICAL DEMOGRAPHY

Learning Outcomes

By the end of the course, the participants must be able to:

• Comprehend the basic concepts and definition of Demography
• Describe the concept of population or demographic transition.
• Interpret the population pyramid
• Understand the determinants of fertility and mortality.
• Describe different indicators of population and vital statistics

Rationale

The aim of this course is to provide students with essential information related to Demography and population change, demographic transition, vital and population statistics, determinants of fertility and mortality in a population, interpreting the population pyramid and different information we can get from population pyramid.

S. #	Learning Objectives	Topic	Teaching strategy
1.	• Define population and population studies • Comprehend the basic concepts and definition of Demography • Discuss the population doubling time • Describe the concept of population or demographic transition. • Describe and interpret the population pyramid • Compare the population pyramid of developing and developed countries.	**PAR-S-2-CM-43** Introduction to demography	Lecture
2.	• Define population and vital statistics. • Define fertility and mortality. • Describe the determinants of fertility and mortality. • Describe different indicators of population statistics. • Describe indicators of vital statistics • Determine the factors affecting fertility-related statistics.	**PAR-S-2-CM-44** Demographic indicators	
3.	• Define urbanization • Explain the importance of social mobilization • Determine the social implication of high population growth	**PAR-S-2-CM-45** Urbanization and social mobilization	

EPIDEMIOLOGY

Learning Outcomes

At the end of Epidemiology sessions, students will be able to;

- Demonstrate proficiency in the use of common data sources in descriptive epidemiology and be aware of their strengths and weaknesses.
- Describe epidemiological measures, calculate basic measures, and describe epidemiological patterns of disease occurrence.
- Classify epidemiological study designs and the most appropriate circumstances to use them.
- Describe, implement, and correctly calculate the different measures of occurrence and effects of disease.
- Understand the merits and demerits of epidemiological studies
- Distinguish between association and causation and be aware of the relevant issues in deducing causation from observational designs.
- Verify the ability to review and evaluate observational studies.
- Summarize screening principles and the conditions in which a screening program could be most suitable.

Rationale:

This course aims to provide students with a fundamental understanding of epidemiology, including the measurement and interpretation of disease incidence patterns; the use of routine data sources, their advantages, and disadvantages; the design of epidemiological studies and when to use them; and epidemiological causal models.

S. #	Learning Objectives	Topic	Teaching Strategy
1.	- Define epidemiology - Describe the basic terminology and concept of epidemiology - Explain the objectives and approaches of epidemiology. - Explain the concept of descriptive epidemiology. - Describe concept and importance of time place, and person.	**PAR-S-2-CM-46** Introduction to Epidemiology	
2.	- Define surveillance and its role in Epidemiology. - Define outbreak - Discuss the steps of an outbreak investigation. - Describe the Epidemic Curve. - Explain concept of Epidemic, Endemic, Pandemic & Sporadic.	**PAR-S-2-CM-47** Surveillance and investigation of epidemics	
3.	- Define the measure of occurrences and effects of diseases. - Describe Proportions, Risk, Rate, Ratio and Odds - Understand the concept of prevalence and incidence. - Describe the concept of Crude, specific & standardized rates	**PAR-S-2-CM-48** Measures of occurrence of diseases	Lecture
4.	- Define the principles of causation. - Determine the concept of necessity and sufficiency. - Describe the different models of causation. - Discuss Bradford Hill's criteria of causation.	**PAR-S-2-CM-49** Causation in Epidemiology	
5.	- Discuss the epidemiological study design. - Differentiate between observational and experimental studies. - Identify the key concept of descriptive epidemiology. - Differentiate between Descriptive and analytical studies. - Determine how and when to select the appropriate study design	**PAR-S-2-CM-50** Introduction to epidemiological study design	

6.	• Describe case reports and case series. • Define cross-sectional study • Discuss the uses of the cross-sectional study. • Compare the relative strengths and weaknesses of Cross-sectional studies	**PAR-S-2-CM-51** Case-report, Case series, and Cross-sectional study	
7.	• Define the case-control study. • Describe advantages & limitations of case-control studies. • Analyze and interpret the Odd ratio.	**PAR-S-2-CM-52** Case-control study	
8.	• Define the cohort study • Discuss the importance, uses, and limitations of the cohort study • Analysis and interpretation of relative risk and rate ratio	**PAR-S-2-CM-53** Cohort Study	
9.	• Define Experimental Studies. • Differentiate randomized control trail and non-randomized control trials. • Discuss the importance of randomized control trials.	**PAR-S-2-CM-54** Experimental studies	
10.	• Define screening • Discuss the type of screening • Explain the concept of sensitivity and specificity. • Describe the predictive values.	**PAR-S-2-CM-55** Screening	

BIOSTATISTICS

Learning Outcomes

By the end of sessions, the students will be able to:

• Define Biostatistics and different types of data.
• Describe the different sources of data and their management.
• Classify Variables and Discuss the scales of measurements
• Describe measures of central tendency and measures of dispersion.
• Understand the normal distribution curve
• Classify different sampling techniques

Rationale

This course aims to provide students with a fundamental understanding of Biostatistics, including the measurement of mean, mode, median, range, standard deviation, and variance; the management and use of routine data. Sampling technique and data interpretation using statistical tests.

S #	Learning Objectives	Topic	Teaching strategy
1.	• Define basic concepts and uses of biostatistics. • Define the data and its types • Define variables and their different types • Describe the different methods of data presentation	**PAR-S-2-CM-56** Introduction to Biostatistics and Data	Lecture
2.	• Describe different sources of health-related data. • Discuss the importance of data management • Describe the collection and registration of vital events in Pakistan. • Define and describe the purpose of a health management information system.	**PAR-S-2-CM-57** Sources and Management of Data	

3.	• Define the measures of central tendency. • Define and compute Mean, Mode, and Median • Construct data tables that facilitate the calculation of mean, mode, and median. • Apply the concept of central tendency measures in raw data.	**PAR-S-2-CM-58** Measures of Central Tendency	
4.	• Define the measures of dispersion. • Explain the purpose of measures of dispersion • Define and compute Variance, standard deviation, range, and interquartile range • Construct data tables that facilitate the calculation of Variance and standard deviation • Apply the concept of measure of dispersion in raw data.	**PAR-S-2-CM-59** Measure of Dispersion	
5.	• Define the normal distribution. • Describe the purpose and importance of normal distribution in biostatistics. • Describe the normal distribution curve	**PAR-S-2-CM-60** Normal Distribution	
6.	• Define the statistical tests • Describe the different statistical tests. • Distinguish between categorical and continuous measures. • Describe the interpretation of data analyzed through t-test and Chi-square test	**PAR-S-2-CM-61** Statistical tests interpretations	
7.	• Define sampling • Describe the purpose and importance of sampling. • Describe different methods of sampling. • Differentiate between probability and non-probability sampling.	**PAR-S-2-CM-62** Sampling	

4th Year MBBS

S #	4th Year	Number of Lectures
1	Medical Demography	3
2	Epidemiology	10
3	Biostatistics	7
Total lectures		**20**

MEDICAL DEMOGRAPHY

Learning Outcomes

By the end of the course, the participants must be able to:

• Comprehend the basic concepts and definition of Demography
• Describe the concept of population or demographic transition.
• Interpret the population pyramid
• Understand the determinants of fertility and mortality.
• Describe different indicators of population and vital statistics

Rationale

The aim of this course is to provide students with essential information related to Demography and population change, demographic transition, vital and population statistics, determinants of fertility and mortality in a population, interpreting the population pyramid and different information we can get from population pyramid.

S #	Learning Objectives	Topic	Teaching Strategy
1.	• Define population and population studies • Comprehend the basic concepts and definition of Demography • Discuss the population doubling time • Describe the concept of population or demographic transition. • Describe and interpret the population pyramid • Compare the population pyramid of developing and developed countries.	**PAR-S-2-CM-63** Introduction to demography	Lecture
2.	• Define population and vital statistics. • Define fertility and mortality. • Describe the determinants of fertility and mortality. • Describe different indicators of population statistics. • Describe indicators of vital statistics • Determine the factors affecting fertility-related statistics.	**PAR-S-2-CM-64** Demographic indicators	
3.	• Define urbanization • Explain the importance of social mobilization • Determine the social implication of high population growth	**PAR-S-2-CM-65** Urbanization and social mobilization	

EPIDEMIOLOGY
Learning Outcomes

At the end of Epidemiology sessions, students will be able to;

- Demonstrate proficiency in the use of common data sources in descriptive epidemiology and be aware of their strengths and weaknesses.
- Describe epidemiological measures, calculate basic measures, and describe epidemiological patterns of disease occurrence.
- Classify epidemiological study designs and the most appropriate circumstances to use them.
- Describe, implement, and correctly calculate the different measures of occurrence and effects of disease.
- Understand the merits and demerits of epidemiological studies
- Distinguish between association and causation and be aware of the relevant issues in deducing causation from observational designs.
- Verify the ability to review and evaluate observational studies.
- Summarize screening principles and the conditions in which a screening program could be most suitable.

Rationale

This course aims to provide students with a fundamental understanding of epidemiology, including the measurement and interpretation of disease incidence patterns; the use of routine data sources, their advantages, and disadvantages; the design of epidemiological studies and when to use them; and epidemiological causal models.

S #	Learning Objectives	Topic	Teaching strategy
1.	• Define epidemiology • Describe the basic terminology and concept of epidemiology • Explain the objectives and approaches of epidemiology. • Explain the concept of descriptive epidemiology. • Describe the concept and importance of time place, and person.	**PAR-S-2-CM-66** Introduction to Epidemiology	
2.	• Define surveillance and its role in Epidemiology. • Define outbreak • Discuss the steps of an outbreak investigation. • Describe the Epidemic Curve. • Explain the concept of Epidemic, Endemic, Pandemic and Sporadic.	**PAR-S-2-CM-67** Surveillance and investigation of epidemics	
3.	• Define the measure of occurrences and effects of diseases. • Describe Proportions, Risk, Rate, Ratio and Odds • Explain the concept of prevalence and incidence. • Describe the concept of Crude, specific and standardized rates	**PAR-S-2-CM-68** Measures of occurrence of diseases	
4.	• Define the principles of causation. • Determine the concept of necessity and sufficiency. • Describe the different models of causation. • Discuss Bradford Hill's criteria of causation.	**PAR-S-2-CM-69** Causation in Epidemiology	
5.	• Discuss the epidemiological study design. • Differentiate between observational and experimental studies. • Identify the key concept of descriptive epidemiology. • Differentiate between Descriptive and analytical studies. • Determine how and when to select the appropriate study design	**PAR-S-2-CM-70** Introduction to epidemiological study design	Lecture
6.	• Describe case reports and case series. • Define cross-sectional study • Discuss the uses of the cross-sectional study. • Compare the relative strengths and weaknesses of Cross-sectional studies	**PAR-S-2-CM-71** Case-report, Case series, and Cross-sectional study	
7.	• Define the case-control study. • Describe the advantages and limitations of case-control studies. • Analyze and interpret the Odd ratio.	**PAR-S-2-CM-72** Case-control study	
8.	• Define the cohort study • Discuss the importance, uses, and limitations of the cohort study • Analysis and interpretation of relative risk and rate ratio	**PAR-S-2-CM-73** Cohort Study	
9.	• Define Experimental Studies. • Differentiate randomized control trail and non-randomized control trials. • Discuss the importance of randomized control trials.	**PAR-S-2-CM-74** Experimental studies	
10.	• Define screening • Discuss the type of screening • Explain the concept of sensitivity and specificity. • Describe the predictive values.	**PAR-S-2-CM-75** Screening	

BIOSTATISTICS

Learning Outcomes

By the end of sessions, the students will be able to:

• Define Biostatistics and different types of data.
• Describe the different sources of data and their management.
• Classify Variables and Discuss the scales of measurements

- Describe measures of central tendency and measures of dispersion.
- Understand the normal distribution curve
- Classify different sampling techniques

Rationale:

This course aims to provide students with a fundamental understanding of Biostatistics, including the measurement of mean, mode, median, range, standard deviation, and variance; the management and use of routine data. Sampling technique and data interpretation using statistical tests.

S #	Learning Objectives	Topic	Teaching strategy
1.	- Define basic concepts and uses of biostatistics. - Define the data and its types - Define variables and their different types - Describe the different methods of data presentation	**PAR-S-2-CM-76** Introduction to Biostatistics and Data	
2.	- Describe the different sources of health-related data. - Discuss the importance of data management - Describe the collection and registration of vital events in Pakistan. - Define and describe the purpose of a health management information system.	**PAR-S-2-CM-77** Sources and Management of Data	
3.	- Define the measures of central tendency. - Define and compute Mean, Mode, and Median - Construct data tables that facilitate the calculation of mean, mode, and median. - Apply concept of central tendency measures in raw data.	**PAR-S-2-CM-78** Measures of Central Tendency	
4.	- Define the measures of dispersion. - Explain the purpose of measures of dispersion - Define and compute Variance, standard deviation, range, and interquartile range - Construct data tables that facilitate the calculation of Variance and standard deviation - Apply the concept of measure of dispersion in raw data.	**PAR-S-2-CM-79** Measure of Dispersion	Lecture
5.	- Define the normal distribution. - Describe the purpose and importance of normal distribution in biostatistics. - Describe the normal distribution curve	**PAR-S-2-CM-80** Normal Distribution	
6.	- Define the statistical tests - Describe the different statistical tests. - Distinguish between categorical & continuous measures. - Describe the interpretation of data analyzed through t-test and Chi-square test	**PAR-S-2-CM-81** Statistical tests interpretations	
7.	- Define sampling - Describe the purpose and importance of sampling. - Describe different methods of sampling. - Differentiate between probability and non-probability sampling.	**PAR-S-2-CM-82** Sampling	

List of Textbooks

- Parks Textbook of Preventive and Social Medicine – Author: K. Park
- Public health and Community Medicine – Author: Ilyas, Ansari
- Textbook of Community Medicine and Public Health Edited by: Saira Afzal - Sabeen Jalal
- Fundamental of Preventive Medicine – Author: Dr. Zulfikar Ali Shaikh

3 BEHAVIOURAL SCIENCES

Introduction

Behavioral sciences (BS) is the scientific study of human behavior, and it includes psychology, sociology, and anthropology. These three disciplines are taught together in undergraduate curricula around the world because they are all concerned with understanding human behavior from different perspectives. BS is similar to other basic medical sciences, such as anatomy, biochemistry, physiology, and pathology, in that it explains existing behavior and can be used to predict the behavior of patients and healthcare providers in both clinical and non-clinical situations.

Behavioral sciences are essential for physicians to understand the psychosocial aspects of medical disorders. A physician who has been trained in BS is aware of the impact of history, culture, environment, and psychology on the manifestation of various symptoms. This knowledge allows physicians to communicate more effectively and ethically with their patients, and to develop treatment plans that include not only the patient but also the family.

Behavioral sciences can also be beneficial to medical students on a personal level. By understanding the modern theories of learning, memory, and cognition, students can improve their own learning abilities. Additionally, the knowledge of behavioral sciences can help students to better understand themselves and their relationships with others.

In 2022, the Pakistan Medical & Dental Council (PM&DC) assigned 50 teaching hours to the subject of behavioral sciences in the curriculum of MBBS. This is a significant step in the right direction, as it acknowledges the importance of BS in medical education. It will help to produce physicians who are better equipped to understand and treat the psychosocial aspects of medical disorders. This will ultimately lead to improved patient care.

Rationale

- To provide medical and dental graduates with a broader bio-psycho-social perspective on health and illness.
- To teach students how to use principles of learning and behavior change to enhance their own learning capabilities and to help their patients make positive behavioral changes.
- To help medical graduates develop the ethical and personal qualities necessary to provide compassionate and effective care.

Learning Outcomes of Behavioral Sciences Among MBBS Students:

Upon completion of a BS course in undergraduate MBBS, students should be able to:

KNOWLEDGE:

- Comprehend BS in clinical practice.
- Conceptualize the holistic aspect of medical learning.
- Understand communication skills in clinical and non-clinical settings.
- Understand human cognitive faculties like learning, memory, perception, thinking, intelligence, and meta-cognition that regulate behavior.
- Demonstrate the psychological components of health and disease like defense mechanisms and personality in various behavioral states.
- Apprehend psychosocial issues in special hospital settings.
- Learn psychosocial aspects of aging, death, pain, and terrorism.
- Be aware of sex and gender issues in pre-clinical, clinical, and professional settings.
- Understand and recognize common psychiatric ailments like anxiety, depression, and stress.

SKILLS

- Keep an eye on behavioral issues while working in pre-clinical, clinical, and professional settings.
- Understand patients' stance while taking a comprehensive history or in any other scenario like breaking bad news, conflict resolution, disaster management, information care, etc.
- Communicate well his/her own understanding and strategy in interpersonal relationships.
- Use cognitive and behavioral theories while communicating with others and in any clinical or non-clinical activity.
- Believe in the implication of socio-cultural factors such as gender, race, social class, family, and occupations in health and disease.
- Be able to correlate the psychosocial aspects with the common clinical conditions (DM, Coronary Artery Disease, AIDS, etc.)
- Identify the social and anthropological factors that influence detection, management, compliance, and clinical outcome (stigma, myths, cultural taboo, somatization, etc.)
- Demonstrate stress management skills towards self, patients, and colleagues.
- Be highly concerned about the psychosocial factors in important clinical settings like hospitalization, emergency, ICU, cancer wards, etc.

ATTITUDE

- Exhibit the highest level of ethical and professional standards in his/her character with the patients, colleagues, teachers, relatives, attendants, pharmaceutical industry, and public as a whole.
- Be highly concerned about the rights of patients and doctors envisaged in law, constitution, and religion.
- Acknowledge the social, cultural, and anthropological aspects of health and disease.
- Demonstrate confidentiality and privacy of their patient's information in their clinical practice, interaction with colleagues, and medical/dental and other authorities.
- Undertake an informed consent from the patient.
- Demonstrate principles of these Medical/Dental Ethics in their interactions with patients, their relatives, colleagues, pharmaceutical industry, and medical/dental as well as other authorities.

In conclusion, BS is an essential component of medical education. It provides students with the knowledge, skills, and attitudes necessary to provide comprehensive and patient-centered care.

LEARNING METHODOLOGIES

The following teaching / learning methods are used to promote better understanding:

- Lectures
- Interactive Lectures
- Demonstrations
- Hospital / Clinic visits
- Problem- Based Learning (PBL)
- Case- Based Learning (CBL)
- Practical's
- Skills session
- E-Learning
- Self-learning

TOPICS WITH SPECIFIC LEARNING OBJECTIVES AND TEACHING STRATEGIES

1st Year MBBS

(Structure of Behavioral Sciences Course)

Theme 1: Introduction to Behavioral Sciences and Its Importance in Health

S #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY
01	Comprehend significance of BS in Medical Practice. Demonstrate understanding of Holistic and Bio medicine model in clinical practice along with understanding of culture and medical practice. Comprehensive understanding of psychology, sociology and anthropology as well as biological determinants of health and disease in clinical practice, along with public health approach of primary and secondary of prevention of disease/disorder and promotion of health.	**PAR-S-1-BS-1** Introduction to behavioral sciences and its importance in health Significance of BHS in clinical practice. Differentiate: 1. Holistic Vs. Traditional Allopathic Medicine 2. Culture and Medical Practice. Discuss Health Care Models and their clinical Applications 1. Bio-Psycho-Social Model of health and disease 2. The Integrated Model of Health Care: Correlation of Body, Brain, Mind, Spirit and BHS 3. The Public Health Care Model	Lecture

Theme 2: Understanding Behavior

S #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY
02	Analyze human behavior by factors such as sensation, sense organs, and perception, and affect health and disease by enhancing doctors' own learning and clinical skills.	**PAR-S-1-BS-2** Understand human behavior through the Principles of Psychology 1. Sensation and sense organs 2. Perception	Lecture
03	Analyze human behavior by factors such as attention and concentration, and memory, and affect health and disease by enhancing doctors' own learning and clinical skills.	**PAR-S-1-BS-3** Understand human behavior through the Principles of Psychology 1. Attention & Concentration 2. Memory	
04	Analyze human behavior by factors such as thinking, and communication, and affect health and disease by enhancing doctors' own learning and clinical skills.	**PAR-S-1-BS-4** Understand human behavior through the Principles of Psychology 1. Thinking 2. Communication	

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Theme 3:   Individual Differences

S #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY
05	Assess types of human personality and phases of personality development along intelligence.	**PAR-S-1-BS-5** Understand individual differences 3. Intelligence 4. Personality Development	Lecture
06	Explain the complex interplay of Brain and Behavior	**PAR-S-1-BS-6** Describe Neurobiological and Psychological Basis of Behavior 1. Emotions 2. Motivation/need/drive 3.Learning	

Theme 4:   Doctor Patient Relationship

S #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY
07	Analyze critical situations/ challenges in clinical practice to solve clinical problems. Critique the ethical boundaries of conduct in doctor patient relationship. Demonstrate Professionalism, Excellence of a doctor to maintain healthy doctor-patient relationship	**PAR-S-1-BS-7** Doctor patient relationship Discuss Rights & Responsibilities of Patients and Doctors. Understand Psychological Reactions in Doctor-Patient Relationship 1. Social bonding 2. Dependence 3. Transference 4. Counter-transference, 5. Resistance 6. Unwell Physician/ Burn-Out Understand Professionalism and health care	Lecture

Theme 5:   Medical Ethics and Mental Health Acts

S #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY
08	Integrate the principles of medical ethics in professional life Integrate significance of medical ethics in medical practice Familiarize doctors with alternative medicine and ethical concerns of its practices in medical setup. Mental Health Acts	**PAR-S-1-BS-8** Medical Ethics and Professionalism and Mental Health Act Describe and Demonstrate relevance of Ethics in the Life of a Doctor 1. Scope and Meaning of Medical Ethics 2. Guiding Principles of Medical Ethics 3. Common Ethical Issues in Medical Practice 4. Common Ethical Dilemmas in a Health Professional's Life 5. Doctor-Patient Relationship Discuss the significance of knowing psychosocial aspects of alternative medicine in clinical practice. History of Mental Health Acts in Pakistan Recent Psychiatric health laws in Pakistan	Lecture

Theme 6: Non- Pharmacological Interventions

S #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY
09	Demonstrate effective communication skills in clinical practice assimilate and handle patient information in different clinicalscenarios. Handling uncertain situations in clinical practice.	**PAR-S-1-BS-9** Demonstrate Non- Pharmacological Interventions (NPIs) in Clinical Practice 1. Communication Skills 2. Counseling 3. Informational Care (IC) 4. Handling Difficult Patients &their Families 5. Breaking Bad News 6. Crisis Intervention and Disaster Management 7. Conflict Resolution 8. Empathy	
10	Equip medical students with the required skills tocope with critical psychosocial issues in exceptional hospital settings. Critically analyze the patient to provide the best care possible and help the individual obtain optimal health.	**PAR-S-1-BS-10** Psychosocial issues, demonstrate knowledge, and necessary skills for psychosocial assessment in special hospital settings 1. Coronary CareUnit 2. Intensive CareUnit 3. The Emergency Department 4. Psychosocial Aspects of Organ Transplantation 5. The Dialysis Unit 6. ReproductiveHealth 7. Pediatrics Ward 8. Oncology 9. Operating Theater	Lecture

2nd Year MBBS

(Structure of Behavioral Sciences Course)

Theme 1: Psychological Aspects of Health and Disease

S #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY
01	Illustrate human thought, behavior and interactions by health and their disease situations influenced by psychological factors	**PAR-S-1-BS-1** **Discuss the role of Psychology in Medical Practice** 1. Role of psychological factors in the aetiology ofhealth problems 2. Role of psychological factors in the precipitation(triggering) of illness 3. Role of psychological factors in the management of illness 4. Role of psychological factors in diseases causingdisability handicap & stigma 5. Role of psychological factors in patients' reactionto illness 6. Medically unexplained physical symptoms (MUPS)	Lecture

S #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY
02	Recognize the factors contributing towards a state of psychological and social well-being of human in clinical practice.	**PAR-S-1-BS-2** **Discuss and Demonstrate Psychosocial Aspects of Health and Disease** 1. Health and Normality 2. Defence Mechanisms 3. Psychosocial Assessment in Health Care 4. Clinical Situations Demanding a Comprehensive Psychosocial Assessment Psychological reactions to Illness and Hospitalization	

Theme 2:   Culture and Medical Practice

S #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY
03	Explain the culture and social aspects of medical practice by getting holistic view of health	**PAR-S-1-BS-3** **Explain following cultural and social aspects in medicalpractice:** 1. Sociology andHealth 2. Social Groups 3. Social Class 4. Child RearingPractices 5. Roles, Social Support, religion, Stigma, Sick role,Death and Dying 6. Impact of social factors on Treatment Adherence 7. Anthropology and Health 8. Understanding culture in health 9. Influence of cultureon health care Culturally sensitiveclinical assessment	Lecture SGD

Theme 3:   Pain, Sleep, Consciousness and Sexuality

S #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY
04	Explain the complex interplay of Brain and Behavior. Integrate knowledge and skills of coping and pain treatment in various situations.	**PAR-S-1-BS-4** **Describe Neurobiology of Behavior:** 1. Arousal 2. Sleep 3. Consciousness. Discuss Psychosocial aspects of Pain	
05	Identify the bio-psycho-social factors contributing to sexual health and its impact on physical and mental health of human being.	**PAR-S-1-BS-5** **Discuss Psychosocial Aspects of Gender andSexuality** 1. Sexual Identity 2. Gender Identity 3. Sexual Behaviour 4. Gender differences in Sexual Behaviour 5. Masturbation 6. Sexual orientation 7. Psychiatricmorbidity 8. Sexual Disorders 9. Sexual Dysfunction	Lecture SGD

S #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY
		10. Disorders of SexualPreference/ Paraphilia 11. Gender Dysphoria (DSM V) or Gender Identity Disorder (ICD 10) Management of Gender and Sexuality Issues	

Theme 4: Interviewing and Psychosocial Assessment History Taking

S #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY
06	Interviewing and Psychosocial Assessment, History taking	**PAR-S-1-BS-6** • **Techniques for interviewing in clinical setting** • **History taking** 1. Developmental History. 2. Educational history. 3. Job stressors 4. Social history 5. Marital history 6. Drug addiction history 7. Legal history 8. Medical/surgical history 9. Assessment of health services & other psychosocial stressors 10. Assessment of patient perception of disease according to Health Belief Model	**Lecture SGD**

Theme 5: Common Psychiatric Disorders in General Health Settings

S #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY
07	Common Psychiatric Disorders in General Health Settings	**PAR-S-1-BS-7** **Common Psychiatric Disorders in General Health Settings** 1. Mixed Anxiety and Depression 2. Panic Disorder 3. Unexplained Somatic complaints: Persistent Complainers 4. Dissociative and Possession States 5. Drug Abuse, Alcohol & Tobacco use 6. Suicide and Deliberate Self Harm (DSH) 7. Delirium	Lecture SGD

Theme 6: Life Events, Psycho-Trauma, Psychological Reactions, Stress and Stressor, Stress Management

S #	LEARNING OBJECTIVES	TOPIC	TEACHING STRATEGY
08	Equip medical students with knowledge and skills in order to respond to psycho-traumatic cases in hospital settings. Prepare doctors to deal with challenges of terminal and bereavement care in clinical practice within their boundaries. Understand the impact of terrorism on mental health its management and wellbeing. Identify the correlation of aging with life span, Psychological factors and sociological factors.	**PAR-S-1-BS-8** **Understanding Psycho-Trauma, Psychological Aspect of Terrorism, Death, Dying, and Aging** 1. Understand Psycho-trauma 2. Discourse of the psychosocial aspects of Death and Dying 3. Explain Psychosocial Aspects of Terrorism 4. Discuss Psychosocial Aspects of Aging	Lecture SGD
09	Identify sources of stress and its management towards patients, self and other staff members	**PAR-S-1-BS-9** **Define and discuss Stress and its Management** 1. Job-related Stress & Burnout 2. Response to stress 3. Stress Management	

3rd, 4th & FINAL YEAR MBBS

STRUCTURE OF BEHAVIORAL SCIENCES COURSE

DURING PSYCHIATRY & BEHAVIORAL SCIENCES WARD ROTATION

DAY	Topic / Course Content/ Learning Outcomes	Teaching Strategies
1	**PAR-S-2-BS-1** • Skills and Types of interviewing & listening. • Communication. Non verbal cues. Communication skills. • Characteristics of a good communicator.	Clinical Learning (During ward Posting)
2	**PAR-S-2-BS-2** • History taking skills. • Desirable attitudes in health professionals.	Clinical Learning (During ward Posting)
3	**PAR-S-2-BS-3** • Doctor patient relationship, boundaries & psychological reactions in doctor- patient relationship, transference & counter transference. • Professionalism in health care: how to assess attitudes. Empathy amongst medical students.	Clinical Learning (During ward Posting)
4	**PAR-S-2-BS-4** • Mental state examination. • Cognitive errors. Defense mechanism	Clinical Learning (During ward Posting)

5	**PAR-S-2-BS-5** • Assessment of personality.	Clinical Learning (During ward Posting)
6	**PAR-S-2-BS-6** • Informational Care, counseling & its indications & contraindications, conflict resolution • Dealing with difficult patients & management. Crisis management/disaster management.	Clinical Learning (During ward Posting)
7	**PAR-S-2-BS-7** • Dealing with real life crisis & conflict situations in health settings. • Problem solving & decision making strategies.	Clinical Learning (During ward Posting)
8	**PAR-S-2-BS-8** • Assessment: a comprehensive evaluation of a medical student's knowledge, skills, and attitudes.	Clinical Learning (During ward Posting)

DURING MEDICINEs AND SURGERYs WARD ROTATION:

S #	Topic / Course Content/ Learning Outcomes	Teaching Strategies
1	**PAR-S-2-BS-9** Illness behavior	Clinical Learning (During ward Posting)
2	**PAR-S-2-BS-10** Sick role	
3	**PAR-S-2-BS-11** Rape, torture, terminal illness, death.	
4	**PAR-S-2-BS-12** Breaking bad news & major challenges, death of a patient, abnormal baby, intractable illness.	
5	**PAR-S-2-BS-13** Psychosocial issues in hospitals, emergency department, intensive care unit, operating theatre, cancer ward, transplant unit, anesthesia.	
6	**PAR-S-2-BS-14** Grief & bereavement.	
7	**PAR-S-2-BS-15** Psychosocial issues in intensive care unit, operating theatre, and anesthesia.	

❖ There will be workshops on the topics to be covered by Surgery & Medicine.
Workshops can be scheduled on feasible dates, after a formal meeting of Dean, Director Academics, and Chairman, Psychiatry.

Learning Resources

1. Hand book of Behavioral Sciences by Brig (Rtd) Mowadat H Rana (3rd Edition)
2. Introduction To Psychology By Atkinson & Hilgard (15th Edition)
3. Shorter Oxford Textbook of Psychiatry (7th Edition)

❖ This Study Guide for Behavioral Sciences for MBBS Student is prepared in accordance with the Pakistan Medical Commission's (PMC) Guidelines for Undergraduate Medical Education Curriculum (MBBS) – 2022, and Curriculum of MBBS prepared by Pakistan Medical & Dental Council & Higher Education Commission Islamabad.

4 BIOMEDICAL ETHICS

FIRST YEAR TO FINAL YEAR MBBS
(Clinical and Research Ethics)

Introduction/ Rationale

The rationale for teaching Biomedical Ethics to MBBS students at LUMHS is rooted in several important considerations related to the fields of medicine, healthcare, and related professions. This will provide ethical guidance and education, promote ethical behavior, protect patient rights and resolve ethical dilemmas. This will help students as future professionals to navigate complex ethical challenges and ensures that ethical principles and values are integrated into the practice of medicine, research, and other professional fields. Ultimately, this course will play a vital role in promoting ethical conduct and maintaining the trust and integrity of these professions.

TOPICS WITH SPECIFIC LEARNING OBJECTIVES AND TEACHING STRATEGIES

1ST YEAR MBBS (01 LECTURE)

S #	LEARNING OUTCOMES	TOPIC	TEACHING STRATEGY
01	• Students should be able to understand the principles of bioethics and what is ethical practice and what is an ethical dilemma • Students should be able to understand harms and benefits in health care settings • Students should be able to understand the concepts of autonomy and individual responsibility and to understand their significance for the health care provider patient relationship • Students should be able to understand concept of non-maleficence and Hippocratic oath • Students should be able to understand concept of justice in health care setting and equity in resource allocation	**PAR-S-1-ETH-1** Introduction to Biomedical Ethics	**Lecture SGD**

2nd YEAR MBBS (1 Lecture)

S #	LEARNING OUTCOMES	TOPIC	TEACHING STRATEGY
01	• Students should be able understand rational justification for ethical decisions • Students should be able to understand the concept of paternalism, consumerism, default and mutuality approaches while dealing with patient • Students should be able to understand the necessity of communication skills while handling patients, doing research, handling emergency situations, running private clinic	**PAR-S-1-ETH-1** Doctor-Patient Relationship	Lecture SGD

3rd YEAR MBBS (2 Lectures)

S #	LEARNING OUTCOMES	TOPIC	TEACHING STRATEGY
01	• Students should be able to explain the meaning of "consent", "informed", and "informed consent"; they should be able to define the principle of "informed consent" • Students should be able to explain what the process of informed consent requires • Students should be able to explain how the principle of consent is applied in different interventions, research, and teaching • Students should be able to explain how exceptions to the principle can be justified • Students should be able to explain the meaning of "capacity to consent" • Students should be able to explain the criteria of capacity to consent and who give consent on behalf of minors in clinical settings and research • Students should be able to explain how the criteria for consent are applied in different circumstances of treatment and research.	**PAR-S-2-ETH-1** Informed Consent in clinical settings and Research	Lecture SGD
02	• Students should be able to recognize legitimate exceptions to the requirement of confidentiality. • Students should be able to learn how to prevent ethical breaches. • Students should be able to understand need of confidentiality in medical research and its application. • Students should be able to understand the circumstances in which confidentiality can be breached to protect the community and third party.	**PAR-S-2-ETH-2** Confidentiality in clinical settings and Research	

	• Students should be able to understand concept of patient confidentiality in clinical settings like clinics, wards and hospitals and its application and also the concept of confidentiality in research data and encoding of data to prevent leak of confidential information in research.		

4ᵗʰ YEAR MBBS (2 Lectures)

S #	LEARNING OUTCOMES	TOPIC	TEACHING STRATEGY
01	• Students should be able to learn to practice medicine in an ethical manner. • Students should be able to learn how the ethical codes and guidelines are made for clinical and research settings. • Students should be able understand Nuremberg Code and its application in research. • Students should be able understand the dual roles of physician and investigator • Students should be able to explain why patient privacy should be respected. • Students should be able to understand the concept of veracity (truthfulness). • Students should be able to understand different types of privacy and their differentiation. • Students should be able to understand the need of veracity in contemporary medicine.	**PAR-S-2-ETH-1** Concept of Privacy, Veracity and Professional Ethics	Lecture SGD
02	• Students should be able to understand the relationship of doctors/physicians to the representatives of pharmaceutical companies. • Students should be able to understand various guidelines in dealing with medical representatives and drug companies. • Students should be able to understand the mindset of drug companies, their motives, real purpose of sample distribution and gifts to doctors.	**PAR-S-2-ETH-2** Doctor-Pharmaceutical Sales Representative Relationship	

Final YEAR MBBS (3 Lectures)

S #	LEARNING OUTCOMES	TOPIC	TEACHING STRATEGY
01	• Students should be able to learn the concept of mercy killing. • Students should be able to understand the end of life issues and what is futile treatment, patient on vegetative state and ventilators, Islamic rulings on euthanasia, brain death etc. • Students should be able to understand the different types of euthanasia and their differentiation.	**PAR-S-3-ETH-1** Euthanasia and end of life issues	Lecture SGD

02	• Students should be able to learn the ABCDE Mnemonic for braking bad news. • Students should be able to understand the need of proper communication skills while breaking bad news to the patients and how to break bad news. • Students should be able to learn the things which are to be avoided while breaking bad news to the patients.	**PAR-S-3-ETH-2** Breaking Bad News	
03	• Students should be able to understand the types of errors. • Students should be able to learn how to avoid medical errors. • Students should be able to differentiate between medical error and negligence. • Students should be able to learn what to do when medical error occurs and how to deal with the patients.	**PAR-S-3-ETH-3** Medical Error	

List of Books:

• Beauchamp TL, Childress JF. Principles of biomedical ethics. Oxford University Press, USA; 2001

5 INFORMATION TECHNOLOGY

Introduction/ Rationale

The integration of information technology into the MBBS (Bachelor of Medicine and Bachelor of Surgery) curriculum is essential in today's rapidly evolving healthcare landscape. IT proficiency is vital, as it will equip MBBS students with the skills needed to navigate electronic health records, telemedicine platforms, and advanced diagnostic tools. It enables efficient data management and evidence-based decision-making. Moreover, IT skills are crucial for facilitating interdisciplinary collaboration, ensuring that MBBS graduates can research, access academic literature, and adapt to emerging healthcare technologies. By incorporating an IT module, the MBBS curriculum aligns with the evolving healthcare environment. It is time that healthcare professionals stay updated with the latest medical research, clinical guidelines, and best practices. IT modules will help students leverage digital resources for continuous learning, including online courses, webinars, and virtual conferences, ultimately leading to ongoing professional development. Understanding healthcare management systems, hospital information systems (HIS), and administrative software is crucial for effective healthcare administration. IT modules will provide relatable knowledge to students.

Learning Outcomes

After completing this IT module, students will be able:

- To effectively use office software (e.g., Microsoft office, google workspace) for tasks such as word processing, spreadsheet analysis, and presentation creation.
- To organize, store, and manage medical documents and reports using office automation tools.
- To proficiently use medical databases (e.g., PubMed, The Cochrane Library) to access scholarly articles, research, and evidence-based resources.
- To edit medical images and videos for presentations, reports, and patient education, ensuring accuracy and clarity.
- To use visuals effectively to convey medical information, diagnoses, and treatment plans.
- To comprehend the fundamental principles of electronic health records (EHR), including their structure, purpose, and functionalities. They will learn to enter, update, and manage patient information and medical records in EHR systems.

TOPICS WITH SPECIFIC LEARNING OBJECTIVES AND TEACHING STRATEGIES

S. #	LEARNING OBJECTIVES	LECTURE TITLE	TEACHING STRATEGY
01	To learn the basics of IT, importance, benefits, and major areas of Information Technology	**PAR-S-1-IT-1** Introduction to IT & its Importance in healthcare	Lecture
		PAR-S-1-IT-2 Advance applications of IT in healthcare (AI, EHR, mHealth, IoT)	
02	Learn efficient content delivery and resource management in a digital environment	**PAR-S-1-IT-3** Google Classroom	Practical
03	Comprehensive understanding of computer system components, their functions, and the skills necessary for hardware maintenance, troubleshooting, and optimization	**PAR-S-1-IT-4** Components of a Computer System	Lecture
		PAR-S-1-IT-5 Hardware & Software	
		PAR-S-1-IT-6 Types of Software	
		PAR-S-1-IT-7 Software Installation and Troubleshooting	Practical
		PAR-S-1-IT-8 Operating System	Lecture
		PAR-S-1-IT-9 Microprocessors, mobile computing	
04	Developing skills in document design, enhancing aesthetics for professional presentations and reports. Learn to Explore advanced techniques for data visualization	**PAR-S-1-IT-10** Word Processing Software	Practical
		PAR-S-1-IT-11 Presentation Software	
		PAR-S-1-IT-12 Data Analysis using MS Excel software	

S. #	LEARNING OBJECTIVES	LECTURE TITLE	TEACHING STRATEGY
01	Learn to diagnose and resolve common hardware and software issues to ensure smooth computer operation.	**PAR-S-1-IT-1** Secure Data Replication	Lecture Practical
		PAR-S-1-IT-2 Data recovery	Practical
		PAR-S-1-IT-3 Data Transformation and Efficient Data Compression Techniques	
		PAR-S-1-IT-4	

		Cybersecurity and Data Security solutions	
02	To equip MBBS students with advanced skills in information retrieval and search strategies, enabling them to access, evaluate, and apply high-quality medical research materials effectively in their studies and medical practice	**PAR-S-1-IT-5** Introduction to Scientific Searching **PAR-S-1-IT-6** Understanding & Navigating Medical Databases **PAR-S-1-IT-7** Creating Accounts in medical repositories **PAR-S-1-IT-8** advanced search strategies for precise results **PAR-S-1-IT-9** Introduction to specialized medical databases (e.g., ClinicalTrials.gov, Cochrane Library)	Practical
03	To develop a comprehensive understanding of what plagiarism is and familiarize students with various plagiarism detection software tools and their features	**PAR-S-1-IT-10** **Introduction to** Software for Detecting Unoriginal Content	Lecture Practical
04	To gain knowledge and skills to efficiently use Google Workspace tools for scheduling, data collection, document management, and collaboration in healthcare settings	**PAR-S-1-IT-11** Google Calendar **PAR-S-1-IT-12** Advanced Data Collection and Survey Tool by Google **PAR-S-1-IT-13** Google Drive for Medical Document Management **PAR-S-1-IT-14** Personalized google page	Practical
05	Understand the concept and significance of e-learning in modern education. Familiarize students with various e-learning platforms and tools.	**PAR-S-1-IT-15** E-Learning Tools and Platforms	Lecture
		PAR-S-1-IT-16 Practicing Online Education Platforms: Coursera, complete anatomy, and Medscape	Practical
06	Learn to create a collaborative online environment for knowledge sharing	**PAR-S-1-IT-17** Social networking platforms, Facebook, Twitter, LinkedIn, Instagram	Lecture Practical

S. #	LEARNING OBJECTIVES	LECTURE TITLE	TEACHING STRATEGY
01	To familiarize students with a range of tools and technologies used for medical visual communication, including illustration software, medical imaging tools, and 3D modeling	**PAR-S-2-IT-1** Overview and importance of visual comm: for healthcare professionals	Lecture
		PAR-S-2-IT-2 **Visual Design with Canva**	Practical
		PAR-S-2-IT-3 **Image Editing for Medical Illustrations**	
		PAR-S-2-IT-4 AI based image editing tools	
02	To know the significance of EHR and HMIS in modern healthcare. Learn to navigate and use EHR and HMIS effectively and develop skills for data entry, retrieval, and management within systems	**PAR-S-2-IT-5** Introduction to EHR and HMIS	Lecture
		PAR-S-2-IT-6 Exploring EHR and HMIS Applications	Practical
03	To learn about digital evidence types, e.g., electronic documents, emails, images, videos. To familiarize students with the tools and techniques of digital forensics used to collect and preserve evidence.	**PAR-S-2-IT-7** Data and Evidence Recovery in Medical Investigations	Lecture
		PAR-S-2-IT-8 Security Issues	Lecture Practical
		PAR-S-2-IT-9 **Video Technology**	Practical
04	To know about a range of data visualization tools and software (Tableau, Power BI, and Python libraries). To develop expertise in advanced visualization techniques, including heatmaps, treemaps, network diagrams	**PAR-S-2-IT-10** Tools and Techniques for Data Visualization	Lecture
		PAR-S-2-IT-11 Mastery of Tableau	Practical

Recommendation:

Relevant reading material and supplementary handouts will be provided during classes/ lectures.

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6 RESEARCH

Introduction

The foundation of any institution is research. Advanced nations assert that their advancements in research and development have modernized them and enabled them to generate revenue. Globally, medical universities are essential to the advancement of healthcare. Beginning with health issue prediction surveys and continuing with the creation of innovative medications and diagnostic methods.

Any institution's greatest asset is its student population. Here, we offer the guidelines and framework for research curriculum, which will assist you in reaching degree program standards.

The scientific research element of the medical curriculum aims to develop a research-oriented mindset in students that promotes evidence-based practice, critical thinking, and a more comprehensive understanding of medical science. This module focuses on bridging the knowledge gap between theory and clinical application by giving students the tools they need to carry out significant medical research.

Rationale

Research is essential to expanding our understanding of medicine and enhancing patient care. Students who engage in research projects improve their analytical and critical thinking skills, strengthen their capacity to understand scientific literature, and make a positive impact on the continuous advancement of medical science. Students' academic journeys are further enhanced by research experiences, which equip them to make evidence-based decisions in their future healthcare endeavors.

Learning Objectives:

- **Develop Research Competence:** Get the know-how required to plan, carry out, and evaluate medical research on your own.
- **Critical Thinking:** Gain the capacity to evaluate scientific literature critically, understanding research techniques and coming to conclusions supported by data.
- **Communication Skills:** Improve your written and verbal communication abilities to effectively communicate research findings to a variety of audiences.
- **Ethical Considerations:** Show your dedication to responsible and open scientific inquiry by understanding and putting ethical principles into practice in your research.

TOPICS WITH SPECIFIC LEARNING OBJECTIVES AND TEACHING STRATEGIES

1st Year MBBS

S #	LEARNING OBJECTIVE	TOPICS	TEACHING STRATEGY
1	Define Research Fundamentals	**PAR-S-1-RES-1** Introductory class	Lecture
2	Describe Fundamentals of Biostatistics	**PAR-S-1-RES-2** Introduction to Biostatistics	
3	Enlist the types of research variables	**PAR-S-1-RES-3** Types of Research Variables	
4	Identify methods of measuring Central Tendencies & Measures of Dispersion	**PAR-S-1-RES-4** Central Tendencies & Measures Of Dispersion	
5	Summarize Concepts of basic research	**PAR-S-1-RES-5** Basic Research	
6	Demonstrate an understanding of different research designs	**PAR-S-1-RES-6** Study Designs	
7	Summarize and synthesize relevant literature to establish the research context	**PAR-S-1-RES-7** Literature search	
8	Identify and apply appropriate research methods and techniques.	**PAR-S-1-RES-8** Basic Laboratory techniques	
9	Define research proposal and its contents	**PAR-S-1-RES-9** What is research proposal and how to write it?	
10	Define research proposal and its contents	**PAR-S-1-RES-10** What are the components of proposal writing?	
11	Define research proposal and its contents	**PAR-S-1-RES-11** Presentation of Research Proposal	Discussion

2nd Year MBBS

S #	LEARNING OBJECTIVE	TOPICS	TEACHING STRATEGY
1	Explain the significance of hypothesis and P- value in research	**PAR-S-1-RES-1** Introductory class & Hypothesis testing and P-value	Lecture
2	Describe the basic principles of Statistical analysis software	**PAR-S-1-RES-2** Introduction to SPSS	Practical
3	data analysis techniques and statistical methods.	**PAR-S-1-RES-3** SPSS Software Introduction	Practical
4	Explain types of sampling techniques and their application	**PAR-S-1-RES-4** Sampling Techniques	Lecture

S #		TOPICS	TEACHING STRATEGY
		Designing Questionnaire/Pro Forma	
5	Define different types of articles	**PAR-S-1-RES-5** Types of articles	Lecture
6	Explain primary cell culture	**PAR-S-1-RES-6** Primary cell culture	Lecture
7	Outline the expected outcomes and findings of the research	**PAR-S-1-RES-7** Finalizing Research Proposal	Practical
8	Reinforce the importance of the research and its potential impact in Ethical review committee	**PAR-S-1-RES-8** Research Ethics & Approval of Research proposal from ERC	Lecture

3rd Year MBBS

S #	LEARNING OBJECTIVE	TOPICS	TEACHING STRATEGY
1	Analysis of variables on SPSS	**PAR-S-2-RES-1** SPSS Software installation and creating Variables	Practical
2	Define types of graphs and their uses	**PAR-S-2-RES-2** Preparing graphs	
3	Explain the potential contributions of the research to the field.	**PAR-S-2-RES-3** Literature Review	
4	Presentation of a project	**PAR-S-2-RES-4** Project selection/presentation	
5	Explain Reference writing through Mendeley	**PAR-S-2-RES-5** Mendeley	

4th & Final Year MBBS

S #	LEARNING OBJECTIVE	TOPICS	TEACHING STRATEGY
1	Describe a manuscript and its contents	**PAR-S-2-RES-1** Manuscript writing	Practical
2	Create a presentation or a poster related to the subject	**PAR-S-2-RES-2** Presentation/Poster	
3	Research project	**PAR-S-2-RES-3** Submission and publication of article	

Learning Resources

- Basic Biostatistics for Clinical Researchers" by Prof. Dr. Binafsha Manzoor Syed, PhD et al.
  Weblink: https://www.lumhs.edu.pk/publishers/documents/basicbio.pdf

- Research Methodology in Medicine" by John K. Last
  Weblink: https://kth.diva-portal.org/smash/get/diva2:1547062/FULLTEXT01.pdf

Journals:
- New England Journal of Medicine
- Nature Medicine
- Journal of clinical investigation (JCI)
- Circulation

Online Databases:
- PubMed

7 COMMUNICATION SKILLS, PROFESSIONALISM

Introduction

This course is designed to holistically develop crucial competencies in communication skills, ethics, and professionalism among undergraduate medical students. By focusing on these essential pillars, the course aims to empower students to establish meaningful doctor-patient relationships and excel in their future medical practices.

Rationale:

Effective communication, ethical conduct, and professionalism are foundational elements in the medical field. The need for healthcare practitioners to navigate complex interactions, uphold ethical standards, and maintain a high level of professionalism is paramount. This course has been crafted to address the following key reasons:

1. **Patient Outcomes and Doctor-Patient Relationship:**
   - Understanding the profound impact of communication on patient outcomes is critical. By delving into the intricacies of effective communication, students will be better equipped to establish empathetic and trustworthy relationships with their patients.

2. **Comprehensive Communication Models:**
   - The course introduces students to various communication models, such as the transactional model and patient-centered communication. This provides a nuanced understanding of the multifaceted nature of communication in healthcare, including the delicate task of delivering difficult news.

3. **Foundational Communication Skills:**
   - Basic communication skills, including active listening and mastering verbal and non-verbal cues, form the bedrock of successful doctor-patient interactions. These skills are fundamental in comprehending patients' concerns and fostering a supportive healthcare environment.

4. **Advanced Communication Proficiency**:
   - The course progresses to advanced communication skills, emphasizing effective patient interviewing, structured history-taking, and shared decision-making. This ensures that students can navigate intricate medical scenarios while maintaining a patient-focused approach.

5. **Ethics, Integrity, and Professional Values:**
   - The inclusion of themes on medical ethics and professional values instills in students the principles of honesty, integrity, and respect. Understanding the ethical dimensions of healthcare, including informed consent and patient confidentiality, is indispensable for ethical medical practice.

6. **Navigating Professional Boundaries:**
   - Recognizing and navigating professional boundaries is crucial in fostering a healthy doctor-patient relationship. This theme addresses the delicate balance required to uphold professionalism while avoiding boundary violations.

7. **Interprofessional Collaboration:**

- The course recognizes the collaborative nature of healthcare. By introducing the Tuckman model and strategies for conflict resolution, it prepares students to engage effectively within interdisciplinary teams, fostering a collaborative and cohesive healthcare environment.

Themes
- Introduction to Communication Skills
- Basic Communication Skills
- Advanced Communication Skills
- Professionalism in Medicine
- Interprofessional Collaboration

TOPICS WITH SPECIFIC LEARNING OBJECTIVES AND TEACHING STRATEGIES

Theme 1: Introduction to Communication Skills

S #	LEARNING OBJECTIVE	TOPICS	TEACHING STRATEGY
1	• Articulate the impact of effective communication on patient outcomes. • Recognize the pivotal role of communication in fostering a positive doctor-patient relationship.	**PAR-S-2-CS-1** Understanding the Importance of Communication in Healthcare	Lecture SGD
2	• Differentiate and explain the components of the transactional model of communication. • Analyze the significance of patient-centered communication in healthcare. • Develop strategies for delivering difficult news empathetically	**PAR-S-2-CS-2** Models of Communication	

Theme 2: Basic Communication Skills

S #	LEARNING OBJECTIVE	TOPICS	TEACHING STRATEGY
3	• Apply techniques for active listening in medical contexts. • Justify the importance of active listening in comprehending patients' concerns.	**PAR-S-2-CS-3** Models of Communication Active Listening	Clinical setting
4	• Demonstrate an understanding of how tone, pitch, and pace contribute to effective verbal communication. • Interpret and respond appropriately to non-verbal cues, including body language and gestures.	**PAR-S-2-CS-4** Verbal and Non – Verbal Communication	

Theme 3:   Advance Communication Skills

S #	LEARNING OBJECTIVE	TOPICS	TEACHING STRATEGY
5	• Implement structured history-taking techniques for comprehensive patient interviews. • Cultivate skills in building rapport and establishing trust with patients.	**PAR-S-3-CS-1** Effective Patient Interviewing	Clinical setting
6	• Advocate for involving patients in treatment decisions • Balance considerations of patient autonomy with medical expertise in shared decision-making	**PAR-S-3-CS-2** Shared Decision - Making	
7	Apply strategies for navigating and effectively discussing challenging topics with patients	**PAR-S-3-CS-3** Handling Difficult Conversations	

Theme 4 Professionalism in Medicine

S #	LEARNING OBJECTIVE	TOPICS	TEACHING STRATEGY
8	• Articulate the fundamental principles of medical ethics. • Embody honesty, integrity, and respect in professional medical practice	**PAR-S-3-PROF-1** Ethics and Professional Values	Clinical setting
9	• Explain the importance of obtaining informed consent in medical procedures. • Safeguard patient confidentiality in accordance with legal and ethical standards.	**PAR-S-3-PROF-1** Legal and Ethical Issues in Healthcare	
10	• Navigate the doctor-patient relationship while upholding professional boundaries • Recognize and avoid potential violations of professional boundaries	**PAR-S-3-PROF-1** Professional Boundaries	

Theme 5:   Interprofessional Collaboration

S #	LEARNING OBJECTIVE	TOPICS	TEACHING STRATEGY
11	• Apply the Tuckman model to understand the stages of team development. • Define the role of each healthcare professional within the interdisciplinary team.	**PAR-S-3-PROF-1** Teamwork and Collaboration	Clinical setting
12	• Demonstrate conflict resolution strategies applicable to interprofessional healthcare settings • Formulate and apply conflict resolution plans to enhance teamwork and collaboration	**PAR-S-3-PROF-1** Dealing with Interprofessional Conflicts	Clinical setting