

**Liaquat University of Medical and Health sciences
Department of Pharmacology & Therapeutics**

DEPARTMENT OF PHARMACOLOGY



**Curriculum of M.Phil Pharmacology
LUMHS, Jamshoro**

Preface

Pharmacology is a cornerstone of medical science, providing the essential understanding of drug action and therapeutics that supports all clinical knowledge and practice. Over the years, the field has evolved remarkably, from classical experimental pharmacology to advanced molecular and clinical pharmacology, strengthening its role in modern healthcare and research.

This M.Phil Pharmacology curriculum is designed to cultivate inquiry, analytical thinking, and research excellence. It offers a comprehensive framework that guides students through both foundational and advanced pharmacological studies, including general, systemic, and clinical pharmacology, along with related scientific disciplines.

Interdisciplinary integration remains a key feature of this program, encouraging collaboration with fields such as physiology, biochemistry, pathology, and therapeutics. Such connections broaden the scope of learning and promote innovative approaches to pharmacological science.

Through this curriculum, students are empowered to engage in impactful research that contributes to drug discovery, clinical advancements, and scientific discovery. It serves not only as a roadmap for academic growth but also as a platform for shaping future leaders in the pharmacological sciences.

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Table of Contents

S. No.	Titles
1	Section-I
1.1	Introduction to University
1.2	Vision & Mission Statement
2	Section-II
2.1	Introduction to Program
2.2	Aims & Objectives
2.3	Responsibilities and competencies of post graduate trainees
2.4	Course outcomes
3	Section-III
3.1	Program Resources
3.2	Introduction Department Of Pharmacology & Therapeutics
4	Section-IV
4.1	Criteria for admission
5	Section-V
5.1	Course outline
5.2	Program Specifications
5.3	Details of course work and workshops
6	Section –VI
6.1	Synopsis and Thesis
6.2	Plagiarism undertaking
7	Section –VII
7.1	Postgraduate trainee evaluation
8	Section –VIII
8.1	Assessments
8.2	Table of specification
9	PGT toolkit for formative assessment
9.1	Maintenance of Record
10	Section –X
10.1	LIST OF BOOKS

SECTION-I

1.1 INTRODUCTION TO UNIVERSITY

The Liaquat University of Medical and Health Sciences (LUMHS) is a public medical university located in Jamshoro, Sindh, Pakistan. It is started as a medical school, and known for its mission to train undergraduate and postgraduate students in line with the highest professional standards. It is in conjunction with Liaquat University Hospital and NIMRA Cancer Hospital. LUMHS is the second oldest medical school in Pakistan and the oldest in Sindh. It was later upgraded to the status of medical college known as Sindh Medical College in 1942. After Sind province got separated from Bombay Presidency, the college started teaching MBBS under University of Bombay. The requirements set by the university to maintain the affiliation led to the college being shifted to Karachi on December 10, 1945, and as a result, it was renamed as Dow Medical College. The Sindh government subsequently restarted the old medical college in the premises of the same civil hospital at Hyderabad in 1951, which acquired its name as Liaquat Medical College (LMC), after the name of first prime minister of Pakistan, Liaquat Ali Khan. Liaquat Medical College Hospital (later known as Liaquat University Hospital) was simultaneously started in the premises of the university.

The LMC was affiliated with University of Sindh. The college with its journey and natural growth for more than 62 years made tremendous contributions in both medical education and health care. The college was shifted to its new campus which spreads over 570 acres at Jamshoro in 1963 as the provincial government found the campus in Hyderabad to be inadequate and not sufficient to meet the demands of a top tier medical college. Faculty of Dentistry was also introduced in the same year after relocation. It became the second oldest and the largest institute of dentistry in the country. Postgraduate courses were also started simultaneously. After an ordinance was passed by Government of Sindh in 2001, it was upgraded to the status of the first public-sector medical university of the country. The university was ranked as the second best medical university in Pakistan throughout its initial years after being upgraded by the HEC.

1.2 VISION & MISSION OF LUMHS

Mission Statement:

- Fostering ideal learning environment to ensure modern scientific evidence based practices by imparting critical knowledge, analytical and psychomotor skills, and professional dedication among healthcare students, under the umbrella of virtuous professional, moral and ethical standards.
- To impart evidence-based research oriented medical education in the field of Pharmacology.
- To cultivate a community of scholars dedicated to advancing knowledge in field of pharmacology through rigorous research, interdisciplinary collaboration, and innovation.
- To inculcate the values of mutual respect and ethical practice of medicine.
- To meet the requirements of Higher Education Commission (HEC) and Pakistan Medical and Dental Council (PM&DC) up to the level of satisfaction with accuracy & transparency.

Vision:

- Liaquat University of Medical & Health Sciences seeks to be a top-tier healthcare institution, producing ingenious academic leaders, medical researchers, and healthcare advocates to serve global community.
- To overcome deficiency and enhance standards of faculty in the field of Pharmacology by establishing the Pharmacology Department of LUMHS as a number one seat of learning Pharmacology in Pakistan and through it, make available Pharmacology faculty; which can act as a change agent for bringing up the standards of graduate as well as undergraduate Medical and Dentistry programs of Pakistan in general and Sindh in particular and make this program one of the best in Pakistan, covering all aspects of the specialty of Pharmacology.

SECTION-II

2.1 INTRODUCTION TO M.PHIL. PHARMACOLOGY PROGRAM

The Master of Philosophy (M.Phil) in Pharmacology at Liaquat University of Medical & Health Sciences (LUMHS) is designed to strengthen advanced academic and research competencies in pharmacological sciences. As pharmacology remains a foundation of medical education and clinical practice, this program aims to deepen understanding of drug action from molecular to clinical levels.

The curriculum integrates coursework, laboratory training, and independent research, enabling students to develop expertise in general pharmacology, systemic pharmacology, chemotherapy, and pharmacological variations relevant to clinical disciplines. Modern teaching and investigative tools, including advanced laboratory techniques and digital learning technologies, help students align with current scientific advancements.

The program emphasizes analytical thinking, ethical research practice, and scholarly communication. Students are guided to pursue innovative research with applications in drug therapy, disease management, and other healthcare specialties.

Committed to academic excellence, the M.Phil Pharmacology program at LUMHS prepares graduates to become competent educators, researchers, and contributors to the evolving field of pharmacological science, equipped to support future discoveries and improved patient care.

2.2 AIMS & OBJECTIVES

The aim of the M.Phil Pharmacology program is to produce competent pharmacologists equipped with comprehensive knowledge of all aspects of pharmacology including general, systemic, clinical, and recent advances. The program's goals are designed to equip students with the knowledge, skills, and ethical values necessary for a successful and impactful career in pharmacology.

- To make a good teacher, supervisor, researcher.
- To motivate and devise innovative teaching and research strategies in order to collaborate in integrated teaching and research.
- To acquire a detailed knowledge of the mechanisms of drug action and correlate it with normal and altered physiological functions.

- To be able to plan and implement teaching programs for under-graduate medical/dental students and paramedical courses.
- Be able to use diverse teaching methods and modern learning resources for teaching and research presentations.
- To be able to critically appraise published literature, plan investigative procedures for research, and interpret data and to broaden his knowledge by keeping abreast with modern developments in the specialty.
- To be a competent pharmacologist, capable of organizing specialty department.

2.3 RESPONSIBILITIES AND COMPETENCIES OF POST GRADUATE TRAINEES

We expect our Postgraduate Trainees to be responsible regarding their:

- Behavior
- Discipline
- Punctuality
- Dress code
- Feedbacks
- Social media

We expect our PGTs to develop competency in:

- Medical knowledge
- Research
- Interpersonal & communication skills
- Professionalism
- Practice based learning & improvement

2.4 COURSE OUTCOMES

Upon successful completion of an M.Phil. Pharmacology program, students should achieve several key objectives, demonstrating their proficiency. These objectives include:

1. **In-Depth Knowledge:** Demonstrate a comprehensive understanding of human and clinical pharmacology, including advanced knowledge of drug mechanisms, their effects, and their relationships within body systems. Exhibit proficiency in the terminology, nomenclature, and classifications used in pharmacological science.
2. **Research Competence:** Conduct independent and original research projects in the field of pharmacology, which may include pharmacological studies, experimental research, drug analysis, or related areas. Publish research findings in reputable scientific journals and present research outcomes at conferences.
3. **Practical Skills:** Exhibit practical skills in laboratory techniques, and experimental pharmacology. Demonstrate proficiency in the use of laboratory instruments and pharmacological tools and equipment.
4. **Critical Thinking and Problem-Solving:** Apply critical thinking and problem-solving skills to analyze complex pharmacological issues and develop innovative solutions.
5. **Interdisciplinary Integration:** Integrate pharmacological knowledge into interdisciplinary contexts, such as physiology, biochemistry, pathology, and clinical applications.
6. **Lifelong Learning:** Cultivate a passion for lifelong learning, staying updated with the latest advancements in pharmacological science and related fields.
7. **Ethical and Professional Conduct:** Adhere to the highest ethical standards in pharmacological research and practice. Demonstrate professionalism, effective communication skills, and the ability to collaborate with peers, colleagues, and students.
8. **Teaching and Education:** Prepare for roles in education and mentorship by gaining experience in teaching pharmacology to undergraduate and postgraduate students. Develop effective pedagogical skills to convey pharmacological concepts clearly.
9. **Leadership and Advancement:** Be prepared to assume leadership positions in academia, research institutions, or healthcare settings, where they can contribute to the advancement of pharmacological science and education.
10. **Contribution to the Field:** Contribute meaningfully to the field of pharmacology research

publications, collaborations, and active participation in pharmacological societies and organizations. The successful achievement of these objectives ensures that graduates of an M.Phil Pharmacology program are well-equipped to make substantial contributions to the field of pharmacology, whether in academia, research, healthcare, or related domains.

SECTION-III

3.1 PROGRAM RESOURCES

PROGRAM RESOURCES

Faculty: Department of Pharmacology & Therapeutics is enriched with full-time dedicated, qualified and experienced faculty for teaching postgraduate students.

S No	Name	Designation
1.	Dr. Munawar Alam Ansari	Professor
2.	Dr. Mashkoor Ahmed Ansari	Associate Professor
3.	Dr. Sadat Memon	Assistant Professor
4.	Dr. Ganesh Kumar	Assistant Professor
5.	Dr. Adeela Mangrio	Lecturer
6.	Dr. Rizwan Ahmed Memon	Lecturer
7	Dr. Naveeta Bai	Lecturer
8	Dr Fazila Maryam	Lecturer

Location: Pharmacology department is located in Main campus 1st floor

SECTION-IV

4.1 Eligibility CRITERIA FOR ADMISSION

- Sixteen years of schooling or 4 years (minimum 124 credit hours) education after HSSC/A' Level in relevant discipline with minimum 55% marks
- MBBS from an institute recognized by PM&DC and one-year house job
- Candidates having teaching experience in Pharmacology will be preferred.
- The entry test conducted by Directorate of Postgraduates with a minimum 50% cumulative score will be required at the time of admission to M.Phil
- The postgraduate committee will be responsible to sort and verify documents, and suitability of the applicants.
- Government employees should produce NOC from their respective department
- For award of M.Phil degree, candidates will need to complete 30 credit hours with 24 credit hours of course work and 6 credit hours for research work.

SECTION-V

PROGRAM SPECIFICATION– M.PHIL
PHARMACOLOGY

5.1 COURSE OUTLINE

The M.Phil program shall extend over a period of at least two years.

During the two years of M.Phil. students will have to complete their 30 credit hours.
The course work will comprise of:

1. Compulsory courses and mandatory workshops =24 Credit hours
2. Research work =06 Credit hours

Note:

1 credit hour means 16 hours of lecturing.

1 credit hour means 32 hours of Practical Teaching.

5.2 PROGRAM SPECIFICATION

Course Title		M.Phil Pharmacology
Course Duration		02 Years
Type Of Study		Full Time
Study System		Annual
Total Credit Hours		30
YEAR	COURSE CODE	CREDIT HOURS
I.	PHM 01 General Pharmacology, Autonomic & Systemic Pharmacology PHM 02 CNS Pharmacology, GIT Major 1	06
	Minor 1 (Physiology/Biochemistry/Pathology)	06
II.	PHM 03 Chemotherapeutic & Cancer Pharmacology PHM 04 Renal, Endocrine & Respiratory Pharmacology Major 2	06
	PHM 05 Minor 2 (Physiology/Biochemistry/Pathology)	06
	PHM 06 Research work	06

Teaching schedule

Suggested weekly schedules will be as follows: -

1. Discussion once a week.
2. Practical/laboratory session once a week.
3. Formative Assessment once a week.
4. Journal club once a month.

ANNUAL OUTLINE

YEAR	TITLE OF COURSE
1 ST YEAR	CORE COURSES 1. General Pharmacology 2. ANS Pharmacology 3. GIT Pharmacology 4. CNS Pharmacology MANDATORY WORKSHOPS 1. Computer skills 2. Research methodology 3. Medical/Synopsis writing workshop 4. Communication Skills Journal Clubs and presentations Research and Synopsis submission for approval
2 ND YEAR	CORE COURSES 1. NSAIDs & Chemotherapeutic Drugs 2. Systemic Pharmacology (CVS, Renal, Blood, Endocrine, Respiratory) 3. Cancer Chemotherapy & Immunopharmacology MANDATORY WORKSHOPS Basic and Advance Statistical analysis Journal Clubs and presentations Abstract or Poster Presentation in conference(optional) Research and thesis writing and submission

5.3 DETAILS OF COURSE WORK

EDUCATIONAL METHODOLOGIES

1. Interactive Lectures
2. Small group discussions
3. Presentations
4. Assignments
5. Seminars/Tutorials/ SDL

Year 1

Credit Hours **12**

Compulsory Workshops

Computer Skills

Teaching Strategy – Hands On Workshop

OBJECTIVES:

Upon completion the students will be able to:

1. Develop basic skills in operating computer in the mentioned softwares.
2. Comprehend the basic principles of presenting scientific data at national and international platforms using computer and IT technology

CONTENTS:

The course contents will include:

Programme Microsoft:

- Word
- Power point
- Excel

2.Research Methodology

OBJECTIVES:

The primary objective of this course is to develop a research orientation among the scholars and to acquaint them with fundamentals of research methods. It includes discussions on sampling techniques, research designs and techniques of analysis.

At the end of the course the students should be able to

1. To develop the basic framework of research process
2. To develop an understanding of various research designs and techniques
3. Identify various sources of information for literature review and data collection
4. Elaborate ethical dimensions of conducting applied research

COURSE CONTENT

1. Introduction to research
2. Understanding Concepts, Constructs, Variables, and Definitions
3. Research Methodology
4. Problems and Hypotheses – Defining the research problem, Formulation of the
5. Research designs
6. Methods of data collection
7. Sampling techniques and determination of sample size
8. Processing and analysis of data
9. Ethical issues in conducting research
10. Report generation, report writing – Title page, Abstract, Introduction, Methodology, Results, Discussion, References, and Appendices

SYLLABUS M.PHIL PHARMACOLOGY MAJOR SUBJECT - I

COURSE TITLE:	GENERAL & SYSTEMIC PHARMACOLOGY
COURSE CODE:	PHM 01
COURSE CREDITS:	04

CONTENTS:

GENERAL PHARMACOLOGY

1. Routes of drug administration
2. Drug absorption
3. Drug distribution
4. Drug biotransformation
5. Drug excretion
6. Bioavailability and half life
7. Therapeutic index
8. Pharmacodynamics
9. Adverse drug reactions
10. Teratogenic drugs

ANS (AUTONOMIC NERVOUS SYSTEM) PHARMACOLOGY

1. Introduction to Autonomic Nervous System pharmacology
2. Directly acting cholinomimetics
3. Indirectly acting cholinomimetics
4. Anti-cholinergic drugs (anti-muscarinic)
5. Neuromuscular blocking agents
6. Adrenergic agonists
7. Adrenergic antagonists (alpha and beta blockers)

GIT PHARMACOLOGY

1. Acid peptic disease
2. Anti-emetics
3. Prokinetics
4. Laxatives and purgatives

COURSE TITLE: CNS PHARMACOLOGY, NSAIDs &
CHEMOTHERAPEUTIC DRUGS

COURSE CODE: PHM 02

COURSE CREDITS: 02

CONTENTS:

CNS PHARMACOLOGY

1. Sedatives and hypnotics
2. General anesthetics
3. Local anesthetics
4. Opioids
5. Drugs used in Parkinsonism
6. Anti-epileptic drugs
7. Alcohol

NSAIDs

1. NSAIDs
2. Drugs used in Rheumatoid Arthritis
3. Drugs used in Gout

CHEMOTHERAPEUTIC DRUGS

1. Cell wall synthesis inhibitors
2. Aminoglycosides
3. Tetracyclines
4. Macrolides
5. Chloramphenicol
6. Sulphonamides
7. Quinolones and fluoroquinolones
8. Anti-TB drugs
9. Antimalarial drugs
10. Anti-helminthic drugs
11. Antifungal drugs
12. Antiviral drugs

SYLLABUS M.PHIL PHARMACOLOGY MAJOR SUBJECT - II

**COURSE TITLE: CARDIOVASCULAR, RENAL & BLOOD
 PHARMACOLOGY**

COURSE CODE: PHM 03

COURSE CREDITS: 04

CONTENTS:

CVS PHARMACOLOGY

1. Antihypertensive drugs
2. Drugs used in CCF
3. Anti-Angina drugs
4. Anti-arrhythmic drugs
5. Lipid lowering drugs

RENAL PHARMACOLOGY

1. Diuretics

BLOOD PHARMACOLOGY

1. Drugs used in iron deficiency anemia
2. Drugs used in megaloblastic anemia
3. Coagulants
4. Anticoagulants
5. Thrombolytics

**COURSE TITLE: AUTOCOIDS, ENDOCRINE, RESPIRATORY &
 CANCER PHARMACOLOGY**

COURSE CODE: PHM 04

COURSE CREDITS: 02

CONTENTS:

AUTOCOIDS PHARMACOLOGY

1. Histamine
2. Antihistamines

3. Prostaglandins

ENDOCRINE PHARMACOLOGY

1. Anterior pituitary hormone
2. Corticoids and corticosteroid antagonists
3. Thyroid and parathyroid hormone
4. Antidiabetic drugs

RESPIRATORY PHARMACOLOGY

1. Treatment of asthma
2. Antitussive drugs

CANCER CHEMOTHERAPY

1. Anti-cancer drugs

IMMUNOPHARMACOLOGY

1. Immunosuppressants
2. Immunostimulants

SYLLABUS M.PHIL PHARMACOLOGY PRACTICALS

COURSE TITLE: PART-1 PRACTICALS

CONTENTS:

1. Preparation of physiological salt solutions – composition, purpose, and preparation (e.g. Tyrode's solution)
2. Laboratory animal handling and ethics – basic handling, care, identification, and ethical considerations
3. Observe the effect of Atropine on rabbit's eye
4. Observe the effect of Pilocarpine on rabbit's eye
5. Observe the effect of Antihistamine on rabbit's eye
6. Observe the effect of Xylocaine on rabbit's eye

COURSE TITLE: PART-2 PRACTICALS

CONTENTS:

DRUG EFFECTS ON ISOLATED TISSUES (POWERLAB RECORDING SYSTEM)

1. Introduction to isolated organ bath techniques and tissue preparations commonly used in pharmacology
2. Recording and analysis of tissue responses to different classes of drugs using the PowerLab data acquisition system
3. Understanding dose-dependent responses, agonist and antagonist interactions, and reversible vs. irreversible effects
4. Development of skills in data interpretation, graphical presentation, and linking findings to pharmacodynamic principles.

DOSE–RESPONSE CURVE

1. Demonstration of graded and quantal dose–response relationships using isolated tissues
2. Practical training in cumulative and non-cumulative dose–response methods
3. Construction and interpretation of dose–response curves to determine drug potency and efficacy
4. Introduction to concepts such as EC₅₀, maximal response, and slope of the curve

Research/Thesis Writing

The Thesis will be completed before the end of 2nd year of the courses and is submitted for evaluation to assessors, two from within the country. Upon approval of the work by the assessors, the student is required to correct the Thesis to comply with the observation of the evaluators before it is submitted to the panel of examiners.

Evaluation of Students During Course

There will be 360° continuous evaluation of Post Graduate Trainees throughout the course by Supervisors, Mentors, and Students (Proformas Attached)

SECTION VI

6.1 SYNOPSIS AND THESIS

Guidelines for M.Phil. Synopsis

Every candidate shall carry out work on an assigned research project under the guidance of a supervisor. The project shall be written & submitted in the form of a thesis. Every candidate shall submit synopsis and thesis within the time frame given by the university. The study must reflect the originality of work. The students will

- Identify a relevant research question
- Conduct a critical review of literature
- Formulate a hypothesis
- Determine the most suitable study design
- State the objective of the study
- Prepare a study protocol
- Undertake a study according to the protocol
- Analyze and interpret research data, and draw conclusion
- Write a research paper.

A synopsis should be constructed in a manner that facilitates the reviewer to understand the research project at a glance. It should be brief but precise. A synopsis must have the following headings:

Title:

The title of the research project should be brief but informative. It should reflect the objectives of the study. It must be written after the whole synopsis has been written so that it is a true representative of the plan. It should neither be too short nor too long. It should not include any name of the institution or the number of cases to be studied.

Introduction:

It should provide a brief description of the selected topic. It must highlight the importance of study, its relevance and applicability of results on general population. The purpose of the study must be evidently stated in the introduction.

Hypothesis:

A hypothesis is a statement which is to be tested for possible acceptance or rejection.

Hypothesis are of two types i.e. null (ho) and alternative (h1). Null hypothesis is tested for possible rejection, whereas alternative hypothesis is tested for possible acceptance. Hypothesis can be formulated by understanding the problem, reviewing the literature on it, and considering other factors. A hypothesis is needed in the following study designs:

All Interventional Studies

Cohort

Case Control

Comparative Cross Sectional.

Aims and Objectives:

An objective is indication of what the researcher wants to study. It should be stated in clear measurable terms and should be itemized. The objectives and aims should be only a few (2-3). They must pertain to the study problem. Usages of terms like "first study", "the only study", etc. Should be avoided.

Operational Definition:

It may be required in some synopsis. It is the definition of the exposure and outcome variables of interest in context to objective in a particular study and their means of measurement/determination?

Examples:

Anemia,
Effectiveness

PPH

Diabetes
Mellitus

Wound Healing

Material &**Methods:****Study Design:**

Mention the name of the appropriate study design.

Setting:

Name and place where the research work is to be conducted

Duration Of Study:

How long will the study take?

Sample Size:

How many patients will be included? If there are groups how many per group?

Sampling Technique:

Type Of Sampling Technique Employed.

Sample Selection:

Inclusion criteria: on what basis will patients be inducted in the study?

Exclusion criteria: on what basis will patients be excluded from the study?

Data Collection Procedure:

A detailed account of how the researcher will perform research; how she/he will measure the variable. It includes:

Identification Of The Study Variables**Methods For Collection Of Data****Data Collection Tools (Proforma/Questionnaire)****Variables:**

Variables are the factors that can change. These changes can affect the outcome of a research project. Thus, it is important to identify the variables at the planning stage. They should be quantified with a measurable unit. Knowledge of the various variables in a research project will assist in refining the objectives. Usually, objectives of a research will be to see the effect of independent variables on dependent variables

Data Analysis Procedure:

Data analysis is an important part of a research project. A good analysis leads to good results. Relevant details naming software to be used, which descriptive statistics and which test of significance if and when required, specifying variables where it will be applied. A general statement "appropriate statistical methods will be used." must be avoided.

Ethical Clearance:

Wherever necessary, ethical committee clearance from the institute should be obtained. The certificate must be attached. Ethical clearance is required in all human and animal studies.

Data Collection Instrument:

The researcher must attach, as an annex, the proforma or questionnaire with the help of which

he/she intends to collect data. The proforma/questionnaire must match the objectives and must not contain irrelevant sections like inclusion and exclusion criteria etc.

Estimated Cost Of The Project:

It includes the funds required for all chemicals / reagents, laboratory equipments / materials or study animals (if any) to be utilized in the research needs.

Outcome & Utilization:

It describes the way in which the expected results of your study can be useful in designing and delivery of health care system

References:

All references quoted in review of literature and anywhere else in the synopsis should be listed here. There are two styles for writing references, vancouver style and harvard style. Vancouver style is easy to follow as it depends on the numbers as quoted in text.

Process of Submission & Approval

Synopsis will be approved by university institutional research forum and ethical review board. Final approval will be given by university board of advance studies and research.

Guidelines for M. Phil Thesis

Thesis is a detailed discourse on a subject especially submitted for a higher degree in a university. It results from original research, especially when submitted by a candidate for

Masters Thesis Format

The thesis is a document that contains relevant details of the research work conducted by the post-graduate trainee relating to the problem. It emphasizes on developing skills in post-graduate trainees for: collection and compilation of data, analyzing and reviewing relevant literature available on the subject& developing medical writing habits. A thesis must have the following headings:

Title page:

It must include the title (including subtitle), Author, Institution, Department & Year.

Supervisor's certificate:

A thesis is to be submitted for the purpose of examination. It must obtain prior declaration by the supervisor on the standard and quality of the thesis.

Acknowledgements:

The student may acknowledge the assistance of various individuals or organizations in successfully producing the thesis. This should be written in one page.

List of symbols/abbreviations:

All symbols or abbreviations found in the text should be listed on this page in alphabetical order.

Table of contents:

The table of contents page must start on a new page. It should list all sections, chapters and sub-headings. The titles must be written using the same words as those written in the text.

List of tables:

This page should list all the tables found in the thesis. The page number of the table must also be included. The table numbers should be arranged according to the chapters.

List of figures:

Diagrams, photographs, drawings, graphs, charts and maps are included as figures. The list should be written similar as the list of tables

List of appendices:

All appendices should be listed on this page.

Abstract:

A good abstract explains the importance of the research in one line. It then goes on to give a summary of your major results. The closing sentences explain the major inferences of your work. A good abstract is concise, readable, and quantitative. Length should be ~ 1-2 paragraphs, approx. 400 words. Information in title should not be repeated. Use numbers where appropriate. Abstract must tell why & how you performed the study & what did you learned by the results of the study.

Introduction:

For writing a good introduction pgs must know what the body of the paper says. Preferably the introductory section(s) should be written after pgs have completed the rest of the paper, rather than before. Be sure to include a sufficiently interesting statement at the beginning of the introduction to motivate pgs reader to read the rest of the paper. This is the scientific problem that pgs paper either solves or addresses. Pgs should attract the reader in and make them want to read the rest of the thesis.

The next paragraphs in the introduction should quote previous research in this field. It should cite those who had the idea or ideas first, and should also cite those who have done the most recent and relevant work. Pgs should then go on to explain why more work was necessary (pgs work, of

course.)

Pgts should also state the goal of the paper: why the study was undertaken, or why the paper was written. Do not repeat the abstract. Provide sufficient background information to allow the reader to understand the context and significance of the question pgts are trying to address. Mention proper acknowledgement of the previous work on which they building their thesis. Give sufficient references at the end. The introduction should be focused on the thesis question(s). All cited work should be directly relevant to the goals of the thesis.

Aims and objectives:

An objective is indication of what the researcher wants to study. It should be stated in clear measurable terms and should be itemized. The objectives and aims should be only a few (2-3). They must pertain to the study problem.

Material and methods:

It should be same as stated in the synopsis. It includes:

- **Study Design:**

Mention the name of the appropriate study design.

- **Setting:**

Name and place where the research work is to be conducted

- **Duration Of Study:**

How long will the study take?

- **Sample Size:**

How many patients will be included? If there are groups how many per group?

- **Sampling Technique:**

Type of sampling technique employed.

- **Sample Selection:**

Inclusion criteria: on what basis will patients be inducted in the study?

Exclusion criteria: on what basis will patients be excluded from the study?

- **Data Collection Procedure:**

A detailed account of how the researcher will perform research; how she/he will measure the variable. It includes:

- Identification of the study variables

- Methods for collection of data

- Data collection tools

(proforma/questionnaire)

- **Data Analysis Procedure:**

Data analysis is an important part of a research project. A good analysis leads to good results. Relevant details naming software to be used, which descriptive statistics and which test of significance if and when required, specifying variables where it will be applied. A general statement "appropriate statistical methods will be used." must be avoided.

Results:

The results are actual statements of observations, including statistics, tables and graphs. Results indicate information on range of variation. Mention negative results as well as positive. Do not interpret results - save that for the discussion. Use s.i. units (m, s, kg, w, etc.) Throughout the thesis. Break up their results into logical segments by using subheadings. Key results should be stated in clear sentences at the beginning of paragraphs. It is far better to say "x had significant positive relationship with y than to start with a less informative like "there is a significant relationship between x and y". Describe the nature of the findings; do not just tell the reader whether or not they are significant.

Tables & figures:

All tables must be numbered. A caption should be positioned at the top of the table. If the caption is written in a single line, it should be centered. If the caption is written more than one line, it should be aligned to the left. Tables must be numbered with respect to the chapter. Illustrations such as maps, charts, graphs, drawings, diagrams, and photographs are referred as figures. All figures must be clear and of high quality. Figures must be numbered. A caption should be located at the bottom of the figure. If the caption is written in a single line, it should be centered.

If the caption is written in more than one line, it should be align to the left. Figures are numbered with respect to the chapter.

Discussion:

Discussion should be started with a few sentences that summarize the most important results. The discussion section should be a brief essay in itself. It should emphasize on the major patterns in the observations, the relationships, trends and generalizations among the results. The exceptions to these patterns or generalizations should also be mentioned. Describe the likely causes (mechanisms) underlying these patterns resulting predictions. Explain the agreement or disagreement with previous work. Interpret results in terms of background laid out in the introduction. Mention the implications of the present results. Include the evidence or line of reasoning supporting each interpretation. This section should be rich in references to similar

work and background needed to interpret results. However, interpretation/discussion section(s) are often too long and verbose. Break up the sections into logical segments by using subheads.

Conclusion:

Conclusions include the strongest and most important statement that pgts can make from his/her observations. Refer back to problem posed, and describe the conclusions that pgts reached from carrying out this investigation, summarize new observations, new interpretations, and new insights that have resulted from the present work. Include the broader implications of your results. Do not repeat word for word the abstract, introduction or discussion. The conclusions should be linked with the objectives of the study.

Appendices:

Appendices are supplementary materials to the text. These include tables, charts, computer program listings, and others.

References:

References are detailed description of items from which information were obtained in preparing the thesis. All references must be listed at the end of the text.

Policy for M.Phil thesis writing and submission:

- Student will select topic and get it approved in first semester.
- Student will write synopsis and get it approved in 2nd semester.
- In the 3rd semester student will do research work.
- In the 4th semester student will complete research work and write down the thesis.

The thesis submitted by M.Phil candidate shall comply with the following conditions:

- (a) It shall form a distinct contribution to knowledge and afford evidence of originality, shown by the discovery of new facts, by the exercise of independent critical judgment, and/or by the invention of new methods of investigation.
- (b) It shall not include research work for which a degree has already been conferred in this or any other university.
- (c) It shall be written in english and the presentation must be satisfactory for publication.
- (d) Any part of the thesis which has been published before submission of the thesis may be appended at the end of the thesis.

6.2 Plagiarism undertaking

I solemnly declare that research work presented in the thesis titled

“.....”
.....”

Is solely my research work with no significant contribution from any other person. Small contribution/help wherever taken has been duly acknowledged and that complete thesis has been written by me.

I understand the zero tolerance policy of the hec and university

..... (Name of University).....

Towards plagiarism. Therefore, I as an author of the above titled thesis declare that no portion of my thesis has been plagiarized and any material used as reference is properly referred/cited.

I undertake that if i am found guilty of any formal plagiarism in the above titled thesis even after award of mphil degree, the university reserves the rights to withdraw/revoke m degree and that hec and the university has the right to publish my name on the HEC/university website on which names of students are placed who submitted plagiarized thesis.

Student /Author signature:_____Name:_____

SECTION-VII

7.1 POSTGRADUATE TRAINEE EVALUATION

PGT EVULATION

360 Degree evaluation of PGTs:

PGTs will be evaluated by

- Students
- Lab Staff
- Mentors
- Supervisors

EVALUATIONS

- To make sure that residents/students are evaluated fairly, the evaluators will attend workshops on evaluation methodologies.
- There will be structured viva and written assessments
- Keys will be provided to evaluators for checking written papers/viva
- For annual confidential written evaluations of the PGT by the students, Feedback proforma will be designed in which all aspects related to teaching like Knowledge, punctuality, tolerance level, professionalism, communication skills and behavior with student will be covered.
- To ensure confidentiality students will be asked to fill proforma without showing their identity, different students will be asked to fill proforma at different times
- All data will be computerized and a pass code will be generated so only concerned person will be able to access these feedback proforma.
- A confidential letter will be written to PGT in which details of his/her annual Feedback will be told including all positive and negative aspects
- He /she will be called in HOD office to discuss areas where improvement is required
- He/she will be encouraged to convert weaknesses into strengths by addressing his problems

DEPARTMENT OF PHARMACOLOGY & THERAPEUTICS

LUMHS, JAMSHORO

PGT EVALUATION PROFORMA BY SUPERVISOR

NAME: _____SESSION: _____

PROGRAMME: _____COURSE TITLE: _____

ATTENDANCE

PRESENTATIONS

LECTURES

SGD

TUTORIALs/GUIDED SELF-STUDY

PRACTICAL

PROFESSIONALISM

CONDUCT

TEST RESULTS

WRITTEN

VIVA

TOTAL

REMARKS

SUPERVISOR SIGNATURE: _____

PGT EVALUATION BY STUDENTS

Proforma

Teacher Evaluation Form

(To be filled by the student)

Course Title and Number: _____

Name of Instructor: _____ Semester _____

Department: _____ Degree _____

Use the scale to answer the following questions below and make comments

A: Strongly Agree B: Agree C: Uncertain D: Disagree E: Strongly Disagree

Instructor:

1. The Instructor is prepared for each class A B C D E
2. The Instructor demonstrates knowledge of the subject A B C D E
3. The Instructor has completed the whole course A B C D E
4. The Instructor provides additional material apart from the textbook A B C D E
5. The Instructor gives citations regarding current situations with reference to Pakistani context. A B C D E
6. The Instructor communicates the subject matter effectively A B C D E
7. The Instructor shows respect towards students and encourages class participation A B C D E
8. The Instructor maintains an environment that is conducive to learning A B C D E
9. The Instructor arrives on time A B C D E
10. The Instructor leaves on time A B C D E
11. The Instructor is fair in examination A B C D E
12. The Instructor returns the graded scripts etc, in a reasonable amount of time A B C D E
13. The Instructor was available during the specified office hours and for after class consultations A B C D E

COURSE:

1. The Subject matter presented in the course has increased your knowledge of the subject A B
C D E
2. The syllabus clearly states course objectives requirements, procedures and grading criteria A B
C D E
3. The course integrates theoretical course concepts with real-world applicationsA B C D E
4. The assignments and exams covered the materials presented in the course A B C D E
5. The course material is modern and updated A B C D E

Comments:

Instructor:_____

Course:_____

Proforma-2

Faculty Course Review Report

(To be filled by each teacher at the time of Course Completion)

Part-I

Department:

Faculty:

Course Code:

Title:

Batch:

Term:

Year:

Credit / Contract

Weeks:

No. of Lectures Conducted

No. of Students enrolled

Designation

Assessment Methods: Please give precise details (no & length of assignments, tests and presentations)

Comments:

Overview/ Evaluation (Course Coordinator's Comments)

Feedback: First summarize, and then comment on feedback received form:

- Student (Course Evaluation) Questionnaires (filled by QEC)
- External Examiners or Moderators (if any)

(comments of External examiner if any)

1) Curriculum: comment on the continuing appropriateness of the Course curriculum in relation to the intended learning outcomes (course objectives) and its compliance with the HEC Approved / Revised National Curriculum Guidelines (comments by the course teacher)

2) Assessment: comment on the continuing effectiveness of method(s) of assessment in relation to the intended learning outcomes (Course objectives)

(comments by the course teacher)

3) Enhancement: comment on the implementation of changes proposed in earlier Faculty Course Review Reports (comments by the course teacher)

4) Outline: any changes in the future delivery or structure of the Course that this semester/term's experience may prompt (by the course teacher)

Name/ Signature _____

Date_____

(Course Instructor)

Name/ Signature _____

Date_____

(Head of Department)

SECTION-VIII

8.1 ASSESSMENT

Formative assessment

Summative assessment

Assessment Procedure:

- Assignment 20 marks percent marks
- Test 30 marks percent marks
- Total / Number of all percent marks Weight age 30% (Internal assessment)
- Annual Examination
 - a. Major 1 SBQs 100 marks
 - b. Minor 1 SBQs 100 marks
 - c. Major 11 SBQs 100 marks
 - d. Minor 11 SBQs 100 marks
 - e. Viva & OSPE 200 marks Passing % (70 %)
 - f. Thesis marks 300 Marks approved by three local examiners.

Assignments:

- Trainees/students will be informed about their assignments/duties by putting their duty rosters and teaching schedules on notice boards on weekly basis
- By keeping academic log books
- By maintaining and displaying annual academic calendars
- All schedules will be readily available on college website

STANDARD OF PASSING

1. Cleared semester exams: A comprehensive exam would be held on the minor subject related to the research topic at the end of 3rd semester along with the semester exam of course work.
2. The Thesis examined or to be examined by at three examiners: If the scholar has completed his/ her dissertation then the dissertation has to be examined by minimum of three examiners preferably from technologically advanced universities.
3. Has the Thesis been defended If yes, then provide the details including date of defense, whether it was an open defense, notification of the defense etc.

Defense Examination

- a. There shall be a standing list of external examiners for respective department consisting of persons of eminence in the field of research. The list shall be suggested from time to time by the board of studies of faculty concerned and approved by the research board. The external examiners will be requested to critically examine the thesis for its suitability for the award of M.Phil degree.
- b. There shall also be a standing list of local examiners for department consisting of eminent persons engaged in research. The list shall be suggested from time to time by the board of studies of the department/board of faculty concerned and approved by the research board. The local examiners will be requested to conduct the final viva-voce examinations of thesis.
- c.
 - i. The candidate shall in the first instance submit six unbound copies of his/her completed thesis along with an application on prescribed form for the evaluation of his/her thesis, duly forwarded by his/her supervisor and the chairman of the department:-

Three for external

One for examination section

One for department office

One for the supervisor

- ii. After corrections have been incorporated in accordance with the comments of external examiners; two copies of thesis in loose binding, to be sent to viva-voce examiners.
- iii. After the viva-voce examination; four copies of the final hard-bound thesis be submitted: -
 - i. One for examination section
 - ii. One for central library
 - iii. One for departmental office
 - iv. One for supervisor
- d. The supervisor shall suggest a panel of at least six external examiners from the approved list. The vice-chancellor shall appoint three external examiners from the suggested panel to evaluate the thesis.
- e. The reports of the examiners shall be placed before the research board for consideration.
- f. If the thesis is adjudged as adequate by two of the three examiners, the research board shall allow the candidate to appear in the viva-voce (thesis defense) examination.
- g. If two of the three examiners find that the thesis is wholly inadequate it may be rejected by the research board.
- h. If any of the examiners suggests modification/revision of the thesis, the candidate shall be required to resubmit a revised version of the thesis, duly certified by the supervisor, within one year.
- i. The revised version of the thesis shall be approved by the same examiner who suggested modification/revision of the thesis.
- j. If any of the examiners finds the thesis adequate but suggests minor modifications/revision, this may be incorporated without referring again to the examiner as required in clause (i).
- k. The viva-voce examination shall be conducted by the two external examiners appointed by the vice-chancellor from the panel approved by the research board, the supervisor and the chairman of the department concerned.

l. The viva-voce examination shall be open to the public but the evaluation will be done only by the panel of examiners.

m. If the candidate fails to satisfy the examiners in the viva-voce examination he/she may be given a chance to defend the thesis for the second and final time within a period of six months.

n. A candidate who successfully completes all the requirements shall be awarded, with the approval of the research board and the syndicate, the degree of M.Phil under the seal of the university.

The vice-chancellor may approve the recommendations of the research board on behalf of the syndicate regarding the award of M.Phil degree to the candidate.

Table of Specification (Blueprint of Assessment)

M.Phil Pharmacology – Examination

The M. Phil Pharmacology annual examination assesses candidates through Best Choice Questions (BCQs) only. Each paper (Major-I and Major-II) carries 100 marks, distributed as 100 BCQs of 1 mark each, allocated across topics in proportion to their weightage in the approved syllabus (Section V of the curriculum). This blueprint is intended to guide question paper setters in ensuring balanced topic coverage and to inform candidates of the relative emphasis of each subject area.

Minor-I and Minor-II (Physiology / Biochemistry / Pathology, as selected) are administered and assessed by the respective host departments according to their own blueprint of assessment; this document covers only the Major subjects taught within the Department of Pharmacology & Therapeutics.

Paper 1: Major-I – General & Systemic Pharmacology, CNS Pharmacology, NSAIDs & Chemotherapeutic Drugs (PHM 01 + PHM 02)

Total: 100 BCQs = 100 Marks | Time Allowed: 2 Hours | Passing: 50%

S.No	Topic	No. of BCQs	Marks	Weightage (%)
1	General Pharmacology (routes of administration, absorption, distribution, biotransformation, excretion, bioavailability, therapeutic index, pharmacodynamics, adverse drug reactions, teratogenic drugs)	23	23	23%
2	ANS (Autonomic Nervous System) Pharmacology	16	16	16%
3	GIT Pharmacology	9	9	9%
4	CNS Pharmacology	16	16	16%
5	NSAIDs	7	7	7%
6	Chemotherapeutic Drugs	29	29	29%
Total		100	100	100%

Paper 2: Major-II – Cardiovascular, Renal, Blood, Autocoids, Endocrine, Respiratory & Cancer Pharmacology (PHM 03 + PHM 04)

Total: 100 BCQs = 100 Marks | Time Allowed: 2 Hours | Passing: 50%

S.No	Topic	No. of BCQs	Marks	Weightage (%)
1	CVS Pharmacology	22	22	22%
2	Renal Pharmacology	4	4	4%
3	Blood Pharmacology	22	22	22%
4	Autocoids Pharmacology	13	13	13%
5	Endocrine Pharmacology	17	17	17%
6	Respiratory Pharmacology	9	9	9%
7	Cancer Chemotherapy	4	4	4%
8	Immunopharmacology	9	9	9%
Total		100	100	100%

Notes on BCQ Construction

- Each BCQ is a single-best-answer item with one stem and four to five options (one correct/best answer).
- Items should be distributed across cognitive levels: approximately 40% Knowledge/Recall, 40% Comprehension/Application, and 20% Analysis/Problem-solving, in line with the program's competency-based outcomes.
- Recent advances and clinically relevant applications relating to each topic should be represented proportionate to their weightage above.
- This blueprint should be reviewed and updated periodically by the Board of Studies to reflect any changes in the approved syllabus.

SECTION- IX
PGT TOOLKIT FOR FORMATIVE ASSESSMENT
9.1 Maintenance of Record
PORTFOLIO

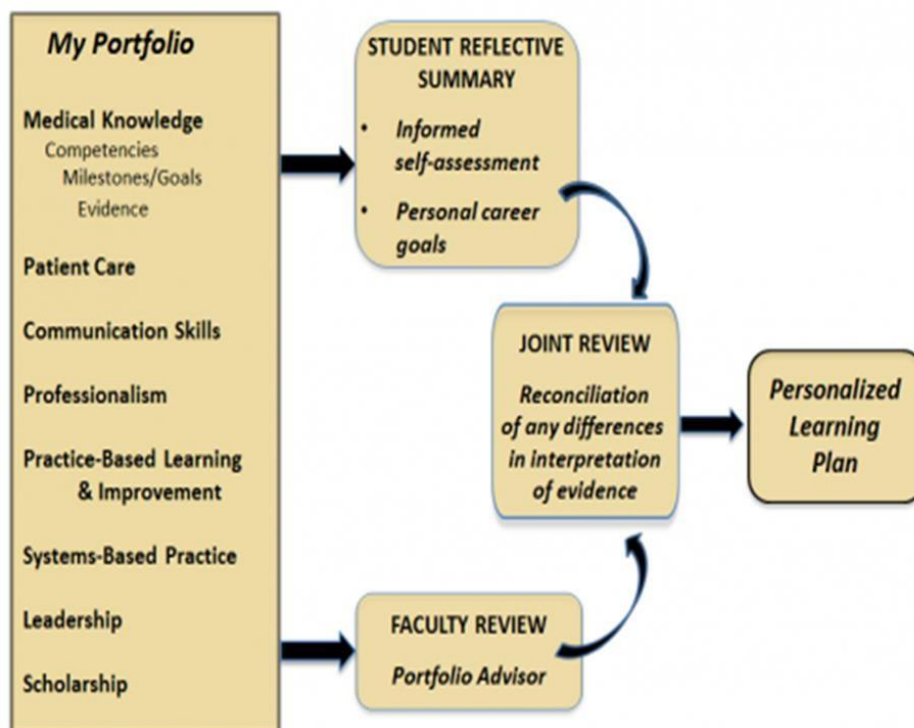
PGTs will maintain a portfolio that takes the portfolio resume concept one step further in a multiple-page document that thoroughly covers PGTs career to date.

Portfolio will contain:

- Table of contents
- Copy of standard resume
- Education: degrees, certifications, etc.
- Skills and achievements
- Career goals
- Mission statement or guiding principles
- Professional summary
- Personnel Essay
- Previous Work samples
- Evaluations or recommendations
- Publications and research
- Volunteer work
- Awards and acknowledgements
- List of references
- Cover Letter
- Critical Choices
- Senior Memory Book
- Two-Year Plan
- Academic Work samples

- Projects, examples, posters
- Student reflections (either weekly, monthly, or bi-monthly)
- Pivotal Points
- Charts, graphs created
- CPC attendance
- Assignments

PGTs will organize portfolio into sections. Use page numbers and a table of contents to make the information easy to find, as well as tabs or dividers between sections.



SECTION- X

10.1 LIST OF BOOKS

S.No	Title of Books	Author
01	<i>Goodman & Gilman's The Pharmacological Basis of Therapeutics</i>	<i>Laurence Brunton, Randa Hilal-Dandan, Björn Knollmann (eds.)</i>
02	<i>Katzung's Basic & Clinical Pharmacology</i>	<i>Bertram Katzung, Todd Vanderah</i>
03	<i>Katzung & Trevor's Pharmacology: Examination & Board Review</i>	<i>Bertram Katzung, Anthony Trevor</i>
04	<i>Lippincott Illustrated Reviews: Pharmacology</i>	<i>Karen Whalen</i>