Liaquat University of Medical and Health sciences
Department of Anatomy

Curriculum of M.Phil Anatomy
LUMHS, Jamshoro

Preface

Anatomy is a cornerstone of medical science, providing the essential understanding of human structure that supports all clinical knowledge and practice. Over centuries, the field has evolved remarkably—from early dissections to advanced imaging technologies and molecular exploration—strengthening its role in modern healthcare and research.

This M.Phil Anatomy curriculum is designed to cultivate inquiry, analytical thinking, and research excellence. It offers a comprehensive framework that guides students through both foundational and advanced anatomical studies, including gross anatomy, histology, developmental biology, and related scientific disciplines.

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

Through this curriculum, students are empowered to engage in impactful research that contributes to medical education, 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 anatomical sciences.

Curriculum Development Team

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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 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 Anatomy and associated subspecialties.
- To cultivate a community of scholars dedicated to advancing knowledge in field of anatomy 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.

1.3 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 Anatomy by establishing Anatomy Department of LUMHS as a number one seat of learning Anatomy in Pakistan and through it, make available Anatomy 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 Anatomy.

SECTION-II

2.1 INTRODUCTION TO M.PHIL. ANATOMY PROGRAM

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

The curriculum integrates coursework, laboratory training, and independent research, enabling students to develop expertise in gross anatomy, histology, embryology, neuroanatomy, and anatomical variations relevant to clinical disciplines. Modern teaching and investigative tools, including advanced imaging 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 medical education, surgery, pathology, radiology, and other healthcare specialties.

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

2.2 AIMS & OBJECTIVES

The aim of the M.Phil Anatomy program is to produce competent anatomists equipped with comprehensive knowledge of all aspects of anatomy including gross, microscopic, developmental, 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 anatomy.

- 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 gross and microscopic structure of human body and correlate it with its normal and altered 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 anatomist, capable of organizing specialty department.

2.3 RESPONSIBILITIES AND

We expect our Postgraduate Trainees to be responsible regarding their:

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

2.4 COMPETENCIES OF POST GRADUATE TRAINEES

We expect our PGTs to develop competency in:

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

2.5 COURSE OUTCOMES

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

1. **In-Depth Knowledge**: Demonstrate a comprehensive understanding of human and comparative anatomy, including advanced knowledge of anatomical structures, their functions, and their relationships within the body. Exhibit proficiency in the terminology, nomenclature, and classifications used in anatomical science.

2. **Research Competence**: Conduct independent and original research projects in the field of anatomy, which may include anatomical studies, histological research, imaging 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 imaging technologies. Demonstrate proficiency in the use of microscope and anatomical tools and equipment.

4. **Critical Thinking and Problem-Solving**: Apply critical thinking and problem-solving skills to analyze complex anatomical issues and develop innovative solutions.

5. **Interdisciplinary Integration**: Integrate anatomical knowledge into interdisciplinary contexts, such as physiology, biomechanics, genetics, and clinical applications.

6. **Lifelong Learning**: Cultivate a passion for lifelong learning, staying updated with the latest advancements in anatomical science and related fields. Exhibit a capacity for self-directed learning and the ability to adapt to evolving anatomical knowledge and technologies.

7. **Ethical and Professional** Conduct: Adhere to the highest ethical standards in anatomical 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 anatomy to undergraduate or lower-level students. Develop effective pedagogical skills to convey anatomical concepts clearly and engage students in learning.

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 anatomical science and education.

10. **Contribution to the Field:** Contribute meaningfully to the field of anatomy through research publications, collaborations, and active participation in anatomical societies and organizations. The successful achievement of these objectives ensures that graduates of an M.Phil Anatomy program are well-equipped to make substantial contributions to the field of anatomy, whether in academia, research, healthcare, or related domains.

SECTION-III

PROGRAM RESOURCES

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

S. #	Name	Degree	Designation
1.	**Prof: Dr. Samreen Memon**	**MBBS, Ph.D (U.K)**	**Dean Faculty of Basic Medical Sciences**
2.	**Prof: Dr. Pushpa Goswami**	**MBBS, M.Phil, Ph.D**	**Professor & Chairperson**
3.	Dr. Muhammad Yaqoob	MBBS, Ph.D	Associate Professor
4.	Dr. Pashmina	MBBS, M.Phil (Ph.D)	Associate Professor
5.	Dr. Farhana Rajpar	MBBS, M.Phil (Ph.D)	Associate Professor
6.	Dr. Umbreen Bano	MBBS, Ph.D	Assistant Professor
7.	Dr. Fahmida Gul	MBBS, M.Phil, Ph.D	Lecturer
8.	Dr. Khalida Parveen	MBBS, M.Phil	Lecturer
9.	Dr. Rabia Bughio	MBBS, M.Phil	Lecturer
10.	Dr. Sana Shabbir	MBBS, M.Phil	Lecturer
11.	Dr. Anas Raza	MBBS, M.Phil	Lecturer
12.	Dr. Iqra	MBBS, M.Phil	Lecturer
13.	Dr. Ahad	MBBS	Lecturer

Location: Anatomy department is located in Main campus ground floor.

SECTION-IV

4.1 Eligibility CRIETERIA 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 Anatomy will be preferred.
- The entry test conducted by Directorate of Admission 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

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.

Details of Annual Examination

Part 1
Paper 1 (Major)
SBAs .....100 marks

Paper 11 (Minor)
SBAs .....100 marks

Practical and Oral 100 Marks (Successful students in theory exam will be eligible)

Part 2
Paper 1 (Major)
SBAs .....100 marks

Paper 11 (Minor)
SBAs .....100 marks

Practical and Oral 100 Marks (Successful students in theory exam will be eligible)

The passing percentage will be 60% in all exams.

5.2 PROGRAM SPECIFICATION

Course Title		M.Phil Anatomy
Course Duration		02 Years
Type Of Study		Full Time
Study System		Annual
Total Credit Hours		30
YEAR	**COURSE CODE**	**CREDIT HOURS**
I.	ANT 01 Histology & Microtechnique ANT 02 General Embryology Major 1	06
	Minor 1 (Physiology/Biochemistry/Pharmacology/Pathology)	06
II.	ANT 03 Special Embryology ANT 04 Neuroanatomy Major 2	06
	ANT 05 Minor 2 (Gross/Regional Anatomy)	06
	ANT 06 Research work	06

5.3: Teaching schedule

Suggested weekly schedules will be as follows: -

1. Discussion once a week.
2. Histology slides discussion/ preparation once a week.
3. Formative Assessment once a week.
4. Journal club once a month.

5.4: ANNUAL OUTLINE

YEAR	TITLE OF COURSE
1ST YEAR	**CORE COURSES** 1. General Histology 2. Special Histology 3. Microtechnique 4. General Embryology **MANDATORY WORKSHOPS** 1. Computer skills 2. Research methodology and Medical/Synopsis writing workshop 3. Literature search and selection of research topic 4. Reference Management & citation 5. Animal Handling **Journal Clubs and presentations** **Research and Synopsis submission for approval**
2ND YEAR	**CORE COURSES** 1. Special Embryology 2. Neuroanatomy 3. Gross Anatomy **MANDATORY WORKSHOPS** Basic and Advance Statistical analysis **Journal Clubs and presentations** **Abstract or Poster Presentation in conference(optional)** **Research and thesis writing and submission**

5.5: EDUCATIONAL METHODOLOGIES

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

5.6: SYLLABUS M.PHIL ANATOMY

5.6.1: SUBJECT MAJOR 1

COURSE TITLE: **HISTOLOGY& MICROTECHNIQUES**

COURSE CODE: **ANAT 01**

COURSE CREDITS: **04**

CONTENTS:

GENERAL HISTOLOGY

1. Cell, cell membrane, cell organelles and cell division
2. Epithelium
3. Connective tissue.
4. Skeletal tissue (bone and cartilage)
5. Muscular tissue
6. Nervous tissue

SPECIAL HISTOLOGY

1. Immune system and lymphoid organs
2. Circulatory system (Heart and blood vessels)
3. Respiratory system
4. Gastrointestinal tract and accessory digestive organs
5. Urinary system
6. Endocrine system
7. Male and female reproductive system
8. Histology of the special senses

MICRO TECHNIQUES

1. Introduction to histological micro technique.
2. Principles of fixation of biological materials, fixation and fixatives
3. Tissue processing and embedding.
4. Use of stains.
5. Microtomy (selection, care and operation of microscopes used in biological procedures)
6. Photo micorgraphy, image acquistation
7. Lab. Safety

COURSE TITLE: GENERAL EMBRYOLOGY

COURSE CODE: ANAT 02

COURSE CREDITS: 02

CONTENTS:

General Embryology:

1. Fundamental concepts and scope of embryology and terminology.
2. General features of development (cell proliferation, growth, differentiation)
3. Gametogenesis in male and female, menstrual cycle, ovulation.
4. First Two Weeks of Development; Fertilization, cleavage, Implantation, Formation of bilaminar germ disc, Trophoblast development
5. Third Week of Development; primitive streak, node, Gastrulation.
6. Fourth to Eighth Week of Development, Formation of somites, neural tube, folding
7. Fetal Membranes, Placenta, Umbilical cord, Amnion, Amniotic fluid.
8. External appearance during second month, estimation of age and growth of fetus.
9. Multiple pregnancies.
10. Birth defects and prenatal diagnostic techniques.

5.6.2: MAJOR SUBJECT - II

COURSE TITLE: SPECIAL EMBRYOLOGY

COURSE CODE: ANAT 03

COURSE CREDITS: 02

1. Development of muscular system
2. Development of skeletal system and limbs
3. Development of body cavities and serous membranes.
4. Development of digestive system, liver and pancreas.
5. Development of urinary system.
6. Development of urogenital system (male and female).
7. Development of cardiovascular system.

8. Development of head and neck
9. Development of respiratory system.
10. Development of central nervous system.
11. Development of eye
12. Development of ear
13. Development of integumentary system.
14. Special reference to vulnerable periods with respect to each system.
15. Congenital malformations and recent advances associated with each system

COURSE TITLE: NEUROANATOMY

COURSE CODE: ANAT 04

COURSE CREDITS: 04

NEUROANATOMY

CONTENTS:

1. Introduction and organization of nervous system
2. Neurobiology and histology of the neuron and neuroglial cells.
3. Nerve fibers, peripheral nerves receptor and effector endings, dermatomes
4. Development of nervous system.
5. Spinal cord and the ascending and descending tracts.
6. Brainstem.
7. Cerebellum and its connections.
8. Cerebrum.
9. Structural and functional localization of the cerebral cortex.
10. Reticular formation and limbic system.
11. Basal nuclei (Basal ganglia) and their connections.
12. Cranial nerve nuclei and their central connections and distribution.
13. Thalamus and its connections.
14. Hypothalamus and its connections.
15. Autonomic nervous system.

16. Meninges of the brain and spinal cord.Ventricular system, the cerebrospinal fluid, blood brain and blood CSF barriers
17. Blood supply of the brain and spinal cord

5.6.3: MINOR SUBJECT - II

COURSE TITLE: GROSS ANATOMY

COURSE CODE: ANAT 05

COURSE CREDITS: 06

CONTENTS:

GENERAL ANATOMY:

1. Introduction to anatomy, Organization of the body
2. Cells, tissues organs and systems
3. General anatomy of musculo skeletal system
4. Basic organization of somatic and autonomic nervous system
5. General anatomy of circulatory system
6. Anatomy of vertebral column and vertebral canal

HEAD & NECK

1. The Skull: Fetal and adult, Ossification of the skull
2. The muscles, nerves, blood vessels and lymphatic's of the head and neck
3. The fascia and triangles of the neck with contents.
4. The parotid region
5. The infratemporal region
6. The nose and paranasal sinuses
7. The mouth and hard plate
8. The pharynx and larynx
9. The orbit, eye and eyeball.
10. The ear
11. Pre and post vertebral muscles
12. Cervical vertebrae and their movements

13. Cranial cavity and meninges and dural venous sinuses
14. Thyroid gland and parotid gland
15. Tongue
16. Cranial nerves and their testing
17. Radiology of head and neck

UPPER LIMB

1. Bones of the upper limb and their ossification
2. Pectoral region and breast.
3. Axilla and scapular region
4. Upper arm and cubital fossa.
5. Forearm and hand
6. Nerves, dermatomes and nerve injuries.
7. Venous and lymphatic drainage of the upper limb
8. Joints of upper limb
9. Applied anatomy of each region
10. Radiological anatomy of the upper limb for different age groups

LOWER LIMB

1. Bones of the lower limb with their ossification
2. Gluteal region
3. Thigh and popliteal fossa
4. Leg, dorsum of foot, sole
5. Arches of foot
6. Joints of lower limb
7. Innervation of the lower limb
8. Venous and lymphatic drainage of the lower limb
9. Applied anatomy of each region
10. Radiological anatomy of the lower limb for different age groups

THORAX

11. Introduction to thorax

12. Walls of thorax & Respiratory Movement
13. Thoracic cavity
14. Lung with Pleura
15. Heart with Pericardium
16. Mediastinum- subdivisions, detailed contents and applied
17. Joints of thorax
18. Applied aspects of all regions including bypass surgeries and stents

ABDOMEN & PELVIS:

1. Introduction of Abdomen and pelvis
2. Abdominal walls including fascia
3. Vessels of Abdomen and pelvis
4. Peritoneal cavity including details of fossae, sub-phrenic spaces, peritoneal bands
5. Viscera of abdominal cavity
6. Diaphragm including details of diaphragmatic hernias
7. Nerves of abdomen and pelvis
8. Female reproductive system
9. Male reproductive system
10. Posterior abdominal wall
11. Kidneys, ureters and suprarenal glands
12. Pelvic wall, Pelvic cavity and viscera
13. Male and female pelvic viscera
14. Perineum and Pelvic diaphragm
15. Joints of abdomen and pelvis
16. Sectional anatomy of abdomen and pelvis
17. Applied anatomy of all regions of abdomen and pelvis
18. Recent advances

5.6.4 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.

SECTION VI
Research Work

6.1 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

(i) Identify a relevant research question

(ii) Conduct a critical review of literature

(iii) Formulate a hypothesis

(iv) Determine the most suitable study design

(v) State the objective of the study

(vi) Prepare a study protocol

(vii)Undertake a study according to the protocol

(viii) Analyze and interpret research data, and draw conclusion

(ix) 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

Wound Healing

Material and

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.

6.2: **Guidelines for M.Phil**

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 & date of delivery.

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 pgts must know what the body of the paper says. Preferably the introductory section(s) should be written after pgts 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 pgts reader to read the rest of the paper. This is the scientific problem that pgts paper either solves or addresses. Pgts 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. Pgts should then go on to explain why more work was necessary (pgts 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.

Section VII
DEPARTMENT OF ANATOMY
LUMHS, JAMSHORO

7.1: PGT EVULATION PROFORMA BY SUPERVISOR

NAME: _____SESSION: _____

PROGRAMME:_____COURSE TITLE: _____

ATTENDANCE_____

PRESENTATIONS _____

LECTURES _____

TUTORIALs/GUIDED SELF-STUDY_____

PRACTICAL_____

PROFESSIONALISM _____

TEST

RESULTS

WRITTEN

VIVA

TOTAL

REMARKS

SUPERVISOR SIGNATURE :_____

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 4 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:-

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. 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.

f. If two of the three examiners find that the thesis is wholly inadequate it may be

rejected by the research board.

g. 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.

h.The revised version of the thesis shall be approved by the same examiner who suggested modification/revision of the thesis.

i. 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).

j. The viva-voce examination shall be conducted by the three external examiners

k. 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.

l. A candidate who successfully completes all the requirements shall be awarded, with the approval of the advance board of studies the degree of M.Phil under the seal of the university.

SECTION- VIII

8.1 LIST OF BOOKS

S.No	Title of Books	Author
01	*Students group Anatomy*	*Drake, Richard L*
02	*Keith-L-Moore*	
03	*Human Embryology (02nd Edition)*	*Laiq Hussain Siddiqui*
04	*General Anatomy (4th Edition)*	*Laiq Hussain Siddiqui*
05	*Clinical Neuroanatomy (07th Edition)*	*Snell Richard. S*
06	*Human embryology by*	*Langman*
07	*Clinical anatomy*	*Rehired Snell*
08	*Regional anatomy*	*R.J Last*
09	*Histology*	*Jancquita*
10	*Histology*	*Laiq Hussain Siddiqui*
11	*General Anatomy*	*B.D Chaurasia*