CURRICULUM MD
Forensic Medicine

Rawalpindi Medical University

Curriculum MD Forensic Medicine
2024

Rawalpindi Medical University

WMA DECLARATION OF GENEVA

" Adopted by the 2nd General Assembly of the World Medical Association, Geneva, Switzerland, September 1948 and amended by the 22nd World Medical Assembly, Sydney, Australia, August 1968 and the 35th World Medical Assembly, Venice, Italy, October 1983 and the 46th WMA General Assembly, Stockholm, Sweden, September 1994 and editorially revised by the 170th WMA Council Session, Divonne-les-Bains, France, May 2005 and the 173rd WMA Council Session, Divonne-les-Bains, France, May 2006. "

AT THE TIME OF BEING ADMITTED AS A MEMBER OF THE MEDICAL PROFESSION:

I SOLEMNLY PLEDGE to consecrate my life to the service of humanity;
I WILL GIVE to my teachers the respect and gratitude that is their due;
I WILL PRACTISE my profession with conscience and dignity;

THE HEALTH OF MY PATIENT will be my first consideration;
I WILL RESPECT the secrets that are confided in me, even after the patient has died;

I WILL MAINTAIN by all the means in my power, the honor and the noble traditions of the medical profession;

MY COLLEAGUES will be my sisters and brothers;

I WILL NOT PERMIT considerations of age, disease or disability, creed, ethnic origin, gender, nationality, political affiliation, race, sexual orientation, social standing or any other factor to intervene between my duty and my patient;

I WILL MAINTAIN the utmost respect for human life;

I WILL NOT USE my medical knowledge to violate human rights and civil liberties, even under threat;

I MAKE THESE PROMISES solemnly, freely and upon my honor.

Preface

The horizons of *Medical Education* are widening & there has been a steady rise of global interest in *Post Graduate Medical Education*, an increased awareness of the necessity for experience in education skills for all healthcare professionals and the need for some formal recognition of postgraduate training in Histopathology.

We are seeing a rise in the uptake of places on postgraduate courses in medical education, more frequent issues of medical education journals and the further development of e-journals and other new online resources. There is therefore a need to provide active support in *Post Graduate Medical Education* for a larger, national group of colleagues in all specialties and at all stages of their personal professional development. If we were to formulate a statement of intent to explain the purpose of this curriculum we might simply say that our aim is to help clinical colleagues to teach and to help students to learn in a better and advanced way. This book is a state of the art book with representation of all activities of the MD Histopathology program at RMU. Curriculum is incorporated in the book for convenience of supervisors and residents. MD curriculum is based on six Core Competencies of ACGME ***(Accreditation Council for Graduate Medical Education)*** including ***Patient Care, Medical Knowledge, System Based Practice, Practice Based Learning, Professionalism, Interpersonal and Communication Skills***. The mission of Rawalpindi Medical University is to improve the health of the communities and we serve through education, biomedical research and health care. As an integral part of this mission, importance of research culture and establishment of a comprehensive research structure and research curriculum for the residents has been formulated and provided in this book.

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SECTION - I

Vision:

- The vision of Department of Forensic Medicine and Toxicology is to provide relevant professional knowledge, skills and ethical values to medical students to enable them to apply their professional skills in provision of justice
- The Department of Forensic Medicine and Toxicology strives to demonstrate leadership in Forensic Sciences in order to:
  - ✓ Provide affordable, high quality undergraduate and postgraduate education in accordance with the needs of the legal system of the province.
  - ✓ Improve the educational standards for the training medico-legal officers at grass-root level in order to strengthen the prevalent medico-legal system.
  - ✓ Conduct new specialized programs postgraduate certificate/ diploma/ degree programs in the field of Forensic Medicine and Toxicology.
  - ✓ To provide 24/7 medico legal services and consultations to all public upon the request of relevant authorities.

Mission statement:

- To have a good command over the subject of Forensic Medicine & Toxicology to prepare a comprehensive Autopsy / Medicolegal certificates with the help of application of principles of medical knowledge in the court of law for furthering of justice
- Provision of standardized medico-legal services to the citizens of Rawalpindi District
- The mission of MD Forensic Medicine program must be,
  1. That the student accepts science of Forensic Medicine in its full sense as lifelong activity and that he/she is prepared to invest time and effort to acquire, maintain and further improve his/her own knowledge and skills.
  2. A critical appreciation of techniques, procedures carried out in Forensic Medicine; an understanding of scientific methods, reliability and validity of observations and the testing of hypothesis.
  3. The ability and willingness to adopt a problem solving approach to manage clinical situations included in the definition of Forensic Medicine.
  4. The ability to plan and interpret management program with due regard to the patient's comfort and economic factors.
  5. His / her awareness of the role of specialists of Forensic Medicine in Health / rehabilitation / welfare teams and his/her willingness to work cooperatively within such teams.
  6. The awareness that he/she has to create his/her own professional impact as a capable specialist/ Teacher / Scholar of Forensic Medicine in the world.
  7. To pursue and develop the basic scientific pursuits and guideline for scientific discoveries to strengthen knowledge further about human body requirements.
  8. To set and pursue the highest goals for ourselves as we learn the science, craft, and art of Forensic Medicine.
  9. To passionately teach our junior colleagues and students as we have been taught by those who preceded us.
  10. To treat our colleagues and hospital staff with kindness, respect, generosity of spirit, and patience.
  11. To foster the excellence and well-being of our residency program by generously offering our time, talent, and energy on its behalf.
  12. To extend our talents outside the walls of our hospitals and clinics, to promote the health and well-being of communities, locally, nationally, and internationally.
  13. To serve as proud ambassadors for the mission of the Rawalpindi Medical University MD Forensic Medicine Residency Program for the remainder of our professional lives.

Introduction To The Department Of Forensic Medicine

Introduction

The Forensic Medicine curriculum provides the framework for the training of doctors to the level of independent consultant practice in Forensic Medicine, addressing the requirements of patients, the population and basic health services.

The Department of Forensic Medicine & Toxicology was established in Rawalpindi Medical College in 1976. In early days of the establishment there was No full time Head of Department, however, the District Health Officers (DHO) Rawalpindi were performing their additional duties to supervise the academic activities. In late 80's **Dr. Wasim** was appointed as a Head of Department (on adhoc basis) then he was replaced by Dr. Nadeem Afraz.

In 1991 **Dr. Mian Abdur Rasheed** was appointed as an Assistant Professor of of Forensic Medicine & Toxicology, Rawalpindi Medical College Rawalpindi also performed the duty as 1st regular Head of Department & remained posted till 1999. **Dr. Rizwana Qayyum** posted as an Assistant professor of Forensic Medicine and Toxicology at RMC Rawalpindi and also took the charge of the Head of Department and served till her superannuation Nov. 2021. **Dr. Sajid Hameed** who has been performing his duty in the Department of Forensic Medicine & Toxicology for last 9 years was assigned the duty of Head of Department, who served till his superannuation on **15th July, 2022.**

Dr. Shahida Bashir Sr. Demonstrator assigned the duty of Head of Department **16th July 2022** till 17th Feb, 2023. Later on **Dr. Filza A**li was appointed as Assistant professor of Forensic Medicine and Toxicology at RMU Rawalpindi on **18th Feb 2023**.She remained working as HOD till 31st March, 2023 then **Dr. Romana Malik** was appointed as Associate professor and HOD of Forensic Medicine and Toxicology at RMU Rawalpindi from **1st April, 2023**. In spite of extreme shortage of teaching faculty comprising of only 4 demonstrators, the department is extending its valuable services regarding Forensic Medicine and Toxicology. In addition to academic teaching and practical skills of the subject at DHQ Hospital RWP, the department is also performing its highly recommendable role regarding postgraduate training with reference to **Medico legal & Postmortem Examinations** as per direction of apex court and higher authority to DMLOs and MOs/WMOs of District Health Authorities of Rawalpindi, Jhelum Attock and Chakwal.

1 Rationale of curriculum:

The Forensic Medicine curriculum will produce a work force fit for the needs of patients, producing doctors who are more patient-focused, more general and who have more flexibility in their career structure. The introduction of updated standards for curricula and assessment processes laid out in **Excellence by Design** requires curricula to be based on high-level outcomes. The high-level outcomes in this curriculum are integral parts of the syllabus to describe the professional tasks within the scope of specialty practice.

2 Training pathway and duration of training:

Trainees enter Forensic Medicine training via a Central Induction Process. Program has 2 phases.

Phase 1 consists of 2 years training in Forensic Medicine with mandatory rotations in Anatomy, Physiology, Biochemistry, Pathology & Pharmacology, Serology & Analytical lab, Medicolegal clinics and Mortuary followed by Mid-term Assessment.

Phase 2 also consists of 2 years training in Forensic Medicine, Electives at PFSL & Radiological department and Medicolegal clinics and Mortuary followed by Final Assessment and Defense of Thesis.

TRAINING PATHWAY & ROTATIONS

Year of training	Rotations					Assessment
Year 1	3 Months Anatomy, Physiology, Biochemistry Pathology & Pharmacology	3 Months Medico-legal clinic/A & E at THQ	3 Months Mortuary at THQ	3 Months Dept of Forensic Medicine	Non clinical Electives	MCQs
Year 2	3 Months Serology & Analytical Laboratory	3 Months Medico-legal clinic/A & E at THQ	3 Months Mortuary at THQ	3 Months Dept of Forensic Medicine	Non clinical Electives	MCQs **OSCE**
Year 3	3 Months Electives Ballistics / Punjab Forensic Science lab & Department of Radio-Imaging	3 Months Medico-legal clinic/A & E at THQ	3 Months Mortuary at THQ	3 Months Dept of Forensic Medicine	Non clinical Electives	MCQs

Year 4	Research Methodology, Biostatics & Medical Writing	3 Months Medico-legal clinic/A & E at THQ	3 Months Mortuary at THQ	3 Months Dept of Forensic Medicine	Non clinical Electives	MCQs OSCE VIVA VOCE

SECTION - II GENERAL

A. STATUTES

1. Nomenclature:

The name of degree program shall be MD Forensic Medicine. This name is well Recognized and established for the last many decades worldwide.

2. Course Title:

MD Histopathology

3. Training Centers:

Departments of Forensic Medicine at Rawalpindi Medical University NTB (RMU).

Infrastructure

The department of Pathology, RMU occupies 2 laboratories (Experimental lab & Research Lab), 2 lecture halls with seating capacity of300 students per hall and 06 rooms for offices with the following details:

- **Chairperson's Room** 01
- **Assistant Professor Room** 01
- **Demonstrator Room** 01
- **Forensic Museum** 01
- **Toxicology Laboratory** 01
- **Departmental library** present with more than 750 books approximately & 20 microscopic slides approximately

We have well equipped diagnostic Histopathology laboratories in all of our RMU Allied Hospitals where M. Phil students of Histopathology are getting their training for the last 10 years. There are two well-established diagnostic laboratories in Rawalpindi Medical University allied hospitals

1. Holy Family Hospital.
2. Benazir Bhutto Hospital.

4.**Duration of Course:**

The duration of MD Forensic Medicine course shall be four 04 years with structured training in a recognized department under the guidance of an approved supervisor.

5. **Course structure**:

- The course is structured in two parts:
- After admission in M.D. Forensic Medicine Program theresident will spend first 12 Months in the relevant Department of Forensic Medicine during whichresident will get orientation about the chosen discipline and will also undertake the mandatory workshops.
    - The research project will be designed and the synopsis be prepared during this period. Resident will undergo 1st In-training Assessment at the end of 1st year. It will comprise 100 clinical/applied basics MCQs. Pass marks will be 50%.The resident will continue formal training in the Basic Principals of Forensic Medicine for further 12 Months, during this period the resident must get the research synopsis approved by AS&RB of the university.
    - At the end of second year, trainee will undergo Midterm Examination. This Examination will comprise of written and clinical components. Pass percentage in this examination is 60%.
    - During the 3rd “& 4“years of the program, there are two components of the training: -

      1. Training in Forensic Medicine.(Mortuary, Medico-legal clinics, Electives at PFSL, ,Radiology Department,)
      2. Research and Thesis writing.
    - The candidate shall undergo clinical training to achieve educational objectives of M.D Forensic Medicine (knowledge and skills) along with rotations in the relevant fields. The clinical training shall be competency based. There shall be generic and specialty specific competencies and shall be assessed by continuous Internal Assessment.
    - Thesis writing will be started in the third year. At the end of third year, again In-training assessment will be conducted consisting of MCQs based examination in which pass marks will be 50%.
    - In Fourth year preferably during first 6 months, thesis will be completed and approval by BASR will be taken. Following fulfillment of eligibility criteria, the trainee will appear in Final Assessment at the end of fourth year training that will comprise written and clinical components. Pass marks in this examination will be 60%.

B. ADMISSION CRITERIA

- Applications for admission to MD Training Programs will be invited through advertisement in print and electronic media mentioning closing date of applications and date of Entry Examination.
- ***Eligibility:*** The applicant on the last date of submission of applications for admission must possess the:
- Basic Medical Qualification of MBBS or equivalent medical qualification recognized by Pakistan Medical Council.
- Certificate of one year's House Job experience in institutions recognized by Pakistan Medical Council is essential at the time of interview. The applicant is required to submit Hope Certificate from the concerned Medical Superintendent that the House Job shall be completed before the Interview.
- Valid certificate of permanent or provisional registration with Pakistan Medical Council.
- MD entry exam pass certificate

C. REGISTRATION AND ENROLMENT

- As per policy of Pakistan Medical Council the number of PG Trainees/ Students per supervisor shall be maximum 05 per annum for all PG programs including minor programs (if any).
- The University will approve supervisors for MD courses.
- Candidates selected for the courses: after their enrollment at the relevant institutions shall be registered with RMU as per prescribed Registration Regulations.

SECTION - III: PROGRAM

DEVELOPMENTAL MILESTONES FOR MD FORENSIC MEDICINE PROGRAM AT RAWALPINDI MEDICAL UNIVERSITY

This document presents milestones designed for programs to use in semi-annual review of resident performance and reporting to the ACGME. Milestones are knowledge, skills, attitudes, and other attributes for each of the ACGME competencies organized in a developmental framework from less to more advanced. They are descriptors and targets for resident performance as a resident moves from entry into Forensic medicine residency through graduation. In the initial years of implementation, the Review Committee will examine milestone performance data for each program's residents as one element in the Next Accreditation System (NAS) to determine whether residents overall are progressing. For each reporting period, review and reporting will involve selecting the level of milestones that best describes each resident's current performance level in relation to milestones. Milestones are arranged into numbered levels. Selection of a level implies that the resident substantially demonstrates the milestones in that level, as well as those in lower levels. A general interpretation of levels for Histopathology is below:

Level 1: The resident demonstrates milestones expected of one who has had some education in Forensic medicine.

Level 2: The resident is advancing and demonstrating additional milestones.

Level 3: The resident continues to advance and demonstrate additional milestones; the resident consistently demonstrates the majority of milestones targeted for residency.

Level 4: The resident has advanced so that he or she now substantially demonstrates the milestones targeted for residency. This level is designed as the graduation target.

Level 5: The resident has advanced beyond performance targets set for residency and is demonstrating "aspirational" goals which might describe the performance of someone who has been in practice for several years. It is expected that only a few exceptional residents will reach this level.

These are described in **Appendix 1**

Milestones levels

Milestones for high level outcome	Milestones Level (end of Year 1)	Milestones Level (end of Year 2)	Milestones Level (end of Year 3)	Milestones Level (end of Year 4)
Patient care and technical skills	L2	L3	L4	**L5**
Medical knowledge	L 2	L 3	L 4	**L 5**
professionalism	L 1	L 2	L 3	**L 4**
Interpersonal and communication skills	L 2	L 2	L 3	**L 5**
System based practice	L 2	L 2	L 3	**L 4**
Practice based learning and improvement	**L 1**	**L 2**	**L 3**	**L 5**

SECTION-IV: TEACHING & LEARNING:

The curriculum is used to help design training program locally that ensure all trainees can develop the necessary skills and knowledge in a variety of settings and situations. The curriculum is designed to ensure it can be applied in a flexible manner, meeting service needs as well as supporting each trainee's own tailored learning and development plan. The requirements for curriculum delivery have not changed as a result of this new curriculum; the only difference is that this new curriculum is more structured in its delivery.

A. AIMS AND OBJECTIVES OF THE PROGRAM:

Aim

The aim of four years MD programme in Histopathology is to train residents to acquire the competency of a specialist in the field of Forensic Medicine so that they can become good teachers, researchers and clinicians in their specialty after completion of their training.

General Objectives

- To train and teach postgraduate students Forensic or State medicine for attaining knowledge and skill to:
- Identify, examine & prepare report or certificate in medico legal cases/situations in accordance with the law of land.
- Perform medico legal post-mortem & interpret findings & results of other relevant investigations to logically conclude the cause, manner & time since death.
- Become aware of Medical ethics & etiquettes, Medical negligence and Medico legal duties
- To identify responsibilities of the doctors towards patient, profession, society, state & humanity.
- Acclimatize with relevant legal/court procedures applicable to the medico legal/ medical practice.
- Identify General principle of analytical environmental, occupational & preventive aspects of toxicology.
- Ascertain medico legal implications, diagnosis & principles of therapy of common poisons.
- Classify Different types of Bio-medical waste potential risks & their management.
- To reinforce self-learning and commitment to continued updating in all aspects of Histopathology.
- To encourage contributions aiming at advancement of knowledge and innovation in Histopathology through basic and/or clinical research and teaching of junior trainees and other health related professionals.
- To acquire professional competence in training future trainees in Histopathology at Rawalpindi Medical University.

Specific Objectives:

The training is aimed to achieve the following learning outcomes in the Cognitive, Psychomotor and Affective domains.

A. Cognitive Domain

At the end of training, a candidate is able to:

1. **Understand the prevailing laws and legal procedure of the country**

- Distinguish between the systems of medico-legal investigation in the country and abroad.
- Comprehend the court procedures and his /her position and role as an expert witness.
- Apply the Principles of medical Science for the elucidation of judicial queries.
- Interpret the enactments promulgated 'by the competent authorities to prevent offences against human body arrow the day of conception to death in accordance to the medical facts.
- Identify the legal and ethical aspects of medical practice.
- Utilize privileges and fulfill obligations as a Forensic expert towards state, community and professional colleagues.

2. Understand the Phenomenon of death and the background regarding evolution of Various concepts, regarding death.

- Verify death in the light of evolution of various concepts regarding definition of death.
- Diagnose the moment of death and the changes occurring in a dead body subsequently.
- Recognize various Anatomical, Physiological, Pathological and Toxicological causes of death.
- Certify the cause of death based on international criterion.
- Estimate the fatal period, post mortem interval, manner and Mechanism of death.
- Comprehend the legal and ethical issues relevant to organ transplantation, persistent vegetative state and euthanasia.

3. Understand the effects of violence on human body.

- Identify the various physicochemical agents existing in the environments/ society responsible for injury to human body.
- Interpret effects of such physicochemical agents On human body in structure: function and overall behavior,

4. Enumerate the various toxic agents used intentionally/ inadvertently in our environments

5. Understand the importance and value of Biological/Non Biological Specimen in medico-legal work.

- Select representative specimen for confirmation/ diagnostic purpose.

Interpret logically the results of laboratory tests in the medico-legal context.

- Demonstrate common laboratory Techniques and procedure

6. Recognize the significance of medico-legal documents prepared to denote the physical, sexual and mental condition of a person.

- Prepare Autopsy report, Medical certificates regarding death and physical, sexual and mental fitness under various enactments.
- Notify the concerned quarters regarding the seen and unforeseen dangers for public safety purpose.

B. Psychomotor Domain

Trainee after completion of training is able to:

- Conduct interviews, perform Physical examination and make accurate observations regarding Physical, Sexual and mental trauma caused by various causative a gents/actions.
- Recover and preserve Biological and non-Biological material from human body both in living and dead.
- Recognize, collect and preserve trace evidence providing clues regarding personal identification, crime detection from The locus of incident, living and dead body.
- Dispatch with justification, the Biological and non biological material to appropriate laboratory/agency, maintaining the chain of custody
- Conduct Autopsy on dead and exhumed bodies.
- Examine the skeletonized material and fragmentary remains for identification and detect cause, manner and time of death by using scientific knowledge and procedures.
- Diagnose, resuscitate and manage a case of poisoning.
- Prepare Medical documents depicting comprehensive report of his observations and scientific opinion regarding the examination of living and dead for production barn, the investigators, attorneys and courts.

C. Affective Domain

At the end of training program, a candidate is able to display following virtues of personal character.

- Depict in his 'actions sense of responsibility towards state, community and his brethren colleagues.
- Demonstrate honesty and professionalism while certifying and testifying a Medico-legal case.
- Believe in the value of truth, devotion and dedication while performing his professional duties.
- Establish a positive relationship with investigators and law enforcing institutions to achieve the aims of justice.
- Facilitate the transfer of information that is required for the diagnosis and management of the case.
- Distinguish his professional obligation vis-à-vis privileges.
- Accept the leadership of seniors and demonstrate spirit of teamwork.
- Understand the importance of obtaining and valuing a second opinion.
- Believe in the importance of self-learning, continuing education by consistently improving professional knowledge, skills and approach.
- Equip and abreast himself of latest technical and legal advancements in the field of Medical, Forensic. Sciences and law.
- Recognize the role of planning, organizing and working of a medico-legal center including Autopsy and Medico-legal examination set up that can fulfill the objectives of Public Service.
- Offer his professional Services with willingness and pleasure whenever'. required by the law enforcing institutions.
- Deal with patient/injured and the relatives with compassion, sympathy, in a nondiscriminatory, non-prejudice and free manner.
- Demonstrate sensitivity in performing intimate examination. He must inform and explain to the patient about his/her clinical condition.
- Preserve confidentiality regarding his patient's clinical condition within possible limits in his commands

B. 6 CORE COMPETENCIES OF CURRICULUM

Curriculum of MD Forensic Medicine at Rawalpindi Medical University is an important document that defines the educational goals of Residency Training Program and is intended to clarify the learning objectives for all inpatient and outpatient rotations. Program requirements are based on the **ACGME (Accreditation Council for Graduate Medical Education)** standards for categorical training in Histopathology. Curriculum is based on 6 core competencies. Detail of these competencies is as follows

Detail of these competencies is as follows

COMPETENCY NO.1

PATIENT CARE:

Provide patient care that is compassionate, appropriate and effective.

Skills

- Gather essential and accurate information about patients
- Develop a diagnostic plan based upon the clinical question/s and relevant clinical and pathological/ investigation based information
- Oversee diagnostic testing to ensure adequacy of studies performed
- Counsel patients concerning preparation for diagnostic testing
- Demonstrate a basic understanding of electronic patient information systems
- Demonstrate the ability to use the Internet as an educational instrument to expand medical knowledge
- Demonstrate knowledge of the levels of ionizing biohazard related procedures and employ measures to minimize biohazard exposure to the patient
- Perform pathological investigations appropriately and safely, assuring that the correct examination is ordered and performed

Education (with graduated faculty supervision and feedback)

- Practical experience in developing a differential diagnosis and investigations plan based upon clinical data, testing findings and other medical test results
- Active participation in journal reviews to determine the effectiveness of
- Investigative tests for specific diagnostic questions
- Graduated responsibility in performing pathology related procedures
- Didactic instruction in biohazard safety
- Preparation and presentation of rare cases to other members of the healthcare team

Assessment

- Global ratings by faculty
- 360 degree examination
- Procedure log
- Objective structured clinical examination

COMPETENCY NO.2

MEDICAL KNOWLEDGE
:

Residents must demonstrate knowledge about established and evolving biomedical and clinical sciences and the application of this knowledge to patient care.

Skills

- Demonstrate sufficient knowledge of medicine and apply this knowledge to pathological/investigation based studies in a clinical context to generate meaningful differential diagnoses
- Demonstrate progressive acquisition of pathological/investigation based knowledge
- Demonstrate knowledge of the principles of research design and implementation
- Generate a clinically appropriate diagnostic plan
- Demonstrate the ability to use all relevant information resources to acquire evidence-based data
- Understand how pathologyinvestigation equipment can be used to generate appropriate and diagnostic images

Education

- Didactic lectures and self-directed learning on the science and practice of Histopathology
- Participation in departmental and inter-departmental case conferences
- Participation in the clinical activities of the Histopathology department
- Departmental or institutional training programs on research design and implementation

Assessment

- Global ratings by faculty
- Program-developed written examinations
- CAP in-training examination
- Written examination
- Oral examination

COMPETENCY NO.3

INTERPERSONAL AND COMMUNICATION SKILLS:

Residents must demonstrate interpersonal and communication skills that result in effective information exchange with patients, patient family members, medical students, other residents, supervising faculty, referring physicians, technologists, nurses and other members of the health care team.

Skills

- Provide a clear and informative written pathology report including a precise diagnosis whenever possible, a differential diagnosis when appropriate, and recommended follow-up or additional studies when appropriate
- Provide direct communication to the referring physician or appropriate clinical personnel when interpretation reveals an urgent or unexpected finding and document this communication in the pathology report
- Demonstrate effective skills of face-to-face listening and speaking with
- physicians, patients, patient's families and support personnel
- Demonstrate appropriate telephone communication skills
- Demonstrate skills in obtaining informed consent, including effective
- communication to patients of the procedure, alternatives and possible complications

Education (with graduated faculty supervision and feedback)

- Participation as an active member of the Histopathology team by communicating face to-face with clinicians, answering the telephone, providing consults, problem solving and decision-making
- Act as the contact person for technologists and nurses in managing patient and testing issues
- Active participation in preparing and moderating multi-disciplinary conferences
- Practical experience in dictating pathological/investigation based reports

Assessment

- Global ratings by faculty
- 360 degree evaluations
- Oral ABR examination
- Record review (systematic evaluation of resident dictations)

COMPETENCY NO.4

PROFESSIONALISM:

Demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population.

Skills

- Demonstrate altruism (putting the interests of patients and others above own self interest)
- Demonstrate compassion: be understanding and respectful of the patients, patient families, and staff and physicians caring for patients
- Demonstrate excellence: perform responsibilities at the highest level and continue active learning throughout one's career
- Be honest with patients and all members of the health care team
- Demonstrate honor and integrity: avoid conflicts of interest when accepting gifts from patients or vendors
- Interact with others without discriminating on the basis of religious, ethnic, sexual or educational differences and without employing sexual or other types of harassment
- Demonstrate knowledge of issues of impairment (i.e. physical, mental and alcohol and substance abuse), obligations for impaired physician reporting, and resources and options for care of self-impairment or impaired colleagues
- Demonstrate positive work habits, including punctuality and professional Appearance Demonstrate an understanding of broad principles of biomedical ethics
- Demonstrate principles of confidentiality with all information transmitted during a patient encounter
- Demonstrate knowledge of regulatory issues pertaining to the use of human subjects in research

Education

- Discussion of conflicts of interest and the ethics of conducting research during departmental or institutional conferences and daily clinical work
- Training programs (i.e. videotapes) on the issues of harassment and
- discrimination.
- Didactic presentations on the recognition and management of the "impaired physician"
- Participation in hospital-sponsored core curriculum educational activities (i.e.lectures, web-based programs)
- Didactic lecture/training program on the broad principles of medical ethics
- Institutional web-based self-directed learning and assessment programs on human subjects research guidelines

Assessment

- Global ratings by faculty
- 360 degree evaluations
- Conference attendance logs
- Resident self-assessment
- Written ABR examination

COMPETENCY NO.5

PRACTICE BASED LEARNING AND IMPROVEMENT:

Residents must be able to investigate and evaluate their patient care practices, and appraise and assimilate scientific evidence in order to improve their pathology investigation practices.

Skills

- Analyze practice experience and perform practice-based improvement in cognitive knowledge, observational skills, formulating a synthesis and impression, and procedural skills
- Demonstrate critical assessment of the scientific literature
- Demonstrate knowledge of and apply the principles of evidence-based medicine in practice
- Use multiple sources, including information technology to optimize life-long learning and support patient care decisions
- Facilitate the learning of students, peers and other health care professionals

Education

- Participate in critical assessment of the scientific literature through journal clubs, clinical conferences and independent learning
- Didactic lectures on the assessment of scientific literature, study designs and statistical methods
- Teaching students, peers and other health care professionals, with graduated supervision and feedback from supervising faculty
- Active participation in departmental or institutional quality assurance
- (QA)/quality improvement (QI) activities with faculty supervision

Assessment

- Global ratings by faculty
- CAP in-service examination
- Written ABR examination
- QA/QI conference attendance logs
- Global ratings by students
- Procedure log

COMPETENCY NO.6

SYSTEMS BASED PRACTICE:

Demonstrate an awareness and responsiveness to the larger context and system of health care and the ability to effectively call on system resources to provide optimal care.

Skills

- Demonstrate the ability to design cost-effective care plans based on knowledge ofbest practices
- Demonstrate knowledge of the sources of financing for National health care including
- Demonstrate knowledge of basic health care reimbursement methods
- Demonstrate knowledge of the regulatory environment including state licensing authority, state and local public health rules and regulations, and regulatory agencies.
- Demonstrate knowledge of basic practice management principles such as budgeting, record keeping, medical records, and the recruitment, hiring,supervision and management of staff

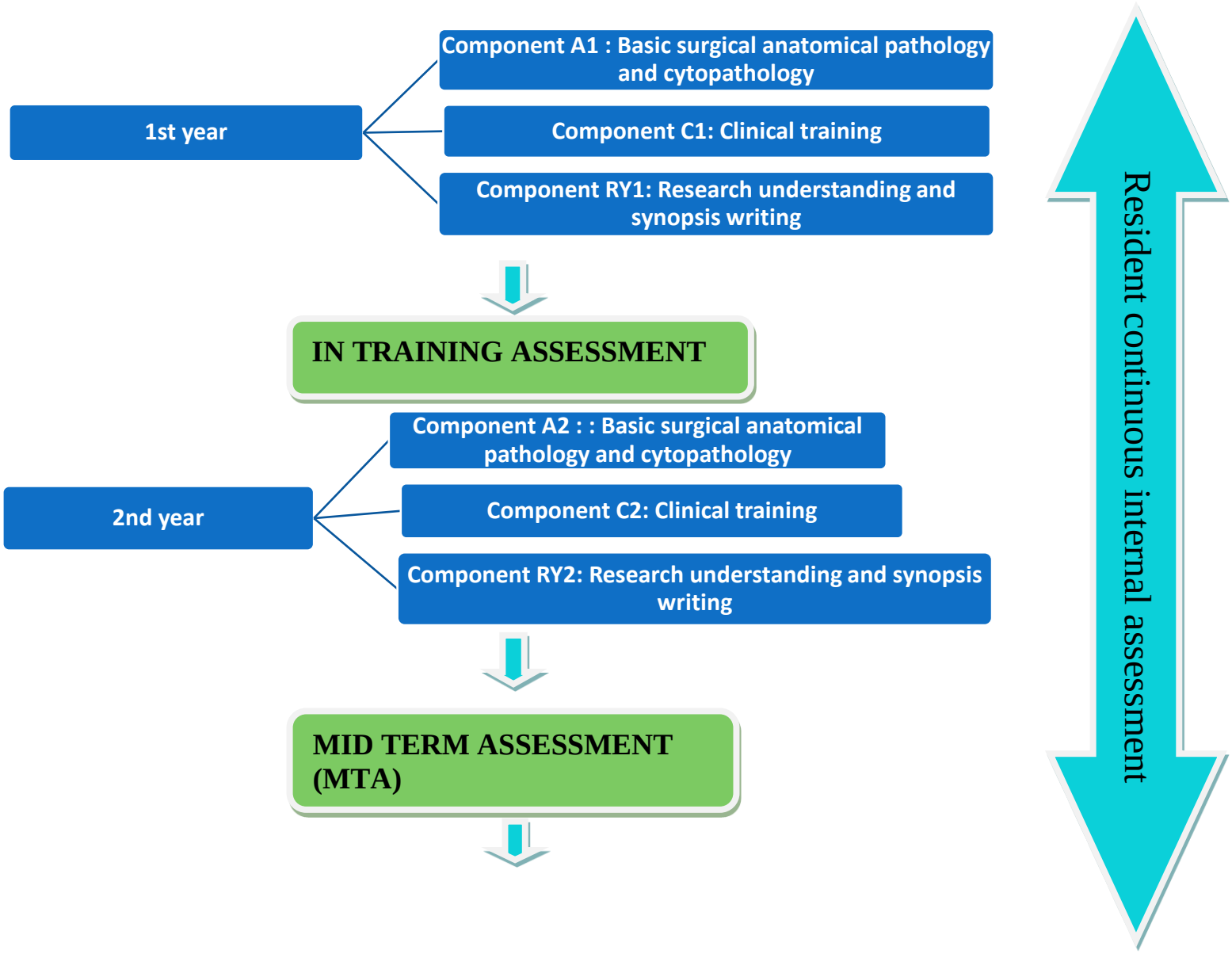
Education

- Systematic review of appropriate literature, including current American College of Pathology (CAP) Appropriateness Criteria, to develop knowledge of evidence based indications for testing procedures
- Attendance and active participation in departmental and multi-disciplinary conferences where there is discussion of the testing evaluation of specific diseases and most appropriate and cost-effective methods for establishing a diagnosis
- Interaction with department administrators and knowledgeable faculty to gain an understanding of the costs of diagnostic examinations and the influence of the type of payer system on reimbursement
- Membership and active participation in local and national pathological/investigation based societies
- Departmental or institutional presentations on health care funding and regulation

Assessment

- Global ratings by faculty
- Written ABR examination
- CAP in-training examination
- Multi-disciplinary conference attendance logs
- Documented membership and participation in pathology investigation societies and other health care organization.

ROAD MAP OF MD TRAINING FORENSIC MEDICINE:



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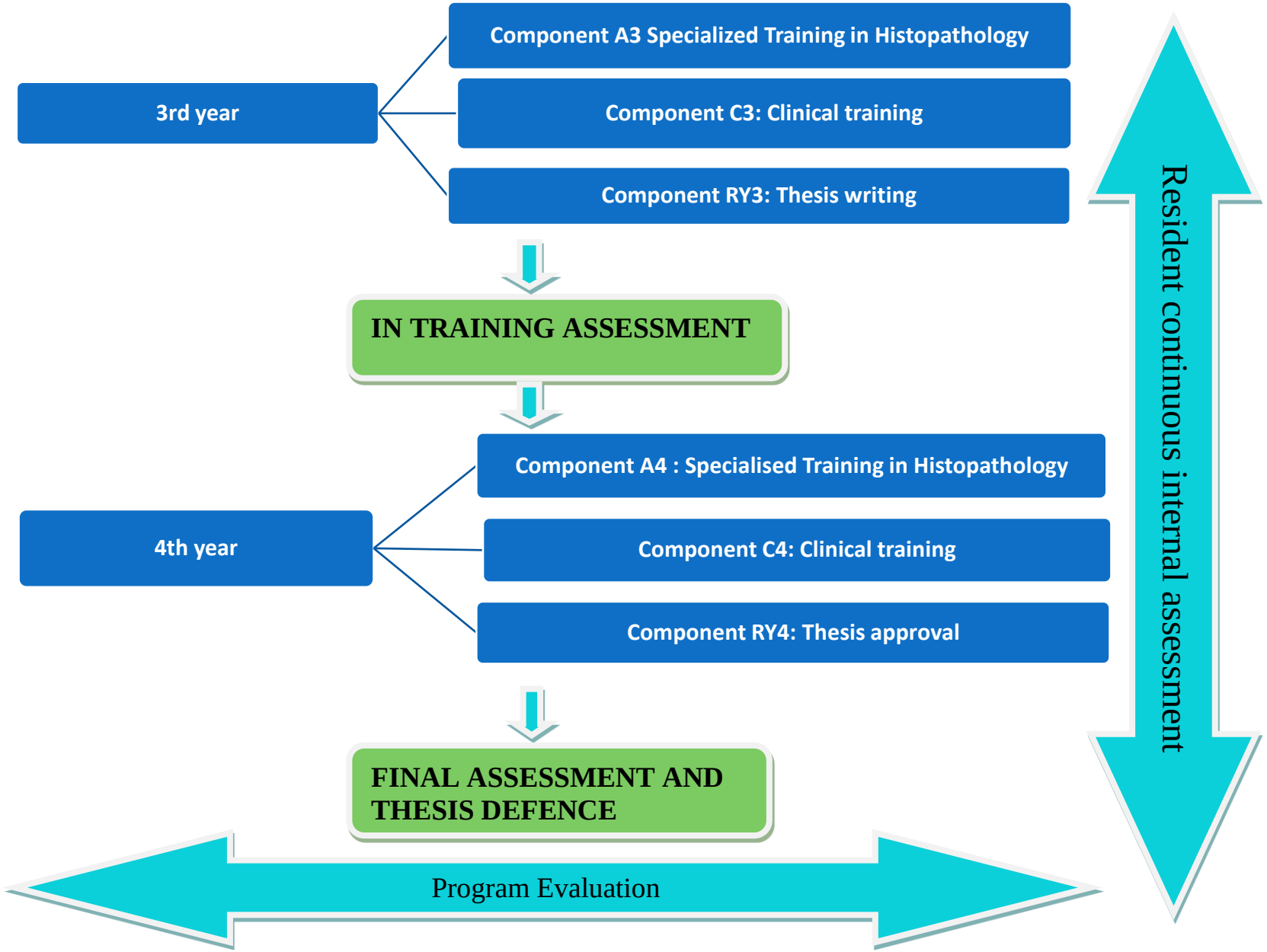


ROAD MAP OF MD TRAINING FORENSIC MEDICINE

C. LEARNING OPPORTUNITIES/ MITs:

1. **Journal Club Meeting (JC):** A resident will be assigned to present, in depth, a research article or topic of his/her choice of actual or potential broad interest and/or application. Two hours per month should be allocated to discussion of any current articles or topics introduced by any participant. Faculty or outside researchers will be invited to present outlines or results of current research activities. The article should be critically evaluated and its applicable results should be highlighted, which can be incorporated in clinical practice. Record of all such articles should be maintained in the relevant department
2. **Small Group Discussions/ Problem based learning/ Case based learning:** Traditionally small groups consist of 8-12 participants. Small groups can take on a variety of different tasks, including problem solving, role play, discussion, brainstorming, debate, workshops and presentations. Generally students prefer small group learning to other instructional methods. From the study of a problem students develop principles and rules and generalize their applicability to a variety of situations PBL is said to develop problem solving skills and an integrated body of knowledge. It is a student-centered approach to learning, in which students determine what and how they learn. Case studies help learners identify problems and solutions, compare options and decide how to handle a real situation.
3. **Discussion/Debate**: There are several types of discussion tasks which would be used as learning method for residents including: guided discussion, in which the facilitator poses a discussion question to the group and learners offer responses or questions to each other's contributions as a means of broadening the discussion's scope; inquiry-based discussion, in which learners are guided through a series of questions to discover some relationship or principle; exploratory discussion, in which learners examine their personal opinions, suppositions or assumptions and then visualize alternatives to these assumptions; and debate in which students argue opposing sides of a controversial topic. With thoughtful and well-designed discussion tasks, learners can practice critical inquiry and reflection, developing their individual thinking, considering alternatives and negotiating meaning with other discussants to arrive at a shared understanding of the issues at hand.
4. **Task-based-learning:**

   A list of tasks is given to the students: participate in consultation with the attending staff
5. **Case Conference (CC)/ Morning Meetings:** These sessions are held once each week; the focus of the discussion is selected by the presenting resident. For example, some cases may be presented to discuss a differential diagnosis,while others are presented to share interesting cases.
6. **Clinico-pathological Conferences:** The clinico pathological conference, popularly known as CPC primarily relies on case

method of teaching medicine. It is a teaching tool that illustrates the logical, measured consideration of a differential diagnosis used to evaluate patients. The process involves case presentation, diagnostic data, discussion of differential diagnosis, logically narrowing the list to few selected probable diagnoses and eventually reaching a final diagnosis and its brief discussion.

7. **Directly Supervised Procedures - (DSP):** Residents learn procedures under the direct supervision of an attending or fellow during some rotations.
8. **SEQ as assignments on the content areas:**
   SEQs assignments are given to the residents on regular basis to enhance their performance during written examinations.
9. **Self-directed learning s**elf-directed learning residents have primary responsibility for planning, implementing, and evaluating their effort. It is an adult learning technique that assumes that the learner knows best what their educational needs are. The facilitator's role in self- directed learning is to support learners in identifying their needs and goals for the program, to contribute to clarifying the learners' directions and objectives and to provide timely feedback. Self-directed learning can be highly motivating, especially if the learner is focusing on problems of the immediate present, a potential positive outcome is anticipated and obtained and they are not threatened by taking responsibility for their own Learning.
10. **Audio visual laboratory:** audio visual material for teaching skills to the residents is used specifically in teaching endocrine challenge and suppression testing and procedure details.
11. **E-learning/web-based medical education/computer-assisted instruction:** Computer technologies, including the Internet, can support a wide range of learning activities from dissemination of lectures and materials, access to live or recorded presentations, real-time discussions, self-instruction modules and virtual patient simulations. distance-independence, flexible scheduling, the creation of reusable learning materials that are easily shared and updated, the ability to individualize instruction through adaptive instruction technologies and automated record keeping for assessment purposes.
12. **Research based learning:** All residents in the categorical program are required to complete an academic outcomes-based research project during their training. This project can consist of original bench top laboratory research, clinical research or a combination of both. The research work shall be compiled in the form of a thesis which is to be submitted for evaluation by each resident before end of the training. The designated Faculty will organize and mentor the residents through the process, as well as journal clubs to teach critical appraisal of the literature.

SECTION - V: RESEARCH & THESIS WRITING

Research and Thesis have to be completed during training period. Research topic selection is must in first year. Synopsis writing and approval from IRF & BASR are must in second year of training. In third year of training Thesis should be written, while in first six months of fourth year Thesis should be completed and after appropriate defense it should be approved by BASR.

Research Experience & Workshops:

The active research component program must ensure meaningful, supervised research experience with appropriate protected time for each resident while maintaining the essential clinical experience. Residents must learn the design and interpretation of research studies, responsible use of informed consent, and research methodology and interpretation of data. The program must provide instruction in the critical assessment of new therapies and of the medical literature. Residents will be advised and supervised by qualified staff members in the conduct of research

To help conduction of Research and facilitate Thesis writing following workshops are mandatory during training that will be organized by RMU:

- Communication skills
- Computer & IT skills days
- Synopsis writing
- Research Methodology & Biostatistics
- Reference Manager (Endnote)

Clinical Research

Each resident will participate in at least one clinical research study to become familiar with

1. Research design
2. Research involving human subjects including informed consent and operations of the Institutional Review Board and ethics of human experimentation
3. Data collection and data analysis
4. Research ethics and honesty
5. Peer review process

Thesis

The candidates shall prepare their synopsis as per guidelines provided by Institutional Research Forum/Ethical Review Board (IRF/ERB) and Board of Advanced Studies & Research (BASR). The research topic must consist of a reasonable sample size and sufficient numbers of variables to give training to the candidate to conduct research, collect and analyze data. Synopsis of research project should be approved in 2nd year of MS program by IRF/ERB and BASR. In 3rd year Thesis work should be completed, and in 4th year it should be approved from BASR.

SECTION - VI: ASSESSMENT:

1 Purpose of assessment:

Assessment of learning is an essential component of any curriculum. The focus is on good practice, based on fair and robust assessment principles and processes in order to ensure a positive educational impact on learners and to support assessors in making valid and reliable judgements. The program of assessment comprises an integrated framework of examinations, assessments in the workplace and judgements made about a learner during their approved program of training. Its purpose is to robustly evidence, ensure and clearly communicate the expected levels of performance at critical progression points in, and to demonstrate satisfactory completion of, training as required by the curriculum.

Assessments can be described as *helping* learning or *testing* learning - referred to as formative and summative respectively. There is a link between the two; some assessments are purely formative others are explicitly summative with a feedback element while others provide formative feedback while contributing to summative assessment as in Continuous Internal Assessment (CIA).

The purposes of **formative assessment** are to:

- Assess trainees' actual performance in the workplace.
- Enhance learning by enabling trainees to receive immediate feedback, understand their own performance and identify areas for development.
- Drive learning and enhance the training process by making it clear what is required of trainees and motivating them to ensure they receive suitable training and experience.
- Enable supervisors to reflect on trainee needs in order to tailor their approach accordingly.

The purposes of **summative assessment** are to:

- Provide robust, summative evidence that trainees are meeting the curriculum requirements during the training program.
- Ensure that trainees possess the essential underlying knowledge required for their specialty.
- Identify trainees who should be advised to consider changes of career direction.
- Provide information for the quality assurance of the curriculum.

2 Assessment Methods:

Workplace-based assessment (WBA):

Each individual WBA is designed to assess a range of important aspects of performance in different training situations. Taken together the WBAs can assess the breadth of knowledge, skills and performance described in the curriculum. Each WBA is recorded on a structured form to help assessors distinguish between levels of performance and prompt areas for their verbal developmental feedback to trainees immediately after the observation.

WBAs are formative and may be used to assess and provide feedback on all clinical activity. Trainees can use any of the assessments described below to gather feedback or provide evidence of their progression in a particular area. WBAs are only mandatory for the assessment of the critical conditions and index procedures.

a) Case Based Discussion (CBD)

The CBD assesses the performance of a trainee in their management of a patient case to provide an indication of competence in areas such as clinical judgement, decision-making and application of medical knowledge in relation to patient care. The CBD process is a structured, in-depth discussion between the trainee and a consultant supervisor. The method is particularly designed to test higher order thinking and synthesis as it allows the assessor to explore deeper understanding of how trainees compile, prioritize and apply knowledge. By using clinical cases that offer a challenge to trainees, rather than routine cases, trainees are able to explain the complexities involved and the reasoning behind choices they made. It also enables the discussion of the ethical and legal framework of practice. As the actual record is the focus for the discussion, the assessor can also evaluate the quality of record keeping and the presentation of cases. The CBD is important for assessing the critical conditions) Trainees are assessed against the standard for the completion of their phase of training.

b) Clinical Evaluation Exercise (CEX) / CEX for Consent (CEX(C))

The CEX or CEX(C) assesses a clinical encounter with a patient to provide an indication of competence in skills essential for good clinical care such as communication, history taking, examination and clinical reasoning. These can be used at any time and in any setting when there is a trainee and patient interaction and an assessor is available. The CEX or CEX(C) is important for assessing the critical conditions. Trainees are assessed against the standard for the completion of their phase of training.

c) Direct Observation of Procedural Skills (DOPS)

The DOPS assesses the trainee's technical, operative and professional skills in a range of basic diagnostic and interventional procedures. The procedures reflect the common and important procedures. Trainees are assessed against the standard for the completion of core histopathological training.

d) Multi-source Feedback (MSF)

The MSF assesses professional competence within a team working environment. It comprises a self- assessment and the assessments of the trainee's performance from a range colleagues covering different grades and environments (e.g. ward, theatre, out-patients). Feedback is in the form of a peer assessment chart, enabling comparison of the self- assessment with the collated views received from the team and includes their anonymized but verbatim written comments. The supervisor should meet with the trainee to discuss the feedback on performance in the MSF. Trainees are assessed against the standard for the completion of their training level.

e) Procedure Based Assessment (PBA)

The PBA assesses advanced technical, operative and professional skills in a range of specialty procedures or parts of procedures during routine and special histopathological sign out.

f) Logbook

The logbook is tailored to each specialty and allows the trainee's competence as assessed by the DOPS and PBA to be placed in context. It is not a formal assessment in its own right, but trainees are required to keep a log of all procedures they have undertaken including the level of supervision required on each occasion using the key below. The logbook demonstrates breadth of experience which can be compared with procedural competence using the DOPS and the PBA and will be compared with the indicative numbers of index procedures defined in the curriculum.

g) Portfolio

A portfolio is a collection of products prepared by the resident that provides evidence of learning and achievement related to a learning plan. A portfolio typically contains written documents but can include video- or audio-recordings, photographs, and other forms of information. Reflecting upon what has been learned is an important part of constructing a portfolio. In addition to products of learning, the portfolio can include statements about what has been learned, its application, remaining learning needs, and how they can be met. In graduate medical education, a portfolio might include a log of laboratory procedures performed; a summary of the research literature reviewed when selecting a diagnosis; a quality improvement project plan and report of results; ethical dilemmas faced and how they were handled; a computer program that tracks patient care outcomes; or a recording or transcript of counseling provided to patients. Portfolios can be used for both formative and summative evaluation of residents. Portfolios are most useful for evaluating mastery of competencies that are difficult to evaluate in other ways such as practice-based improvement, use of scientific evidence in patient care, professional behaviors, and patient advocacy. Teaching experiences, morning report, patient rounds, individualized study or research projects are examples of learning experiences that lend themselves to using portfolios to assess residents.

h) Observation of Teaching (OoT)

The OoT assesses the trainee's ability to provide formal teaching. It can be based on any instance of formalized teaching by the trainee which has been observed by the assessor. Trainees are assessed against the standard for the completion of their phase of training.

Written/Oral Assessments:

a) Objective Structured Clinical Examination (OSCE)

Objective Structured Clinical Examination (OSCE) will be held on the first day of the examination, for all the candidates declared eligible for clinical part of the relevant examination. Candidates will be sent information regarding the schedule of TOACS by the Examination Department. In the TOACS the candidates will be evaluated on procedures, slides & laboratory

findings, instruments, cross sectional testing etc. This component of examination will consist of 15 to 20 stations, 4-8 minutes per station arranged in the examination hall and the candidates will have to rotate through all of them in turn.

The TOACS stations will be of two types:

I. Observed /Interactive

II. Unobserved / Static.

b) MCQ:

A written or computer-based MCQ examination is composed of multiple-choice questions (MCQ) selected to sample medical knowledge and understanding of a defined body of knowledge, not just factual or easily recalled information. Each question or test item contains an introductory statement followed by four or five options in outline format. The examinee selects one of the options as the presumed correct answer by marking the option on a coded answer sheet. Only one option is keyed as the correct response. The introductory statement often presents a patient case, clinical findings, or displays data graphically. A separate booklet can be used to display pictures, and other relevant clinical information. In computer-based examinations the test items are displayed on a computer monitor one at a time with pictures and graphical images also displayed directly on the monitor. In a computer-adaptive test fewer test questions are needed because test items are selected based upon statistical rules programmed into the computer to quickly measure the examinee's ability. Medical knowledge and understanding can be measured by MCQ examinations. Comparing the test scores on in-training examinations with national statistics can serve to identify strengths and limitations of individual residents to help them improve. Comparing test results aggregated for residents in each year of a program can be helpful to identify residency training experiences that might be improved.

c) **Short-answer questions**

Short-answer questions are open-ended questions that require students to create an answer. They are commonly used in examinations to assess the basic knowledge and understanding of a topic before more in-depth assessment questions are asked on the topic. It is very important that the assessor is very clear on the type of answers expected when setting the questions, because SAQ is an open-ended questions, students are free to answer any way they choose, short-answer questions can lead to difficulties in grading if the question is not worded carefully.

d) Viva Voce

3 Assessment Scheme:

First In Training Assessment **At the end of 1st Year Training**	Mid-Term Assessment (MTA) **At the end of 2nd year Training**	Third In Training Assessment **At the end of 3rd year Training**	Final Term Assessment (FTA) **At the end of 4th year Training**
• **Written Paper** • **(conducted in house)**	• **Written & OSCE**	• **Written Paper**	• Written, Clinical, And Thesis – • Thesis submision 06 months before completion of training. • Internal assessment = 75% for legibility to sit in FTA
Total Marks= 100	**Total Marks =300**	**Total Marks= 100**	**Total Marks= 750**
MCQ=100 clinically based	**a) Written- Two papers** Two papers each of 75 scenario based MCQs 75+75=150 marks **(Pass%=60%)-eligibility for clinical assessment** **b) OSCE** - 150 marks	**MCQs**=100 clinically based	**a)Written- Two papers Total 300 marks** • 1st paper- 100 MCQs (1X100) + 05 SEQ(5x10) • Total 150marks • 2nd paper- 100 MCQs (1X100) + 05 SEQ(5x10) • Total 150marks **(Pass%=60%)-eligibility for clinical assessment** **b)Clinical** • **OSCE – 150 marks** (**15 Stations**: 07 Observed interactive and 8unobserved stations) **c)Viva Voce- 100 marks** **(Pass%=60%)** **d)Thesis- 100 marks** • **Presentation :30marks** • **Discussion: 70marks** **e)Continouos internal assessment: 100 marks (10%)**
Pass Percentage = 50%	**Pass percentage = 60%**	**Pass percentage = 50%**	**Pass percentage = 60%**

4 Eligibility Criteria:

First In Training Assessment	Mid-Term Assessment	Third In Training Assessment	Final Assessment
Certificate of Completion of 1st year training. Workshops completion: • Communication skills- 3 days • Computer & IT skills- 3 days • Synopsis writing -3 days • Research methodology & Biostatistics-3 days **Rotations completion:** Microbiology -10 weeks **Clinical subjects –** Medicine -6 weeks **Research:** • Allotment of Synopsis topic by supervisor • Publication of one article in Resident Research Journal OR Statistical report of one disease **CIA:** Minimum 75% marks Certification by DME and Supervisor/s	**Certificate of completion of 2nd year training.** **Passed First In Training Assessment** **Rotations completion:** Hematology -10 weeks Chemical pathology -10 weeks **Clinical subjects** – Surgery -6 weeks **Research:** Formulation of research Synopsis with approval of IRF & BASR by the end of 2nd year. **CIA:** Minimum 75% marks Certification by DME and Supervisor/s	**Certificate of completion of 3rd year training.** **Passed Mid-term Assessment** **Research:** Data collection Data analysis & interpretation Start writing Thesis **CIA**: Minimum 75% marks Certification by DME and Supervisor/s	**Certificate of completion of 4th year training** **Passed Third In Training Assessment** **Research/Thesis**: • Completion & submission of Thesis 6 months before completion of training • Defense & Approval of Thesis in BASR •Publication of one article in Resident Research Journal OR Statistical report of one disease **CIA:** Minimum 75% marks Certification by DME and Supervisor/s **FEE:** Evidence of submission of examination fee **No dues certificate:** submitted from all relevant departments

5 Final Assessment Schedule and Fee:

a. Final Assessment will be held twice a year.
b. The candidates have to fulfil eligibility criteria before permission is granted to take the assessment.
c. Assessment fee will be determined and varied at periodic intervals by the University.
d. The Assessment fee once deposited cannot be refunded / carried over to the next assessment under any circumstances.
e. The Controller of Examinations will issue an Admittance Card with a photograph of the candidate on receipt of prescribed application form, documents satisfying eligibility criteria and evidence of payment of assessment fee. This card will also show the Roll Number, date / time and venue of assessment.
f. The written part of assessment will be valid for three consecutive attempts for appearing in the Clinical and Oral Part of the Final Assessment. After that the candidates have to re-sit the written part of the Final Assessment.
g. The candidates will have two attempts to pass the final examination with normal fee. A special administration fee of Rs.10, 000 in addition to normal fee or the amount determined by the University from time to time shall be charged for further attempts

6 Clinical Examination: TOACS & ORAL:

Mid Term Evaluation

a. The OSCE part of MID term evaluation will consist of 15 Stations with 50 percent stations being static and 50% being interactive. Each station carrying 10 marks and of 08 minute duration.

Final Evaluation

a) The OSCE of final evaluation will consist of 15 stations for 8 minutes each.
b) The oral viva stations to be taken by examiners as decided by examiners panel.
c) Viva will be 02stations (4 units each). Each viva station will be of **20 minutes** duration.

b. Panel of four examiners will be appointed by the Vice Chancellor and of these two will be from RMU whilst the other two will be the external examiners. Internal examiner will act as a coordinator. In case of difficulty in finding an Internal examiner arrange given subject, the Vice Chancellor would, in consultation with the concerned Deans, appoint any relevant person with appropriate qualification and experience, outside the University as an examiner.
c. The internal examiners will not examine the candidates for whom they have acted as Supervisor and will be substituted by other internal examiner.
d. The candidates scoring 50% marks In each component of the Clinical & Oral Examination will pass this part of the Final Examination.

Continuous Internal Assessments (CIA): 75%

Continuous Internal Assessments would be submitted by the supervisor considering the following:

A. Workplace Based Assessments: These assessments will include the following:
- Generic and Specialty specific Competency Assessments
- Multisource Feedback Evaluation

B. Assessment of Residents' Training Log Book & Portfolio

Declaration of Result:

For the declaration of result

1. The Resident must get his/her Thesis accepted.
2. The Resident must have passed the final written examination with 50% marks and the clinical & oral examination securing 50% marks. The cumulative passing score from the written and clinical/ oral examination shall be 60%. Cumulative score of 60% marks to be calculated by adding up secured marks of each component of the Examination i.e., written and clinical & oral and then calculating its percentage.

3. The MS degree shall be awarded after acceptance of thesis and success in the final examination.
4. On completion of stipulated training period, irrespective of the result (pass or fail) the training slot of the candidate shall be declared vacant.

Submission / Evaluation of Synopsis

a. The Residents shall prepare their synopsis as per guidelines provided by the Board of Advanced Studies & Research, available on university website.
b. The research topic in clinical subject should have 30% component related to basic sciences and 70% component related to applied clinical sciences. The research topic must consist of a reasonable sample size and sufficient numbers of variables to give training to the candidate to conduct research, to collect & analyze the data.
c. Synopsis of research project shall be got approved by the end of the 2nd year of MD program. The synopsis after review by an Institutional Review Committee shall be submitted to the University for Consideration by the Board of Advanced Studies & Research, through the Principal / Dean /Head of the institution.

Submission of Thesis

1. Thesis shall be submitted by the candidate duly recommended by the Supervisor.
2. The minimum duration between approval of synopsis and submission of thesis shall be one year.
3. The research thesis must be compiled and bound in accordance with the Thesis Format Guidelines approved by the University and available on website.
4. The research thesis will be submitted along with the fee prescribed by the University.

Thesis Evaluation

a. The Resident will submit his/her thesis at least O6 months prior to completion of training.
b. The Thesis along with a certificate of approval from the supervisor will be submitted to the Registrar's office, who would record the date / time etc. and get received from the Controller of Examinations within 05 working days of receiving.
c. The Controller of Examinations will submit a panel of eight assessors within 07 days for selection of four examiners by the Vice Chancellor. The Vice Chancellor shall return the Final panel within 05 working days to the Controller of Examinations for processing and assessment. In case of any delay the Controller of Examination would bring the case personally to the Vice Chancellor.
d. The Supervisor shall not act as an examiner of the candidate and will not take part in defence of thesis.
e. The Controller of Examinations will make sure that the Thesis is submitted to examiners in appropriate fashion and a reminder is sent after every ten days.
f. The thesis will be evaluated by the examiners within a period of 06 weeks.
g. In case the examiners fail to complete the task within 06 weeks with 02 fortnightly reminders by the Controller of Examinations, the Controller of Examinations will bring it to the notice of Vice Chancellor in person.

h. In case of difficulty in find an internal examiner for thesis evaluation, the Vice Chancellor would, in consultation with the concerned Deans, appoint any relevant person as examiner in supersession of the relevant Clause of the University Regulations.
i. There will be two internal and two external examiners. In case of difficulty in finding examiners, the Vice Chancellor would, in consultation with the concerned Deans, appoint minimum of three, one internal and two external examiners.
j. The total marks of thesis evaluation will be 100 and 60% marks will be required to pass the evaluation.
k. The thesis will be considered accepted, if the cumulative score of all the examiners is 60%.
l. The clinical training will end at completion of stipulated training period but the candidate will become eligible to appear in the Final Examination at completion of clinical training and after acceptance of thesis. In case clinical training ends earlier, the slot will fall vacant after stipulated training period.

Award of MD Forensic Medicine Degree

After successful completion of the structured course of **MD FORENSIC MEDICINE** and qualifying Mid-term, Final Assessment (Written, Clinical: ORAL and Thesis), the degree with title **MD FORENSIC MEDICINE** Degree shall be awarded.

SECTION - VII: CURRICULUM EVALUATION:

Curriculum evaluation is an important part of curriculum development. Two basic stages of curriculum evaluation are process evaluation and product evaluation. Most important aim is to evaluate if the main goals or objective have been met in order to understand and make further improvements to the curriculum

APPENDIX-1

Medical Knowledge

- Develop and maintain knowledge in the basic and clinical sciences necessary for effective consultation in laboratory medicine.
- Demonstrate sufficient knowledge to determine clinically optimal cost-effective testing and laboratory-based strategies, including issues of turn around time, test menu construction, and in-house vs referral diagnostic testing.
- Recognize the unique aspects of laboratory medicine practice as modified by patient age and other patient population characteristics, especially of pediatric and geriatric practice.
- Demonstrate awareness and understanding of general and test-specific standards for method development and evaluation.
- Employ mathematics and statistics as appropriate to laboratory testing; understand and implement quality control (QC) and quality assurance procedures as required.
- Demonstrate awareness and understanding of proficiency programs.
- Demonstrate knowledge of the principles of clinical research design, implementation, and interpretation.
- Be able to design a study that can be used to validate methodologies and parameters of clinical utility for the implementation and continuing use of new evidence- based analytes in the local setting.

❖ **Evidence-based Medicine**

- Demonstrate knowledge of evidence-based medicine and apply its principles in practice.
- Use multiple sources, including information technology, to optimize lifelong learning and support patient care decisions.

- Develop personally effective strategies for the identification and remediation of gaps in medical knowledge needed for effective practice.
- Use laboratory problems and clinical inquiries to identify process improvements to increase patient safety.
- Demonstrate the ability to critically assess the scientific literature.

❖ **Patient Care**

- Gather essential and accurate information about patients using all relevant available modalities.
- Act as a skilled consultant to other clinicians to develop a diagnostic plan based on specific clinical questions and relevant clinical and pathologic information.
- Provide expert consultation on the interpretation and follow-up of unusual or unexpected test results.

❖ **Point-of-Care Testing**

- Understand definitions of POC and the range of tests available in devices used at the point of care.
- Diagnose and perform the common POC tests such as ROSE frozen section chemical tests rapid microbial antigen, and activated clotting time. Under stand the performance characteristics of the common POC devices used for these tests. Know the issues surrounding specimen collection and preparation and the limitations and interpretation of results.
- Be able to assess economic, workflow, human resources, and clinical factors driving the decision to perform testing at the point of care vs the central laboratory.

❖ **Communication Skills**

- Demonstrate the ability to write an articulate, legible, and comprehensive consultation note. Provide a clear and informative report, including a precise diagnosis whenever possible, a differential diagnosis when appropriate, and recommended follow-up or additional studies as appropriate.
- Demonstrate the ability to provide direct communication to the referring physician when interpretation of a laboratory test reveals an urgent, critical, or unexpected finding.
- Conduct both individual consultations and presentations at multidisciplinary conferences.

- Choose effective modes of communication (listening, explanatory, questioning) and mechanisms of communication (face-to-face, telephone, e-mail, written), as appropriate.
- Demonstrate skills in obtaining informed consent, including effective communication to patients about procedures and possible complications.
- Demonstrate skills in educating colleagues and other healthcare professionals:
- Demonstrate the ability to present laboratory medicine concepts effectively in continuing education settings and in the day-to-day laboratory environment.
- Demonstrate an understanding of the principles one must follow when educating other practicing pathologists through publications or seminars on new testing and research discoveries.

❖ **Professionalism**

- Demonstrate positive work habits, including punctuality, dependability, and professional appearance.
- Demonstrate a responsiveness to the needs of patients and society that supersedes self-interest.
- Demonstrate principles of confidentiality with all information transmitted both during and outside of a patient encounter.
- Demonstrate knowledge of regulatory issues pertaining to the use of human subjects in research.
- Demonstrate a commitment to excellence and ongoing professional development.
- Demonstrate interpersonal skills in functioning as a member of a multidisciplinary healthcare team.

❖ **Laboratory Management**

- Demonstrate understanding of the role of the clinical laboratory in the healthcare system.
- Demonstrate the ability to design resource-effective diagnostic plans based on knowledge of best practices in collaboration with other clinicians.
- Demonstrate knowledge of basic healthcare reimbursement methods.
- Demonstrate knowledge of the laboratory regulatory environment, including licensing authorities.
- Understand and implement policies to continually improve patient safety as they relate to clinical laboratory testing at all levels.

APPENDIX - 2

Forensic Medicine Syllabus (Specific Program Content)

Curriculum For 1st & 2nd Year

Module: (Basic sciences) Anatomy , Physiology & Biochemistry

Module Duration: 2 Months

Module Coordinator:

Applied Morbid Anatomy			
Topic	**Content**	**Learning Strategy**	**Assessment tool**
General	• Surface landmarks and regional Anatomy of Medico-legal significance • Outline of body organs with their relative position in erect and supine posture • Anatomy of Neck with Special reference to violent Asphyxial Deaths • Anatomy of scalp, skull & its contents (brain & meninges) • Anatomy of Heart and coronaries • Anatomy of male & female genitalia with developmental Anomalies	Interactive Seminars and Videos Interactive Lecture SGD PBL	MCQ SEQ OSPE OSVE
Osteology	• Comparative study of Anatomical features of male & female skeleton with reference to skull, pelvis, long bones, mandible, Teeth and sternum. • Objective (Mathematical) Methods of gender differentiation from bones. . • Estimation of skeletal age from bones by study of location and time of appearance of ossification centers, Diphyseo-Epiphyseal union, and metamorphic changes of senility. • Determination of racial stock & estimation of stature from bony skeleton.		

Embryology	• Outline of Embroyic /fetal development. • Studies of morphological developmental features to determine the fetal age. • Concept about Crown-Rump length, Crown-Heal length, body weight and appearance of ossification centers in fetal life.		
Odontology	• Pre & post development of tooth. • Gross and sectional Anatomy of tooth. • Determination of age from developmental and atrophic changes in teeth. • Study of gender & racial characteristics.		

Applied Physiology			
Topic	**Content**	**Learning Strategy**	**Assessment tool**
Physiology	• Body water and fluid balance. • Physiology of menstrual cycle & pregnancy. • Physiology of thermoregulation. • Blood sugar Regulation, Diabetic and Hypoglycemic coma. • Blood grouping and RI-I incompatibility. • Physiology of Musculo-skeletal system. • Physiology of sexual and reproductive system.	Interactive Seminars and Videos Interactive Lecture SGD PBL	MCQ SEQ OSPE OSVE

Biochemistry			
Topic	**Content**	**Learning Strategy**	**Assessment tool**
General	• General concepts. Classification, Mechanism of action of Enzymes. • Role of enzymes in inflammatory conditions and death. • Acid Base balance, general consideration, buffer system of plasma, interstitial regulation of normal PH. • Water and Electrolyte Balance, general considerations. Body fluid compartments, regulation of body water balance and the electrolytes of body fluids. • System international (S.I) units and their conversion.	Interactive Seminars and Videos Interactive Lecture SGD PBL	MCQ SEQ OSPE OSVE

Module: **(Basic sciences) Pathology & Pharmacology**

Module Duration: **1 Month**

Module Coordinator:

Pathology			
Topic	**Content**	**Learning Strategy**	**Assessment tool**
General	• Pathology of cell/ tissues, degenerative changes. • Secondary Changes • (Atrophy, Hypertrophy, Aplasia, Hyperplesia, Ischaemia, Necrosis, Infections, Cloudy swelling, Amyloidosis, Thrombo-Embolism, Fat-embolism wound healing & repair) • Body's local and systemic response to trauma. • Phslo-Pathology of shock • Outline of inflammation acute and chronic • Carcinogenic agents, Tumors benign and malignant	Interactive Seminars and Videos Interactive Lecture SGD PBL	MCQ SEQ OSPE OSVE
Special	• Gross and Microscopic changes in Myocardial Infarction, Congenital and Hypertensive Heart Diseases, Tuberculosis, Cirrhohsis • Chronic industrial diseases with pulmonary manifestations. • Anaphylaxis and Hypersentivity reaction. • Microbiology of cadavers with special reference to CL. Welchii • Trauma and its relationship with suppurative conditions, malignant growths and stress phenomenon.		

Applied Pharmacology			
Topic	**Content**	**Learning Strategy**	**Assessment tool**
Pharmacology	• Outline of Mechanism of absorption, distribution, metabolism, Biotransformation and excretion of Exotoxins (Poisons) in the biological systems. • Drug interaction and adverse drug reaction. • Concept of fatal dose.	Interactive Seminars and Videos Interactive Lecture SGD PBL	MCQ SEQ OSPE OSVE

Module: **(Basic sciences) Forensic Medicine**

Module Duration: **6 Months**

Module Coordinator:

Medical Jurisprudence (Law Related to Medical Man)			
Topic	**Content**	**Learning Strategy**	**Assessment tool**
Basic matters relevant to Forensic Medicine / Medical Jurisprudence and Law	• Definition role of Medical man in solving forensic problems • Historical background and development of the subject of Forensic Medicine • Legal system in Pakistan • Common legal terms / definitions • Courts and their powers legal procedure and inquest. System of Medico-legal investigation in Pakistan and other countries. Procedure of recording evidence in Courts Medical evidence, conduct and duties of Doctor towards court and while appearing in witness box. Dictums of Professional secrecy. • Importance of documentation in Medical practice. Various formats of Medical documents. • Law various types, statute Laws relevant to Medico-Legal practice like Pakistan Penal Code, Criminal Procedure Code, Police rules, Qanoon-e-Shahdat (Evidence Act) Qisas and Diyat ordinance, Zina and Hudood ordinance, Workman' Act, Social Security Act, child marriage restraint Act, Rules regarding admissions, treatment and discharge of mentally ill person to Mental Hospitals and Laws in relation to Drugs. • Regulations of Medical Profession, Governing Body (P.M &D.C), its constitution and functions. Laws in relation to Medical man. • Duties of a Medical man as per Geneva declaration. • Privileges and obligations of a registered Medical practitioner • Consent, its types and importance in Medical practice. • Medical Negligence • Medical Ethics, their importance and Hippocratic oath. • Professional misconduct. • Confidentiality in Medical practice.	Interactive Seminars and Videos Interactive Lecture SGD PBL	MCQ SEQ OSPE OSVE

	• Privileged communications. • Ethical issue related to Therapeutic and Human experimentation, Organ Transplantation, Euthanasia, and obstetrical procedures.		

Module: **(Basic sciences)Serology & Analytical techniques**

Module Duration: **3 Months**

Module Coordinator:

Analytical Techniques			
Topic	**Content**	**Learning Strategy**	**Assessment tool**
General	• Principles of Stass - Otto Process • Calorimetery • Photoelectric Colorimetery • Flame Photometery Atomic • Absorption-Spectro-Photometery • Chromatography • Electrophoresis • ELISA	Interactive Seminars and Videos Interactive Lecture SGD PBL	MCQ SEQ OSPE OSVE

Serology			
Topic	**Content**	**Learning Strategy**	**Assessment tool**
	• Basic concepts of serology and Immunology • Morphology of Human Blood and its comparative study with common Domestic Animal species • Laws of inheritances of blood group systems • Methods of collection of blood for grouping its preservation and dispatch techniques • Blood group systems: A.B.O, RH and others with their determination techniques. • Constituents of blood for grouping like red cell enzymes, Haptoglobins, GM, Go systems and Hemoglobin. • D.N.A Technology and its Forensic, Application with method of collection and preservation of specimen for D.N.A test. • Application of blood groups and D.N.A Techniques in paternity tests. • Forensic importance of blood stains and their study under following headings ✓ Physical ✓ Chemical ✓ Spectroscopic ✓ Microscopic ✓ Biological / Immunological ✓ Group determination techniques • Group specific substance and their utility • Study of semen and saliva with determination of grouping and ownership • Principles and techniques of various Immuno-Serological tests, precipitin test and its application to human soluble protein material like blood, semen, bony the grnents and tags of tissues Pregnancy test.	Interactive Seminars and Videos Interactive Lecture SGD PBL	MCQ SEQ OSPE OSVE

MD Forensic Medicine & Toxicology PART II
(After 3rd & 4th Year)
Curriculum for 3rd & 4th Year

Module: General Forensic Medicine

Module Duration: 1.5 Months

Module Coordinator: _____

General Forensic Medicine			
Topic	**Content**	**Learning Strategy**	**Assessment tool**
Forensic Sciences	• Introduction Historical development, scope and importance of various disciplines in crime detection and personal identity, especially Photography, Photo-fit and Identikit techniques Dactylography, Poroscopy, Dentistry, Anthropometry, Questioned documents , criminalistics, Ballastics, Lie detection D.N.A techniques Forensic aspects of Radiology, Anesthesiology and Obstetrics.	Interactive Seminars and Videos Interactive Lecture SGD PBL	MCQ SEQ OSPE OSVE
Personal Identity	• Importance problems in living and dead various objective methods of identification, determination of Race, Sex, Age by using clinical and objective methods. • Specification identification by observation by Moles, Birth marks scars, Occupation marks body measurements, Footprints, Supervision photographic and Para –Nasal sinuses technique. • Evaluation of evidence from examination of skeleton and fragmentary remains.		
Trace Evidence	• Definition, Classification and types. Locard's Principle of exchange with its application in Criminal cases. • Study of scene of Crime Methods of recovery, collection, preservation and dispatch of trace evidence to laboratory.		

Thanatology	• Definition, concepts about death and their evolution. Diagnosis of death and factors responsible for uncertainty in diagnosing death. • Suspended animation, U.K code as diagnostic criterion for death. Mode, Cause manner and Mechanism of death. Physical charges in the various body structures after death and its importance. • Importance of death certification and notification. International format of death certificate with illustrations and its importance. • Post Mortem Chemistry of body fluids like blood , C.S.F and vitreous hmmour, their methods of collection, importance and interpretation of results.		
Sudden Deaths	• Unexpected sudden natural deaths, causes with emphasis on Ischemic Heart diseases, Vasovagal Shock and Thrombo-Embolic Phenomenon		

Module: Special Forensic Medicine

Module Duration: 3 Months

Module Coordinator: _____

Special Forensic Medicine			
Topic	**Content**	**Learning Strategy**	**Assessment tool**
Autopsy	• Definition, Types, Objective rules and techniques with procedural details. Autopsy protocol, Negative Autopsy and Post-Mortem artifacts, Requirements of Modern Mortuary with preventive strategy against potential risks and hazards determination of fatal period & Post mortem interval. • Autopsy on exhumed bodies, legal procedure, Techniques and validity.	Interactive Seminars and Videos Interactive Lecture SGD PBL	MCQ SEQ OSPE OSVE
General Traumatology ✓ Mechanical Injuries ✓ Firearm and Blast Injuries ✓ Non Mechanical Injuries	• Definitions of wound, injury and Hurt, Mechanism of production of wound. Clinical and legal classification of wounds and hurts. Clinical examination and certification of an injured person, assessment of disability, methods of determination of age of wound. • Study of types of wounds according to causative agents. Firearms and ammunition, types effects of firearm projectile and other components discharged during firing on human body proportionate to type of projectile and Muzzle target distance. • Traumatic lesions produced due to Environmental and Physical agents like heat, Cold, Electricity, Lightening and Radiations.		
Special Traumatology ✓ Regional Injuries ✓ Road Traffic Injuries	• Wound and their aspects on various body structures and viscera's like scalp, skull, Meninges, Brain, Spinal cord, Pelvis, Neck, Chest, abdomen, locomotors systems & teeth. • Accidents, Industrial, Domestic Road Railway and aviation. Mass disaster & Explosions methods / protocol of investigation. • Torture, pattern and effects of Custodial deaths. • Causes of death & their complications, Presumption of Survivorship. • Distinction between wounds caused by using criminal force, self-infliction and accidents.		

✓ Custodial Injuries	• Distinction between suicidal, Homicidal & Accidental Traumatic lisions Ante-mortem & Postmortem wounds.		
✓ Violent Asphyxial Deaths	• Definition, Classification of Asphyxial deaths. Physio-Pathology and biochemical changes following Asphyxia. Mechanism, Causes of death, Post Mortem appearances and Medico-legal Aspects of deaths due to suffocation, Strangulation, Throttling, Traumatic Asphyxia, Sexual Asphyxia and Drowning. (Dysbarism & BaroTrauma).		
✓ Medicolegal Aspects of a. Marital Relationship b. Sexual Offences c. Medicolegal Aspects of Infanticide and Child Abuse d. Forensic Psychiatry	• Medico-legal aspects of Marriage. medical grounds of Nullity of marriage and Divorce, Impotence and Sterility Medico-legal aspects causes, examination and certification. • Diagnosis and Medico-legal aspects of virginity, Pregnancy, Delivery, Diagnosis of Delivery in living and Dead Legitimacy. • Termination of Pregnancy causes of natural and unnatural abortions, criminal abortion motives, methods, complications and causes of death following abortion. • Post-Mortem examination of the female, including determination of age gestation and aborted material. Estimation of Fetal age. • Natural & unnatural Sexual offenses. Examination procedure, Justification regarding choise, Methods of recovery, collection and preservation of Biological specimens for confirmation in cases of sexual offence both in victim and aggressor. • Paraphilia: Pattern, Definitions. • Intentional /non accidental injures to children, sexual offences (Pedophilia). Distinction between live born, dead born, still born on autopsy examination. Causes of Un Natural deaths in infants. • Autopsy on infants, determination of age in neonates. • Classification of mental disorders and abnormal Human behaviors. Civil and Criminal responsibility in mentally sick persons.Feignedinsanity. • Suicide and Para Suicide		

Module: **Toxicology**

Module Duration: **1.5 Months**

Module Coordinator:

Toxicology			
Topic	**Content**	**Learning Strategy**	**Assessment tool**
General	• Basic concepts about poisons, Science of poisons, its sub discipline. • Factors that influence Toxicity in Biological system. • Various methods of classification of poisons. • General principles for Diagnosis, removal, management of a case of poisoning. • Antidotal therapy – Non Specific and specific Antidotes. • Identification, methods of collection, preservation of Biological material for Chemical Analysis with maintenance of chain of custody. • Duties of Doctor in case of poison.	Interactive Seminars and Videos Interactive Lecture SGD PBL	MCQ SEQ OSPE OSVE
Special Toxicology	• Study of following poisons with pocus on the Sources, Epidemiology, Mechanism of action, Detoxication, Excretion, Clinical manifestations (in acute and chronic cases), Fatal dose, Laboratory Diagnosis with spot tests, choice of Specimen collection for laboratory confirmation, (in living and dead), management Strategy, complications, causes of death and post-Mortem findings. ✓ Sulphuric acid, Hydrocyanic Acid, Carbolic Acid, Oxalic Acid and Casuistic Potash and Soda. ✓ Phosphorus, Arsenic, Mercury, Lead, Copper Sulphate. ✓ Opiates and Opoids. ✓ Alcohols ✓ Hydrocorbons ✓ Drug Induced poisoning: Asprin, Pracetomol, Amphetamines, Hallucinogens Sedative- Hypnotic drugs Tranquillizers. Barbiturates, Benzodiazipines,		

	Strychnine, Cocaine. ✓ Insecticides like Alkyl, Aryl phosphate, Chlorinated, Compounds ,and those from botanical origin ✓ Herbicides : Paraquat, Diquat ✓ Rodenticides: Warfarin, Red Squill, Thallium ✓ Asphyxiants: War Gases, Corban Mono Oxide, Hydrogen Sulphide. ✓ Venomous Insects including snakes. ✓ Toxic plants: Digitals, Oleander, Nicotine, Aconite, Costorbean, Dhatura, Mushrooms. ✓ Drug abuse and drug dependence.		

Module: **Research**

Module Duration: **12 Months**

Module Coordinator: _____

Topic	Learning Objectives	Learning Strategy	Assessment tool
Research methodology	Understand some basic concept of research and its methodology. Identify appropriate research topic. Select and define appropriate research problem and parameters. Prepare a project proposal. Organize and conduct research in a more appropriate manner. Write a research report and thesis. Write a research grant proposal	Workshop	MCQ SEQ
Biostatistics / Clinical audit	Understand and apply statistical methods for design of biomedical research and analysis of research data Plan clinical audit project and select audit topics Consider best practice in selecting measurable criteria and standards Discover approaches to collecting and analyzing data Determine key area for improvement	Workshop	MCQ SEQ
Behavioral sciences	Demonstrate communication and counseling skills	Workshop	MCQ SEQ

Skill Learning:

At the end of course, the candidate is able to:

- Identify, Describe and note marks of identification of an examinee.
- Record Dying Declaration
- Perform Clinical examination and prepare reports regarding:
  - Determination of age
  - Injury Case
  - Alcoholic Case
  - Poisoning Case
  - Victim / Accused of Sexual offence
  - Potency, Sterility
- Recognize and locate important bony land marks.
- Estimate age, Determine Sex and Height of a person from Bones
- Conduct examination, describe and preserve clothes as a case property.
- Identify and describe suspected stain on a fabric.
- Conduct tests for species and group identification of a suspected material.
- Prepare blood film for Microscopy.
- Determine Sex From Buccul smear.
- Perform second examination of a injured, frame opinion and write report
- Conduct autopsy
- Describe Pathology effecting Heart, Cardiac, Valves, Coronary arteries on dissection.
- Demonstrate centers of ossification in a newly born Child on autopsy.
- Draw Biological fluids (Blood, Urine, C.S.F, Vitreous Humour) from dead body.
- Perform Diatom Test
- Perform Cardiopulmonary resuscitation (C.P.R)
- Perform Gastric Lavage.
- Perform Tracheostomy.
- Insert Endotracheal tube

Competency Level in Dealing with Forensic Cases

Case	Year 1 & 2	Year 3	Year 4
Clinical Examination			
A. Forensic Cases			
Physical Assault	2	3	4
Sexual Assault	2	3	4
Poison/ Drug abuse	2	3	4
Drunkard	2	3	4
B. Civil Cases			
Age determination	2	3	4
Sex related problems	2	3	4
Physical/Mental Fitness	2	3	4
Disability compensation	2	3	4
Autopsy			
a. Medico-Legal	1	2-3	4
b. Clinical	1	2-3	4
c. Special Cases & Exhumation	-1	2	3-4
d. Preservation and Transportation of dead	2	3-4	4
Toxicological Cases			
Diagnosis and Management	2	4	4
Documentation			
Medical certificates	2	4	4
Medical-Legal Reports	2	4	4

Protocol designing	**-**	**2**	**4**
Laboratory Skills			
Preservation of Biological Material	**2**	**3**	**4**
Serological Tests	**1**	**2**	**3**
Molecular Biology	**-**	**2**	**3**
Histopathology	**-**	**2**	**3**
Analytical techniques	**-**	**2**	**3**
Training in ancillary specialties			
A. Dentistry & Osteology(Radiology)			
Nomenclature	**1**	**2**	**4**
International chattering	**1**	**2**	**4**

NON CLINICAL ELECTIVES

Research

Residents are encouraged to engage in clinical or basic science research during their training through our Comprehensive **mentoring program**. At the beginning of this rotation, resident will be asked to identify a research topic or project and be linked with a research mentor. Resident will gain broad understanding of the fundamental principles and methods of research: developing research questions, analyzing current literature, designing studies (including statistical analysis), presenting research projects and writing them up. Residents receive close supervision by their preceptor throughout all phases of the research project, learning the process from hypothesis development to IRB (Institutional Review Board) submission through experimentation, data collection, analysis, formal writing for presentation and publication. At the **Resident Research Forum,** residents present their work-in-progress to peers and faculty.

Mandatory Workshops:

1. Each candidate of MD/MS/MDS program would attend the 04 mandatory workshops in first and second year of training as required by the University.
2. The four mandatory workshops will include the following:
   a) Research methodology and biostatics
   b) Basic life support
   c) Communication skills
   d) Introduction to computer / information Technology and Software programs
3. The workshops will be held on 03 monthly bases.
4. Certificates of attendance will be issued upon satisfactory completion.

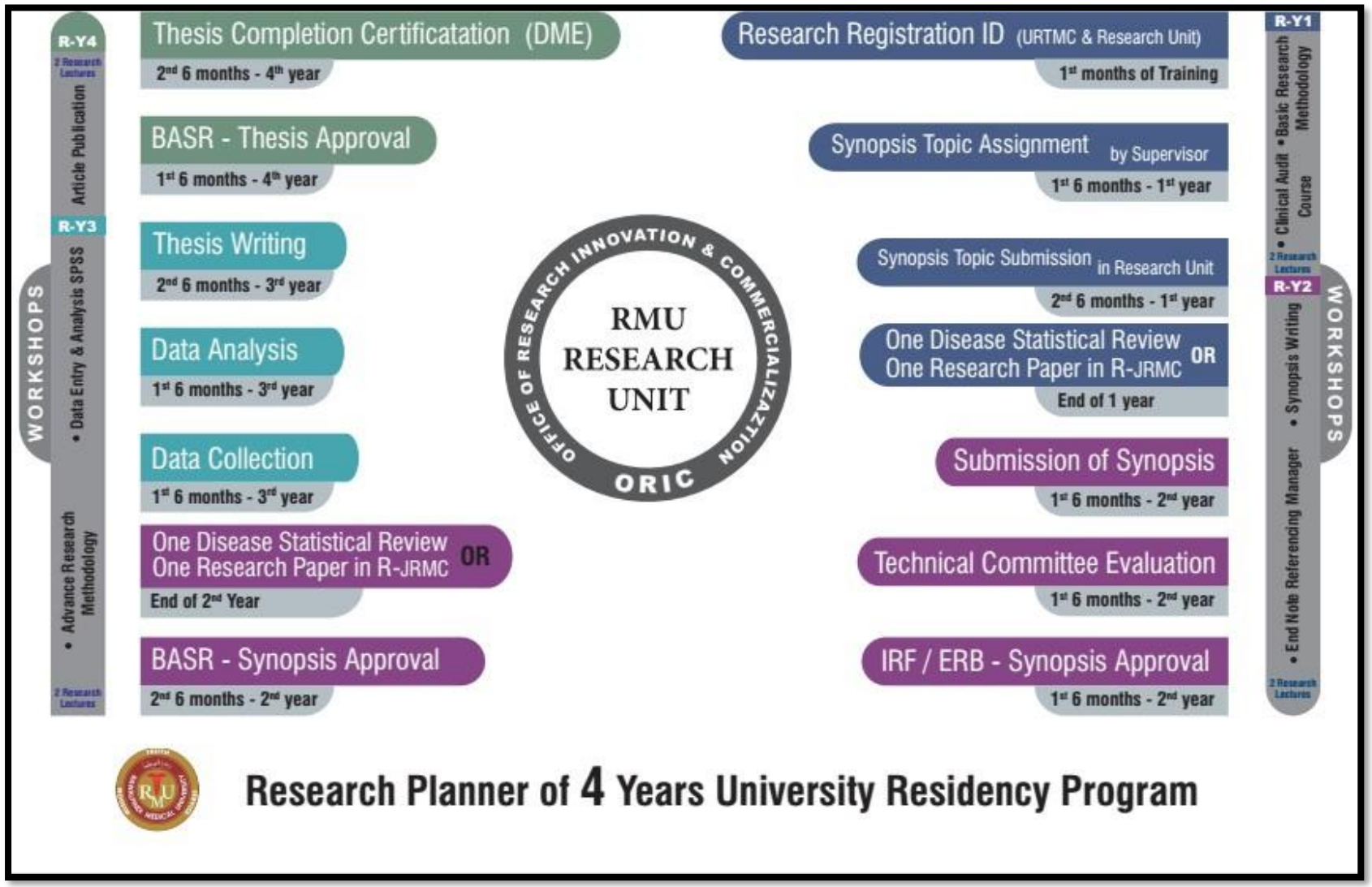
Compulsory Rotations

The frame work for core training will consist of the rotations in

- Basic Departments – 03 Months
- Medicoo-legal clinic – 12 Months
- Mortuary – 12 Months
- Serology & Analytical Laboratory – 03 Months
- Electives (Ballistics / Punjab Forensic Science lab) - 02 Months
- Department of Radio-Imaging - 01 Month

➢ The educational objective of rotations is to give appropriate experience in relevant fields

APPENDIX - 3
Research Planner



APPENDIX - 4
Table of Specification (TOS)

M.D (Forensic Medicine)

1. After completion of each session (1 & 2 years), Rawalpindi Medical University will conduct examination, as per schedule announced by the controller of Examination.

M.D Forensic Medicine (After 1st year)

Component:

2. Theory Examination : 100 MCQs (After 1st Year) 150 MCQs (After 2nd Year)

Component I. Theory

Theory Scheme showing type and number of questions & Syllabus included.

Paper No.	Type of Questions	Number of Questions	Marks Reserved	Syllabus Included
01.	a) MCQ'S	100	100	1. Applied Morbid Anatomy 2. Applied Physiology 3. General Pathology 4. Special Pathology 5. Serology 6. Forensic Medicine 7. Applied Pharmacology 8. Biochemistry

Note Candidate who passes theory Component will be promoted to complete 3 years of thesis & Practical training.

Anatomy

Paper no	Topics	Number of questions	%age
01	General	3	3%
02	Osteology	3	3%
03	Embryology	3	3%
04	Odontology	2	2%
	Total	11	11%

Physiology

Paper no	Topics	Number of questions	%age
01	Body water and fluid balance General	1	1%
02	Physiology of menstrual cycle & Pregnancy	2	2%
03	Physiology of Thermoregulation	1	1%
04	Blood Sugar Regulation, Diabetic and Hypoglycemic coma	1	1%
05	Blood grouping and RH Incompatibility	2	2%
06	Physiology of Musoule-Skeletal system	1	1%
07	Physiology of Sexual and reproductive system	1	1%
	Total	9	9 %

General Pathology

Paper no	Topics	Number of questions	%age
01	Cell Pathology	1	1%
02	Secondary Changes	1	1%
03	Body response to Trauma	2	2%
04	Physio-Pathology of Shock	1	1%

05	Inflammation, acute and Chronic	1	1%
06	Carcinogenic agents, Tumors, benign and malignant	1	1%
07	Histological/Histochemical determination	2	2%
	Total	9	9 %

Special Pathology

Paper no	Topics	Number of questions	%age
01	Gross & Microscopic changes in Myocardial Infarction	1	1%
02	Chronic Industrial Diseases	1	1%
03	Anaphylaxis and Hypersentivity Reaction	1	1%
04	Microbiology of cadaver	2	2%
05	Trauma of its relationship with stress phenomenon	2	2%
	Total	7	7%

Serology

Paper no	Topics	Number of questions	%age
01	Concepts of Serology and Immunology	1	1%
02	Morphology of Human blood	2	2%
03	Blood groups of their collection	1	1%
04	D.N.A technology & its Forensic application	2	2%
05	Blood group and D.N.A in paternity tests	1	1%
06	Forensic Importance of blood stains	1	1%
07	Group Specific Substance and their unity	1	1%
	Total	9	9 %

General toxicology

Paper no	Topics	Number of questions	%age
01	Outline of Mechanism of absorption, distribution, metabolism, Biotransformation	3	3%
02	Drug interaction and adverse drug reaction	3	3%
03	Concept of fatal dose	2	2%
	Total	8	8%

Biochemistry

Paper no	Topics	Number of questions	%age
01	General	3	3%
02	Enzymology	1	1%
03	Acid base, balance, general, consideration buffer system of plasma	3	3%
	Total	7	7%

Forensic Medicine(Law related to Medical man)

Paper no	Topics	Number of questions	%age
01	Role of Medical man in solving forensic problems	2	2%
02	Historical background & Medicolegal System in Pakistan	3	3%
03	Documentation in Medical Practice	2	2%
04	Courts & their powers	3	3%
05	Law, various typs, statute laws relevant to Medicolegal practice	3	3%

06	Procedure of recording ordinance in court Medical evidence and duties of doctor toward court.	3	3%
07	Qisas and Diyat ordinance 1991	3	3%
08	Zina & Hudood Ordinance 1979	3	3%
09	Workman's compensation act	3	3%
10	Medical Ethics/ Professional Misconduct	3	3%
11	Medical Negligence	3	3%
12	Confidentiality in Medical Practice/ Privileged communications	3	3%
13	Pakistan Medical & Dental Council	2	2%
14	Ethical issue related to therapeutic and human experimentation, organs transplantation, Euthanasia & obstetrical Medical practitioner	3	3%
15	Privileges & Obligation of a registered Medical practitioner	1	1%
	Total	40	40%

M.D Forensic Medicine FTA

Examination Consists of Two Components **Total marks: 750**

Component I **Allocated Marks**

Theory comprising of two papers 300 Marks (150 marks for each paper)

Scheme for Theory Examination

Paper No	Type of Questions	Number of Questions	Marks Reserved	Syllabus Included
01.	a) MCQ'S b) Short Essay type SEQ'S (Problem Solving)	100 05	100 50	• Forensic Science • General Forensic Medicine • Autopsy, Sudden Death. • Traumatology • Violent Asphyxial Death • Sexual Forensic Medicine • Pediatric Forensic Medicine
02.	a) MCQ'S b) Short Essay type SEQ'S (Problem Solving)	100 05	100 50	• General Toxicology • Special Toxicology • Forensic Psychiatry

Component II **Allocated Marks**

Practical (O.S.P.E and Viva Voce) 400 Marks

Scheme For Practical Examination

Type	Number	Marks Allocated
a) Slides, Spotting and Radiographs	15stations 10x15=150	150
b) Viva Voce and Discussion	……..	100
c) Continous internal Assessment	……..	100
d) Thesis Examination		100
	Total	450

SECTION – VIII: Reference Books:

List of books:

- Anderson Pathology (Latest Edition).
- Knight's Forensic Pathology by Knight (Latest Edition).
- Forensic Pathology by Bernard Knight (Latest Edition).
- Principle And Practice Of Forensic Medicine By Nasib R Awan (Latest Edition).
- Parikh's Textbook of Medical Jurisprudence, Forensic Medicine and Toxicology (Latest Edition).
- Gradwohl's Legal Medicine By Francis E. Camps (Latest Edition).
- Medicolegal Investigation Of Gunshot Wound By Abdullah Fateh (Latest Edition).
- Robbin’s. Pathologic Basis of Diseases
- Last R. J. Anatomy (Regional and Applied)
- Snell. Clinical Anatomy.
- Langmman J. Embryology
- Introduction To Statistics, Publishing Co. Inc, New York.
- Spiegel, Murray R.: Theory & Problems Of Statistics, Sehawm Publishing Co., New York.

List of journals:

A short list of relevant forensic pathology-related journals:

- Academic Forensic Pathology
- American Journal of Forensic Medicine and Pathology
- Forensic Science International
- Forensic Science Medicine and Pathology
- International Journal of Legal Medicine
- Journal of Forensic and Legal Medicine
- Journal of Forensic Nursing
- Journal of Forensic Odonto-Stomatology
- Journal of Forensic Radiology and Imaging
- Journal of Histotechnology
- Legal Medicine

References

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- **https://qhss-health-qld.libguides.com/forensic-pathology/journals**
- **https://www.ipinnovative.com/journalslist/medical/forensic-medicine-and-toxicology**
- **https://www.hilarispublisher.com/scholarly/forensic-medicine--journals-articles-ppts-list-455.html**
- **https://forensiclibrary.org/journals**