بسم الله الرحمن الرحيم

CURRICULUM / STATUTES/ REGULATIONS

FOR 5 YEARS MD Medical Oncology

Faisalabad Medical University

Faisalabad

Contents

Section A

VISION STATEMENT:

Faisalabad Medical University has been established since 05-05-2017 for purpose of imparting better medical education and encouraging and arranging extensive research and publication in the field of medical science. The vision of university is:

"Striving to achieve national and international stature in undergraduate and postgraduate medical education with strong emphasis on professionalism, leadership, community health services, research and bioethics"

MISSION STATEMENT

The mission of the University is:

"Educate Healthcare professionals to prevent, diagnose and treat human illnesses to practice evidence-based medicine with focus on lifelong healthcare in order to meet the challenges of community needs and competitive medical profession at the same time"

STATUTES

Nomenclature

The name of degree programmer shall be MD Medical Oncology

Course Title:

MD

Training Centers

Department of Medical Oncology in affiliated hospitals of Faisalabad Medical University, Faisalabad.

Duration of Course

The duration of course shall be five 5 years with structured training in a recognized department under the guidance of an approved supervisor.

Course structure:

1. **Core knowledge:** Competency based learning for trainees (2 exams to be conducted by university). Continuous internal assessment to be included throughout the Programme which is conducted by the department which will carry weightage in final assessment)
2. **Clinical Training** in Medical Oncology
3. **Research and Thesis writing.**
4. **Mandatory Workshops** throughout the course of programme will be conducted. The basic workshops will be attended by all trainees from all specialties and will be evenly distributed throughout the course:

    1. **Communication skills**
    2. **Research synopsis and thesis writing skills**
    3. **Basic Biostatistics and Research Methodology**
    4. **Information Technology Skills**
    5. **Initial Life Support (ILS)**

At the end of each workshop, assessment will be done regarding the workshop and certificates will be issued to passing trainees only. The workshops will be conducted by the University and will be paid as in all post-graduate programmes and supervised by the department of Medical Education, FMU, Faisalabad. The trained certified

coaches/teachers will be invited and they will get incentive from the university. All the interested trainers will contact the department for inclusion in trainers list.

Feedback of the facilitators will be recorded for the continuation of the process. Medical education department will issue yearly planner for these workshops in the light of curriculum document. University will certify it.

The course is structured in three parts:

Part I: Candidate will start his/her training in Medical Oncology department from 1st day till 6 months. Candidate will gain basic knowledge of the selected specialty i.e., anatomy, physiology and orientation to the subject, basic principles, history taking and case presentation, inpatient and out-patient care. During this time the candidate will select a topic for synopsis, complete his/her synopsis and will attend the mandatory workshops.

Part II: From 6 months till 2 years, he/she will do a rotational training in (General Medicine) under a supervisor allocated in medical department. The candidate shall undertake clinical training in fundamental concepts of general medicine from 6 months till 2 years. During this period, the candidate must submit the synopsis for approval. At the end of 2nd year, the Intermediate examination shall be held in fundamental concepts of General Medicine. The clinical training in Medical Oncology shall be rejoined from 3rd year onwards in Medical Oncology department.

Part III is structured for 3rd, 4th and 5th calendar years in MD Medical Oncology. The candidate shall undergo training to achieve educational objectives of in MD Medical Oncology along with rotation in relevant fields.

Section B:

Admission Criteria

Central induction Policy as per Government rules

Registration and Enrollment

The number of PG Trainees/ Students and Beds to trainee ratio at the approved teaching site will be as per policy of Pakistan Medical & Dental Council

The University will approve supervisors for MS/MD courses.

Candidates selected for the courses after their selection and enrollment shall be registered with FMU as per prescribed Registration Regulation.

Accreditation Related Issues of the Institution

A. Faculty

Properly qualified teaching staff in accordance with the requirements of Pakistan Medical and Dental Council (PMDC). Supervisors will be decided by the university according to the set standards and rules.

B. Adequate resources

The university will provide adequate resources Including class-rooms (with audiovisual aids), demonstration rooms, computer lab, clinical pathology lab, theaters, instruments and other equipment etc. for proper Training of the residents as per their course outcomes and objectives.

C. Library

Departmental library should have latest editions of recommended books, reference books and latest journals (National and International).

Freezing of Program & Leave Rules:

Freezing of training, maternity leave, Ex-Pakistan Leave and Extra Ordinary Leave etc. would be allocated through the Office of Dean Postgraduate to the competent authority.

Section C:

AIMS AND OBJECTIVES OF THE COURSE

AIM

The aim of five years MD programme in Medical Oncology is to train residents to acquire the competency of a specialist in the relevant field so that they can become good clinicians, teachers, researchers and community health provider in their specialty after completion of their training according to the global standards.

LEARNING OBJECTIVES:

General Objectives

MD Medical Oncology training should enable a student to:

- Access and apply relevant knowledge to clinical practice of Medical Oncology:
    - Maintain currency of knowledge
    - Apply scientific knowledge in practice
    - Appropriate to patient need and context
    - Critically evaluate new technology
- Safely and effectively performs appropriate clinical skills & procedures:
    - Consistently demonstrate sound clinical skills
    - Demonstrate procedural knowledge and technical skill at a level appropriate to the level of training
    - Demonstrate manual dexterity required to carry out procedures
    - Adapt their skills in the context of each patient and procedure
    - Maintain and acquire new skills

- Approach and carries out procedures with due attention to safety of patient, self and others
- Critically analyze their own clinical performance for continuous improvement

- Design and implement effective management plans:
  - Recognize the clinical features, accurately diagnose and manage Oncology related problems
  - Formulate a well-reasoned provisional diagnosis and management plan based on a thorough history and examination
  - Formulate a differential diagnosis based on investigative findings
  - Manage patients in ways that demonstrate sensitivity to their physical, social, cultural and psychological needs
  - Recognize disorders of the Oncology related system and differentiate those amenable to medical treatment
  - Effectively recognize and manage complications
  - Accurately identify the benefits, risks and mechanisms of action of current and evolving treatment modalities
  - Indicate alternatives in the process of interpreting investigations and in decision-making
  - Manage complexity and uncertainty
  - Consider all issues relevant to the patient
  - Identify risk
  - Assess and implement a risk management plan
  - Critically evaluate and integrate new technologies and techniques.

- Organize diagnostic testing, imaging and consultation as needed:
    I. Select medically appropriate investigative tools and monitoring techniques in a cost-effective and useful manner
    II. Appraise and interpret appropriate diagnostic imaging and investigations according to patients' needs
    III. Critically evaluates the advantages and disadvantages of different investigative modalities
- Communicate effectively:
    - Communicate appropriate information to patients (and their family) about procedures, potentialities and risks associated, in ways that encourage their participation in informed decision making
    - Communicate with the patient (and their family) the treatment options including benefits and risks of each
    - Communicate with and co-ordinate health management teams to achieve an optimal patient management
    - Initiate the resolution of misunderstandings or disputes
    - Modify communication to accommodate cultural and linguistic sensitivities of the patient
- Recognize the value of knowledge and research and its application to clinical practice:
    - Assume responsibility for self-directed learning
    - Critically appraise new trends in Oncology
    - Facilitate the learning of others
- Appreciate ethical issues associated with Oncology:

- Consistently apply ethical principles
- Identify ethical expectations that impact on medico-legal issues
- Recognize the current legal aspects of informed consent and confidentiality
- Be accountable for the management of their patients.

- Professionalism by:
  - Employing a critically reflective approach to Oncology
  - Adhering with current regulations concerning workplace harassment
  - Regularly carrying out self and peer reviewed audit
  - Acknowledging and have insight into their own limitations
  - Acknowledging and learning from mistakes

- Work in collaboration with members of an interdisciplinary team where appropriate:
  - Collaborate with other professionals in the selection and use of various types of treatments assessing and weighing the indications and contraindications associated with each type
  - Develop a care plan for a patient in collaboration with members of an interdisciplinary team
  - Employ a consultative approach with colleagues and other professionals
  - Recognize the need to refer patients to other professionals.
- Management and Leadership
  - Effective use of resources to balance patient care and system resources
  - Identify and differentiate between system resources and patient needs
  - Prioritize needs and demands dealing with limited system resources.

- Manage and lead clinical teams
- Recognize the importance of different types of expertise which contribute to the effective functioning of clinical team
- Maintain clinically relevant and accurate contemporaneous records

- Health advocacy:
  - Promote health maintenance of patients
  - Advocate for appropriate health resource allocation

Specific Objectives/ Content list:

Residents completing MD Medical Oncology training will have formal instruction & clinical experience, and will be able to demonstrate competence in the evaluation & management of adult and paediatric patients and applying scientific principles for the identification, prevention, treatment and rehabilitation of acute and chronic illness in oncological disorders.

- Demonstrate understanding of basic sciences relevant to this specialty
- Demonstrate with knowledge of the clinical relevance of pathology, specifically with regard to malignant diseases
- Demonstrate knowledge of the epidemiology, prevention, natural history and management of the common and curable cancers
- Describe etiology, pathophysiology, principles of diagnosis and management of malignancies including emergencies, in adults and children e.g. lung, esophageal, head and neck, breast, prostate, bladder, testicular, renal, colorectal, gastric, pancreatic, melanoma, sarcoma and CNS primary as well as secondary cancers.
- Demonstrate knowledge of the clinical significance of information from the pathologic evaluation of tumors; including invasiveness, nodal spread, expression of oncogenes and the identification of potential targets for treatment of malignancies.

- Demonstrate knowledge of how serum tumor markers are used by the clinician in the diagnosis treatment and prevention strategies;
- Demonstrate the clinical correlation of pathology, molecular biology, immunohistochemistry, flow cytometry and tumor markers study.
- Demonstrate knowledge of the principles in the surgical management of cancer
- Demonstrate knowledge of principles of radiotherapy in treating patients with cancer
- Demonstrate knowledge of the principles of systemic therapy for cancer,including chemotherapy, hormonal therapy, biologic therapy, brachytherapy and clinical trial strategies
- Demonstrate knowledge of the approach and management of the common and curable malignancies; specifically, lung, head and neck, colorectal, gynecological, breast and skin cancers; as well as pediatric tumors, brain tumors and lymphomas and leukemias
- Demonstrate knowledge of the principles of multidisciplinary care for patients with cancer in such a way as they can address basic questions of diagnosis, staging and treatment planning for surgery, radiation therapy and medical oncology
- Demonstrate the following oncological emergencies/urgencies and know how to diagnose and manage them

❖ Febrile neutropenia
❖ Superior vena cava obstruction (SVCO)
❖ Cord compression
❖ Increased intracranial pressure (ICP)
❖ Hypercalcemia
❖ Tumour lysis syndrome
❖ Syndrome of inappropriate ADH secretion (SIADH)

- Describe indications and methods for blood transfusion and pheresis.
- Supportive care
- Role of palliative care service – when and why to get them involved

- Know common side effects of chemotherapy and radiotherapy in general (myelosuppression, nausea, vomiting, mucositis etc) and basic approach to management with supportive measures (pain medication, transfusion, etc).
- Pain assessment - pain types (visceral, somatic, neuropathic)
- Managing opioid side effects – what to watch for and what to try and prevent (e.g. constipation)
- WHO ladder for pain control – describe briefly
- Rational approach to nausea/vomiting, anorexia/cachexia, diarrhea, bleeding diathesis etc. in the oncology patients with differential diagnosis and treatment approach.

-Professional Skills:

Residents shall learn professional skills in:

- Patient Management including eliciting pertinent history, performing physical examination, ordering and interpreting the result of appropriate investigations and thereby deciding and implementing appropriate treatment plan and maintaining follow up
- Psychosocial and emotional effects of acute and chronic illness on patients and their families
- Management of end of life issues and palliative care
- Quality improvement and patient safety activities

-Procedural and Technical Skills:

Residents shall learn technical and procedural skills in:

- Blood sample collection - venepuncture and finger prick methods of sample collection, use of different types of anticoagulants, containers and the effects of delay in processing and storage.

- Review of normal and abnormal blood films with emphasis on morphology of red cells, white cells and platelets.
- Performance of bone marrow aspiration; trephine needle biopsy
- Staining and diagnostic evaluation of bone marrow aspirates. Interpretation of cytochemical stains including Sudan Black, Myleloperoxidase, specific and non-specific esterases, acid phosphatase, PAS and iron staining.
- Familiarization with cytogenetics, understanding the principles of cytogenetics and appreciating the relevance and significance of chromosomes in diagnostic hematology and oncology
- Clinical evaluation and screening of patients and donors for hematopoietic stem cell transplantation.
- Collection, cryopreservation and storage of hematopoietic stem cells.
- Understanding the principals involved in the molecular diagnosis of hematological and oncological disorders by
    - Flow cytometry
    - Polymerase chain reaction (PCR)
    - Flourescence in situ hybridization (FISH)
    - Western and Southern Blotting.
    - Microarray technology
    - Interpretation of imaging techniques commonly employed in the evaluation of patients with critical illness and/or oncological disorders
- Practice infection control procedures and perform continuous quality improvement.

Section D:

Programme Format / Scheme of MD programme

06 months	Outcome
Anatomy a) Anatomy of lung , breast , git , genitourinary b) Histology of spleen ,bone marrow and lymph node	Student will be able to identify the structures and will have knowledge of function
Cancer genome a) Cancer genes and their mutation b) Identification of cancer genes c) Somatic alteration classes by cancer genome analysis d) Genomic landscape of cancers e) Integrative analysis of cancer genomes f) Cancer genome and new taxonomy of tumors g) Cancer genomics and drug resistance h) Perspectives of cancer genome analysis i) Hallmarks of cancer…introduction j) Hallmark capabilities,in Essence k) Two ubiquitous characteristics facilitate Acquisition of Hallmark capabilities l) The constituent cell types of tumor microenvironment m) Therapeutic targeting of hallmarks of cancer n) Molecular methods in cancer…introduction	Students will be able to learn about cancer genes, their types, genetic alterations, hallmarks of cancer, molecular methods in oncology, molecular diagnostic tests and technologies.

o) Application of molecular diagnostics in oncology p) Clinical molecular diagnostic laboratory. Rules and regulations q) Specimen requirements for molecular diagnostics r) Molecular diagnostic testing process	
Etiology and Epidemiology Of Cancer a) Introduction b) Tobacco and cancer c) Carcinogens in tobacco products and d) processes of cancer development e) Oncogenic viruses f) Principles of tumor virology g) Papillomaviruses h) Polyomaviruses i) Epstein-bar viruses j) Kaposi sarcoma herpes virus k) Animal and human retroviruses l) Hepatitis virus m) Inflammation introduction n) Molecular basis of inflammation o) Role of inflammation in transformation and survival p) Role of inflammation in proliferation and invasion q) Role of inflammation in angiogenesis and metastasis r) Role of inflammation in cancer diagnosis s) Inflammation and genomics t) Inflammation and targeted therapies u) Chemical carcinogenesis v) Chemical carcinogenesis w) Physical factors as carcinogens	Students will be able to learn about various etiological factors of cancers including viruses, inflammation, chemical carcinogens, physical carcinogens and dietary factors in cancer pathogenesis

x) Physical factors as carcinogens y) Dietry factors in carcinogenesis z) Obesity and physical activity in cancer pathogenesis aa) Epidemiology methods	
Cancer prevention and screening **a)** Tobacco use and cancer patients b) Role of surgery in cancer prevention c) Cancer risk reducing agents d) Cancer screening and genetic counselling **e)** Design and analysis of clinical trials	Students will learn about methods of cancer prevention and role of screening in cancer management.

(7th month till 24 months)

- Candidate will be required to do 18 months training in Medicine ward
- Candidate will be required to acquire competency in following areas
    - Medical Ethics
    - History taking
    - Physical Examination
    - Making an appropriate differential diagnosis
    - Addressing patient's concerns
    - Candidate will be required to attend medical outpatient department
    - Candidate will be required to do duties in medical emergency and manage patients with different medical emergencies under supervision

Months 7-24

06 months	Outcome
History taking	Student will be able to take history of patient, make differential according to presenting complaint, take proper relevant past medical and family history
Examination a) General physical examination	Candidate will be able to conduct general physical examination
b) Respiratory examination	Candidate will be able to conduct Respiratory system examination
c) CVS examination	Candidate will be able to conduct CVS examination
d) CNS examination	Candidate will be able to conduct CNS examination
e) Gastrointestinal system examination	

a) Rheumatological Examination	Candidate will be able to conduct GIT examination Candidate will be able to conduct Rheumatological examination
Cardiovascular Medicine ▪ Arrhythmias ▪ Ischaemic Heart Disease: acute cor syndromes, stable angina, atheroscle ▪ Heart Failure ▪ Pericarditis/Pericardial effusion ▪ Valvular heart disease	Student will be able to identify and manage cardiac arrhythmias and can do electric and medical cardioversion Student will be able to identify ECG changes of cardiac ischemia and will be able to manage patient of Myocardial Infarction and unstable angina Student will be able to manage patient with heart failure

▪ Endocarditis	Student will be able to manage patient with pericarditis/pericardial effusion Student will be able to manage patient with valvular heart disease Student will be able to diagnose and manage patient with endocarditis
Respiratory medicine ▪ COPD ▪ Asthma ▪ Pneumonia ▪ Pleural disease: Pneumothorax, pleural effusion, mesothelioma	Student will be able to diagnose and manage patient of COPD Student will be able to diagnose and manage patient of Asthma Student will be able to diagnose and manage patient of Pneumonia

▪ Respiratory failure and methods of respiratory support ▪ Pulmonary embolism and DVT	Student will be able to diagnose and manage patient of pleural diseases
▪ Pulmonary fibrosis	Student will be able to diagnose and manage patient of respiratory failure Student will be able to diagnose and manage patient of pulmonary embolism Student will be able to diagnose and manage patient of pulmonary fibrosis
Neurology • Stroke • Paraplegia ▪ Acute paralysis: Guillian-Barré, myasthenia gravis, spinal cord lesion • Central Nervous System infection:	Student will be able to diagnose and manage patient of stroke Student will be able to diagnose and manage patient of paraplegia

encephalitis, meningitis, brain abscess ▪ Subarachnoid haemorrhage ▪ Multiple sclerosis ▪ Motor neuron disease	Student will be able to diagnose and manage patients of GBS,myasthenia gravis Student will be able to diagnose and manage patient of CNS infections Student will be able to diagnose and manage patient of subarachnoid hemorrhage Student will be able to diagnose and manage patient of multiple sclerosis Student will be able to diagnose and manage patient of MND
Gastroenterology and hepatology • Barrett's Esophagus • Peptic Ulcer Disease • Celiac Disease • Colorectal Cancer • Gallbladder and Biliary Disease	Student will be able to diagnose and manage patient of oesopageal and gastric diseases Student will be able to diagnose and manage patient of biliary and gall bladder diseases Student will be able to diagnose and manage patient of chronic viral hepatitis

• GERD • Hepatitis B • Hepatitis C • IBS and Chronic Constipation • Inflammatory Bowel Disease • Noncolorectal Gastrointestinal Cancer • Pancreatitis	Student will be able to diagnose and manage patient of IBS and intestinal diseases Student will be able to diagnose and manage patient of gut malignancies Student will be able to diagnose and manage patient of pancreatitis
Endocrine Diseases ▪ Diabetes Mellitus ▪ Diabetic ketoacidosis ▪ Non-acidotic hyperosmolar coma / severe hyperglycaemia ▪ Hypoglycaemia ▪ Care of the acutely ill diabetic ▪ Peri-operative diabetes care ▪ Hyper/Hypocalcaemia ▪ Adrenocortical insufficiency ▪ Thyroid dysfunction ▪ Dyslipidaemia ▪ Acromegaly ▪ Endocrine emergencies: myxoedema coma, thyrotoxic crisis, Addisonian crisis, hypopituitary coma, phaeochromocytoma crisis	Student will be able to take history and do proper examination of patients with endocrine disorders. Student will be able to make appropriate differentials Student will be able to make appropriate investigational plan and order relevant investigations

	Student will be able to make a management plan for all endocrine disorders Student will able to manage endocrine emergencies independently in ER
Rheumatological diseases ▪ Septic arthritis ▪ Rheumatoid arthritis ▪ Osteoarthritis ▪ Seronegative arthritides ▪ Crystal arthropathy ▪ Osteoporosis – risk factors, and primary and secondary prevention of complications of osteoporosis ▪ Polymyalgia and temporal arteritis ▪ Systemic lupus erythematosus, ▪ scleroderma, ▪ poly- and dermatomyositis, ▪ Sjogren's syndrome, vasculitides	Student will be able to take history and do proper examination of patients with rheumatological disorders. Student will be able to make appropriate differentials Student will be able to make appropriate investigational plan and order relevant investigations Student will be able to make a management plan for all rheumatological diseases
Hematological diseases ▪ Bone marrow failure: causes and complications ▪ Bleeding disorders: DIC, haemophilia ▪ Thrombocytopaenia ▪ anticoagulation treatment: indications, monitoring,	Student will be able to take history and do proper examination of patients with hematological disorders.

management of over-treatment ▪ Transfusion reactions ▪ Anemia: iron deficient, megaloblastic, haemolysis, sickle cell, ▪ Thrombophilia: classification; indications and implications of screening ▪ Haemolytic disease ▪ Myelodysplastic syndromes ▪ Leukaemia ▪ Lymphoma ▪ Myeloma ▪ Myeloproliferative disease ▪ Inherited disorders of haemoglobin (sickle cell disease, thalassaemias) ▪ Amyloid	Student will be able to make appropriate differentials Student will be able to make appropriate investigational plan and order relevant investigations Student will be able to make a management plan for all hematological disorders
Infectious diseases ▪ Fever of Unknown origin ▪ Complications of sepsis: shock, DIC, ARDS ▪ Common community acquired infection: LRTI, UTI, skin and soft tissue infections, viral exanthema, gastroenteritis ▪ CNS infection: meningitis, encephalitis, brain abscess ▪ HIV and AIDS including ethical considerations of testing ▪ Infections in immuno-compromised host	Student will be able to take history and do proper examination of patients with Infectious diseases Student will be able to make appropriate differentials Student will be able to make appropriate investigational plan and

▪ Tuberculosis ▪ Anti-microbial drug monitoring ▪ Endocarditis ▪ Common genito-urinary conditions: non-gonococcal urethritis, gonorrhoea, syphilis	order relevant investigations Student will be able to make a management plan for all Infectious diseases
Psychiatry ▪ Suicide and Para suicide ▪ Acute psychosis ▪ Substance dependence ▪ Depression	Student will be able to diagnose and make a management plan for all Psychiatric disorders
Cancer and Palliative Care *Common or Important* Oncology *Problems:* ▪ Hypercalcemia ▪ SVC obstruction ▪ Spinal cord compression ▪ Neutropenic sepsis ▪ Common cancers (presentation, diagnosis, staging, treatment principles): lung, bowel, breast, prostate, stomach, esophagus, bladder) *Common or Important Palliative Care Problems:* ▪ Pain: appropriate use, analgesic ladder, side effects, role of radiotherapy	Student will be able to take history and do proper examination of patients with malignant diseases Student will be able to make appropriate investigational plan and order relevant investigations Student will be able to make a management plan for cancer patients in collaboration with oncologist

▪ Constipation ▪ Breathlessness ▪ Nausea and vomiting ▪ Anxiety and depressed mood	Student will be able to manage major complaints of cancer patients and do palliative care

Procedural competencies of students during medicine training Months 7-24

Procedures	Months 7-12		Months 13-18		Months 19-24	
	Cases	**Level**	**Cases**	**Level**	**Cases**	**Level**
Venipuncture	5	1/2	5	3	5	4
Cannula insertion, including large bore	5	1/2	5	3	5	4
Pleural tap and aspiration	5	1/2	5	3	5	4
Abdominal paracentesis	5	1/2	5	3	5	4
Central venous cannulation	5	1/2	5	3	5	4
Basic and, subsequently, advanced cardiorespiratory resuscitation	5	1/2	5	3	5	4

Urethral catheterization	5	1/2	5	3	5	4
Lumbar puncture	5	1/2	5	3	5	4
Nasogastric tube	5	1/2	5	3	5	4

3rd year to final year

3rd Year	Outcome	Competency Level		
		3rdyr	4thyr	5thyr
Cancers of head and neck a) Molecular biology of H&N cancers b) Anatomy,pathology,staging and workup c) CA oral cavity d) CA oropharynx e) CA larynx f) CA hypopharynx g) CA nasopharynx h) Rehabilitation in head and neck carcinoma	Candidate will be able to understand and diagnose cancer of head and neck region.	2	3	4
Cancers of thoracic cavity a) Molecular biology of lung cancer b) Non small cell lung cancer c) Small cell and neuroendocrine tumors of lung d) Neoplasms of mediastinum	Student will be able to diagnose cancer of thoracic cavity Student will be able to manage patients with cancers of thoracic cavity.	2	3	4

Cancers of gastrointestinal tract a) Molecular biology of esophagus and stomach b) Cancer of esophagus c) Cancer of stomach d) Genetic testing in gastric carcinoma e) Molecular biology of pancreas cancer f) Cancer of pancreas g) Genetic testing in pancreatic carcinoma h) Molecular biology in liver cancer i) Liver cancer j) Cancer of biliary tree k) Cancer of small bowel l) Gastrointestinal stromal tumor m) Molecular biology of colon cancer n) Colon cancer o) Genetic testing in colon cancer(polyposis syndrome) p) Genetic testing in colon cancer (non-polyposis syndrome) q) Cancer of rectum r) Cancer of anal canal	Student will be able to diagnose cancer of GIT. Student will be able to manage patients with GIT malignancies.	2	3	4
Cancers of genitourinary system a) Molecular biology of kidney b) Cancer of kidney c) Molecular biology of bladder cancer d) Cancer of bladder , ureter and renal pelvis e) Genetic testing in urinary tract cancer f) Molecular biology of prostate cancer g) Cancer of prostate h) Cancer of urethra and penis	Students will be able to diagnose and manage cancer of genitourinary system	2	3	4

i) Cancer of testis				
Gynecologic cancer a) Molecular biology of gynecologic cancer b) Cancer of cervix,vagina and vulva c) Cancer of uterine body d) Genetic testing in uterine cancer e) Gestational trophoblastic disease f) Ovarian cancer ,fallopian tube carcinoma and peritoneal carcinoma g) Genetic testing in ovarian cancer	Students will be able to diagnose and manage cancer of gynaecological system	2	3	4
Cancer of the breast a) Molecular biology of breast cancer b) Malignant tumors of the breast c) Genetic testing in breast cancer	Students will be able to diagnose and manage cancer of breast	2	3	4
Cancer of endocrine system a) Molecular biology of endocrine tumor b) Thyroid tumors c) Parathyroid tumor d) Adrenal tumors e) Pancreatic neuroendocrine tumor f) Carcinoid tumor and carcinoid syndrome g) Multiple endocrine neoplasia h) Genetic testing in endocrine tumor	Students will be able to diagnose and manage cancer of endocrine system.	2	3	4

Sarcomas of soft tissue and bone a) Molecular biology of sarcomas b) Soft tissue sarcoma c) Sarcomas of bone	Students will be able to diagnose and manage sarcomas of soft tissues and bone	2	3	4
Cancers of the skin a) Cancer of skin b) Molecular biology of cutaneous melanoma c) Cutaneous melanoma d) Genetic testing in skin cancer	Students will be able to diagnose and manage cancer of skin.	2	3	4
Neoplasms of central nervous system a) Molecular biology of CNS tumors b) Neoplasms of CNS	Students will be able to diagnose and manage cancer of central nervous system	2	3	4
Cancers of childhood a) Molecular biology of childhood cancers b) Solid tumors of childhood c) Leukemias and lymphomas of childhood	Students will be able to diagnose and manage cancer of childhood.	2	3	4
Lymphomas in adults a) Molecular biology of				

lymphomas b) Hodgkin's lymphoma c) Non-Hodgkin's lymphomas d) Cutaneous lymphomas e) Primary CNS lymphomas	Students will be able to diagnose and manage lymphomas in adults.	2	3	4
Leukemias and plasma cell tumors a) Molecular biology of acute leukemias b) Management of acute leukemias c) Molecular biology of chronic leukemias d) Chronic myelogenous leukemia e) Chronic lymphocytic leukemia f) Myelodysplastic syndromes g) Plasma cell neoplasms	Students will be able to diagnose and manage leukemias and plasma cell tumors	2	3	4
Other cancers a) Cancer of unknown primary site b) Benign and malignant mesothelioma c) Peritoneal metastasis and peritoneal mesotheliomas d) Intraocular melanoma	Students will be able to diagnose and manage cancer of unknown origin	2	3	4
Immunosuppression related malignancies a) HIV related malignancies **b)** Transplantation related malignancies	Students will be able to diagnose and manage immunosuppression related malignancies.	2	3	4
Oncological emergencies	Students will be able to diagnose and	2	3	4

a) Superior vena cava syndrome b) Increased intracranial pressure c) Spinal cord compression d) Metabolic emergencies	manage oncological emergencies.			
Treatment of metastatic cancer a) Metastatic cancer to brain b) Metastatic cancer to lung c) Metastatic cancer to liver d) Metastatic cancer to bone e) Malignant pleural and pericardial effusion f) Malignant ascites **g)** Paraneoplastic syndromes	Students will learn about treatment of metastatic cancer	2	3	4
Stem cell transplantation a) Autologous stem cell transplantation b) Allogeneic stem cell transplantation	Students will have knowledge about stem cell transplantation	2	3	4
Management of adverse effects of treatment a) Infections in cancer patients b) Neutropenia and thrombocytopenia c) Cancer associated thrombosis d) Nausea and vomiting e) Diarrhea and constipation f) Oral complications	Student will learn management of adverse effects of treatment	2	3	4

g) Pulmonary toxicity h) Cardiac toxicity i) Hair loss j) Gonadal dysfunction k) Fatigue l) Second cancer m) Neurocognitive effects n) Cancer survivorship				
Supportive care and quality of life a) Management of cancer pain b) Nutritional support c) Sexual problems d) Psychological issues e) Communication news to cancer patients f) Specialized care of terminally ill g) Rehabilitation of cancer patients Complementary ,integrative and alternative therapies in cancer patients	Students will know about supportive care	2	3	4

Rotations:

Sr. No	Rotation	Duration	Placement
1	Diagnostic radiology	1 month	Part III
2	Radiation Oncology	1 month	Part III
3	Pediatric Hematology oncology	1 month	Part III
4	Infectious Diseases	1 month	Part III
5	Surgical Oncology	1 month	Part III
6	Clinical Hematology	1 month	Part III

Section E:

Assessment Plan:

Program duration	Course contents	Assessment method
At the end of 2nd year of program	1. Revision of core MBBS component including basic and clinical components. 2. Basic knowledge and Acquiring skill related to the specialty according to the objectives made. 1. First 2 mandatory Workshops as described in course outline. 3. Submission of synopsis	**Intermediate Examination:** to be taken by university. It will include: a) Written=300 b) TOACS/ OSCE /LONG CASE/ SHORT CASE=300 **Total Marks =600**
At the end of 4th/5 year	1. Training to act as an individual while managing patient or performing any task as defined by the objectives. 2. Training to act as a teacher, researcher, leader and a player in a team. 3. Overall development of a health care professional with all the set	**Final Examination** to be conducted by university. It will include: a) Written=300 b) TOACS/OSCE/LONG CASE/SHORT CASE=300

	competencies of the Program. 4. All the mandatory and specialty oriented workshops to be completed as mentioned in the curriculum 5. Rotations as described in the curriculum completed 6. Thesis completion and submission	c)Continuous internal assessment=100 Thesis evaluation =300 **Total marks=600+100+300=** **1000**

Components of Mid-term Examination

- Written: Total Marks =300
- Clinical, TOACS/OSCE = 300

Total = 600

Components of Final Examination:

- Written: 300 Marks
- Clinical, TOACS/OSCE = 300 Marks
- Continuous internal assessment =100
- Thesis Evaluation = 300 Marks

Total = 1000 Marks

Intermediate Examinations:

Intermediate examination would be conducted for the candidate getting training, at the end of 2nd calendar year of the program.

Eligibility Criteria:

1. Candidate remained on institution roll during the period approved for appearing in examination.
2. Certificate of completion of mandatory workshops.
3. Completion of Log book signed by supervisor/concerned Head of Department.
4. Certificate of submission of Ethical Review Committee approved synopsis to the university if required as per rules of synopsis submission.
5. Evidence of payment of examination fee as prescribed by the University from time to time.
6. Certificates submitted through Principal/Dean/Head of academic institution shall be accepted as valid towards the candidature of an applicant.
7. submission of application for the examination and the conduct of examination.

Intermediate Examination Schedule and Fee:

a) Intermediate Examination at completion of two years training, will be held twice a year.

b) There will be a minimum period of 30 days between submission of application for the examination and the conduction of examination.

c) Examination fee will be determined periodically by the University.

d) The examination fee once deposited cannot be refunded / carried over to the next examination under any circumstances.

e) The Controller of Examinations will issue Roll Number Slips on receipt of prescribed application form, documents satisfying eligibility criteria and evidence of payment of examination fee.

Written Examination:

The written examination will consist of 100 single best answer type Multiple Choice Questions. Each correct answer in the multiple-choice question paper will carry 02 marks. The short essay question will be clinical scenario or practice based, and each question will carry 10 marks.

The marks of written exam will be divided as follows:

- MCQs (single best type) = 200 Marks
- SEQ (10 marks) =100

Declaration of Results

The candidates scoring 60% marks in the written examination will be considered pass and will then be eligible to appear in the clinical and oral examination.

Clinical, TOACS/OSCE:

The clinical and TOAC/OSCE & Oral examination will evaluate patient care competencies in detail,

The examination will be of 300 total marks consisting of the following components

Clinical, TOACS/OSCE = Total Marks 300

a) 2 short Cases (50 markseach) = 100 marks

b) 1 Long Case = 100 marks

c) TOACS/OSCE & ORAL =100 marks (10 stations with 10 marks each)

- Each short case will be of 07 minutes duration, 05 minutes will be for examining the patient and 02 minutes for discussion.

- The long case and oral examination will each be of 30 minutes duration.

Declaration of Results

- A student scoring 60% in long case, 60% in short cases ad 60% in TOACS/OSCE will be considered pass in the examination.
- A maximum total of four consecutive attempts (availed or un availed) will be allowed in the Intermediate Examination during which the candidate will be allowed to continue his training program. If the candidate fails to pass his Intermediate Examination within the above-mentioned limit of four attempts**,** candidate shall have to take entire Intermediate examination including written examination again

Final Examination

(at the end of 5th Calendar year of the program)

Eligibility Criteria:

To appear in the Final Examination the candidate shall be required:

1. Result card showing that the candidate has passed intermediate Examination.
2. Certificate of completion of 4/5 Years training duly signed by Supervisor, Head of parent Department and that of the Head of Department where rotations were done (if prescribed in the curriculum).
3. Evidence of thesis submission to Department of Examination of the University.
4. Evidence of payment of examination fee as prescribed by the university from time to time.

5. The examination fee once deposited cannot be refunded / carried over to the next examination under any circumstances.
6. Candidate remained on institution roll during the period required for appearing in examination.
7. Only those certificates, submitted through Principal/Dean/Head of academic institution shall be accepted.

Final Examination Schedule and Fee:

a) Final examination will be held twice a year i.e. at least six months apart.
b) Examination fee will be determined and varied at periodic intervals by the University.
c) The examination fee once deposited cannot be refunded / carried over to the next examination under any circumstances.
d) 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 examination fee. This card will also show the Roll Number, date / time and venue of examination.

Written Part of Final Examination

a) The written examination will consist of 100 single best answer type Multiple Choice Questions (MCQs) and 10 Short Essay Questions (SEQs). Each correct answer in the Multiple-Choice Question paper will carry 02 marks. Each Short Essay Question will carry 10 marks.

b) The Total Marks of the Written Examination will be 300 and to be divided as follows:

- Multiple Choice Question paper Total Marks = 200
- Short Essay Question paper Total Marks = 100

Total=300

Paper 1

- MCQs 100 (2marks each)

Paper 2

- SEQs 10 (10 marks each)

a. Paper 1 shall comprise of hundred (100) "single best answer" type Multiple Choice Questions. Each Question shall carry 02 marks.

b. Paper 2 shall comprise of ten (10) Short Essay Questions, each carrying 10 marks.

Declaration of Results

c. The candidates scoring 60% marks in aggregate of Paper 1 and Paper 2 of the written examination will be declared pass and will become eligible to appear in the Clinical Examination.

Clinical, TOACS/OSCE:

a) The Clinical Examination will consist of 04 short cases, 01 long case and TOACs/OSCE with 01 station for a pair of Internal and External Examiner. Each short case will be of 07 minutes duration, 05 minutes will be for examining the patient and 02 minutes for discussion.

b) The Total Marks of Clinical and TOACs/OSCE & Oral will be 300 and to be divided as follows:

- 4 Short Cases (25 each) Total Marks = 100
- 1 Long Case Total Marks = 100
- TOACS/OSCE & ORAL Total Marks = 100

Total= 300

Declaration of Results

- A student scoring 60% in long case, 60% in short cases ad 60% in TOACS/OSCE will be considered pass in the examination.

- Candidate, who passes written examination, shall be allowed a maximum of Three availed attempts within 2 years to pass Clinical/Oral examination. However, in case of failure to pass Clinical examination within stipulated attempts the credit of passing the written examination shall stand withdrawn and candidate shall have to take entire examination including written examination, as fresh.

- The candidate who has completed his/her training along with all the requirements mentioned in the curriculum shall have to appear in the written of final examination at least once within a period of 8 years (from the time of induction). Failure to compliance with this the matter will be referred to the competent authority through proper channel for final decision.

Synopsis and Thesis Writing:

Thesis writing must be completed and thesis be submitted at least 6 months before the end of final year of the program.

Thesis evaluation & defense will be carried out at the end of 5th calendar year of MD Medical Oncology programme.

Submission / Evaluation of Synopsis

a) The candidates shall prepare their synopsis as per guidelines provided by the Advanced Studies & Research Board, available on the 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 Advanced Studies & Research Board, through the Principal / Dean /Head of the institution.

Submission and evaluation of Thesis Evaluation (300 Marks)

1. The Thesis shall be submitted to the Controller of Examination through Head of Institute, duly signed by the Supervisor, Co-Supervisor(s) and Head of the Department.
2. Submission of Thesis is a prerequisite for taking Final Theory Examination.
3. Examiners shall be appointed by the Vice chancellor on recommendation of Controller of Examination from a panel approved by Advance Studies & Research Board for evaluation of thesis.
4. All MD/MS/MDS thesis shall be evaluated by two examiners, one internal and one external (The supervisor must not be the evaluator)
5. Thesis defense shall be held after approval of evaluation reports by Advanced Studies & Research Board.
6. Thesis defense shall be conducted by the external examiners who evaluated Thesis of the candidate.
7. The candidate scoring 60% marks in Thesis defense examination will be declared as pass in the examination.

Continuous Internal assessment

It will consist of professional growth oriented student-centered integrated assessment with an additional component of formative assessment and measurement-based summative assessment

Attendance

- Students joining postgraduate training program shall work as full-time residents during the duration of training and maximum 2 leaves are allowed in one month, and should take full responsibility and participation in all facets of the educational process. The period of training for obtaining degrees shall be four completed years .

Presentations

- In addition to the conventional teaching methodologies interactive strategies will also be introduced to improve both clinical and communication skills in the upcoming consultants. Presentations must be conducted regularly as scheduled and attended by all available faculty and residents. As a policy, active participation of the postgraduate resident will be encouraged. Proper written feedback will be given for these presentations and that will be a part of Resident's Portfolio as well. Reflection of the events to be written by the residents as well and must be included in their portfolios.

Task evaluation

- This competency will be learned from journal clubs, review of literature, policies and guidelines, audit projects, medical error investigations, root cause analysis and awareness of healthcare facilities. Active participation and ability to fulfill given tasks will be encouraged. Written feedback must be given and documented to be included in portfolio

Continuous Internal Assessment format (100 Marks)

1. The award of continuous internal assessment shall be submitted confidentially in a sealed envelope.
2. The supervisor shall submit cumulative score of internal assessment of all training years to be added together to provide a final cumulative score of

Continuous Internal Assessments of all the trainees to the Head of the Department/ Dean of Post Graduate studies.

3. The Head of Department/ Dean shall submit the continuous internal assessment score through the Principal/ Registrar office to the Examination Department of the University. Score of continuous internal assessment once submitted shall be final and cannot be changed subsequently under any circumstances.
4. The weightage of internal assessment in the final examination will be 10%.
5. Continuous Internal Workplace Based Assessments will be done by the supervisors, that may be based on but not limited to:
    a. Generic and Specialty Specific Competency Assessments
    b. Multisource Feedback Evaluations
    c. Assessment of Candidates' Training Portfolio

TOOLS OF ASSESSMENT FOR THE COURSE:

TOOL USED:	DOMAIN TESTED:
MCQs	Knowledge
SEQs	Knowledge
TOACS/OSCE	Knowledge. Skill Attitude
PRESENTATIONS (wards, seminars,	Knowledge.

conferences, journal clubs)	Skill Attitude
Portfolios and log books.	Skill Attitude
Short cases.	Knowledge Skill Attitude
Long cases	Knowledge Skill Attitude
Continuous internal assessment	Skill Attitude
Feedback from department where	Knowledge

rotation is being conducted.	Skill Attitude

Section E

Award of MD Medical Oncology Degree

A candidate having declared successful in all the components of examination i.e. ***Theory, Clinical and Thesis*** shall be declared pass and shall be conferred degree in the name of MD Medical Oncology.

Section F:

Log Book

As per format approved by the university

Section G

Portfolio:

As per format approved by the university, available on university website.

Section H

Paper Scheme

Intermediate Examination

Written

Sr No.	Specialty	Number Of MCQs	Number Of SEQ
1	General Medicine	70	7
2	Medical Oncology specific questions	30	3

Final Examination

Written

Sr No.	Topic:	Number Of MCQs	Number Of SEQ
1	**Epidemiology & Prevention**	**3**	*
2	**Molecular Biology; Principles of Biologic & Immunotherapies**	**3**	*
3	**Clinical Onco-Pharmacology**	**5**	*
4	**Clinical Trials & Biostatistics**	**3**	*

5	**Genetic Aspects of Oncology (Syndromes. Management, counseling)**	**3**	*****
6	**Symptomatic Management & Palliative Care in Oncology**	**5**	*****
7	**Breast Cancer and related neoplasms**	**9**	**1**
8	**Lung Cancer & Thoracic Malignancies**	**6**	**1**
9	**Head & Neck Cancers (including Thyroid malignancies)**	**5**	**1**
10	**Colorectal Cancers**	**7**	**1**
11	**Liver Cancer**	**6**	**1**
12	**Other GI cancers (excluding above 2)**	**5**	*****
14	**Genitourinary cancers**	**6**	**1**
15	**Neuroendocrine Cancers**	**3**	*****
16	**Melanoma and other skin cancers; CNS cancers**	**3**	*****

17	**Gynecologic Cancers**	**6**	**1**
18	**Leukemia**	**5**	*****
19	**Lymphoma**	**5**	**1**
20	**Plasma Cell Disorders**	**3**	*****
21	**Bone Marrow Transplant and Cellular Therapies**	**2**	*****
22	**Oncologic Emergencies**	**7**	**1**

Section I

Resources and references (books and other resource material)

-DeVita, Hellman, and Rosenberg's Cancer: Principles & Practice of Oncology

Textbook by Vincent T. DeVita

-Oxford Textbook of Oncology

-Hoffbrand's Essential Haematology

By A. V. Hoffbrand, Victor Hoffbrand, David P. Steensma

-Practical Medical Oncology Textbook

By Antonio Russo, Marc Peeters, Lorena Incorvaia, Christian Rolfo

-Physicians' Cancer Chemotherapy Drug Manual

By Edward Chu, Vincent T. DeVita

-Basic Science of Oncology

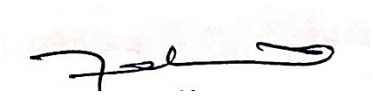
By Ian Tannock, Robert G. Bristow, Robert Bristow

-Guidelines & Publications (available online) of ESMO. ASCO, NCCN, ASH, MASCC, UICC and UptoDate.

Section J

List of authors and contributors

1. Dr. Muhammad Tahir
2. Dr. Muhammad Uzair Ali
3. Dr. Ayesha Ayub



Signed by head of Department