REGULATIONS AND CURRICULUM GOVERNING

DM ONCOPATHOLOGY PROGRAM

(2024-25)

Name of the Constituent Unit/Centre: Yenepoya Medical College

Deralakatte, Mangalore, Karnataka.

YENEPOYA
Deemed to be University

NOTIFICATION

दूरभाष/Phone : 25367033, 25367035, 25367036
फेक्स/Fax : 0091-11-25367024
ई-मेल/E-mail : marb@nmc.org.in,pg.marb@nmc.org.in

पॉकेट -14, सेक्टर-8, द्वारका, फेस1-, नई दिल्ली77-
Pocket- 14, Sector- 8,Dwarka,
Phase – 1, New Delhi-77

राष्ट्रीय आयुर्विज्ञान आयोग
National Medical Commission
Medical Assessment & Rating Board (MARB)
POSTGRADUATE SECTION

No. NMC/MCI-811(22)/10A/2022-23/Med./ 034750 **Date:** 26-08-2022

LETTER OF INTENT

To,

The Dean/Principal,
Yenepoya Medical College
University Road, Deralakatte, Mangalore-575018 (Karnataka)
Email ID- principalymc@yenepoya.edu.in

Sub: Starting of Course DM (Onco-Pathology) at Yenepoya Medical College, Mangalore under Yenepoya University (Deemed), Mangalore in the State of Karnataka u/s 26(1)(a)(b) and 28(1) (2) of the NMC Act, 2019 for the academic year 2022 -23. Permission of Medical Assessment and Rating Board – LOI-Regarding.

Sir/Madam,

Please refer your proposal for Starting of Course **DM (Onco-Pathology)** at **Yenepoya Medical College, Mangalore** under **Yenepoya University (Deemed), Mangalore** in the **State of Karnataka** u/s 26(1)(a)(b) and 28(1) (2) of the NMC Act, 2019 for the academic year 2022 -23.

It is to inform that the Medical Assessment and Rating Board (MARB) reviewed the Assessor's Report dated **23rd March 2022** regarding faculty, their experience, publication and other teaching facilities including infrastructure available at **Yenepoya Medical College, Mangalore** under **Yenepoya University (Deemed), Mangalore** in the **State of Karnataka** for starting of course **DM (Onco-Pathology)** for the academic year 2022-23.

The Medical Assessment and Rating Board (MARB) has made the following decision:

APPROVED FOR 02 SEATS
DM (Onco-Pathology)

The Commission has decided to obtain undertaking/ essential document for issue of Letter of Permission for starting of new course **DM (Onco-Pathology)** with annual intake of **02 seats** for the academic year 2022-23:-

1. The applicant should provide all infrastructural facilities in terms of teaching and non-teaching staff, buildings, equipment and hospital facilities as per National Medical Commission norms.

दूरभाष/Phone : 25367033, 25367035, 25367036
फेक्स/Fax : 0091-11-25367024
ई-मेल/E-mail : marb@nmc.org.in,pg.marb@nmc.org.in

पॉकेट -14, सेक्टर-8, द्वारका, फेस1-, नई दिल्ली77
Pocket- 14, Sector- 8,Dwarka
Phase – 1, New Delhi-7

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National Medical Commission
Medical Assessment & Rating Board (MARB)
POSTGRADUATE SECTION

2. No student should be admitted in the above courses till the formal permission of the Medical Assessment and Rating Board (MARB).
3. The Private Medical College should Provide Bank Guarantee of required amount against establishment of new course of **02 (Two) seats** in favour of National Medical Commission, New Delhi valid for three years or till the course is recognised, whichever is later, from a nationalized/ scheduled Bank as per NMC/MCI's norms. However, medical colleges/institutions governed by the State Govt. are required to furnish only an undertaking **signed by Govt. Authority** to provide funds in their budget till the facilities are fully provided as per time bound programme indicated by them.
4. The Medical Colleges/ institutions will provide undertaking to implement the decision regarding payment of stipend to the PG students similar to PG students of Govt. Medical Colleges in their State.
5. The Medical Assessment and Rating Board (MARB) reserve the right to withdraw/cancel/revoke the Letter of Intent/ Letter of Permission if it comes to the notice that the permission has been obtained from Medical Assessment and Rating Board (MARB) by misrepresentation of fact or fraud.

It shall be incumbent upon the Medical College that the information relating to admission should be submitted within the time specified in the circular in this regards issued by this office from time to time. Any failure to submit the information within this time limit would be construed that the admission in the College were not in accordance with the statutory requirements, thereby enabling the Commission to proceed in accordance with law against the college.

Action to grant formal permission of the Medical Assessment and Rating Board (MARB) for increase in intake/starting of the said course at your college will be initiated on receipt of appropriate bank guarantee, if applicable and undertaking/ compliance letter fulfilling the conditions enumerated above.

The acceptance letter may be sent within **1 (one) week** from the date of issue of this letter to enable the Medical Assessment and Rating Board (MARB) to issue Letter of Permission for the academic year 2022-23.

Kindly acknowledge receipt of this letter.

Member/President
Medical Assessment and Rating Board
(MARB)
National Medical Commission

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DM ONCOPATHOLOGY PROGRAM

PREAMBLE

The Doctorate of Medicine (DM) in Oncopathology is a superspecialty training program designed to address the growing complexity of cancer diagnosis in the era of precision medicine. As cancer remains a significant public health challenge, there is an increasing need for specialists capable of integrating morphologic evaluation with immunophenotypic and molecular insights to guide personalized patient management.

The curriculum provides advanced training in histopathology, cytopathology, immunohistochemistry, molecular diagnostics, cytogenetics, and digital pathology. Emphasis is placed on contemporary WHO classifications, standardized reporting systems, grading and staging protocols, and biomarker-driven therapeutic decision-making. The program underscores the central role of the oncopathologist in multidisciplinary cancer care and encourages active participation in tumor boards and collaborative clinical discussions.

Structured training in quality assurance, laboratory standards, research methodology, and translational oncology fosters analytical thinking and academic development. Graduates are expected to demonstrate diagnostic excellence, ethical practice, and professional leadership.

The program aims to produce competent superspecialists and clinician-scientists who contribute meaningfully to precision oncology and effectively address evolving national and global healthcare needs.

GOAL

The goal of the DM Oncopathology program is to train a competent, ethical, and academically driven superspecialist who is capable of delivering high-quality oncologic diagnostic services and contributing meaningfully to multidisciplinary cancer care, research, and medical education.

At the end of the training, the candidate shall:

1. **Demonstrate advanced diagnostic competence** in tumor pathology across organ systems, integrating histomorphology, cytopathology, immunohistochemistry, molecular diagnostics, and contemporary genomic classifications, including recent WHO updates.

2. **Apply precision oncology principles**, correlating morphologic findings with biomarker-driven therapeutic, prognostic, and predictive implications relevant to patient management.

3. **Function effectively within multidisciplinary teams**, interacting with surgical oncology, medical oncology, radiation oncology, radiology, pediatric oncology, gynecologic oncology, neuro-oncology, and allied specialties to ensure optimal patient-centered care.

4. **Uphold ethical practice and quality standards**, aligned with national health policies, laboratory accreditation norms, and patient safety principles.

5. **Engage in scientific inquiry**, demonstrating competence in research methodology, biostatistics, translational research, and evidence-based practice.

6. **Develop academic and teaching skills**, contributing to undergraduate, postgraduate, and allied health professional education.

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LEARNING OBJECTIVES

I. GENERAL OBJECTIVES

At the end of the DM training, the candidate shall be able to:

1. Deliver ethical, evidence-based specialty care aligned with national health priorities and patient-centered principles.
2. Demonstrate advanced understanding of basic sciences and apply them effectively in clinical decision-making.
3. Diagnose and manage specialty-related conditions using appropriate investigations and sound clinical judgment.
4. Integrate preventive, rehabilitative, and public health perspectives into specialty practice.
5. Maintain professional standards through accurate documentation, quality assurance, and accountability.
6. Engage in research, critical appraisal of literature, and lifelong learning. Contribute effectively to teaching, leadership, and multidisciplinary healthcare teams.

II: SUBJECT SPECIFIC

a. Knowledge Domain (Cognitive Competencies)

At the completion of the program, the candidate shall be able to:

1. Describe the molecular pathogenesis and tumor biology of major solid and hematolymphoid malignancies.
2. Classify neoplasms in accordance with the latest WHO classifications and contemporary molecular taxonomy.
3. Explain the principles, indications, limitations, and interpretation of immunohistochemistry, molecular diagnostics, cytogenetics, and emerging genomic technologies.
4. Correlate morphologic features with prognostic, predictive, and therapeutic biomarkers.
5. Discuss mechanisms of tumor progression, metastasis, resistance to therapy, and principles of targeted and immunotherapy.
6. Outline cancer staging systems and their clinical relevance.
7. Explain quality assurance protocols, laboratory accreditation standards, and regulatory frameworks relevant to oncologic pathology.

b Skills Domain (Psychomotor and Diagnostic Competencies)

At the completion of the program, the candidate shall be able to:

1. Perform and interpret advanced histopathological and cytopathological evaluation of neoplastic lesions across organ systems.
2. Select, interpret, and validate appropriate immunohistochemical panels in diagnostic practice.
3. Interpret molecular diagnostic investigations including PCR-based assays, FISH, cytogenetics, and next-generation sequencing platforms.
4. Integrate morphologic, immunophenotypic, and molecular findings to arrive at accurate and clinically relevant diagnoses.
5. Prepare comprehensive, structured oncopathology reports incorporating grading, staging, and biomarker information.
6. Participate effectively in multidisciplinary tumor board discussions and provide diagnostic guidance for patient management.
7. Implement and monitor internal and external quality control measures in Oncopathology laboratories.

c: Attitude, Ethics and Professionalism (Affective Domain)

At the completion of the program, the candidate shall:

1. Demonstrate ethical and responsible diagnostic practice in accordance with national health policies and professional guidelines.
2. Maintain accuracy, accountability, and timeliness in reporting.
3. Uphold patient confidentiality and medico-legal standards.
4. Exhibit professionalism in interdisciplinary interactions and multidisciplinary cancer care.
5. Engage in lifelong learning and continuous professional development.

D: Research and Academic Development

At the completion of the program, the candidate shall be able to:

1. Design and conduct independent research projects in oncopathology and translational oncology.
2. Apply principles of research methodology, biostatistics, and evidence-based medicine.
3. Critically appraise scientific literature and emerging evidence in oncologic pathology.
4. Present research findings at scientific forums and publish in peer-reviewed journals.
5. Teach and mentor undergraduate, postgraduate, and allied health professionals effectively.

SUBJECT-SPECIFIC COMPETENCIES –DM ONCOPATHOLOGY

1. Knowledge Competencies

The candidate shall be able to:

1. Demonstrate comprehensive knowledge of tumour biology, molecular pathogenesis, and cancer genetics relevant to clinical oncology.

2. Explain current WHO tumour classifications and the principles of grading, staging, and biomarker stratification.

3. Describe the indications, principles, and interpretation of advanced diagnostic modalities including immunohistochemistry, molecular assays (PCR, FISH, NGS), cytogenetics, and digital pathology.

4. Discuss evidence-based approaches to biomarker-guided therapy, prognostication, and emerging diagnostic technologies.

2. Diagnostic and Technical Skills

The candidate shall be able to:

1. Perform and interpret morphological diagnosis in histopathology and cytopathology of neoplastic diseases accurately.

2. Select, interpret, and validate immunohistochemical and molecular diagnostic panels for tumour classification and therapeutic guidance.

3. Prepare comprehensive diagnostic reports integrating morphological, immunophenotypic and molecular data.

4. Demonstrate competence in specialized procedures including fine-needle aspiration cytology, grossing of complex oncologic specimens, and interpretation of ancillary diagnostic data.

3. Professional and Attitudinal Competencies

The candidate shall:

1. Apply ethical, quality-focused practice in laboratory and clinical settings, adhering to regulatory and accreditation standards.

2. Communicate effectively with clinical teams and contribute meaningfully to multidisciplinary tumour boards.

3. Uphold professionalism, empathy, teamwork, and responsibility in patient-related diagnostic work and interdepartmental collaboration.

4. Research and Teaching Competencies

The candidate shall be able to:

1. Design and conduct independent clinical or translational research in oncopathology.

2. Critically appraise scientific literature and integrate research findings into practice.

3. Teach and mentor learners at undergraduate, postgraduate, and allied health levels.

COURSE REGULATIONS

1. Eligibility for Students admission

D.M.: Candidate seeking admission for D.M courses in any subject must possess recognized degree of MD (or its equivalent recognized degree) in the subject specified in the regulations of the Medical Council of India /National Medical Commission(NMC) from time to time. **Eligibility of the Teaching Staff**

The ordinance governing curriculum of DM-Onco-Pathology programme has to be implemented as per MCI/NMC guidelines issued under Gazette of India from time to time .[CG DL-E-23022022-23 3681.Notification dated 14 FEB 2022 Teachers Eligibility Qualifications in Medical Institutions Regulations,2022 F.No.NMC/MCI-23(1)/2021-MED]

2. Obtaining Eligibility Certificate by the University before making Admission

No candidate shall be admitted for DM course unless the candidate has obtained and produced the eligibility certificate issued by the University. The candidate has to make an application to the University with the following documents along with the prescribed fee: 1. MBBS and MD pass degree certificate issued by the University.

2. Marks cards of all the university examinations passed MBBS course.

3. Attempt Certificate issued by the Principal.

4. Certificate regarding the recognition of the medical college by the Medical Council of India/ National Medical Commission

5. Completion of internship certificate.

6. In case internship was done in a non-teaching hospital, a certificate from the Medical Council of India/ National Medical Commission that the hospital has been recognized for internship.

7. Registration by any State Medical Council and

8. Proof of SC/ST or Category I, as the case may be.

Candidates should obtain the Eligibility Certificate before the last date for admission as notified by the University.

A candidate who has been admitted to super specialty course should register his/her name in the University within a month of admission after paying the registration fee.

3. Intake of **Students:** The intake of students to each course shall be in accordance with the ordinance in this behalf.

4. Duration of Study *D.M:* The courses of study shall be for a period of 3 years consisting of 6 Terms

5. Method of training

The training of students for DM course shall be residency pattern with graded responsibilities in the diagnosis of various tumours. The participation of the students in all facets of educational process is essential. Every candidate should take part in seminars, group discussions, journal review meetings, CPC and tumor boards. Every candidate should be required to participate in the teaching and training programme of postgraduate and paramedical students. Training should include involvement in laboratory and experimental work and research studies. Basic medical sciences students should be posted to allied and relevant clinical departments or institutions.

6. Attendance, Progress and Conduct

A candidate pursuing DM course should work in the concerned department of the institution for the full period as a full time student. No candidate is permitted to run a clinic/laboratory while studying super specialty course.

Each year shall be taken as a unit for the purpose of calculating attendance. Every student shall attend symposia, seminars, conferences, journal review meetings, grand rounds, CPC, case presentation and lectures during each year as prescribed by the department and not absent himself/herself from work without valid reasons.

Every candidate is required to attend a minimum of 80% of the training during each academic year of the super specialty course. Provided further, leave of any kind shall not

be counted as part of academic term without prejudice to minimum 80% attendance of training period every year.

Any student who fails to complete the course in the manner stated above shall not be permitted to appear for the University Examinations

7. Monitoring Progress of Studies

7.1 **Work diary/Logbook**–

Every candidate shall maintain a work diary and record of his/her participation in the training programmes conducted by the department such as journal reviews, seminars, etc. (please see Chapter VII for model checklists and logbook specimen copy). Special mention may be made of the presentations by the candidate as well as details of laboratory procedures, if any conducted by the candidate. The work diary shall be scrutinized and certified by the Head of the Department and Head of the Institution and presented in the university practical/clinical examination.

7.2 **Periodic tests**:

In case of degree courses of three years duration (MD/MS, DM, MCh.), the concerned departments may conduct three tests, two of them be annual tests, one at the end of first year and the other in the second year. The third test may be held three months before the final examination. The tests may include written papers, practicals and viva voce .

7.3 Records*:*

Records and marks obtained in tests will be maintained by the Head of the Department and will be made available to the University or MCI/NMC.

8. **Schedule of Examination:**

The examination for D M courses shall be held at the end of three years. The university shall conduct two examinations in a year at an interval of four to six months between the two examinations. Not more than two examinations shall be conducted in an academic year.

9. Scheme of Examination: D M

The examination shall consist of theory, /practical and viva voce examination.

9.1 Theory (Written Examination):

The theory examination shall consist of four question papers, each of three hours duration. Each paper shall carry 100 marks. Out of the four papers, the first paper will be on basic medical sciences. Recent advances may be asked in any or all the papers.

9.2 Practical/Clinical Examination:

In case of practical examination, it should be aimed at assessing competence, skills of techniques and procedures as well as testing student's ability to make relevant and valid observations, interpretation and experimental work relevant to his/her subject.

9.3 In case of practical examination, it should aim at examining laboratory skills and competence of candidates for undertaking independent work as a specialist. The maximum. marks for Practical shall be 200.

9.4 Viva Voce: Viva Voce examination shall aim at assessing thoroughly depth of knowledge, logical reasoning, confidence and oral communication skills. The maximum marks shall be 100.

9.5 Examiners: There shall be at least four examiners in each subject. Out of them, two shall be external examiners and two shall be internal examiners. The qualification and teaching experience for appointment as an examiner shall be as laid down by the Medical Council of India/ National Medical Commission.

9.6 Criteria for declaring as pass in University Examination:

A candidate shall secure not less than 50% marks in each head of passing which shall include (1) Theory, (2) Practical including viva voce examination.

A candidate securing less than 50% of marks as described above shall be declared to have failed in the examination. Failed candidate may appear in any subsequent examination upon payment of fresh fee to the Registrar (Evaluation).

9.7 Declaration of distinction: A successful candidate passing the University examination in first attempt will be declared to have passed the examination with

distinction, if the grand total aggregate marks is 75 percent and above. Distinction will not be awarded for candidates passing the examination in more than one attempt.

9.8 Number of Candidates per day D M Course: The maximum number of candidates for practical and viva-voce examination shall be maximum of 3 per day

COMPONENTS OF THE DM CURRICULUM:

The major components of the DM curriculum shall be:

i) Theoretical knowledge

ii) Practical/clinical Skills

iii) Attitudes, including communication.

iv) Training in research methodology.

Source: Medical Council of India/National Medical Commission, Regulations on postgraduate medical education, 2000.

Course description

Postings during the first year of DM oncopathology

Divided into two sessions

For the first academic term (6 months) they will be posted in the department of pathology, Histopathology unit. During this period they have to learn grossing of oncopathology specimens, refresh their knowledge on basics of tissue processing, sections cutting, staining, frozen section reporting and start learning the synoptic reporting of oncopathology specimens,.

During this period they will have to learn oncopathology routine reporting, trouble shooting in tissue processing and staining techniques and cytochemistry: Peroxidase/Sudan black B, PAS, LAP, NSE and Perl's stain.

During the second academic term they will be posted in the department of pathology (Hematology unit - 3months, Cytology unit - 3months). During this period they will have to refresh their knowledge on cytology (staining and interpretation including LBC) hematology basic of staining and reporting including the analysis, interpretation of the flow cytometry report

DM students will be taking grossing duties, FNAC duties, holiday duties at KMIO and assist in reporting with consultants of histopathology, cytology and hematology.

Internal assessment test at the end of the year-Theory and Practical.

Postings during the second year of DM Oncopathology

Divided into two sessions

For the third academic term(6 months) they will be posted to IHC, FISH, and Cytogenetics and upcoming molecular pathology lab and vigorously trained to do the test along with learning the interpretation independently. A log book will be maintained by each student for each day work mentioning the details and the test done including the patient and lab details by herself/himself/ with interpretation and results. This will be assessed by the consultant.

During the fourth academic term they will be sent for the peripheral postings of 3 months for learning neuropathology & Molecular pathology atleast in two institutions of higher level. Formative assessment tests in both theory and practical aspects will be conducted at the end of second year.

Post graduate will be taking grossing duties, FNAC duties, holiday duties and assist in reporting with consultants of histopathology, cytology, haematology during the entire second year.

Postings during the third year of DM Oncopathology

Divided into two sessions

For the fifth academic term(6 months) -

During this period they will have to learn difficult Oncopathology case reporting, frozen section reporting, Immunohistochemistry reporting, liquid based cytology reporting, interpretation of flow cytometry, FISH and PCR.

During the sixth term they will be posted in cytopathology for 3 months, two months haematooncology and one month molecular pathology including
cytogenetics.

During the last term they will have to see teaching slides prepared for post graduates, revise all techniques pertaining to DM examination

No thesis submission for DM Oncopathology as per university guidelines.

All students must publish at least one paper in scientific indexed journal. Submitted for publication is also acceptable.

During the three year of learning the post graduates will be taking grossing duties, FNAC duties and holiday duties. They will be proficient in independently reporting cases of all formats of oncopathology.

Special features of DM oncopathology course

1. Grossing of oncopathology specimens including uncommon surgeries synoptic of surgical pathology specimens according to AJCC 8th edition and latest CAP guidelines. 2. Hands on training for IHC, FISH, TMA, RT-PCR and PCR. Exposure to whole exome sequencing and NGS in the Center for Molecular Oncology.

3. Posting to a neurocenter for training in Electron Microscopy, neuro-oncopathology, Brain Banking and Partial Autopsy.

4. The Centre for Molecular Oncology is being established in YMC where a high end equipment will be placed. This will be available to students to learn hands-on molecular techniques. Some molecular tests will be offered as a routine service to patients-Eg: EGFR in lung cancer, KRAS in colorectal cancer.

5. DM oncopathology students will be trained to integrate findings obtained from cytology, cytogenetics, flow cytometry and histopathology including IHC for any given case in a holistic manner.

SYLLABUS

General Pathology

Cellular adaptation

Cell injury and death

Tissue renewal and repair

Genetic disease and tumor immunology

Carcinogenesis and neoplasia

Hereditary cancers and familial cancer syndromes.

Systemic Pathology

Tumors of GIT and hepatobiliary system

Tumors of soft tissue and bone

Tumors of lung and mediastinum

Tumors of lymph node and hemopoietic system

Tumors of CNS and Eye

Tumors of Head and neck

Tumors of breast

Tumors of Female genital system

Tumors of male genital system

Tumors of urinary system

Tumors of Endocrine system

Tumors of skin

Tumor like lesions in all sites.

Immunohistochemistry and FISH for accurate subcategorisation of specific tumors.

Cyto-Oncopathology

Cytopathology techniques

Routine, guided (computed tomography (CT) and, ultrasound guided fine needle aspiration. cytology.

Liquid based cytology

Non gynaec cytology including fluids, bronchial wash and BAL

Automated cytology

Oncocytopathology of different systems:

- Lung and mediastinum
- Soft tissue and bone Lymphnode Salivary glands
- Breast
- GIT.liver.abdominal organs
- Thyroid
- Kidney

FNA for cytogenetics, cell blocks, IHC and ISH

FNA for flowcytometry of lymphoproliferative disorders and pediatric solid tumors.

Haemato-oncopathology

Basic techniques

Automation and quality control

Haematologic malignancies- PS, BM aspiration and BM biopsy

MDS - Myelodysplastic syndrome

Acute myeloid malignancies

Acute lymphoid malignancies

Chronic myeloid malignancies

Chronic lymphoid malignancies

CMPD (Chronic myeloproliferative disorders)

CLPD (Chronic lymphoproliferative disorders)

Plasma cell dyscrasias

Flow Cytometry - panels for acute leukemia, CLPD Minimal Residual disease for patients on follow-up

Molecular Pathology

Techniques in cytogenetics - routine karyotyping

TMA (Tissue micro array)

FISH (Fluorescence in-situ hybridization)

CGH (Comparative genomic hybridization) PCR (Polymerase chain reaction) and RT-PCR NGS (Next generation Sequencing) **Recent advances in Oncopathology**

TEACHING METHODS

The course of the study shall be for a period of three years consisting of six terms/semesters

Semester I and II ----------First year

Semester III and IV ---------- Second year

Semester V and VI ---------- Third year

The aim of the course is to impart thorough and comprehensive training to the candidate in the various aspects of this specialty to enable him/her:

(a) To function as a faculty/consultant in the specialty

(b) To carry out and help in conducting applied research in the field of oncopathology (c) To plan and set-up independent Oncopathology units catering to the needs of superspeciality cancer care hospital

Compulsory academic activities:

Journal club: once a week

Subject Seminar: Once a week

Slide Seminar: Once in 30 days

Multidisciplinary seminars: Once a week.

Case based discussion: Once a week

Teaching M.D. students and other allied science subjects

Writing a paper (at least 1):

Selection of topic and getting institutional approval - first year

Data collection and writing the paper- second year

Publication of paper - final year

In addition the trainee will be allowed to attend national and international conferences of Pathology and other relevant specialties

Journal Review Meeting

Journal Review should be held once a week. All students are expected to attend and actively participate in discussion and enter in logbook the relevant details.

All the students are expected to present articles of recent interest & clinical weightage by turn. A timetable with name of student and moderator should be announced before hand. A record of the presentations made should be entered in logbook.

Seminars

Seminars should be made once a week. All students should present seminars by turn. At other times he is expected to actively attend the seminars. A list of name of students with topic and moderator should be submitted beforehand. Students should enter the presented seminars in logbook.

Clinicopathological Conference and Interdepartmental Meeting

It is recommended once a month and all students are expected to present cases of interest by turn. Active participation by medical/ surgical/ radiation oncologist/ radiologists is recommended. Prior intimation of case by students to faculty members is expected. Such meetings should be entered into logbook.

Teaching Programme

A student must be familiar with use of Library, Computer network, Internet, PDQ etc. A student should be actively involved in teaching nursing students, undergraduate (BSc MLT) & postgraduates.

DM students are encouraged to learn about clinical research by interacting with clinical investigators if any clinical trial is going on in the institution.

CME Programme

National level conference - 1 each year

State level Conference - 1 each year

PROPOSED ROTATIONAL POSTINGS

Postings for DM Oncopathology

Basic structure of DM curriculum

Histopathology----------15 months

Cytopathology----------6 months

Hematopathology---------- 6months

Clinical postings----------15days each

Neuropathology----------1 month

Fish, cytogenetics, IHC----3months

Molecular pathology------3months

Log Book

The logbook is a record of the important activities of the candidates during his training; internal assessment should be based on the evaluation of the log book. Collectively, logbooks are a tool for the evaluation of the training programme of the institution by external agencies. The record includes academic activities as well as the presentations and procedures carried out by the candidate.

Every student must maintain a record book (diary/log book) and the work carried out by him and the training programme undergone by him during the training, including details of rotation, night calls, procedure and consultations done as DM candidates. These record books should be checked and assessed by faculty members imparting the training and certified by the head of the department.

Research Training

The candidate is introduced to the field of research in oncopathology.

EXAM SCHEME

The examination shall consist of theory, /practical and viva voce examination and shall be carried out at the end of 3 years.

Theory (Written Examination):

The theory examination shall consist of four question papers, each of three hours duration. Each paper shall carry 100 marks. Out of the four papers, the first paper will be on basic medical sciences. Recent advances may be asked in any or all the papers.

Details of distribution of topics for each paper will be as follows. (As per course contents)

Paper I: Basic sciences and Principles of laboratory techniques

Paper II:Systemic Oncopathology I (Breast, Hematolymphoid, Bone and soft tissue, Neuro oncopathology, Pediatric Oncopathology, Endocrine pathology)

Paper III: Systemic Oncopathology II (Head and neck, Gastrointestinal, Thoracic, Urologic, male and female genital tract)

Paper IV: Recent advances in oncopathology

Practical/Clinical Examination:

Practical examination,is aimed at assessing competence, skills of techniques and procedures as well as testing student's ability to make relevant and valid observations, interpretation and experimental work relevant to his/her subject.

Practical Examination-Marks 300

1. Histopathology, hematopathology, cytology slides for interpretation,

2. Assessment of synoptic reporting (dataset as per CAP guidelines)

3. Grossing of specimens (as per dataset as per CAP guidelines)

4. Charts-ancillary techniques: IHC, flow cytometry, cytogenetics, FISH and other molecular

pathology technique (OSCE/OSPE)

Viva Voce – Marks 100

Maximum marks

Theory--------400

Practical------300 (including OSCE/OSPE)

Viva voce-----100

Grand Total--800

Criteria for declaring as pass in University Examination:

A candidate shall secure not less than 50% marks in each head of passing which shall include (1) Theory, (2) Practical including viva voce examination.

A candidate securing less than 50% of marks as described above shall be declared to have failed in the examination. Failed candidate may appear in any subsequent examination upon payment of fresh fee to the Registrar (Evaluation).

Declaration of distinction: A successful candidate passing the University examination in first attempt will be declared to have passed the examination with distinction, if the grand total aggregate marks is 75 percent and above. Distinction will not be awarded for candidates passing the examination in more than one attempt.

EXAM / ASSESSMENT:

The examination shall consist of theory, /practical and viva voce examination and shall be carried out at the end of 3 years.

Theory (Written Examination):

The theory examination shall consist of four question papers, each of three hours duration. Each paper shall carry 100 marks. Out of the four papers, the first paper will be on basic medical sciences. Recent advances may be asked in any or all the papers.

Practical/Clinical Examination:

In case of practical examination, it should be aimed at assessing competence, skills of techniques and procedures as well as testing student's ability to make relevant and valid observations, interpretation and experimental work relevant to his/her subject.

In case of practical examination, it should aim at examining laboratory skills and competence of candidates for undertaking independent work as a specialist. The maximum. marks for Practical shall be 200.

Viva Voce: Viva Voce examination shall aim at assessing thoroughly depth of knowledge, logical reasoning, confidence and oral communication skills. The maximum marks shall be 100.

Recommended Books & Journals

Books (Latest Edition):

1. Robbins and Cotran Pathologic basis of disease
2. Rosai and Ackerman's Surgical Pathology.
3. Atlas and Text of Haematology by Tejinder Singh
4. Orell's Atlas of Aspiration Cytology
5.Lever's Dermatopathology
6. Novak's Gynecologic and Obstetric Pathology with Clinical and Endocrine Relations by Edmund R. Novak
7. Bone Pathology by H. Jaffe
8. Mac Sween's Pathology of the liver
9.laochim's Lymph Node Pathology
10. Rosen's breast pathology
11. Text Book on Thyroid Pathology by GeethaJayaram
12. Theory and Practice of Histological Techniques by Bancroft
13. Gray's Diagnostic Cytopathology
14. Sternberg's Diagnostic Surgical Pathology
15. Dacie's Practical Haematology
16. Wintrobe'sHaematology
17. Enzinger's Soft Tissue Tumours
18. Henry's clinical diagnosis and management by laboratory methods
19. Atlas of clinical Haematology, BEGEMANN
20. Mckenzie Clinical laboratory Hematology
21. Leukemia, HENDERSON,E.S.et al
22. The Lymphomas, CANELLOS,G.P.et al
23. Molecular Diagnosis of Cancer, COTTER.F.E.
24. Biopsy interpretation series
25. AJCC Cancer' Staging Manual (American Joint Committee on Cancer)
26. Emery's elements of medical genetics
27. The chromosomes in human cancer and leukemia

28. Molecular diagnosis of cancer, Cotter
29. Dabbs Immunohistochemistry
30. Atlas for diagnostic oncology, Skarin
31. Basic sciences of oncology, Tannok
32. WHO blue books for specific systems

Journals:

1. Actacytologica
2. Indian jounal of pathology and microbiology
3. ActaOncologica
4. Modern pathology
5. Brain pathology
6. Diagnostic cytopathology
7. Haematology/Oncology
8. British Journal of Cancer
9. Cancer
10. The Lancet
11. Cancer Genetics and Cytogenetics
12. Cancer Journal (Scientific American) (NP)
13. Histopathology
14. Seminars in Diagnostic Pathology
15. European Journal of Cancer
16. Genes, Chromosomes and Cancer
17. Haematological Oncology
18. Haematology Oncology Clinics of North America
19. Indian Journal of Cancer
20. International Journal of Cancer (UICC)
21. Journal of PaediatricHaematology and Oncology
22. Seminars in Oncology
23. Archives of Pathology and laboratory medicine.
24. Diagnostic Histopathology
25. Human pathology

26. Blood

DM Oncopathology is a new super specialty course in our institution starting from January 2023.

Current plan for **formative assessment** over the training duration is as follows:- Theory: Annually for all the batches

Practical: case discussion gross and slide monthly once. Via voice: -------

Final PG University Examination MD/MS/DM/M.Ch. courses

For all Clinical and Prepara subjects

Distribution of marks for Theory examination

Item	Marks
No. of Theory Papers	4
Marks for each Theory Paper	100
Total marks for Theory Paper	**400**
Passing Minimum for Theory	200/400 (40% minimum in each paper) Theory – aggregate 50% (In addition, in each Theory paper a candidate has to secure minimum of 40%)

Distribution of marks for Practical examination- Clinical departments

Item	Marks	Total Marks
Long case	1*120	120
Short case	2*60	120
OSCE(Minimum 4 stations and two should be manned stations)	40	40

Dissertation viva	20	20
Subtotal of clinical/practical	300	**300**
Viva voce	100	100
Grand total	400	**400**

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Blue Print

THEORY EXAMINATION – DM ONCOPATHOLOGY

(PAPER WISE: CONTENT & WEIGHTAGE)

PAPER	SUBJECT	MARKS
Paper 1	Basic sciences and Principles of Laboratory Techniques	100
Paper II	Systemic Oncopathology I (Hematolymphoid, Breast, Bone and soft tissue, Neuro-pathology, Pediatric pathology, Endocrine pathology)	100
Paper III	Systemic Oncopathology II (Head and neck, Gastrointestinal, Thoracic, Urologic, male and female genital tract)	100
Paper IV	Recent advances	100
	TOTAL	400
	Practical & Viva Voce Examination	
	Gross discussion	50
	Histopathology slides	80 (20x4=80)
	Cytology slides	25
	Hematology Slides	30
	Immunohistochemistry interpretation	30
	Intra-operative diagnosis	25
	OSPE / OSCE (Ancillary test charts interpretation: FCM, PCR, FISH, NGS & Karyotyping)	60
	Viva Voce (Theory Viva + Thesis discussion)	100
	TOTAL	400
	GRAND TOTAL	800

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MODEL QUESTION PAPERS - DM ONCOPATHOLOGY

PAPER 1

BASIC SCIENCES AND PRINCIPLES OF LABORATORY TECHNIQUES

MARKS:10 x 10 = 100 **DURATION: 3 hours**

(All question are to be answered)

1. Epigenetics & its role in Carcinogenesis.
2. Radiation induced systemic changes.
3. Discuss role of expression of intermediate filament proteins in determining cell of origin of poorly differentiated tumours.
4. T cells and its role in cancer.
5. Digital Droplet PCR (Dd-PCR) - principles & application.
6. Tissue Microarray : principles & application.
7. Role of Serum Tumour markers in diagnosis & prognosis of cancer.
8. Epithelial Mesenchymal transition: Molecular pathways & its significance in malignancy
9. The Cancer Genome Atlas project
10. Angiogenesis in Malignancy

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MODEL QUESTION PAPER - DM ONCOPATHOLOGY

PAPER 2

Systemic Oncopathology I

MARKS :10 x 10 = 100 **DURATION: 3 hours**

(All question to be answered)

1. Round cell sarcomas associated with EWS-non ETS fusions.
2. Pediatric Glial Tumours.
3. EBV associated Lymphoid Proliferation.
4. Discuss the histopathologic evaluation of breast carcinoma after neoadjuvant chemotherapy.
5. Adult Rhabdoid tumours.
6. Approach to Myeloproliferative neoplasms.
7. Role of Cytology techniques in Neoplastic lesions of the lung.
8. Role of Molecular testing in Thyroid neoplasms.
9. Mention the different categories in The Bethesda System of Reporting Cervical Cytology. Pitfalls in diagnosis of HSIL on PAP smears.
10. Describe the 2022 updates of the international myeloma working group risk stratification in multiple myelomas.

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MODEL QUESTION PAPER - DM ONCOPATHOLOGY

PAPER 3

Systemic Oncopathology - II

MARKS :10 x 10 = 100 **DURATION: 3 hours**

(All question to be answered)

1. The TCGA Molecular classification of Gastric carcinoma.
2. Classify Testicular neoplasms & add a note on role of IHC in testicular tumours.
3. Pathogenesis of Mucosal Melanoma and discuss the role of IHC in diagnosis .
4. Enumerate and discuss the sex cord stromal tumors as per latest WHO classification of ovarian tumors.
5. Discuss the molecular pathology of colorectal cancer & its role in prognosis & therapy.
6. Update on Uterine mesenchymal tumours.
7. Classify Pituitary neoplasms as per the latest WHO . Add a note of ancillary tests in Pituitary neuroendocrine neoplasms.
8. Cystic neoplasms of pancreas.
9. Elaborate on the Tumour regression scoring systems in Gastrointestinal tract (GIT).
10. Classify and discuss the Sino-nasal neoplasms.

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MODEL QUESTION PAPER - DM ONCOPATHOLOGY

PAPER 4

RECENT ADVANCES

MARKS :10 x 10 = 100

DURATION : 3 hours

(All question to be answered)

1. Human microbiome and cancer.
2. List Myeloid neoplasms associated with germline predisposition and role of molecular testing.
3. Role of Organoid cell culture in cancer research.
4. Application of Proteomics in Cancer.
5. CAR-T cell therapy.
6. Enlist the ASCO/CAP 2023 guidelines on reporting *HER*2 in breast carcinoma with a note on *HER2* low breast carcinoma.
7. Gene editing Techniques . Add a note of CRISPR-Cas9 in cancer therapy.
8. MRD assessment of Acute lymphoblastic leukemia. Add a note on Spectral Flowcytometry.
9. Biobanking : Its application , Quality control and Governance in India.
10. "SMART" : Next generation Cytology in cancer research & diagnosis.

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Check List -1. MODEL CHECK-LIST FOR EVALUATION OF JOURNAL REVIEW PRESENTATIONS

Name of the Student: Name of the Faculty/Observer: Date:

Sl. No.	Items for observation during presentation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Article chosen was					
2.	Extent of understanding of scope & objectives of the paper by the candidate					
3.	Whether cross references have been consulted					
4.	Whether other relevant publications consulted					
5.	Ability to respond to questions on the paper / subject					
6.	Audio-Visual aids used					
7.	Ability to defend the paper					
8.	Clarity of presentation					
9.	Any other observation					
	Total Score					

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Check List - 2. MODEL CHECK-LIST FOR EVALUATION OF SEMINAR PRESENTATIONS

Name of the Student: Name of the Faculty/Observer: Date:

Sl. No.	Items for observation during presentation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Whether other relevant publications consulted					
2.	Whether cross references have been consulted					
3.	Completeness of Preparation					
4.	Clarity of Presentation					
5.	Understanding of subject					
6	Ability to answer questions					
7	Time scheduling					
8	Appropriate use of Audio-Visual aids					
9	Overall Performance					
10	Any other observation					

	Total Score					

Check List - 3

MODEL CHECK LIST FOR EVALUATION OF WORK IN LABORATORY

(To be completed once a month by respective Unit Heads including posting in other departments)

Name of the Student: Name of the Unit Head:
Date:

Sl. No.	**Points to be considered:**	**Poor 0**	**Below Average 1**	**Average 2**	**Good 3**	**Very Good 4**
1.	Regularity of attendance					
2.	Punctuality					
3.	Interaction with colleagues and supportive staff					
4.	Reporting of slides on daily basis					
5.	Ancillary techniques Interpretation (IHC, FISH, Flow cytometry, Cytogenetics)					
6	Overall quality of assigned Lab work					
7	Total Score					

Check List - 4

MODEL CHECK LIST FOR EVALUATION OF TEACHING SKILL PRACTICE

Sl. No	Points to be considered:	Strong Point	Weak Point
1	Communication of the purpose of the talk		
2	Evokes audience interest in the subject		
3	The introduction		
4	The sequence of ideas		
5	The use of practical examples and/or illustrations		
6	Speaking style (enjoyable, monotonous, etc., specify)		
7	Attempts audience participation		
8	Summary of the main points at the end		
9	Asks questions		
10	Answers questions asked by the audience		
11	Rapport of speaker with his audience		
12	Effectiveness of the talk		
13	Uses AV aids appropriately		

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LOG BOOK

Table 1: Academic activities attended

Name: Admission Year:

College:

Date	Type of Activity (Subject Seminar, Slide seminar, Journal Club, Presentation (Tumour board), PG/paramedical teaching)	Particulars

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LOG BOOK

Table 2: Academic presentations made by the student

Name: Admission Year:

College:

Date	**Topic**	**Type of Presentation (Subject Seminar, Journal Club, Presentation (Tumour board), PG/paramedical teaching**

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Model Overall Assessment Sheet

Name of the College:

Academic Year:

Check List No	**Particulars**	**Name of Student and Mean Score**						
		A	**B**	**C**				
I	Journal Review Presentations							
II	Seminars							
III	Work in laboratory							
IV	Teaching skill practice							
	Total Score							

Note: Use separate sheet for each year.

CHAPTER VIII

Medical Ethics

Sensitisation and Practice

Introduction

There is now a shift from the traditional individual patient, doctor relationship, and medical care. With the advances in science and technology and the needs of patient, their families and the community, there is an increased concern with the health of society. There is a shift to greater accountability to the society. Doctors and health professionals are confronted with many ethical problems. It is, therefore necessary to be prepared to deal with these problems. To accomplish the Goal (i), General Objective (ii) stated in Chapter II (pages 2.1 to 2.3), and develop human values it is urged that *ethical sensitisation* be achieved by lectures or discussion on ethical issues, clinical case discussion of cases with an important ethical component and by including ethical aspects in discussion in all case presentation, bedside rounds and academic postgraduate programmes.

Course Contents

1. Introduction to Medical Ethics
What is Ethics
What are values and norms
Relationship between being ethical and human fulfillment
How to form a value system in one's personal and professional life
Heteronomous Ethics and Autonomous Ethics
Freedom and personal Responsibility

2. Definition of Medical Ethics
Difference between medical ethics and bio-ethics
Major Principles of Medical Ethics:
Beneficence = fraternity
Justice = equality
Self determination (autonomy) = liberty

3. Perspective of Medical Ethics
The Hippocratic oath
The Declaration of Helsinki
The WHO Declaration of Geneva
International code of Medical Ethics (1993)
Medical Council of India Code of Ethics

4. Ethics of the Individual

The patient as a person

The Right to be respected
Truth and Confidentiality
The autonomy of decision
The concept of disease, health and healing
The Right to health
Ethics of Behaviour modification
The Physician – Patient relationship
Organ donation

5. The Ethics of Human life

What is human life
Criteria for distinguishing the human and the non-human
Reasons for respecting human life
The beginning of human life
Conception, contraception
Abortion
Prenatal sex-determination
In vitro fertilization (IVF), Artificial Insemination by Husband (AIH)
Artificial Insemination by Donor (AID), Surrogate motherhood, Semen Intrafallopian Transfer (SIFT), Gamete Intrafallopian Transfer (GIFT), Zygote Intrafallopian Transfer (ZIFT)
Genetic Engineering

6. The Family and Society in Medical Ethics

The Ethics of human sexuality
Family Planning perspectives
Prolongation of life
Advanced life directives – The Living Will
Euthanasia
Cancer and Terminal Care

7. Profession Ethics

Code of conduct
Contract and confidentiality
Charging of fees, Fee-splitting
Prescription of drugs
Over-investigating the patient
Low – Cost drugs, vitamins and tonics
Allocation of resources in health cares
Malpractice and Negligence

8. Research Ethics

Animal and experimental research / humanness

Human experimentation
Human volunteer research – Informed Consent
Drug trials

9. Ethical workshop of cases

Gathering all scientific factors
Gathering all human factors
Gathering all value factors
Identifying areas of value – conflict, Setting of priorities,
Working out criteria towards decisions

Recommended Reading

Francis C.M., **Medical Ethics**, 1 Ed, 1993, Jaypee Brothers, New Delhi, p 189