



**YENEPOYA UNIVERSITY**

**Deralakatte, Mangalore - 575018**

**REGULATIONS AND CURRICULUM GOVERNING  
POSTGRADUATE PROGRAM (MD) IN  
PATHOLOGY**

**(CURRICULUM - EFFECTIVE FROM 2010-11)**

**ATTESTED**

A handwritten signature in green ink, appearing to be 'G.S.', is written over the word 'ATTESTED'.

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YENEPOYA  
UNIVERSITY

Recognised under Sec. 3(A) of the UGC Act 1956 as per notification number F.9-11/2007.U.3(A) dated 27-02-2008

YU/NOT/AC4/005/2010

21.07.2010

**NOTIFICATION**

Sub: Curriculum for MD degree program in Departments of  
Pathology and Anesthesiology  
Ref: Proceedings of the meetings of Academic Council and Board of  
Management

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The curriculum for MD degree program in the existing departments of Pathology and Anesthesiology as approved by the Academic Council and Board of Management at the meetings held on 02.07.2010 is hereby notified for implementation from the academic year 2010-11.

*J. S. S. S. S.*  
REGISTRAR

*Copy to: Deptt. of Pathology*

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16/05/11

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## **MD PATHOLOGY**

### **Goals and Objectives of the course:**

At the end of the course a candidate shall be able to

1. Understand and explain factors, about the etiopathogenesis of disease.
2. Understand processes involved in the gross and microscopic changes of organs and tissues and explain these changes.
3. Understand and explain the basis of evolution of clinical signs and symptoms.
4. Perform laboratory procedures.
5. Recognize and report morphological changes in cells, tissues and organs.
6. Identify, plan, perform and report specific research projects.
7. Perform clinical autopsy.
8. Plan and teach pathology for Undergraduate Medical students

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8. Plan and teach pathology for Laboratory Technology, Nursing, Dental, and Medical students.

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# COURSE CONTENTS

## **I. BASIC SCIENCES**

1. Anatomy : Histology - of all structures in the human body/organ.
2. Physiology and Biochemistry : basic aspects of various metabolisms & functioning of endocrines.
3. Genetics : Fundamental / applied aspects
4. Biostatistics.
5. Bio-medical ethics : Ethical issues related to medical practice and research involving human subjects and animals.

## **II PATHOLOGY**

- Historical aspects
- General Pathology including immunopathology
- Clinical pathology
- Systemic pathology
- Haematopathology
- Blood banking, transfusion medicine, immunohaematology.
- Cytopathology
- Genetic disorders : molecular pathology
- Recent advances in all fields
- Organization of laboratory including quality control

## **METHOD OF TRAINING**

- i. **Basic sciences**        - posting to different departments - 3 months  
                                     - genetics- seminar / self learning

ii. **On Job training**

- a) - histopathology  
     - cytology including FNAC, fluid cytology and exfoliative cytology  
     - haematology including blood banking, and transfusion medicine  
     - clinical pathology  
     - museum techniques
- b) - autopsy – techniques and interpretation
- c) - microbiology  
     - basic techniques
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- serology
  - Bio medical waste management : Potential risks, handing of hazardous material, laboratory waste management.
  - d) - undergraduate teaching
  - e) - CPC

iii) **Group teaching Sessions:**

- Biopsy/ slide review once a week
- Journal review- once a month
- Subject seminar presentation once in three months (by each student on a given in topic)
- Grossing sessions - Regularly
- Group discussion of clinical cases/ laboratory techniques
- Training in answering model questions - one essay type question every month
- To present / participate in CME Programmes

**POSTING TO OTHER DEPARTMENTS**

**1. Biochemistry - 1 Month**

Knowledge of procedures of common estimations

Knowledge of Handling of equipment – Colorimeter Flame phometer, Cryostat, Cytosphene, Spectrophotometer, PH Meter, Semi Auto analyser, Electrophoresis.

**2. Microbiology -1 Month**

- Basic Techniques – common stains, sterilization and disinfection, serology/ ELISA and Parasitology – Stool examination

3. **Autpsy Room- 1 Month:** Techniques and interpretation Embalming and body preservation.

4. **Blood Bank - 1 Month:** All procedures in detail

5. **Pathology museum - 15 days:** Preservation, preparation and mounting of specimens.

6. **External posting - 1 Month** (Eg. Neuro Pathology, Oncopathology)

**MONITORING OF PROGRESS OF STUDIES**

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- a. As per the guidelines given in regulations and monitoring learning progress.
  - b. Maintain a detailed work diary. Work diary checked monthly by head of department.

### **DISSERTATION**

- a. Every candidate is required to carry out work on a selected research project under the guidance of a recognized postgraduate teacher. The results of such work shall be submitted in the form of a dissertation.
- b. The dissertation is aimed to train the candidate in research methods and techniques. It includes identification of a problem, formulation of a hypothesis, search and review of relevant literature, getting acquainted with recent advances, designing of research study, collection of data, and critical analysis of results and drawing conclusions.
- c. For details recording registration of dissertation topic, please see under regulations.
- d. The dissertation is to be submitted at least six months before the final examination as notified by the university to the Controller of Examinations.
- e. Prior acceptance of the dissertation shall be a precondition of a candidate to appear for the final examination.

### **SCHEME OF EXAMINATION**

#### **A. THEORY**

There shall be four question papers, each of three hours duration. Each paper shall consist of two long essay questions each question carrying 20 marks and 6 short essay questions each carrying 10 marks. Total marks for each paper will be 100. Questions on recent advances may be asked in any or all the paper.

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|-----------|--|
| Paper I   | - General Pathology including Immunopathology  |
| Paper II  | - Haematology / Clinical Pathology / Cyto pathology, Blood banking, Transfusion Medicine and Immunohaematology.  |
| Paper III | - Systemic Pathology<br>Cardio vascular system, Respiratory system, Gastro intestinal System including Liver & Biliary Tract, Pancreas, Renal system<br>Male and female genital system and breast. |

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Paper IV - Systemic Pathology  
Central and Peripheral nervous system, endocrine system,  
musculo-skeletal system, Reticulo-endothelial system  
(Lymph nodes, Spleen and Thymus), Dermatopathology and  
Ophthalmic Pathology, Bone, Joints and soft tissues.

\*The topics assigned to the different papers are generally evaluated under those sections. However a strict division of the subject may not be possible and some overlapping and topics is inevitable.

Students should be prepared to answer overlapping topics.

**B. PRACTICAL : Total 200Marks Duration - 2 days.**

**DAY 1**

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|--|------------|
| a. Autopsy / Reconstructed autopsy (organ system) and discussion on it | 20 Marks   |
| b. Gross and morbid anatomy. 15 Specimens x 2 marks                    | 30 Marks   |
| c. Haematology and Cytology slides. 8+7x 2 marks                       | 30 Marks   |
| d. Blood bank and haematology techniques / discussion                  | 15 Marks   |
| e. Histopathology techniques:  | 30 Marks   |
| 1. H & E stains : Discussion on histopathological techniques           | (10 Marks) |
| 2. One Special staining – Discussion on technique and interpretation   | (5 Marks)  |
| 3. Cytology staining – Discussion on technique and interpretation      | (5 Marks)  |
| 4. One Slide of IHC with history. Discussion & interpretation          | (5 Marks)  |
| 5. Intraoperative consultation : Frozen section / Imprint slide        | (5 Marks)  |
| f. Topic allotment for Pedagogy exercise.                              |            |

**DAY : 2.**

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|--|----------|
| a. Histopathology slides. 20 slides x 2.5  | 50 Marks |
| b. Clinical pathology & Haematology case history given<br>Discussion& interpretation | 25 Marks |

**C. VIVA - VOCE : Total 100 Marks**

1. Viva- voce Examination : (80 Marks)

Students will be examined by all examiners together about students comprehension, analytical approach, expression and interpretation of data. Student shall also be given case reports, charts for interpretation. It includes discussion on dissertation.

2. Pedagogy Exercise : (20 Marks)

A topic be given to each candidate along with the Practical Examination on the first day. Student is asked to make a presentation on the topics on the second day for 8 to 10 minutes.

**D.**

Maximum marks for	Theory	Practical	Viva – voce	Total
<b>M.D (Pathology)</b>	400	200	100	700

**RECOMMENDED TEXT BOOKS AND JOURNALS:**

**BOOKS:**

1. Robbins and Cotran, **Pathologic Basis Of Disease**, Published by W.B. Saunders and company. Also available in PRISM Indian edition.
2. Ivan Damjanov and James Linder, **Anderson's Pathology**, Published By C.V. Mosby Company.
3. Mc. Gee, Isaacson and Wright Edited **Oxford Text of Pathology** vol. 1, 2a, 2b, Published by Oxford University Press.
4. J.B. Walter M.S. Israel, **General Pathology**, Published by Churchill Livingstone.
5. Emeritus Editor : **W.st. Symmers, Systemic Pathology** 16 volumes, Published by Churchill Livingstone.
6. Edited by Jaun Rosai, **Ackerman's Surgical Pathology**, Published by C.V. Mosby company.
7. Walter F Coalson, **Surgical Pathology**, Published by Lippincott.
8. Enzinger and Weiss, **Soft Tissue Tumors**, Published by B. I. Publications (India) C.V. Mosby company.
9. Lever's **Histopathology Of The Skin**, Published : J.B. Lippincott company.
10. David J. B. Ashley **EVAN'S Edited**, Histological Appearances Of Tumors, Published by Churchill Livingstone.
11. Berek Edited, **Novak's Gynecologic and Obstetric Pathology**, Published by - Kaiku Shoin/saunders.



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12. Leopold G Koss, Myron R. Melamed, **Diagnostic Cytology and Its Histopathological Basis**, Published by J.G. Lippincott company.
  13. Marluce Bibbo Davd C . Wilbur **Comprehensive Cytopathology**, Published by W.B.Saunders and Company.
  14. Winnifred Grey, Edited, **Diagnostic cytopathology**, published by Churchill Livingstone.
  15. Orell, Sterrett, Walters and Whittaker, **Fine Needle Aspiration Cytology** (Manual and Atlas), Published by Churchill Livingstone.
  16. Daniel M. Knowles, Edited, **Neoplastic Haemotopathology**, Published by Williams and Wilkins.
  17. Maxwell M. Wintrobe, **Clinical Haematology**, Published by Lippincott Williams and Wilkins.
  18. De Gruchy's Edited by Firkin, **Chesterman, Penington, And Rush**, Clinical Haematology In Medical Practice, Published by Oxford University Press.
  19. Prema V Iyer and Robert Rowland, **Ophthalmic Pathology**, Published by Churchill Livingstone.
  20. Todd, Sanford, Davidson, Edited, **Clinical Diagnostics And Management** By Laboratory Methods, Published by W. B. Saunders and company.
  21. Shameem Sharif, Edited, **Surgical Pathology and Laboratory Techniques**, Published by Prism Publications.
  22. Christopher D. M. Fletcher, Edited, **Diagnostic Histopathology of Tumors** Vol. 1 & by 2, Published by Churchill Livingstone.
  23. Shameem Shariff, **Laboratory Techniques in Surgical Pathology**, Prism Publications.
  24. Human Pathology, Published by W.B. Saunders Company.
  25. Pathology and genetics (WHO) – Tumors of Soft Tissue And Bone.
  26. Pathology and genetics (WHO) – Tumors of Endocrine Organs.
  27. Pathology and genetics (WHO) – Tumors Of The Lung, Pleura, Thymus & Heart.
  28. Pathology and genetics (WHO) - Skin Tumors.
  29. Pathology and genetics (WHO) – Tumors Of Urinary System & Male Genital Organs.
  30. Pathology and genetics (WHO) – Tumors Of The Digestive System.
  31. Pathology and genetics (WHO) – Tumors Of The Breast & Female Genital Organs.
  32. Pathology and genetics (WHO) – Head & Neck Tumors.
  33. WHO classification of Tumors Of Hematopoietic & Lymphoid Tissues.
  34. WHO classification of Tumors Of The Central Nervous System.
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## **JOURNALS**

1. British Journal of Haematology, Published by Blackwell science
2. CANCER, International Journal of the American Cancer Society, Published by John Wiley and sons, Inc.
3. Journal of Clinical Pathology, Publishing Group BMJ.
4. Hematology / Oncology Clinics of North America, Published by W.B. Saunders and company.
5. Histopathology Journal of the British Division of the International Academy Of Pathology, Published by Blackwell Science.
6. The American journal of Surgical Pathology, Published by Lippincott – Raven.
7. ACTA Cytologica, The Journal Of Clinical Cytology And Cytopathology.
8. Archives of Pathology and Laboratory Medicine, Published by the American Medical Association.
9. The Indian Journal of Pathology & Microbiology, Published by IAPM.
10. The Indian Journal of Cancer, Published by Indian Cancer Society.

## **ADDITIONAL READING**

1. Compendium of recommendations of various committees on Health and Development (1943-1975), DGHS, 1985 Central Bureau of Health Intelligence, Directorate General of Health Services, Min. of Health and Family Welfare, Govt. of India, Nirman Bhavan, New Delhi. P - 335.
  2. National Health Policy, Min of Health & Family Welfare, Nirman Bhavan, New Delhi, 1983.
  3. Santosh Kumar, the elements of Research, writing and editing 1994, Dept of Urology, JIPMER, Pondicherry.
  4. Srinivasa D K et al, Medical Education Principles and Practice, 1995. National Teacher Training Centre, JIPMER, Pondicherry.
  5. Indian Council of Medical Research “ Policy Statement of Ethical considerations involved Research on Human Subjects”. 1982, I.C.M.R, New Delhi.
  6. Code of Medical Ethics framed under section 33 of the Indian Medical Council Act, 1956. Medical Council of India, Kotla Road, New Delhi.
  7. Francis C M, Medical Ethics, J P Publications, Bangalore, II edn., 2004.
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8. Indian National Science Academy, Guideline for care and use of animals in Scientific Research, New Delhi 1994.
  9. International Committee of Medical Journal Editors, Uniform requirements form manuscripts submitted to biomedical journals, N Engl J Med 1991; 424-8.
  10. Kirkwood B R, Essential of Medical Statistics, 1<sup>st</sup> Ed., Oxford : Blackwell Scientific Publications 1988.
  11. Mahajan B K, Methods in Bio statistics for medical students, 5<sup>th</sup> Ed. New Delhi, Jaypee Brothers Medical Publishers, 1989.
  12. Raveendran and B Gitanjali, A Practical approach to PG dissertation, New Delhi, J P Publication, 1998.