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**Pravara Institute of Medical Sciences
(Deemed University)**

Loni Bk - 413 736, Tal. Rahata, Dist. Ahamadanagar (M.S.)

Established Under Section 3 of UGC Act 1956, Vide Govt. of India Notification
No. F.9-11/2000-U.3, dated 29th September, 2003



**Syllabus
M.D. (Pathology)**

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Pravara Institute of Medical Sciences (Deemed to be University)

University Established under section (3) of UGC Act

NAAC Re-accredited with 'A' Grade (CGPA 3.17)

LONI - 413736, (Near Shirdi) Tal. Rahata,
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- RURAL MEDICAL COLLEGE
- RURAL DENTAL COLLEGE
- DR. APJ ABDUL KALAM COLLEGE OF PHYSIOTHERAPY
- COLLEGE OF NURSING
- CENTRE FOR BIO-TECHNOLOGY
- CENTRE FOR SOCIAL MEDICINE
- PRAVARA RURAL HOSPITAL

Ref. No.

Date :

NOTIFICATION NO. 21 / 2017

Subject: Notification regarding syllabi of Post Graduate Degree & Post Graduate Diploma.
Ref. : Academic Council Resolution No. AC/2016/24 dated 26th August 2016.

It is hereby notified for information all concerned that as per Academic Council, Resolution No. AC/2016/24 dated 26th August 2016 and decision taken by the authorities of the university to introduce the Syllabi of:

(A) Post Graduate Degree -

- M.D. & M.S (Doctor of Medicine & Master of Surgery)

- | | |
|------------------------------------|---|
| 1. MD in Anatomy, | 10 MD in Physiology, |
| 2. MD Pathology, | 11. MD Microbiology, |
| 3. MD in Pharmacology, | 12. MD in Forensic Medicine & Toxicology, |
| 4. MD in General Medicine, | 13. MD in Radiodiagnosis, |
| 5. MD Radiotherapy, | 14. MD in Anaesthesiology, |
| 6. MD in Paediatrics, | 15. MD Community Medicine, |
| 7. MS in General Surgery, | 16. MS in Orthopaedics, |
| 8. MS in Otorhinolaryngology, | 17. MS in Ophthalmology, |
| 9. MS in Obstetrics & Gynaecology, | |

- M.Sc. (Medical) (Master of Sciences)

- | | |
|---------------------------------|---------------------------------|
| 1. M.Sc. (Medical) Anatomy | 3. M.Sc. (Medical) Microbiology |
| 2. M.Sc. (Medical) Pharmacology | 4. M.Sc. (Medical) Physiology |

(B) Post Graduate Diploma - Medical

- | | |
|--|--------------------------------|
| 1. Diploma in Clinical Pathology (DCP), | 6. Diploma in Radiodiagnosis, |
| 2. Diploma in Radiotherapy (DMRT), | 7. Diploma in Anaesthesiology, |
| 3. Diploma in Otorhinolaryngology (DLO), | 8. Diploma in Ophthalmology, |
| 4. Diploma in Pediatrics (DCH) | 9. Diploma in Orthopaedics |
| 5. Diploma in Obstetrics & Gynaecology | |

For Post graduate 2017-18 onwards.

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The paperwise distribution, pattern of Internal Assessment and University Examination in theory & practical etc. are as per given in the syllabus.

The Dean, Rural Medical College, Loni is authorised to follow & implement the said syllabi of Post Graduate Degree & Post Graduate Diploma w.e.f. 2017-2018.

Place: Loni BK-413 736

Date: 04/03/2017

Ref. No. PIMS/R/2017/289

Registrar

Registrar

Pravara Institute of Medical Sciences
(Deemed to be University)
Loni - 413736 Tal. Rahata
Dist. Ahmednagar (M.S. India)

Copy for information:

1. Hon'ble Pro-Chancellor, PIMS (DU), Loni
2. Hon'ble Vice-Chancellor, PIMS (DU), Loni

Copy for information & necessary action to:

1. Dean, Rural Medical College, Loni
2. Dean, Faculty of Medicine.
3. All HOD, Rural Medical College, Loni
4. Controller of Examination, PIMS (DU), Loni.

**Pravara Institute of Medical Sciences
(Deemed University)**

**Curriculum
MD PATHOLOGY**

1. GOAL:

The goal of postgraduate medical education shall be to produce competent specialist.

- (i) Who shall recognize the health needs of the community and carry out professional obligation ethically and in keeping with the objectives of the national health policy;
- (ii) Who shall have mastered most of the competencies pertaining to the speciality that is required to be practiced at the secondary and tertiary levels of the healthcare delivery system.
- (iii) Who shall be aware of contemporary advances and developments in the discipline concerned.
- (iv) Who shall be able to organize and establish clinical laboratory.
- (v) Who shall have acquired a spirit of scientific inquiry and is oriented to the principles of research methodology.
- (vi) Who shall be able to teach and share his knowledge and competence with others. He/She should be imparted training in teaching methods in the subject which may enable them to take up teaching assignments in Medical Colleges/Institutes.

2. OBJECTIVES:

The target is to develop Cognitive domain, Psychomotor domain and Affective domain related to disease process and diagnosis.

So that at the end of the course a candidate must be able to

Cognitive Domain:

- i) Understand and explain about the factors in causation of disease.
- ii) Understand and explain about Patho-physiology of disease.
- iii) Understand processes involved in the gross and microscopic changes of organs and tissues and explain these changes.
- iv) Understand and explain the basis of evolution of clinical signs and symptoms.
- v) Understand the complication and prognosis of the disease process.
- vi) Should be able to accurately interpret the representative materials obtained from the patients in order to arrive at a correct diagnosis of common diseases.
- vii) Should be able to interpret morphological changes in cells, tissues and organs & diagnose the disease.
- viii) Should be able to accurately interpret findings of clinical autopsy and present a CPC (clinico pathological correlation.)
- ix) Identify, plan, execute, analyse and present research work

- x) To index and efficiently manage the data using internationally accepted methods.
- xi) Plan and teach pathology for medical and laboratory technology students.
- xii) To understand quality assurance, to obtain and retain accreditation of laboratory.
- xiii) To organize and supervise diagnostic laboratory
- xiv) Identify problems in the laboratory, offer solutions thereof & maintain a high order of quality control.

Psychomotor Domain:

- i) Able to perform most of the routine tests in a Pathology Laboratory including grossing of specimens, processing, cutting of paraffin and frozen section, making smears, and staining.
- ii) Able to collect specimens for routinely performed procedures such as vene puncture, finger prick fine needle aspiration of super facial lumps and bone-marrow aspirates.
- iii) Should be able to recognize and report morphological changes in cells, tissues and organs.
- iv) Perform an autopsy, dissect various organ complexes and display the gross findings.
- v) Should be familiar with the function, handling and routine care of equipment in the laboratory.
- vi) Capable of safe & effective disposal of laboratory waste.

Affective Domain:

- i) Should be able to function as part of a team, develop an attitude of cooperation with colleagues, and interact with the patient and the clinician or other colleagues to provide the best possible diagnosis or opinion.
- ii) Always adopt ethical principles and maintain proper etiquette in dealings with patient, relatives and other health personnel and to respect the right of the patient including the right to information and second opinion.
- iii) Develop communication skills to word reports and professional opinions as well as to interact with patients, relatives, peers and paramedical staff, & for effective teaching.
- iv) Able to supervise and work with subordinates and colleagues in a laboratory.

3. SYLLABUS (COURSE CONTENTS):

Duration of course: 3 years

A. Theory and practical:

- 1. General pathology
- 2. Basic sciences pertaining to Pathology
 - a. Immunopathology
 - b. Serology
 - c. Enzyme histochemistry
 - d. Immunohistochemistry

- e. Electroimmunoassay
- f. Molecular biology
- g. Cytogenetics
- h. Tissue culture
- i. Principles of Medical Statistics
- 3. Systemic pathology
- 4. Haematology including Clinical Haematology
- 5. Blood Banking including Transfusion Medicine
- 6. Laboratory Medicine
 - a. Clinical Pathology
 - b. Clinical Biochemistry
 - c. Clinical Microbiology
 - d. Organization of laboratory including quality control
 - e. Safe & effective disposal of laboratory waste.
- 7. Surgical Pathology
- 8. Cyto-pathology
- 9. Medical Autopsy techniques and interpretation
- 10. Museum techniques.
- 11. Common Micro-organisms.
- 12. Laboratory methods including - Sample collection, process of the sample and quality control.
- 13. Microscopy
- 14. Photomicrography
- 15. Teaching Methodology
- 16. Write the thesis or a scientific paper of international standards.
- 17. Research Methodology

B. SCOPE OF TRAINING:

1. High degree of Professional competence

In the following fields, related to diagnosis of appropriate diseases, a high degree of professional competence and theoretical knowledge is expected.

- a. Pathologic Anatomy (General Pathology, Systemic Pathology including Surgical Pathology and Cytopathology)
- b. Hematology

2. Reasonable Professional competence:

- a. Laboratory Medicine (Clinical Haematology, Clinical Pathology, Clinical Biochemistry, Clinical Microbiology)
- b. Transfusion Medicine (Blood-Banking)

3. General Acquaintance

- a. Following are the fields in which the student is expected to acquire a general acquaintance of techniques and principles and competence to understand and interpret data without being called upon to achieve technologic proficiency.
 - i. Immunopathology
 - ii. Electron microscopy
 - iii. Histochemistry

- iv. Immunohistochemistry
- v. Use of radioisotopes
- vi. Cytogenetics
- vii. Tissue culture

4. POSTING SCHEDULE:

Total Duration 36 Months

1.	Haematology and Clinical pathology	14 months
2.	Surgical Pathology	10 months
3.	Cytopathology, Autopsy & Museum	07 months
4.	Clinical Biochemistry	01 month
5.	Blood Bank	01 month
6.	Elective/ Reorientation/ Extramural/ Exam	03 months

TOTAL 36 months

Posting schedules may be modified depending on needs, feasibility and exigencies. For facilities not available in the parent institution as well as for additional knowledge and skill, extramural postings may be undertaken.

5. POSTGRADUATE TRAINING/ LEARNING PROGRAMME:

The student should maintain Log Book for Training/ Learning Programme

- a. On job training
- b. Subject seminars
- c. Journal club
- d. Slide seminars – Histopathology, Haematology and Cytopathology
- e. Grossing seminars
- f. Group discussion on clinical cases
- g. Inter departmental seminars
- h. Post graduate students should be encouraged to attend CME, Workshops, Conferences and present papers
- i. Microteaching

6. EVALUATION:

A. Dissertation:

- a. Thesis / Dissertation is compulsory. Every candidate is required to carry out the 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 at training the candidate in research methods and techniques.
- c. It includes identification of a problem, formulation of a hypothesis, search and review of relevant literature, getting acquaintance with recent advances, designing of research study, collection of data, critical analysis of results and drawing conclusions.
- d. The title of the topic along with the plan of work not exceeding 500 words in prescribed Performa should be submitted to the

University with the recommendation of guide. Prior approval by the local Ethical Committee is essential.

- e. Students should submit a Thesis or Dissertation six months prior to examinations as a partial fulfillment to the award of the degree of MD (Pathology).

B. EXAMINATION PATTERN:

THEORY:

TOTAL: 400 marks.

Four Papers 100 marks each:

PAPER – I

General Pathology including Basic Sciences and Recent advances

PAPER – II

Systemic Pathology and Recent advances

PAPER – III

Laboratory Medicine and Recent Advances

(Laboratory Medicine will include Clinical Pathology, Clinical Biochemistry, Clinical Microbiology, Organization of laboratory including quality control and Safe & effective disposal of laboratory waste.)

PAPER – IV

Haematology including Clinical Haematology, Transfusion Medicine & recent advances

Each Paper will be: Full Questions: 3X20 Marks each – 60

Short Notes : 4X10 Marks Each -- 40

PRACTICAL:

Two Days Practical Examination

Sr No	Practical	Marks
1	Autopsy	30
2	Histopathology (20 Histopathology)	80
3	Cytopathology (5 Cytology slides)	20
4	Surgical Pathology (Grossing – 3 specimens)	30
5	Histotechniques	20
6	Haematology Exercise including case discussion	70
	Routine test (Hb,TLC, PBS)	30
	Special Haematology Test (Retic count, Absolute Eosinophil Count, Sickling test, Erythrocyte Sedimentation Rate, Platelet count, PT, APTT, PCV, Cytochemistry etc.)	20
	Haematology Slides (5 slides)	20
7	Clinical Pathology Exercise including case discussion	30
8	Clinical Chemistry Exercise including case discussion	30
9	Blood Banking–Blood grouping & Cross matching Exercise	10
10	Basic Sciences	20
	Serology	10
	(Immunohistochemistry/immunofluorescence/ FISH/ PCR/ Electronmicrophotograph etc.)	10
11	Grand Viva	50
	TOTAL	400

7. RECOMMENDED TEXT BOOKS; REFERENCE BOOK AND JOURNALS :

1. Cotran, Kumar, Collins. Robin's Pathologic Basis of Disease, 9th edition 2015 published by W.B. Saunders & Company.
2. Ivan Damjanov, James Linder. Anderson's Pathology, 10th edition, 2010, published by C.V. Mosby Company.
3. Juan Rosai, Ackerman's Surgical Pathology, 10th Edition volume 1 & 2, 2011 published by C.V. Mosby Company.
4. Christopher D.M. Fletcher. Diagnostic Histopathology of tumours volume 1&2, 4th edition, 2013. published by Churchill Livingstone Elsevier company
5. Jurgen Ludwig, Hand book of Autopsy Practice; 5th Edition; 2009; Human Press.
6. Theory & practice of Histological Techniques edited by John. D. Bancroft- 7th edition 2012 published by Churchill Livingstone.
7. Gradwohl's Clinical laboratory methods and diagnosis volume 1 & 2 Eight Edition, 1990 by Alex Sonned with Leonard Jarett
8. Henry J.B Clinical Diagnostics and Management by Laboratory Methods, 22nd edition, 2012 published by W.B. Saunders & Company.
9. Lewis S.M, Bain D.J, Bates I, Dacie & Lewis Practical Haematology 11th edition, 2012 published by Churchill Livingstone.
10. Hoffbrand A.V, Catovsky D, Tuddenham G.D, Postgraduate Haematology – 7th edition, 2016 published by Blackwell Sciences.
11. Firkin F , Chesterman C, Penington D, de Gruchy's Clinical Haematology in Medical Practice, 6th edition 2012, published by Blackwell Sciences
12. Greer J.P, Foerster J, Jukens J et. Al, Wintrobe's Clinical Haematology, 13th edition, 2013, published by Lippincott Williams and Wilkins
13. Mollison P.L, Blood transfusion in clinical medicine, 12th edition, 2015, published by Oxford, ELBS & Blackwell Scientific Publication
14. Orell, Sterrett- Walters and Whittaker, Fine Needle Aspiration Cytology (Manual & Atlas), 5th edition, 2011, published by Churchill Livingstone
15. Leopold G Koss, Diagnostic cytology and its histopathologic basis 5th edition, 2006, published by J.B. Lippincott Company.
16. Marluce Bibbo, Comprehensive cytopathology, 4th edition, 2015 published by W.B Saunders Company
17. Winnifred Grey, Grace T Mckee, Diagnostic cytopathology, 3rd edition, 2010, published by Churchill Livingstone
18. Sudha R.Kini , Colour Atlas of differential diagnosis in exfoliative and aspiration cytopathology, 2nd edition, 2011 , published by Lippincott, Williams & Wilkins.
19. Praful B. Godkar , Clinical Biochemistry – Principles & practice, published by Bhalani Publishing House, Bombay
20. Tietz Textbook of Clinical Chemistry and Molecular Diagnostics Edited by Carl Burt Edward R. Ashwood David E. Bruns, 5th edition 2013 Elsevier, Inc. Publication .
21. Varley's Practical Clinical Biochemistry edited by Alan H. Gowen lock with assistance of Janet R Mc Mullay and Donald M. Mclauchlan Sixth edition 2010.
22. R. Anantnarayan , C.K. Paniker, Textbook of Microbiology, 9th edition, 2013, published by Orient Longman.

23. Parasitology (Protozoology & Helminthology.) in relation to clinical medicine –K.D.Chatterje published by Chatterjee Medical Publication.
24. McKee & McCartney Practical Medical Microbiology volume 1 & 2 14th edition 1996 edited by J.Gerald Collee, Andrew G Frasel, Ballies P Masmion, Anthony Simmon.
25. Bailey & Scott Diagnostic Microbiology Edited by Denni S.C. Capson 13th edition, 2013.
26. WHO Classification of tumours, published by IARC Press
27. Recent advances in Histopathology, Haematology etc.

JOURNALS:

1. Acta Cytologica
2. The American Journal of Pathology
3. American Journal of Surgical Pathology, published by Lippincott & Raven
4. The American Journal of Hematology
5. The American Journal of Clinical Pathology
6. Archives of Pathology and Laboratory Medicine
7. Blood
8. British Journal of Haematology, published by Blackwell Sciences.
9. CANCER, International journal of American Cancer Society, published by John Wile & sons Inc.
10. Diagnostic Cytopathology published by Wiley Liss, inc, publication
11. Histopathology
12. Human Pathology
13. Haematology/Oncology Clinics of North America, published by W.B. Saunders &Company.
14. Journal of Cytology, published by I.AC.
15. I.C.M.R. Bulletin, published by ICMR
16. Indian Journal of Pathology & Microbiology, published by IAPM.
17. Indian Journal of Pathology and Microbiology
18. Indian Journal of Cancer, published by Indian Cancer Society.
19. Journal of Pathology
20. Journal of Clinical Pathology, published by B.M.J.
21. Laboratory Investigation
22. LANCET, published by Elsevier
23. Modern Pathology
24. Pathology
25. Seminars in Hematology
26. Seminars in Diagnostic Pathology
27. Virchows Archives
28. Year Book Series
29. Recent Advances Series

