

INSTITUTE	FACULTY OF SCIENCE
PROGRAM	POSTGRADUATE DIPLOMA IN MEDICAL LABORATORY TECHNOLOGY
SEMESTER	1
COURSE TITLE	APPLIED HISTOPATHOLOGY & CYTOLOGICAL TECHNIQUES
COURSE CODE	02ML0106
COURSE CREDITS	4

Objective:

- 1 To provide deep insights of principles and application of histological and cytological techniques and handling of pathological samples and associated diseases.
- 2 To provide deep insights of principles and application of histological and cytological techniques and handling of pathological samples and associated diseases.

Course Outcomes: After completion of this course, student will be able to:

- 1 Develop understanding about different histological techniques.
- 2 Develop skills to handle some sophisticated histopathological instruments and interpretation of results.
- 3 Understanding different staining method and Correlate the difference between normal and abnormal cell and its structure.
- 4 Grabbing knowledge about Cytochemistry & immunohistochemistry which will be helpful in medical laboratory.

Pre-requisite of course: Basic knowledge of Biology

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
4	0	0	50	30	20	0	0

Contents : Unit	Topics	Contact Hours
1	Histology Introduction Histology, Handling Biopsy Specimen, Instruments in Histopathology (Microtome), The manipulation and use of microtomes, Microtome knives and methods of sharpening. Quality control in Histopathology, Fixation of tissue-different fixatives and their mode of action, Various methods of preparation of tissue section.	15

Contents : Unit	Topics	Contact Hours
2	Tissue processing and staining Different stages of tissue processing i.e. dehydration, clearing, embedding, Processing of tissues-protocol for manual & automated tissue processors, paraffin embedding & preparation of blocks, section cutting, picking up sections, drying sections, Methods in common use for decalcification, recognition and correction of faults in section cutting, preparation of reagents. , Different Staining Methods: Objective and principle of different histopathological staining, preparation and use of Hematoxylin and eosin stain. Reticulin, PAS, Van-Gieson, Massion's trichrome, Lipid & Mucin stains & Perl's stain and Mounting specimens. , Frozen section apparatus: (cryostat) A theoretical knowledge of its application, construction and use. Different techniques & application and frozen section/cryostat. Preservation of slides and blocks	15
3	Diagnostic Cytology Preparation of cytosmear and H&E, Papanicolaou & MGG staining of different body fluids. Fine Needle Aspiration cytology and exfoliative cytology, Buccal Smear examination. Cytochemistry & immunohistochemistry.	15
4	Clinical Genetics Chromosomal abnormalities: Numerical and structural Somies, Ploidies, Mosaic, Chimera and syndromes. Translocations, Deletions, duplications, inversion, isochromosomes, ring chromosomes, and causes of genetic abnormalities. , Genetic Screening: Introduction, Types of screening, Methods used in genetic screening: PCR/RFLP, FISH, DNA fingerprinting and sequencing. Genetic counseling.	15
Total Hours		60

Textbook :

- 1 Basic and Advanced Laboratory Techniques in Histopathology and Cytology, Pranab Dey, Springer Singapore, 2018

References:

- 1 Basic and Advanced Laboratory Techniques in Histopathology and Cytology, Basic and Advanced Laboratory Techniques in Histopathology and Cytology, Pranab Dey, Springer Singapore, 2018
- 2 Textbook of Medical Laboratory Technology , Textbook of Medical Laboratory Technology , P.B Godkar, Bhalani Publishing House, 2005
- 3 Medical Laboratory Technology (Volume I-III): Procedure Manual for Routine Diagnostic Tests, Medical Laboratory Technology (Volume I-III): Procedure Manual for Routine Diagnostic Tests, Mukherjee I. Kanai, McGraw Hill Education, 2010
- 4 4. Medical Laboratory Technology, Methods and Interpretations, 4. Medical Laboratory Technology, Methods and Interpretations, RamnikSood, Jaypee, 2009

Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery and evaluation					
Remember / Knowledge	Understand	Apply	Analyze	Evaluate	Higher order Thinking / Creative
30.00	20.00	20.00	15.00	10.00	5.00

Instructional Method:

- 1 The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, etc.
- 2 The internal evaluation will be done on the basis of continuous evaluation of students in the class-room in the form of attendance, assignments, verbal interactions etc.
- 3 Students will use supplementary resources such as online videos, NPTEL videos, ecourses, Virtual Laboratory.