

PG DMLT Semester I
Subject Name: Applied Histopathology & Cytological Techniques
Subject Code: 02ML0106

Objective: To provide deep insights of principles and application of histological and cytological techniques and handling of pathological samples and associated diseases.

Credits Earned: 4 Credits

Course Outcomes: After the completion of the course:

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 tissue.

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
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.	10
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.	10
Total Hours		60

References:

1. Basic and Advanced Laboratory Techniques in Histopathology and Cytology, PranabDey, Springer Singapore, 2018.
2. Textbook of Medical Laboratory Technology Vol 1 & 2, P.B Godkar, 3rd edition, Bhalani Publishing House, 2005.
3. Medical Laboratory Technology Medical Laboratory Technology (Volume I-III): Procedure Manual for Routine Diagnostic Tests, Mukherjee I. Kanai, 2 edition, McGraw Hill Education, 2010.
4. Medical Laboratory Technology, Methods and Interpretations (volume I&II), RamnikSood, , 6th Ed., Jaypee, 2009.

Suggested Theory distribution:

The suggested theory distribution as per Bloom's taxonomy is as per 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	Understand	Apply	Analyze	Evaluate	Create
30%	25%	25%	15%	5%	0%

Instructional Method:

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