

**Add-on Course**  
on  
**“Basics of Histology, Histochemistry and  
Histopathology”**

Organized by

**Department of Physiology**  
**Serampore College (Affiliated to University of Calcutta)**  
**9, William Carey Road, Serampore, Hooghly, West Bengal**

**Convener:** Sandip Mukherjee, Ph.D.  
Associate Professor, Department of Physiology, Serampore College

**Course objective:** Histology is fundamental in biology, medicine, and biomedicine. Histological studies of biological samples often lead to the establishment of structure/function relationships, which may have diagnostic and prognostic value in the clinical context. Classical histological techniques made it possible to observe tissues and cells for the first time and to distinguish between their single components.

**Course outcome:** On completion of this Add-On Course, participants will get basic knowledge of tissue preparation, including embedding, tissue cutting, staining, visualization of tissue structure and characteristic changes the tissue may have undergone in different clinical condition. Also, participants will get extensive experience to work with immunohistochemistry techniques.

**Eligibility:** Students of B.Sc. Honours /M.Sc. in Physiology and Allied Sciences / Research Scholars

**Schedule:**

<b>Date</b>	<b>Time</b>	<b>Venue</b>
13/06/2023	11AM-5.00PM	Department of Physiology, Serampore College
14/06/2023	11AM-5.00PM	Department of Physiology, Serampore College
15/06/2023	11AM-5.00PM	Department of Physiology, Serampore College
17/06/2023	11AM-5.00PM	Department of Physiology, Serampore College
23/06/2023	11AM-5.00PM	Department of Physiology, Serampore College

**Registration: Free**

**Last date of registration: 12/06/2023 up to 12 Noon**

After successful completion of the course, participants will be given certificates

Registration link: <https://forms.gle/gvvBGEmjrk97egm56>

For any query - Email: sandip@seramporecollege.ac.in/ Mob No. 9088014072

# Course content

## THEORY

### UNIT – I

Histology, Histochemistry and Histopathology : Objectives and applications

- Tissue fixation: Objectives, methods, chemical fixatives-types and chemistry of fixation; Physical methods: freezing and microwave fixation; choice of fixatives, fixation artifacts.
- Dyes – Natural and Synthetic, Classification

### UNIT-II

Functional Morphology (mammalian): Histological organization of GI tract- stomach and intestine, lungs, kidney, spleen, thymus, Bone and bone marrow.

### Unit-III

#### Histochemistry

Principles and methods of application and utility of classical histochemical Techniques : for localization of glycoproteins (PAS), nucleic acids(Feulgen) and steroid dehydrogenase activity.

### Unit-IV

#### Immunohistochemistry

Principles, method of application of Immunohistochemistry and immunofluorescence techniques for localization of proteins in endocrine cells (Islet of Langerhans)

### Unit-V

#### Histopathology

Morphological alterations in cells due to disease, types of degeneration- clouding, hyaline, hydrophic and fatty degeneration.

Etiology, pathogenesis and histopathology of liver cirrhosis and atherosclerosis,

### Unit-VI

Histopathology

Tumors- malignant and non-malignant, types of carcinoma, histopathology of breast and prostate tumors

## PRACTICALS

### I. Histology:

1. Histology:

Observations of permanent slides of mammalian organs – stomach, intestine, spleen, liver, kidney, lungs, testis, epididymis, vas deferens, ventral prostate, seminal vesicle, ovary, uterus and Fallopian tube.

2. **Demonstration:** Microtomy and staining: Hematoxylin-eosin

**II. Histometry:** Histometrical measurements of a few organs.

### III. Histopathology:

Study of histopathological changes (permanent slides) – gastric ulcers, cirrhosis of liver, breast tumors, cystic follicles of ovary, pancreas in diabetics, cryptorchid testis and leukemia.

### IV. Histochemistry and immunohistochemistry: Observation

1. Histochemical localization of glycogen in rat/mouse liver by PAS staining.

2. Immunohistochemical localization of insulin/glucagon rat/mouse pancreas.