**Histopathology Course syllabus**

**Course Code**: MeLS3136

**Credit Hours**: 3

 **Lecture**: 2 hours/week=32hrs

**Laboratory**: 1 hours/week=48hrs

**Total contact hours: 80hrs**

**Prerequisite: None**

**Instructor: Aytenew A. (MSc.)**

**Course descriptions:**

This course is designed to equip BSC degree Medical Laboratory Science students with overview of introduction to pathologic tissue reactions and changes, basic Knowledge and Skills of diagnostic techniques in histopathology; handling, shipment and record keeping of clinical specimens; Preparation and processing of small biopsies. It gives more emphasis on histopathological techniques; fixation and fixative, tissue processing, tissue sectioning, staining and Immunocytochemistry of histopathological diagnosis and other pathology examination methods.

**Course Objectives:**

At the end of this course students will be able to:

**Knowledge**

* Discuss pathologic tissue reactions and changes
* Discuss purposes of histopathological examinations
* Describe the different types of specimen in histopathology (pathology) laboratory and their handling
* List methods of preservation of the various pathological specimens
* Evaluate the quality of the sectioning and staining of prepared slides.
* Trouble-shoot any sectioning or staining problems encountered

**Skill**

* Process, and embed surgical and autopsy tissue specimens
* Operate correctly and safely a rotary microtome to section paraffin processed blocks of tissue
* Perform corrective action at any stage of histopathological techniques that are inadequate
* Practice methods of preservation of the various specimen
* Carry out pathological tests using staining techniques
* Prepare biological material for microscopic examination
* Perform cell concentration and fixation techniques
* Prepare blood smears to clinical laboratory standards
* Stain smears and sections with routine and special staining procedures

**Attitude**

* Recognize the importance and application of QA in histopathology
* Adhere to standard operating procedures and safety policies
* Demonstrate team work
* Use resource and equipment properly

 **Course outline:**

**Chapter 1: Introduction**

1.1 Pathology

1.2 Histopathology

 1.2.1 Branches of Pathology

1.3 Pathologic tissue changes

1.4 Inflammation

1.5 Introduction to Neoplasia

1.6 Purposes of histopathological examinations

**Chapter 2**: **Histopathology techniques**

 2.1 Introduction

 2.1.1 Surgical specimen collection and handling

 2.1.2 Tissue marking substances

2.2 Fixation and fixatives

2.2.1 Introduction to fixation

2.2.2 Fixatives

2.2.3 Factors involved in fixation

2.2.4 Fixation of specific substance

2.3Decalcification

**Chapter 3: Tissue processing**

3.1 Embedding

3.2. Microtomy

**Chapter 4:**  **Principles of staining**

4.1 Introduction

4.2 Types of stain

4.3 Affinity of staining

4.4 Factors that determine selectivity of stain

4.5. Types of commonly used stains in histopathologic techniques

**Chapter 5: Special Staining methods**

 5.1 Connective tissue staining

5.2 Protein, nucleic acid and amyloid

5.3 Carbohydrates and lipids

5.4 Pigments, Minerals and Bone

5.5 Microorganisms

 **Chapter 6: Immunohistochemistry**

6.1 Enzyme histochemistry

6.2 Immunostaining

6.3 Immunoflourescence

6.4 Autoradiography

**Chapter 7: Cytology and Museum techniques**

 7.1 Introduction to Cytology

 7.2 Pathology museum techniques

**Chapter 8: Quality assurance and safety in histopathology**

**References:**

1. Suvarna Sk, Layton C, Bancroft JD. Bancroft’s theory and practice of histological techniques, 7th ed.
2. Sir William Lyon’s Road, John Crocker the science of laboratory diagnosis, second edition University of Warwick Science Park, Department of Cellular Pathology,
3. Berhanu Seyum, Jemal Yimam Haramaya University, Histopathology for Medical Laboratory Technology students in Ethiopia, Lecture note series in collaboration with The Carter Center, 2006 Addis Ababa.