I. INTRODUCTION

A. Introduction to Histology: Histotechnology is the study of the microscopic anatomy of cells and tissues of plants and animals. It is commonly performed by examining cells and tissues under a light microscope or electron microscope, which have been sectioned, stained and mounted on a microscope slide. Histological studies may be conducted using tissue culture, where live human or animal cells are isolated and maintained in an artificial environment for various research projects. The ability to visualize or differentially identify microscopic structures is frequently enhanced through the use of histological stains. Histology is an essential tool of biology and medicine. Histopathology, the microscopic study of diseased tissue, is an important tool in anatomical pathology, since accurate diagnosis of cancer and other diseases usually requires histopathological examination of samples.

B. The courses are designed to meet basic curriculum requirements for the Central Texas College Histology Laboratory Technician Program.

C. This course is occupationally related and provided didactic and practical knowledge required for entrance into the clinical portions of the Histology Laboratory Technology Program.

D. Prerequisite(s): None

II. LEARNING OUTCOMES

Upon successful completion of the course, Functional Histology, students will be able to:

A. Identify and understand basic anatomy and physiology of cells and tissues.

B. Introduction to the healthcare environment and the histology laboratory.

C. Learn medical terminology associated with Histology.

D. Learn how to use and perform testing with specialized microscopic techniques.
Identify and understand basic theories and practices of histology, including anatomy and physiology of cells and tissues.

Overview of methods used in histology including Histochemistry and cytochemistry.

Learn how to perform and understand organ and tissue culture and how they relate to the diagnosis, treatment, and prognosis of a tumor biopsy.

Learn how to compare and contrast normal versus abnormal cells and tissues by use of instrument microtomes, cryostat, fixation, and embedding techniques.

Learn how to perform routine staining techniques including H&E stains to differentiate cell nuclei from the rest of the tissue.

Utilize appropriate safety equipment and procedures according to established laboratory protocol.

Exhibit the professional, legal, and ethical attributes required by the Histology Laboratory Technician, and understand how the above relates to communication.

Perform quality control (QC) procedures according to established protocol and evaluate the results.

Understand laboratory mathematics as it relates to the Histology Lab.

At the conclusion of this lecture series, the student will have achieved the following: Achievement will be met with a minimum score of 75 percent is earned on the written examination covering the material.

III. INSTRUCTIONAL MATERIALS

The instructional materials identified for his course are viewable through www.ctcd.edu/books

IV. COURSE REQUIREMENTS

To receive transferable credits for this course, you must earn a grade of 2.5 or better.

Class attendance is mandatory. A student who is late for 15 minutes or more will be marked absent. A student who is late for less than 15 minutes will be marked tardy. 2 tardies will count as an absence. 3 absences result in loss of a letter grade for the course. 4 absences will disqualify a student from the HT program and the
student will be required to meet with the program director for readmission.

C. Students with a grade of 2.4 or less should make an appointment with the instructor to discuss the reason for low performance. Any material not understood by the student can be discussed with the instructor privately during office hours. Office hours are posted on the instructor’s door; please try to schedule an appointment at your convenience.

D. Lecture examinations will be taken from class notes, assigned pages in your text, and any additional information such as computer assignments or videos.

E. Laboratory examinations will be taken from a combination of lecture and any laboratory information covered in any format. Often theory of procedures is required to perform the procedure and evaluate your results.

V. EXAMINATIONS

A. Five lecture, three laboratory examinations, and a laboratory assessment will be given. A comprehensive final examination will be given.

B. Makeup examinations will not be given. If you must miss an exam, you can use your final exam grade to replace your missed exam grade. Any additional missed exams would result in a “0” and cannot be made up.

I. SEMESTER GRADE COMPUTATION

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<thead>
<tr>
<th>*Lecture Examinations</th>
<th>Point Value</th>
<th>*Laboratory Examinations</th>
<th>Point Value</th>
</tr>
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<tbody>
<tr>
<td>Lecture 1</td>
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<td>100</td>
<td>Laboratory Assessment</td>
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<td>Lecture 5</td>
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<td>Total Lab Points Possible</td>
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Total Lecture Points Possible 500

Homework 100

Final Examination 200

Total Lecture/Lab/Final Points Possible 1200

<table>
<thead>
<tr>
<th>Number of Points</th>
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<tr>
<td>1200 – 1080</td>
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VI. SEMESTER GRADE COMPUTATION

NOTE: Plagiarism in any form will not be tolerated. A student who chooses to plagiarize will be given a zero on the assignment. A formal charge may be made to the College Disciplinary Board.

VII. NOTES AND ADDITIONAL INSTRUCTIONS FROM THE INSTRUCTOR

A. Course Withdrawal: It is the student’s responsibility to officially withdraw from a class if circumstances prevent attendance. Any student who desires to, or must, officially withdraw from a course after the first scheduled class meeting must file a Central Texas College Application for Withdrawal (CTC Form 59). The withdrawal form must be signed by the student.

CTC Form 59 will be accepted at any time prior to Friday of the 12th week of classes during the 16-week fall and spring semesters. The deadline for sessions of other lengths is as follows:

- 10-week session: Friday of the 7th week
- 8-week session: Friday of the 6th week
- 5-week session: Friday of the 3rd week

The equivalent date (75% of the semester) will be used for other sessions of other lengths. The specific last day to withdrawal is published each semester in the Schedule Bulletin.

A student who officially withdraws will be awarded the grade of “W” provided the student’s attendance and academic performance are satisfactory at the time of official withdrawal. Students must file a withdrawal application with the college before they may be considered for withdrawal.

A student may not withdraw from a class for which the instructor has previously issued the student a grade of “F” or “FN” for nonattendance.

B. Administrative Withdrawal: An administrative withdrawal may be initiated when the student fails to meet College attendance requirements. The instructor will assign the appropriate grade on CTC Form 59 for submission to the registrar.
C. **Incomplete Grade:** The College catalog states, “An incomplete grade may be given in those cases where the student has completed the majority of the course work but, because of personal illness, death in the immediate family, or military orders, the student is unable to complete the requirements for a course…” Prior approval from the instructor is required before the grade of “I” for Incomplete is recorded. A student who merely fails to show for the final examination will receive a zero for the final and an “F” for the course.

D. **Cellular Phones and Beepers:** Student cellular phones and beepers will be turned off while the student is in the classroom or laboratory. Students choosing to disregard this policy will be asked to leave and will be recorded as absent. If a cell phone rings or is used during testing, the test will be taken and a grade of zero will be given.

E. **American’s with Disabilities Act (ADA):** Disability Support Services provide services to students who have appropriate documentation of a disability. Students requiring accommodations for class are responsible for contacting the Office of Disability Support Services (DSS) located on the central campus. This service is available to all students, regardless of location. Explore the website at [www.ctcd.edu/disability-support](http://www.ctcd.edu/disability-support) for further information. Reasonable accommodations will be given in accordance with the federal and state laws through the DSS office.

F. **Instructor Discretion:** The instructor reserves the right or final decision in course requirements.

G. **Civility:** The collegiate expectation is that students will conduct themselves with civility at all times in classrooms. Minimal civility includes:

1. Being in class on time
2. Staying in class for the entire class period
3. Leaving early occurs only after informing the teacher, prior to class, of an unavoidable conflict requiring your early departure (if possible, position yourself close to the door for a minimum disruption of the class)
4. Avoiding such uncivil conduct as talking, sleeping, reading papers/magazines, or working on some other class homework assignment
5. Using socially unacceptable language in classroom discussions

Failure to do so can result in disciplinary action up to and including expulsion

VIII. COURSE OUTLINE

A. **Part 1: Histotechnology – A Self Instructional Text, 4e**
1. **Learning Outcomes:** Upon completion of this course, the student will be able to:

   a. Describe the role of the histology laboratory technician as a part of the health care team
   b. Demonstrate knowledge of medical terminology
   c. Identify the various parts of a binocular microscope and the types of microscopy.
   d. Explain the function of the various parts of the microscope, equipment, and reagents used with the microscope.
   e. Perform laboratory activities using safe laboratory behavior and regulatory compliance.
   f. List potential hazards in the clinical laboratory including biological, chemical, fire, electrical, mechanical, physical, and radiation hazards
   g. Identify safety features in the student and clinical laboratory. Explain how safety practices are ensured.
   h. List the importance of quality assurance in the clinical laboratory
   i. Perform metric measurements and conversions
   j. Explain the importance of a QC program including QC samples, range, and charts. Explain the need for standardization in lab practice.
   k. Demonstrate correct and safe use of lab equipment, microscope, and glassware. Demonstrate accurate measurement of liquids. Choose appropriate equipment for the measurement. Prepare dilutions. Define solute, solvent, solution and dilution.
   l. Choose appropriate mode of transmission for laboratory activities.
   m. Classify correct phase of lab testing.
   n. Exhibit a sense of professionalism by demonstrating the following characteristics: attend class regularly and punctually, seeks activities which further learning, admits mistakes and takes steps to correct them, repeats procedures when test result is in doubt, cooperates with instructor, takes pride in laboratory medicine, complies with the stated dress code of the student laboratory, and recognizes the value of continuing education activities
   o. At the conclusion of this lecture series, the student will have achieved the following: Achievement will be met when a minimum score of 75 percent is earned on the written examination covering the material.

2. **Learning Activities:** Methods of Teaching and Learning

   Students will be taught using various learning methods and activities which includes lectures, demonstrations including hands on with
microscope preserved slides, practice sessions, case studies, projects, laboratory exercises, clinical experiences, Internet exercises, quizzes, exams, and recordings. All material covered by these methods maybe covered on Exams.

B. **Fixation, Processing, Equipment, Staining Techniques**

**Learning Outcomes:** Upon completion of this chapter, the student should be able to do the following:

a. Define the purposes of fixations.

b. Identify the factors that affect the quality of fixation and describe the effect of each on tissue.

c. Explain the different methods to process tissue, and explain advantages and disadvantages of each.

d. Know the equipment in the histology laboratory and the proper use of each.

e. Be able to differentiate different types of stains and when to use each.