

**HOUSTON COMMUNITY COLLEGE SYSTEM  
HISTOLOGIC TECHNICIAN PROGRAM (HT)**

**COURSE SYLLABUS**

HLAB 2341

REGISTRY REVIEW

SPRING 2013 \ CRN: 30517

Coleman Campus – Lecture Room 368 \ 6:00 – 9:00 PM \ Wednesday

3 credits (3 lecture) \ 54 hours per semester \ 16 weeks

Course level – advanced \ Web Enhanced Instruction

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Instructor: Larry Langlois

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Note: Utilize email or instant messaging for questions, advanced notice of missing class, on-line tutoring, or scheduling time for face-to-face tutoring.

Office hours: By Appointment

**Course Description**

Review of the major theoretical/practical applications in histotechnology. Includes: fixation, processing, embedding, microtomy, frozen cryotomy, routine and special stains, tissue identification immunohistochemistry, enzyme histochemistry, and electron microscopy. Emphasis on employment skills, review of ethical and legal behavior, and professional development.

**Course Prerequisite**

Department approval

**Course Rationale**

It is essential that histology technicians understand and implement high standards of personal and professional ethics to provide consistent, competent patient care to avoid litigation. The course will focus on an extensive review of major theoretical/practical applications in histotechnology as preparation for the certification examination. The need for ongoing professional development will be encouraged.

**Program Learning Outcomes**

A program that prepares individuals, under the supervision of histology laboratory scientists/technologists, to perform routine procedures and tests in the histopathology laboratory. Instruction includes general laboratory procedures and skills; laboratory mathematics; medical computer applications; interpersonal and communication skills; and the basic principles of fixation, tissue processing, embedding, microtomy, H&E staining, and histochemical staining of tissue sections.

**Student Learning Outcomes**

After completing this course, the student will be able to:

1. Identify the cognitive principles of fixation, tissue processing, operating laboratory equipment, laboratory safety, routine histochemical staining and specialized histopathology procedures.
2. Demonstrate ethical and professional behavior
3. Pass the ASCP national HT certification examination.

## **Student Learning Objectives**

Student will:

1. Demonstrate recognition of cognitive principles of fixation, tissue processing, operating laboratory equipment, laboratory safety, routine histochemical stains, and specialized procedures by scoring 70% or better on all lecture exams.
2. Illustrate ethical and professional behavior by adhering to attendance policies, dress codes, and general rules and regulations.
3. Demonstrate respect and appropriate interpersonal skills with classmates and instructors.
4. Score 400 or better on the ASCP HT examination following graduation.

## **Cognitive**

With the use of course materials and various teaching methods, the student will demonstrate mastery of the following course objectives by scoring 70% or better on all examinations.

### UNIT EXAM 1: Chapter 1 (Fixation)

1. Describe fixative actions on tissue, factors that affect fixation, and formalin-based fixatives.
2. Describe the advantages and disadvantages of simple and compound fixatives. List the ingredients of the compound fixatives.

### UNIT EXAM 2: Chapter 2 (Tissue Processing)

1. Describe the principles of routine paraffin infiltration tissue processing and contrast to atypical procedures. Describe operating procedures and quality control standards for the following equipment: tissue processor and embedding unit. Describe proper embedding techniques. Describe proper microtomy technique and identify sources of microtomy errors and corrective actions. Describe principles for decalcifying and freezing tissue.

### UNIT EXAM 2: Chapter 3 (Instrumentation)

1. Describe the purpose, operational steps, general maintenance, and quality control measures of routine histopathology laboratory equipment.

### UNIT EXAM 2: Chapter 5 (Laboratory Mathematics)

1. Accurately calculate how to prepare routine solutions in the histopathology laboratory to include: percent, dilutions, molar, normal, and adjusting dye concentration using the gravimetric factor.

### UNIT EXAM 3: Chapter 4 (Laboratory Safety)

1. Describe Federal Safety Standards and safety work practice in the 3 major areas of lab safety: biohazardous, mechanical and chemical.

### UNIT EXAM 3: Chapter 6 (Nuclear and Cytoplasmic Staining)

1. Describe the interaction of tissue charge, solution pH, fixation, and dye-composition upon staining tissue sections especially with the H&E procedure.
2. Distinguish between progressive and regressive staining modalities and list 3 common types of differentiation solutions.
3. Describe the affect upon nuclear staining when tissue is overexposed to acidic fixatives or decal solutions. State preventative measures and possible corrective actions.
4. Name 7 hematoxylin solutions and state the purpose of the ingredients such as oxidizer, mordant, and preservative.
5. Evaluate possible sources of error that can occur during routine H&E staining and state standard corrective actions.
6. Name the purpose, procedural steps, evaluate sources of error, and state corrective actions for the following histochemical procedures: Feulgen, MGP, and Giemsa.
7. State the advantages and disadvantages between natural, synthetic, and aqueous mounting media.
8. Compare the affects of mounting media refractive index upon microscopic resolution.
9. Identify coverslipping errors and state corrective actions.

#### UNIT EXAM 4: Chapter 7 (Carbohydrates and Amyloid Stains)

1. Describe 3 primary classifications of carbohydrates and give examples of each.
2. Identify histochemical procedures that stain positively in each carbohydrate group.
3. Define amyloid and name 3 techniques used to demonstrate amyloid in tissue sections.
4. Name the purpose, procedural steps, evaluate sources of error, and stated corrective actions for the following histochemical procedures: PAS with digestion, Alcian blue (pH 1.0, 2.5), Alcian blue with hyaluronidase, Mucicarmine, Colloidal iron, Alkaline Congo red, Crystal violet (amyloid), and Thioflavin T.
5. **Micrograph Pictures:** Identify tissue, demonstrated structures, pathological conditions, histochemical stains, and evaluate causes of poor stain quality.

#### UNIT EXAM 4: Chapter 8 (Connective and Muscle Tissue Stains)

1. List organs/tissues that have reticulum fibers, elastic fibers, basement membranes and mast cells.
2. Name the three muscle types and briefly describe their major functions and distinguishing physiological differences.
3. Name the purpose, procedural steps, evaluate sources of error, and stated corrective actions for the following histochemical procedures: Masson trichrome, Gomori one-step trichrome, VVG, van Gieson stain, Gomori aldehyde fuchsin, Movat pentachrome, Reticulum, PTAH, PAMS, Toluidine blue, Oil red O, Sudan black, osmium tetroxide fixation, and MGP.
4. **Micrograph Pictures:** Identify tissue, demonstrated structures, pathological conditions, histochemical stains, and evaluate causes of poor stain quality.

#### UNIT EXAM 5: Chapter 9 (Nerve Tissue Stains)

1. Name the purpose, procedural steps, evaluate sources of error, and state corrective actions for the following histochemical procedures: Cresyl echt violet (Luna, Vacca), Bodian, Holmes, Sevier-Munger, Bielschowsky-PAS, PTAH, Holtzer, Cajal, Luxol fast blue, Weil, Luxol fast blue-Holmes, and Luxol fast blue-cresyl echt violet.
2. Neuron diagram: name anatomic structures and identify areas of positive staining for nissl substance, nerve fibers and myelin sheaths.
3. **Micrograph Pictures:** Identify tissue, demonstrated structures, pathological conditions, histochemical stains, and evaluate causes of poor stain quality.

#### UNIT EXAM 5: Chapter 10 (Microorganism Stains)

1. Name the purpose, procedural steps, evaluate sources of error, and state corrective actions for the following histochemical procedures: Auramine-rhodamine, Giemsa, Gram stain, PAS, Gridley fungal stain, Grocott methenamine silver (GMS), Mucicarmine, Dieterle, Warthin-Starry, and Steiner and Steiner.
2. **Micrograph Pictures:** Identify tissue, demonstrated structures, pathological conditions, histochemical stains, and evaluate causes of poor stain quality.

#### UNIT EXAM 6: Chapter 11 (Pigments, Minerals, and Cytoplasmic Granules Stains)

1. State examples of pigments, minerals, and cytoplasmic granules in the following groups: Artifacts, exogenous pigments, endogenous hematogenous pigments, endogenous Nonhematogenous pigments, endogenous deposits, minerals, and cytoplasmic granules.
2. Name the purpose, procedural steps, evaluate sources of error, and state corrective actions for the following histochemical procedures: Prussian Blue, Turnbull Blue, Schmorl ferric-ferricyanide reduction test, Fontana-Mason, Grimelius, Churukian-Schenk, GMS, Hall (Fouchet), von Kossa, alizarin red S, and rhodanine.
3. **Micrograph Pictures:** Identify tissue, demonstrated structures, pathological conditions, histochemical stains, and evaluate causes of poor stain quality.

#### UNIT EXAM 6: Chapter 12 (Immunohistochemistry Theory)

1. Discuss the importance of antigen retrieval and monoclonal antibodies upon IHC methods.
2. Describe the following IHC staining methods: direct, indirect 2-tier, indirect 3-tier, PAP, APAAP, ABC, LAB, direct polymer, and indirect polymer.
3. Describe the affects of various fixatives upon preserving tissue antigenicity.
4. List CAP guidelines for IHC procedures and describe their significance.
5. Evaluate sources of error in IHC methods and state corrective actions.
6. Accurately perform laboratory mathematical problems pertaining to IHC.

### **Affective**

During the course of the semester, the students will:

1. attentively attend to verbal and demonstrative instruction
2. follow written and verbal instructions
3. communicate effectively in written and spoken English
4. engage in class/laboratory discussions by asking pertinent questions and responding respectfully to other student's comments
5. demonstrate a willingness to learn and apply new ideas/technical skills to future endeavors
6. demonstrate a positive teamwork ethic by being willing to assist and cooperate with others
7. develop confidence by gradually working independently in a competent manner
8. prioritize and manage work flow within a restricted time frame
9. handle themselves at all times in a professional manner
10. demonstrate honesty and integrity
11. demonstrate commitment to the Histotechnician profession

### **SCANS Competencies and Foundations**

This course does not have any designated SCANS skills assigned.

### **Course Calendar**

<b>Week</b>	<b>Topic of Instruction</b>
1.	<b>Pre-Test Practice Final</b> Fixation (chapter 1)
2.	Fixation (chapter 1), Math (Chapter 5)
3.	<b>Unit Exam 1</b> (fixation)
4.	Instrumentation (chapter 3)
5.	Tissue Processing (Chapter 2)
6.	<b>Unit Exam 2</b> (Processing, Math, Instruments)
7.	Laboratory Safety (Chapter 4)
8.	Staining Theory (Chapter 6)  Spring Break
9.	<b>Unit Exam 3</b> (Safety/Staining Theory) Carbohydrate Stains (Chapter 7)
10.	Connective Tissue Stains (Chapter 8)
11.	<b>Unit Exam 4</b> (Carbohydrates/Connective Tissues)
12.	Microorganisms (Chapter 10)
13.	<b>Unit Exam 5</b> (Nerve and Microorganisms)
14.	Immunohistochemistry (Chapter 12)
15.	<b>Unit Exam 6</b> (Pigments/Immunohistochemistry)

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**Instructional Methods**

Instructional strategies will include classroom lecture reviews and collaborative interaction.

**Instructional Materials**

Instructional materials include the textbook, online lecture PowerPoint presentations, hand-outs, video presentations (if available), and internet access.

The required textbook for this course are:

Board of Registry Study Guide: Practice Questions for the Histotechnology Examinations 2<sup>nd</sup> ed. ASCP  
ISBN: 089189473X

All HLAB books are sold at the Central Campus Bookstore or ordered online. The instructor will provide any supplemental handouts to the students. Numerous reference books are available at the HAM-TMC library and in faculty offices. The Computer Center located on the first floor is equipped with fully operational computers available for student access.

HAM-TMC Library  
1133 John Freeman Blvd.  
Houston, Texas 77030  
713-795-4200

**Circulation Privileges:**

Present your student ID, current registration invoice, and registration form. The registration form can be Downloaded at <http://resource.library.tmc.edu/circ/docs/memberregisform.pdf>

**Remote TMC Educational Access:**

Go to <http://resource.library.tmc.edu/resources/>

**Other HCC libraries:**

HCC Central Campus  
1300 Holman, 3<sup>rd</sup> floor  
Houston, Texas 77004  
713-718-6133

HCC West Loop Campus  
5601 West Loop South  
Houston, Texas 77081  
713-718-7880

**Web Sites of Interest:****Professional Organizations**

American Society of Clinical Pathologist: <http://www.ascp.org/>

Joint Commission on Accreditation of Healthcare Organizations: <http://www.jcaho.org/>

College of American Pathologists: <http://www.cap.org/>

Occupational Safety and Health Administration: <http://osha.gov/>

National Accrediting Agency for Clinical Laboratory Sciences: <http://www.naacls.org/>

Centers for Disease Control and Prevention: <http://www.cdc.gov/>

National Society for Histotechnology\*\*: <http://www.nsh.org/>

Texas Society for Histotechnology\*\*: <http://www.txsh.org/>

Histonet (email between histology technicians): [http://www.histonet.org/site\\_sendpics.asp](http://www.histonet.org/site_sendpics.asp)

The Histotechs' Home Page (various links-jobs, procedures, and theory): <http://www.histology.to/>

\*\*It is recommended that you join one or both of the histology professional organizations.

#### Research related Web Sites:

Centers for Disease Control and Prevention: <http://www.cdc.gov/>

The Histotechs' Home Page: <http://www.histology.to/>

Web MD: <http://www.webmd.com/>

Histology Resource: <http://swehsc.pharmacy.arizona.edu/exppath/micro/histology.html>

Martindale Histology: <http://www.martindalecenter.com/MedicalAnatomy.html>

Web Path: <http://medlib.med.utah.edu/WebPath/webpath.html#MENU>

Search Engines: "Histology" and specific names of diseases.

#### Student Assignments

Signing and returning the "syllabus acknowledgement form" to the instructor during the second lecture of class. Another option is to email the completed form to the instructor on BBV by the second day of lecture.

**NOTE:** Five points will be deducted from your final grade if it is handed in late.

#### Student Assessments

Six unit exams

Three self-quizzes

Practice Final Exam

Late Syllabus Acknowledgement Form

#### Program/Discipline Requirements

HLAB 2341 is a required course to earn the Histologic Technician AAS degree. All students must obtain a grade of 70 or better to receive a passing grade. Any student whose scores 69 or below will fail the class.

A = 100 – 90:

B = 89 – 80:

C = 79 – 70:

F = 69 and below

#### Instructor Grading Criteria

HLAB 2341 is a three-hour lecture. Students will be graded according to the following:

Unit Exams	90%
Practice Quizzes	10%
Practice Cumulative Final	No grade
Late Syllabus Ack. Form	Subtract 5 points from final average

The quizzes pertain to special stains (chapters 7-12), and the questions are taken from the ASCP Board of Registry Study Guide. The quizzes are to be taken online (home or campus). They must be taken before the deadline expires (day prior to the corresponding unit exam-see Course Outline) to avoid receiving a grade of zero.

The unit exams **MUST** be taken on campus. A thorough knowledge of unit objectives will ensure adequate performance on exams. Students must maintain a 70% average on unit exams. Students not maintaining a 70% average will receive a grade of "F" for the course.

Students will be allowed to repeat one unit exam that they scored below 70% on. This repeat exam must be taken within one week of the return date of the original exam and the highest grade allowed will be 70.

Exams include multiple choice, true and false, and matching questions with images taken from all lecture presentations.

No makeup exams are given for unexcused absences. An absence on test day will result in a grade of “0”. If a student must be absent for a test, the student is responsible for informing the instructor in advance and providing the instructor with appropriate documentation to explain the absence.

### **Instructor’s Requirements**

As your instructor, it is my responsibility to:

1. Provide the course syllabus and course outline that describes student expectations, assignments, exam content, and grading policies
2. Facilitate an effective learning environment through class activities, discussions, and lectures
3. Inform students of policies such as attendance, withdrawal, tardiness and making up missed exams
4. Be available to tutoring and discussing other issues outside of the classroom whether during office hours or online communication.

To be successful in this class, it is the student’s responsibility to:

1. Read lecture material before class, define unknown terms and come prepared to ask questions
2. Attend all classes, pay close attention to instructions given by the instructor, follow procedures and participate to the fullest extent
3. Immediately after the lecture, review lecture material covered and answer learning objectives
4. Students should not study the night before the exam. Rather, plan to study a certain amount each day to achieve academic success

**EGLS<sub>3</sub> – Evaluation for Greater Learning Student Survey System** At Houston Community College, professors believe that thoughtful student feedback is necessary to improve teaching and learning. During a designated time, you will be asked to answer a short online survey of research-based questions related to instruction. The anonymous results of the survey will be made available to your professors and division chairs for continual improvement of instruction. Look for the EGLS<sub>3</sub> as part of the Houston Community College Student System online near the end of the term.

### **HCC Policy Statement: Disability Notification**

Any student with a documented disability (e.g. physical, learning, psychiatric, vision, hearing, etc.) who needs to arrange reasonable accommodations must contact the Disability Services Office at their respective college at the beginning of each semester. Faculty are authorized to provide only the accommodations requested by the Disability Support Services Office. If you have any questions, please contact the Disability Counselor at your college or the District Disability Office at 713-718-5165. Contact Lorenzo Walker, Coleman College ADA counselor, at 713-718-7082.

### **HCC Policy Statement: Academic Honesty**

Plagiarism, cheating, and other forms of academic dishonesty are not only violations of the college system and the rules of this class, but are unethical and unprofessional. Students engaging in any form of academic dishonesty are subject to immediate dismissal from the program.

You are expected to be familiar with the College's Policy on Academic Honesty, found in the catalog and student handbook. Students are responsible for conducting themselves with honor and integrity in fulfilling course requirements. Penalties and/or disciplinary proceedings may be initiated by College System officials against a student accused of scholastic dishonesty. “Scholastic dishonesty”: includes, but is not limited to, cheating on a test, plagiarism, and collusion.

**Cheating** on a test includes:

- Copying from another students’ test paper;
- Using materials not authorized by the person giving the test;
- Collaborating with another student during a test without authorization;
- Knowingly using, buying, selling, stealing, transporting, or soliciting in whole or part the contents of a test that has not been administered;
- Bribing another person to obtain a test that is to be administered.

**Plagiarism** means the appropriation of another’s work and the unacknowledged incorporation of that work in one’s own written work offered for credit.

**Collusion** mean the unauthorized collaboration with another person in preparing written work offered for credit. Possible punishments for academic dishonesty may include a grade of 0 or F in the particular

assignment, failure in the course, and/or recommendation for probation or dismissal from the College System. (See the Student Handbook).

#### **HCC Policy Statement: Attendance**

Attendance: Students are expected to attend all classes and labs regularly. Students are responsible for [any and all] materials covered during their absences, and it is the student's responsibility to consult with the professors for make-up assignments. A student may be dropped from a course for excessive absences in excess of 12.5% of the hours of instruction. For example: For a three-credit hour lecture, a student may be dropped after six hours of absence. HCCS professors cannot assign a "W" for any student after the official withdrawal date. "Administrative withdrawals are the discretion of the professor. If you are doing poorly in the class, but you have not contacted your professor to ask for help, and you have not withdrawn by the official withdrawal date, it will result in you receiving a grade of "F" in the course.

#### **HCC Policy Statement: Withdrawals**

Students are responsible for officially withdrawing from classes. The last day to drop with a "W" is 3/25/2013 by 4:30 pm. Students who fail to withdraw from a class before this date will receive a grade of "F". Before you withdraw from your course, please take the time to meet with the instructor to discuss why you feel it is necessary to do so. The instructor may be able to provide you with suggestions that would enable you to complete the course. Your success is very important.

To help you avoid having to drop/withdraw from any class, contact your professor regarding your academic performance. You may also want to contact your counselor to learn about helpful HCC resources (e.g. online tutoring, child care, financial aid, job placement, etc.). HCC has instituted an Early Alert process by which your professor may "alert" you and the counselors that you might fail a class because of excessive absences and/or poor academic performance.

- **Students should check HCC's Academic Calendar by Term for drop/withdrawal dates and deadlines. Student may also check the course syllabus for the withdrawal date.**
- **If a student decides to drop or withdraw from a class upon careful review of other options, the student can drop online prior to the deadline through their HCC Student Service Center: <https://hccsaweb.hccs.edu:8080/psp/csprd/?cmd=login&languageCd=ENG>**

#### **Course Withdrawals-First Time Freshmen Students-Fall 2007 and Later**

Under Section 51.907 of the Texas Education Code "an institution of higher education may not permit a student to drop more than six courses, including any course a transfer student has dropped at another institution of higher education." Beginning in fall 2007, the Texas Legislature passed a law limiting first time entering freshmen to no more than **SIX** total course withdrawals **throughout** their educational career in obtaining a certificate and/or degree.

#### **HCC Policy Statement: Early Report Program**

Early Alert Program: To help students avoid having to drop/withdraw from any class, HCC has instituted an Early Alert process by which your professor *may* "alert" you and HCC counselors that you might fail a class because of excessive absences and/or poor academic performance. It is your responsibility to visit with your professor or a counselor to learn about what, if any, HCC interventions might be available to assist you – online tutoring, child care, financial aid, job placement, etc. – to stay in class and improve your academic performance.

#### **HCC Policy Statement: Repeating a course 3 times**

Repeat Course Fee: The State of Texas encourages students to complete college without having to repeat failed classes. To increase student success, students who repeat the same course more than twice, are required to pay extra tuition. The purpose of this extra tuition fee is to encourage students to pass their courses and to graduate. Effective fall 2006, HCC will charge a higher tuition rate to students registering the third or subsequent time for a course. If you are considering course withdrawal because you are not earning passing grades, confer with your instructor/counselor as early as possible about your study habits, reading and writing homework, test taking skills, attendance, course participation, and opportunities for tutoring or other assistance that might be available.



**THIS SYLLABUS IS SUBJECT TO CHANGE WITHOUT FURTHER NOTICE**