



Course Syllabus

HT 12- Beginning Histotechniques

Department of Biology/Natural Sciences

Spring 2023

Instructor Information

Lecture Instructor: Jennifer MacDonald, HT(ASCP), RT(CSMLS)

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Office Hours: T, W: 3:00-4:30, Th: 3:00 pm-4:00 pm

Others by appointment

A little about me: I completed my education in Canada as a Medical Technologist. I worked for several years in the clinical laboratory in all disciplines, including histotechnology.

Histotechnology is my passion. I love the field and I love teaching about it. I have been at Mt. SAC since 2001.

I prefer to be addressed as Jennifer, but you may use whatever salutation you are comfortable with (Prof, Professor MacDonald, Mrs. MacDonald, Teach, Teacher, Ms. Jennifer, etc.). Please let me know what you prefer to be called, and do not hesitate to correct me if I mispronounce your name.

You can now put your preferred name in the Student Portal and give the correct pronunciation, using NameCoach in Canvas.

I am dedicated to creating an inclusive learning environment that promotes and values diversity: gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture.

Course Identification

Course Reference Number: 40458 (CRN)

Course Name: Beginning Histotechniques

Course Location: 60-2512

Class Times: Lecture T/TH 9:45 am-11:10 am, Lab 11:30 am-2:40 pm

Prerequisite: HT 1 and HT 2

Advisory Prerequisite: MICRO 22

Units: 5

Course Description/Overview

This is a combined lecture and laboratory course emphasizing an understanding of the practical applications and skill building in tissue fixation, processing, embedding, sectioning, and hematoxylin-eosin staining. Also covered is quality control related to routine histological techniques and equipment.

Course Resources

Course Website(s)

- [Canvas](https://mtsac.instructure.com/courses/122482) (https://mtsac.instructure.com/courses/122482)
- [Program website](https://www.mtsac.edu/histotech/) (https://www.mtsac.edu/histotech/)

Required Course Text

Histotechnology: A Self-Instructional Text, 5th Edition, Carson, Freida, Hladik-Cappellano, Christa, ASCP Press. ISBN: 9780891896760

Recommended:

Histotechnology: A Self-Assessment Workbook, 5th Edition, Carson, F., ASCP Press. ISBN: 978-089189-6807

BOC Study Guide for Histotechnology Certification Exams 3rd Edition, Carson, F., & Hood, G., ASCP Press. ISBN: 9780891896111

Download:

Dako Guide to [Special Stains](#)

Leica [Training Resources](#)

Course Fees/Supplies

- Binder for lecture notes and lab handouts
- 19 ScanTron® #815-E (Quizzstrips®) for quizzes
- 4 ScanTron® #882-E for unit exams1
- ScanTron® #884-E for the final exam
- Pencil and/or marker for labeling blocks and slides in lab
- Lab coat (needed for first lab)
- Gloves
- Brushes for microtomy
- Forceps for microtomy
- Timer
- Safety goggles

Course Learning Objectives

1. Identify the purpose, ingredients, function and action of histological fixatives and the criteria for choosing the appropriate fixative.
2. Describe and perform tissue processing, including dehydration, clearing, and infiltration.
3. Demonstrate proper orientation and embedding of tissue specimens in paraffin.
4. Demonstrate routine microtomy of paraffin embedded tissue.
5. Compare and contrast various hematoxylin stains.
6. Identify the purpose, principle, reagents, function, and action of histological stains for routine H&E staining and selected microorganism staining and the criteria for choosing the appropriate control tissue.

7. Demonstrate the ability to perform hematoxylin and eosin staining and microorganism staining of routine paraffin embedded tissue sections.
8. Perform coverslipping procedures correctly and efficiently.
9. Analyze and troubleshoot H&E and microorganism staining procedures.
10. Discuss and demonstrate the ability to perform the maintenance and quality control of equipment used in a histotechnology lab, including tissue processors, embedding centers, microtomes, flotation baths, and ovens.

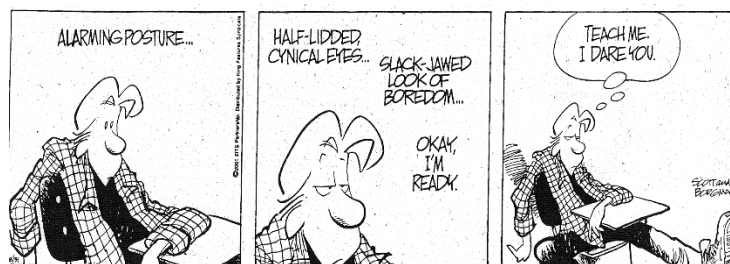
Course Student Learning Outcomes

Student Learning Outcomes ([SLOs](#)) include general skills, knowledge, or applications which students are expected demonstrate after completing a course or program of study. The discipline faculty responsible for a course or program develop these outcomes, as well as measure or assess the students to determine if the outcomes are being met. The goal of assessing SLOs is to help improve our courses, curriculum, student success, and/or instruction.

- Students will be able to dismantle and reassemble the knife holder and specimen holder on a rotary microtome.
- Students will be able to determine acceptable H&E tissue sections

Important Dates

- Class Start Date **21-Feb-2023**
- Drop Deadline for Refund: **03-Mar-2023**
- Drop Deadline without a "W": **05-Mar-2023**
- Drop Deadline with a "W": **28-Apr-2023**
- Lab Final (10:30-1:00 pm) **06-Jun-2023**
- Lecture Final (07:30-10:00 am) **08-Jun-2023**
- Class End Date **11-Jun-2023**
- Instructor does NOT assume responsibility for dropping inactive students.



Grading Scale

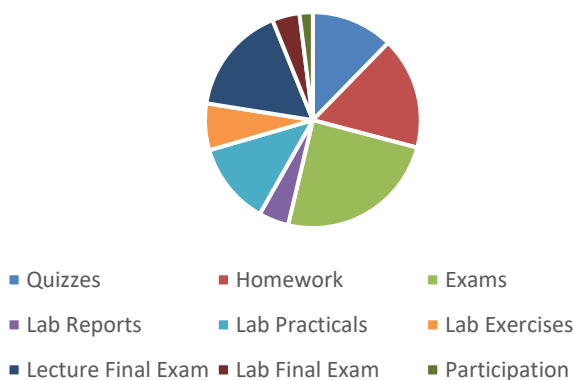
Letter Grade	Percentage	Grade points/credit	Rating
A	90% & above	4.00	Excellent
B	80% – 89%	3.00	Good
C	70% – 79%	2.00	Satisfactory
D	60% - 69%	1.00	Passing, less than satisfactory
F	59% and below	0.00	Failure
I	Incomplete; given only when a student is unable to complete a segment of the course because of circumstances beyond the student's control. Incompletes may only be issued for requirements missed after 85% of a short-term course has been completed. Reenrollment in the same course for purposes of making up the Incomplete is prohibited. The petition is subject to the approval of the professor. If granted, the student must complete all outstanding course requirements stipulated by the professor within one year, or the Incomplete will become a letter grade assigned by the professor.		

Grading Policy

Grades will be based on the following:

Course Component	Points	%
Quizzes	150	12.3%
Homework	205	16.8%
Exams	300	24.6%
Lab Reports	50	4.5%
Lab Practical Exams	100	12.3%
Lab Exercises	85	7.0%
Lecture Final Exam	200	16.4%
Lab Final Exam	75	4.1%
Participation	25	2.0%
Total Points	1190	100

Grade Distribution



A maximum of 15 extra credit points will be available to students that have submitted all assignments.

Lecture Assessment

1. Ten-point quizzes are given upon completion of each section. The highest 15 quiz scores are counted.
2. There are four lecture exams at 100 points each. The three highest exam scores are counted.
 - Lecture exams will have both a multiple-choice component and a written component. Exams are not graded on a curve.
3. The mandatory final exam is multiple-choice and is worth 200 points.
 - Questions for the quizzes and exams originate from lecture, lab, discussion, and assigned reading from the text.
 - Cell phones, Smart watches, pagers, PDAs, or electronic devices are not allowed during exams or quizzes.
4. Staining Journal 1 Worksheets
 - Students will complete worksheets for types of hematoxylin, nuclear and cytoplasmic staining, nucleic acid staining, and extraction of nucleic acids, identifying key reagents and functions.
 - Journal is due 4-April and is worth 56 points.
5. Staining Journal 2 Worksheets
 - Students will complete worksheets for microorganism staining procedures, identifying the purpose, principal, and function/purpose of the reagents.
 - Journal is due 23-May and is worth 74 points.
6. Fixative Worksheets Journal
 - Students will complete worksheets identifying the properties, actions, functions, and reagents (chemicals) of common fixatives; and identify the criteria for choosing a fixative and select appropriate fixatives for demonstration of tissue components.
 - Journal is due 25-April and is worth 75 points

Lab Assessment

1. Comparison of Progressive and Regressive H&E Staining lab report
 - Prepare a laboratory report for both progressive and regressive H&E staining. Compare and contrast the methodology and the results for the two staining procedures. Include the comparison results for all 4 tissue types.
 - Lab report is due 11-April and is worth 25 points.
2. Microorganism Staining lab report
 - Prepare a laboratory report for the microorganism staining procedures. Include procedures for: [Gram and AFB] **OR** [GMS and PAS]
 - Report is due 25-May and is worth 25 points.
3. There will be two laboratory practical exams at 50 points each.
 - For each practical, the student will hand in slides as instructed. Tissue type and stain to be determined by the instructor.
 - The slides will be graded on the quality of embedding, microtomy, staining, coverslipping, and labeling and slide critique. No late slides accepted.
4. There is a lab final cumulative practical scheduled for exam week, at 75 points.



Course Policies

This is an inclusive class where the ideas and opinions of all students will be treated with respect.

Attendance

- Attendance is critical for success. Students not present in **both** lecture and lab of the first week will be dropped from the class.
- Students **may** be dropped from the class when the number of lecture absences exceeds 4, or the number of lab absences exceeds 2.
- Students that are punctual, prepared, and remain for the entire class are more successful.
- It is your responsibility to withdraw from a class whenever you determine that you can no longer attend the class. Failure to drop a class may result in a failing grade.
- College-authorized absences, such as field trips, are excused (with documentation).
- Roll is taken at the beginning of the class. Be sure to notify the instructor if you arrive late.
- Students absent or tardy from class for any reason are responsible for the work missed and materials distributed.
- If you arrive late for an exam, you may begin when you arrive, but you will not receive extra time.
- If you arrive late for a quiz, you may begin if no more than 5 minutes of class have elapsed. You will not be allowed extra time to complete the quiz.
- For safety and liability reasons, only students registered in the class are permitted to attend.

Distance Learning/Canvas

Occasional quizzes and assignments will be administered through Canvas. Assignments may involve watching a video and answering questions. All assignments will be uploaded into Canvas.

Late Assignments

Due dates are published with the assignment. Ten percent (10%) will be deducted for each day that it is late. Assignments will not be accepted past the closing date.

Academic Integrity Rules

Students may discuss homework assignments (if authorized) but are expected to individually work/write/solve all submitted work.

The Biology Department [Policy on Student Cheating](#) will be upheld.

Each student is to read the policy and sign a [statement of understanding](#).

The instructor reserves the right to assign a grade of ZERO POINTS to any assignment or exam or quiz in which the student is caught in violation of the Biology Department Policy on Student Cheating.

For more details on academic integrity, please review the Student Academic Honesty policy in the [college catalog](#).

If you have any questions as to what constitutes a violation of the Cheating Policy, please discuss this with your instructor prior to handing in an assignment or taking an exam or quiz.

Honorlock

This course uses a tool called [Honorlock](#). Honorlock is a remote proctoring service software that works within your web browser to confirm student identity and monitor students taking quizzes/exams.

When taking an Honorlock assessment, follow these guidelines:

- Honorlock is not a live proctoring-service, you do not need to schedule an appointment with Honorlock in advance
- Use Google Chrome and ensure you have the Honorlock Chrome Extension
- Ensure you are in a location where you won't be interrupted
- Turn off all mobile devices, phones, etc.
- Clear your desk of all external materials — books, papers, other computers, or devices
- Remain at your desk or workstation for the duration of the test
- Make sure your webcam is plugged in or enabled before clicking "Take the Exam"
- When you are ready, click "Take your Exam" to start the authentication process
- If you are asked for an access code, it means you are not in Google Chrome or do not have the Honorlock Chrome Extension installed
- Know that you will be recorded during the assessment to ensure you're using only permitted resources
- Honorlock will prevent you from accessing other websites or applications; you will be unable to exit the test until all questions are completed and submitted

For technical difficulties with **Canvas**, please visit the Student Canvas Support portal by clicking on the Help button in the Canvas menu.

For technical difficulties with **Honorlock**, please contact Honorlock directly. Honorlock provides 24/7 support via phone 1-855-828-4004 or e-mail support@honorlock.com

Course Success

- Read the assigned material prior to the lecture.
- Review the material after the lecture.
- Take notes and participate in class discussions and activities.
- Prepare for quizzes and exams in advance. Do not wait until the night before to try to learn the material.
- Turn in all assignments on time.
- Attend my office hours or arrange to see me if you are having difficulties.

It is my intent that our class provides a learning environment in which all students can hear and respect each other. If at any time you are made to feel uncomfortable, please talk to me about it.

Your experience in this class is important to me. The campus offers multiple resources to help you succeed in the Histotechnology program.

Additional Resources Available

The Mountie Fresh Basic Needs Resource

The [Mt. SAC Mountie Fresh Basic Needs Resources](#) is a comprehensive campus-wide effort that serves students experiencing housing instability, food insecurity, and other emergency/crisis situations. This is a campus-wide prevention and early intervention program hosted by the Department of Student Life.

Accessibility Resource Centers

The [Accessibility Resource Centers](#) are located in 9B. ACCESS offers resources and coordinates reasonable accommodations for students with disabilities and/or temporary health conditions. Reasonable accommodations are established through an interactive process between you, ACCESS, and me. If you have already established accommodations with the Accessibility Resource Centers (ACCESS), please communicate your approved accommodations to me at a suitable time so we can discuss your needs in this course. If you have not yet established services through ACCESS, but have a temporary health condition or permanent disability that requires accommodations (conditions include but are not limited to: mental health, attention-related, learning, vision, hearing, physical or health impacts), you are welcome to contact ACCESS at 909-274-4290 to make an appointment..

ACES Program

The [ACES](#) Program assists low-income, first-generation, and/or disabled students so that they can obtain an Associate's degree and transfer to a four-year institution.

ACES services focus on a holistic approach to student development and success. Participants will gain the knowledge and skills necessary to achieve their educational goals and ultimately obtain a bachelor's degree.

Arise Program

[Arise](#) is a community of students from diverse cultures coming together to lift up one another and rise above all sorts of challenges to reach their fullest potential. An Asian American and Pacific Islander student support service with a dedicated team to empower Arise students to achieve academic and personal success.

Aspire Program

[Aspire](#) is a program design to provide essential support and services to increase the academic success, retention, degree completion, and transfer rates of African American and other students enrolled at Mt. SAC. The aim is to develop a sense of community among African American students, other students, faculty, staff, and administrators.

Bridge Program

The [Bridge](#) Program 'offers several learning communities designed to increase students' academic and personal success through the structuring of the learning environment.' Students are enrolled in linked or clustered classes that are taught in a cooperative environment between instructors.

CalWORKS

The [CalWORKs](#) program provides educational/training assistance to student-parents who are receiving TANF. The program assists students in entering the workforce at the highest level possible, leading to increased self-sufficiency and individual growth. Support services include academic counseling, case management, childcare, and work-study.

Dream Program

The [Dream](#) Program provides support services to DREAMers (undocumented students) at Mt. SAC. Its purpose is to increase the personal growth and development of DREAM students through academic, career, and personal counseling; peer mentoring; assistance in applying for the California Dream Act/Financial Aid and scholarship opportunities.

EOPS

[EOPS](#), also known as Extended Opportunity Programs and Services, is a state-funded program that provides educational and financial support services to eligible students who have historically experienced economic and educational disadvantages. Our program goes “over and above” other college services by offering counseling, tutoring, financial assistance, and other support services designed to help students meet their personal and educational goals.

MARCS

[MARCS](#), The **Math Activities Resource Centers & Support** serves students in all Mt. SAC math courses. The MARCS offers free tutoring, study spaces, tutorial software, calculator rentals, textbooks, solution manuals, and handouts.

Mountie Student Hub

Your [Canvas Hub](#) for Mt. SAC Student Resources.

Natural Sciences Computer Laboratory

The [NS computer lab](#), located in 61-3311, has multiple computers available for students use with a variety of computer programs and software. Students can print documents and get tech support.

Pride Center

The [Pride Center](#) is a resource and lounge space for LGBTQ individuals and their allies. The Pride Center provides a safe, supportive, and educational space for STUDENTS ACROSS THE GENDER AND SEXUALITY SPECTRUM. The Pride Center also provides services that promote student success including computer and printing services, tutoring, mentoring, a lending Library, research assistance with an in-house Librarian, and academic support from faculty from various disciplines. Additionally, the Pride Center provides professional, academic, and therapeutic support with small group discussions, and educational opportunities for students, faculty, and the surrounding community to learn more about how best to support our students achieve their educational and professional goals.

REACH Program

[REACH](#) is an education program designed to assist current and former foster youth. REACH provides assistance and support to our Foster Youth students in their transition into college, at Mt. SAC and as they graduate and/or transfer to a university.

STEM Center

[Mt. SAC STEM Center](#), located in 61-3318, provides tutoring, peer-to-peer coaching, counseling, and general support services. Students who visit the center will find a study area stocked with microscopes, laptop computers, and even skeletons for anatomy students. The **center** is available to any math, science, or engineering student. However, it is also used by the **STEM** Teacher Preparation Program, Robotics Team members, and students in two of the campus engineering clubs. Approximately 200 students use the **center** each day.

Tech Ed Resource Center (TERC)

The [TERC](#) offers basic math, reading, writing, research methods, and study skills to all students enrolled in Career Education (CE) Programs and courses. Students are encouraged to drop in and receive assistance with faculty and tutors or study independently or in groups. Histotechnology reference books and resources are available in the TERC.

Veterans Resource Center

The [Veterans Resource Center](#) is located in 9E-1st floor. The center assists Veterans and eligible dependents seeking educational and/or vocational training.

The College cooperates with the Veterans Administration and with the California State Bureau of Vocational Rehabilitation in helping Veterans and dependents apply for Federal and state educational benefits. They assist student Veterans and eligible dependents and to make appropriate referrals regarding educational benefits.

Tutoring Centers

[Tutoring](#) is available to free to all Mt. SAC students. There are multiple tutoring centers on campus

Course Conduct

- Please read the guidelines for [Classroom & Online Conduct and Behavior](#).
- Cell phones, additional electronic devices, Smart watches, digital cameras, etc. are not allowed during testing.
- Honorlock will be used to monitor some quizzes and exams.

Course Lecture Schedule

Week	Date	Unit	Lecture Topic	Assessment
Week 1	21-Feb	Unit 1	Orientation/Syllabus, Overview of Histotechnology	Quizzes and Discussion
	23-Feb	Unit 2	Embedding Centers, embedding	
Week 2	28-Feb	Unit 2	Specimen Orientation, embedding	
	2-Mar	Unit 3	Microtomes and Microtomy	
Week 3	7-Mar	Unit 3	Microtomes and Microtomy	
	9-Mar	Unit 4	Floatation baths, oven, adhesives	
Week 4	14-Mar	Unit 5	Tissue Staining	Exam
	16-Mar		Examination 1 (Units 1-3)	
Week 5	21-Mar	Unit 5	Tissue Staining	Quizzes, Staining Journals, Discussion
	23-Mar	Unit 5	Tissue Staining	
Week 6	28-Mar	Unit 5	Tissue Staining: troubleshooting	
	30-Mar	Unit 5	Coverslipping	Quizzes, Fixative Journals, Discussion
Week 7	4-Apr	Unit 6	Fixation	
	6-Apr	Unit 6	Fixation	
Week 8	11-Apr		Examination 2 (Units 4-5)	Exam
	13-Apr	Unit 6	Fixation	Quizzes and Discussion
Week 9	18-Apr	Unit 7	Tissue Processing: dehydration, clearing	
	20-Apr	Unit 7	Tissue Processing: dehydration, clearing	
Week 10	25-Apr	Unit 7	Tissue Processing: infiltration	
	27-Apr	Unit 7	Tissue Processing: instrumentation	
Week 11	2-May	Unit 7	Processing Protocols	
	4-May		Examination 3 (Units 6-7)	Exam
Week 12	9-May	Unit 7	Troubleshooting Processing Problems	Quiz
	11-May	Unit 8	Microbial Staining in Tissue Specimens	Quizzes, Staining Journals, Discussion
Week 13	16-May	Unit 8	Microbial Staining in Tissue Specimens	
	18-May	Unit 8	Microbial Staining in Tissue Specimens	
Week 14	23-May	Unit 9	Quality Control, CAP Requirements	Quiz
	25-May	Unit 9	Instrumentation/Reagent Quality Control	Quiz
Week 15	30-May		Examination 4 (Units 7-9)	Exam
	1-Jun		Completion/Review	
Week 16	6-Jun		No lecture scheduled	
	8-Jun	07:30	Final Examination (Units 1-9)	Cumulative Exam

Course Lab Schedule

Week	Date	Lab	Lab Exercise	Assessment
Week 1	21-Feb	Lab 1	Review of the microscope	Lab graded
	23-Feb	Lab 2	Introduction to Embedding (practice "tissue")	Labs graded, blocks and slides evaluated for proper embedding
Week 2	28-Feb	Lab 3	Embedding Review (actual tissue)	
	2-Mar	Lab 4	Introduction to Microtomy	
Week 3	7-Mar		Embedding and microtomy of tissue specimens	
	9-Mar		Embedding and microtomy of tissue specimens	
Week 4	14-Mar		Microtomy of tissue specimens	
	16-Mar		Microtomy of tissue specimens	
Week 5	21-Mar	Lab 5	Progressive Hematoxylin & Eosin Staining	Labs graded, Lab report 1
	23-Mar	Lab 6	Regressive Hematoxylin & Eosin Staining	
Week 6	28-Mar		Regressive/Progressive Hematoxylin & Eosin Staining	
	30-Mar		Microtomy and H&E Staining	
Week 7	4-Apr	Lab 7	Comparison of H&E staining	Lab graded
	6-Apr		Microtomy and H&E Staining	
Week 8	11-Apr	Lab 8	Troubleshooting processing and microtomy problems	Lab graded
	13-Apr		Troubleshooting processing and microtomy problems	
Week 9	18-Apr		Microtomy and H&E Staining	
	20-Apr		Microtomy and H&E Staining	
Week 10	25-Apr		Preparation of Slides for Practical 1	Slides graded
	27-Apr	Lab 9	Preparation of biopsy slides	Lab and slides graded
Week 11	2-May		Preparation of biopsy slides	
	4-May	Lab 10	Feulgen Reaction DNA staining	Lab and slides graded, Lab Report 2
Week 12	9-May	Lab 11	Microbial Staining (AFB, Gram)	
	11-May		Microbial Staining (AFB, Gram)	
Week 13	16-May	Lab 12	Microbial Staining (GMS, PASF)	
	18-May		Microbial Staining (GMS, PASF)	
Week 14	23-May		Microtomy and H&E Staining	
	25-May		Microtomy and H&E Staining	
Week 15	30-May		Microtomy and H&E Staining	
	1-Jun		Preparation of Slides for Practical 2	Slides graded
Week 16	6-Jun	10:30	Preparation of Slides for Practical Final	Slides graded
	8-Jun		No lab scheduled	

Laboratory Objectives and Responsibilities

Instructor is present is during lab sessions. The instructor assists the students with their embedding and microtomy skills and with the interpretation of the staining. Slides and evaluations are submitted for grading.

Microscope Review- Lab 1

Instructor Responsibilities

1. Demonstrate the proper use of the microscope
2. Respond to any questions about the demonstration
3. Demonstrate the parts of the microscope to the students
4. Discuss the functions of the microscope
5. Ask individual students to identify specific parts on the microscope and have them discuss the functions
6. Grade lab exercise 1

Student Responsibilities

1. Locate the major components of the microscope and demonstrate their appropriate usage
2. Demonstrate appropriate usage of the microscope objectives including the oil immersion lens.
3. Identify cellular organelles and primary tissues
4. Demonstrate appropriate use and storage of the microscope
5. Demonstrate the appropriate use of immersion oil
6. Demonstrate clean technique when preparing wet mount slides

Introduction to Embedding- Lab 2

Instructor Responsibilities

1. Describe the parts and functions of the embedding centers and tissue processor for the students
2. Demonstrate proper embedding techniques utilizing simulated specimens
3. Assist students with embedding specimens
4. Demonstrate and explain the use of the tissue processor
5. Evaluate student embedding
6. Grade Lab 2

Student Responsibilities

1. Describe the purpose of fixation and several factors that affect the fixation process
2. Describe the steps of tissue processing
3. Describe the types of solutions used in processing and their importance
4. Identify the components of the tissue processor and their intended use
5. Identify the components of the embedding center and their intended use
6. Define or describe lumen, on edge, on end, transverse, longitudinal
7. Demonstrate appropriate processing procedure
8. Evaluate processed tissue for fixation and infiltration
9. Embed simulated tissue samples in the correct spatial orientation

Introduction to Microtomy- Lab 4

Instructor Responsibilities

1. Identify the components of the microtome and explain their functions
2. Establish safety protocols for microtomy
3. Demonstrate proper microtomy techniques
4. Show students previous slides to demonstrate adequate microtomy and indicate microtomy errors
5. Assist students with microtomy of specimens
6. Evaluate student microtomy skills
7. Evaluate the dismantling and reassembly of the knife holder assembly
8. Grade Lab 4

Student Responsibilities

1. Describe the components of a microtome and their functions
2. Describe various types of microtomes and their uses
3. Demonstrate the ability to dismantle and reassemble the knife holder assembly
4. Demonstrate the ability to produce a ribbon with a blank paraffin block
5. Demonstrate the ability to produce acceptable paraffin sections with the blocks embedded by the student

Progressive H&E Staining- Lab 5

Instructor Responsibilities

1. Describe the process of progressive H&E staining
2. Demonstrate proper technique for staining
3. Assist students with H&E staining
4. Demonstrate proper coverslipping techniques
5. Show students H&E stained slides to demonstrate adequate staining
6. Discuss evaluation criteria
7. Assist students with evaluation of H&E stained slides
8. Grade lab 5

Student Responsibilities

1. Describe a basic hematoxylin staining method
2. Describe the solutions used in hematoxylin staining methods
3. Describe common problems encountered during hematoxylin staining
4. Implement accurate embedding and microtomy techniques
5. Perform hematoxylin staining using clean and safe technique
6. Evaluate hematoxylin stained slides for nuclear and cytoplasmic contrast

Regressive H&E Staining- Lab 6

Instructor Responsibilities

1. Describe the process of regressive H&E staining
2. Demonstrate proper technique for staining
3. Assist students with H&E staining
4. Assist with coverslipping techniques
5. Show students H&E stained slides to demonstrate adequate staining
6. Discuss evaluation criteria

Student Responsibilities

1. Describe different types of hematoxylin and the staining properties of each
2. Describe common problems encountered with progressive and regressive hematoxylin staining methods and explain possible solutions to these problems
3. Demonstrate proper embedding and microtomy techniques

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| <ol style="list-style-type: none"> 7. Assist students with evaluation of H&E stained slides 8. Grade lab 6 | <ol style="list-style-type: none"> 4. Perform regressive hematoxylin staining methods 5. Evaluate tissue slides that have been stained with the regressive hematoxylin methods for the quality of nuclear and cytoplasmic staining |
|--|--|

Comparison of Progressive and Regressive H&E Staining- Lab 7

- | Instructor Responsibilities | Student Responsibilities |
|--|--|
| <ol style="list-style-type: none"> 1. Review the instructions for comparison of progressive and regressive H&E staining 2. Discuss evaluation criteria 3. Assist students with evaluation of H&E stained slides 4. Grade lab 7 5. Grade formal lab report | <ol style="list-style-type: none"> 1. Compare and contrast progressive and regressive hematoxylin staining methods 2. Describe common problems encountered with progressive and regressive hematoxylin staining methods and explain possible solutions to these problems 3. Evaluate tissue slides that have been stained with the progressive and the regressive hematoxylin methods for the quality of nuclear and cytoplasmic staining 4. Compare and contrast the staining results for the progressive and regressive H&E methods. 5. Write a formal lab report documenting your findings |

Troubleshooting Processing and Microtomy Problems- Lab 8

- | Instructor Responsibilities | Student Responsibilities |
|---|--|
| <ol style="list-style-type: none"> 1. Review proper processing protocols and troubleshooting 2. Review proper microtomy and troubleshooting 3. Assist students with the lab exercise and questions 4. Grade lab 8 | <ol style="list-style-type: none"> 1. Describe several common problems encountered during routine tissue preparation 2. Relate each problem described with the causative step of tissue preparation 3. Determine the corrective action for tissue that has been poorly processed 4. Evaluate hematoxylin stained slides for nuclear and cytoplasmic contrast 5. Troubleshoot slides with common artifacts and find solutions to these problems 6. Determine the processing problems with the tissue that you have been provided previously |

Preparation of Slides for Practical 1

Instructor Responsibilities

1. Review instructions for preparation of practical slides
2. Grade practical slides and evaluations

Student Responsibilities

1. Prepare practical slides according to instructions

Preparation of Small Biopsy Slides- Lab 9

Instructor Responsibilities

1. Discuss the lab exercise expectations, including levels and serial sections
2. Assist students with embedding and microtomy of small biopsy specimens
3. Grade lab 9

Student Responsibilities

1. Outline the processing of small biopsy specimens
2. Compare and contrast section levels and serial sections
3. Demonstrate the ability to cut section levels
4. Perform H&E staining on both the levels and the serial sections.
5. Evaluate the slides for microtomy quality and nuclear and cytoplasmic staining quality

Feulgen Reaction DNA Staining- Lab 10

Instructor Responsibilities

1. Outline the steps of the Feulgen reaction
2. Assist students with the performance of the Feulgen reaction
3. Grade lab 10, including Feulgen slides and evaluations

Student Responsibilities

1. Describe the importance of fixation on the Feulgen reaction
2. Discuss over hydrolysis of DNA
3. Perform the Feulgen Reaction staining on tissue sections
4. Evaluate Feulgen Reaction staining slides for the presence of DNA

Microbial Staining (AFB, Gram)- Lab 11

Instructor Responsibilities

1. Coordinate cutting of controls for AFB and Gram
2. Outline the steps of the AFB and Gram staining procedures
3. Assist students with performing the AFB and Gram, including determination of adequate differentiation

Student Responsibilities

1. Describe the importance of positive and negative controls when performing the gram and AFB stains on tissue sections
2. Compare and contrast the purpose, procedures and results of Gram and acid-fast stains

4. Grade lab 11

3. Perform acid fast staining on tissue sections
4. Evaluate AFB slides for the presence of acid-fast bacilli.
5. Perform the Gram stain on tissue sections
6. Evaluate GRAM slides for the presence of bacteria and differentiate between gram positive and gram-negative bacteria, noting the morphology

Microbial Staining (GMS, PASF)- Lab 12

Instructor Responsibilities

1. Coordinate cutting of controls for GMS and PASF
2. Outline the steps of the GMS and PASF staining procedures
3. Assist students with performing the AFB and Gram, including determination of adequate differentiation
4. Grade lab 12

Student Responsibilities

1. Describe the importance of positive and negative controls when performing microbial stains on tissue sections
2. Compare and contrast the purpose, procedures and results of PAS and GMS stains
3. Perform PAS staining
4. Evaluate PAS slides for the presence of fungus, *Cryptococcus* and *Pneumocystis*
5. Perform GMS staining on tissue sections
6. Evaluate GMS slides for the presence of fungus, *Cryptococcus* and *Pneumocystis*

Preparation of Slides for Practical 2

Instructor Responsibilities

1. Review instructions for preparation of practical slides
2. Grade practical slides and evaluations

Student Responsibilities

1. Prepare practical slides according to instructions

Preparation of Slides for Final Practical

Instructor Responsibilities

1. Review instructions for preparation of practical slides
2. Grade practical slides and evaluations

Student Responsibilities

Prepare practical slides according to instructions