

Forensic Molecular BIOL 4590.301 Laboratory

Instructor Contact:

Name: Andrea Bernardino, PhD

Pronouns: she |her| hers

Office Location: Department of Biological Sciences, Room A222

Phone Number: (940) 369-8721

Office Hours: Thursday 9:00 a.m. – 12:00 p.m.

Email: Andrea.Bernardino@unt.edu

Communication Expectations: If you have any questions about the course or assignments, please contact me via email and I will respond within 24 hours on weekdays. Please use my phone number as a last resort.

Welcome to UNT

As members of the UNT community, we have all made a commitment to be part of an institution that respects and values the identities of the students and employees with whom we interact. UNT does not tolerate identity-based discrimination, harassment, and retaliation.

Course Description

This is an intensive laboratory course designed to give students experience and expertise in the basic molecular techniques currently utilized by many forensic laboratories performing forensic DNA analysis.

Course Structure

This course takes place 100% Face-to-Face. Other than that, your interaction with me will take place in Canvas.

Course Prerequisites or Other Restrictions

Students must complete BIOL/BIOC 4570 or its equivalent.

Course Objectives:

Upon successful completion of this course, students will have been introduced to methods including a variety of DNA extraction techniques from different sources, DNA quantification, PCR amplification of selected polymorphic nuclear/autosomal loci, and fragment analysis utilizing capillary electrophoresis. Laboratory exercises will be carried out sequentially in a “mock case” format where possible. The laboratory portion will not only give the students hands-on experience with a variety of forensic techniques, but will also train the student in proper record-keeping, laboratory QA/QC, and performing routine laboratory calculations. This is expected to allow students to later train individuals themselves as methods evolve, independently monitor and trouble-shoot theirs or another person’s work, and to effectively explain methods/results to criminal investigators, attorneys, and juries.

Recommended Text

Advanced Topics in Forensic DNA Typing: Methodology 1st Edition

Author: John Butler

Course Technology & Skills:

Minimum Technology Requirements

- Computer
- Reliable internet access
- [Canvas Technical Requirements \(Links to an external site.\)](https://clear.unt.edu/supported-technologies/canvas/requirements) (<https://clear.unt.edu/supported-technologies/canvas/requirements>)

Technical Assistance

Please contact the UNT Student Help Desk for help with Canvas or other technology issues.

UIT Help Desk: [UIT Student Help Desk site \(Links to an external site.\)](http://www.unt.edu/helpdesk/index.htm) (<http://www.unt.edu/helpdesk/index.htm>)

Email: helpdesk@unt.edu

Phone: 940-565-2324

In Person: Sage Hall, Room 130

Walk-In Availability: 8am-9pm

Telephone Availability:

- Sunday: noon-midnight
- Monday-Thursday: 8am-midnight
- Friday: 8am-8pm
- Saturday: 9am-5pm

Laptop Checkout: 8am-7pm

For additional support, visit [Canvas Technical Help \(Links to an external site.\)](https://community.canvaslms.com/docs/DOC-10554-4212710328) (<https://community.canvaslms.com/docs/DOC-10554-4212710328>)

Rules of Engagement

- While the freedom to express yourself is a fundamental human right, any communication that utilizes cruel and derogatory language on the basis of race, color, national origin, religion, sex, sexual orientation, gender identity, gender expression, age, disability, genetic information, veteran status, or any other characteristic protected under applicable federal or state law will not be tolerated.
- Treat your instructor and classmates with respect in any communication online or face-to-face, even when their opinion differs from your own.
- Ask for and use the correct name and pronouns for your instructor and classmates.
- Speak from personal experiences. Use “I” statements to share thoughts and feelings. Try not to speak on behalf of groups or other individual’s experiences.

- Use your critical thinking skills to challenge other people's ideas, instead of attacking individuals.
- Avoid using all caps while communicating digitally. This may be interpreted as "YELLING!"
- Be cautious when using humor or sarcasm in emails or discussion posts as tone can be difficult to interpret digitally.
- Avoid using "text-talk" unless explicitly permitted by your instructor.
- Proofread and fact-check your sources.
- Keep in mind that online posts can be permanent, so think first before you type.

Grading

Grades in this course are based on the following, using a traditional A (100-90%), B (89-80%), C (79-70%), D (69-60%), F (59-0%) scale, Grades will not be rounded up to the next highest grade, there are ample points available for each letter grade.

No assignments will be accepted past the due date.

Students will be evaluated based on:

Ethics assignment: 50 points

Laboratory Results: 100 points

- Serology and Pipetting – 20 points
- DNA Extraction: 20 points
- Quantifiler (Real time PCR) – 20 points
- Globalfiler (STR PCR) – 20 points
- SeqStudio and profile analysis – 20 points

Case File: 175 points

Mock Trial: 75 points

Case file: Each student will maintain a designated case file folder. This folder is representative of a case file found in a real-world Forensic Biology laboratory and will be used to maintain ALL material relating to the testing of mock evidence. All completed documentation pertaining to the mock case (bench notes, laboratory protocols, chain of custody, case file worksheets, etc.) will be maintained in the case file. Students are required to completely document procedures during labs and after labs, as necessary. Periodically during the semester, the students will turn in the case file for technical review and grading. Missing or incorrect information will result in deduction of points each time the lab notebook/case file is found to be incomplete. Students are expected to correct these items before turning in the case file again.

Seating and locker assignments: A seating and locker will be provided in the first week of class. Seating will remain unchanged for the duration of the semester.

In the event of any unexpected server outage or any unusual technical difficulty which prevents students from completing a time sensitive assessment activity, the students should immediately report any problems to the instructor and contact the UNT Student Help

Desk: helpdesk@unt.edu or 940.565.2324 and obtain a ticket number. The instructor and the

UNT Student Help Desk will work with the student to resolve any issues at the earliest possible time.

Laboratory Requirements

A disposable lab coat will be provided, but the students can also their own. A combination lock, and a folder/binder representative of a Forensic Biology case file are required for this course. No disposal lab coats are required to be kept in your locked cabinet for the duration of the semester. Gloves, safety goggles, and lab material will be provided. Please inform the instructor in advance of any allergies or any other health issues that might affect or impair his/her ability to participate fully in this course.

Laboratory Safety

During this laboratory course, the student will be handling and processing biological material. The student will receive instruction in the proper handling and precautions used when examining this type of evidence. Students will also be instructed in the proper handling of any chemical hazards they might encounter during this course. In case of an accident or spill notify the instructor immediately. A first aid kit is located in the laboratory.

Course Policies:

There are no scheduled 'make-up' labs.

Students are expected to attend class meetings regularly and to abide by the attendance policy established for the course. It is important that you communicate with the professor and the instructional team prior to being absent, so you, the professor, and the instructional team can discuss and mitigate the impact of the absence on your attainment of course learning goals. Please inform the professor and instructional team if you are unable to attend class meetings because you are ill, in mindfulness of the health and safety of everyone in our community.

Attendance:

Excused Absences

1. Students are expected to attend all classes regularly and punctually. An absence may be excused for the following reasons:

- a. religious holy day, including travel for that purpose.**
- b. active military service, including travel for that purpose.**
- c. participation in an official university function.**
- d. illness or other extenuating circumstances.**
- e. pregnancy and parenting under Title IX; and**
- f. when the University is officially closed.**

Absence for Religious Holidays: Refer to the UNT Catalog: A student absent due to the observance of a religious holiday may take examinations/complete assignments scheduled for the day(s) missed within a reasonable time after the absence. Class participants must notify the instructor, in writing, of planned absences for religious holidays by the 12th day of the beginning of the class.

Participation in University Sponsored Activities: such as athletics, debate, musical organizations, AFROTC, class field trips, etc., must be authorized by the student's academic dean. Within three days after the absence, students must obtain authorized absence cards from the Dean of Students for presentation to their instructors.

Absence for Military Service: In accordance with section 51.9111 of the Texas Education Code, a student is excused from attending classes or engaging in other required activities, including exams, if he or she is called to active military service of a reasonably brief duration. The maximum time for which the student may be excused has been defined by the Texas Higher Education Coordinating Board as “no more than 25 percent of the total number of class meetings or the contact hour equivalent (not including the final examination period) for the specific course or courses in which the student is currently enrolled at the beginning of the period of active military service.” The student will be allowed a reasonable time after the absence to complete assignments and take exams. Policies affecting students who withdraw from the University for Military Service are given in the Withdrawal section.

Student Absence for Official University Functions: Student absences due to participation in an official university function or activity must be approved in advance by the department chair and the academic dean. Athletic team member absences will be approved by the athletic director or designee. Excused students will be permitted to make up missed work when practicable or will be given special consideration so they are not penalized for their absence. The academic dean/athletic director or designee will notify the Dean of Students office regarding the excused absences and the student will pick up the approved absence card to present to all instructors.

Pregnancy and Parenting under Title IX. A student who is pregnant or who has given birth must be excused from class for as long as the student's doctor certifies the absences is medically necessary. A faculty member, department, or other academic unit that establishes course-wide attendance standards must comply with this policy.

Student Absence Due to Illness or other extenuating circumstances. In case of an illness that will require absence from class for more than one (1) week, the student should notify his or her faculty member.

In the event of an excused absence, it is the responsibility of the student to provide proper documentation of the absence to the Lecture Professor and/or Lab Instructor within 7 days of the absence. After 7 days no consideration will be made for excusing the absence and students will forfeit all points associated with the day of absence including but not limited to exams, quizzes, and other assignments.

Documentation to support an excused absence should be on an official letterhead with clear dates and contact information of the document issuing agency/person.

There are no scheduled 'make-up' labs. If you miss a class because of an excused absence, it is your responsibility to contact your instructor (email or leave a message) who will provide a reasonable time to complete an online assignment.

UNT Policies:

Academic Integrity Policy

Academic Integrity Standards and Consequences. According to UNT Policy 06.003, Student Academic Integrity, academic dishonesty occurs when students engage in behaviors including, but not limited to cheating, fabrication, facilitating academic dishonesty, forgery, plagiarism, and sabotage. A finding of academic dishonesty may result in a range of academic penalties or sanctions ranging from admonition to expulsion from the University.

ADA Policy

UNT makes reasonable academic accommodation for students with disabilities. Students seeking accommodation must first register with the Office of Disability Accommodation (ODA) to verify their eligibility. If a disability is verified, the ODA will provide a student with an accommodation letter to be delivered to faculty to begin a private discussion regarding one's specific course needs. Students may request accommodations at any time, however, ODA notices of accommodation should be provided as early as possible in the semester to avoid any delay in implementation. For additional information see the [ODA website \(https://disability.unt.edu/\)](https://disability.unt.edu/).

Prohibition of Discrimination, Harassment, and Retaliation (Policy 16.004)

The University of North Texas (UNT) prohibits discrimination and harassment because of race, color, national origin, religion, sex, sexual orientation, gender identity, gender expression, age, disability, genetic information, veteran status, or any other characteristic protected under applicable federal or state law in its application and admission processes; educational programs and activities; employment policies, procedures, and processes; and university facilities. The University takes active measures to prevent such conduct and investigates and takes remedial action when appropriate.

Acceptable Student Behavior

Student behavior that interferes with an instructor's ability to conduct a class or other students' opportunity to learn is unacceptable and disruptive and will not be tolerated in any instructional forum at UNT. Students engaging in unacceptable behavior will be directed to leave the classroom and the instructor may refer the student to the Dean of Students to consider whether the student's conduct violated the Code of Student Conduct. The University's expectations for student conduct apply to all instructional forums, including University and electronic classroom, labs, discussion groups, field trips, etc. Visit UNT's [Code of Student Conduct \(https://deanofstudents.unt.edu/conduct\)](https://deanofstudents.unt.edu/conduct) to learn more.

Student Evaluation Administration Dates

Student feedback is important and an essential part of participation in this course. The student evaluation of instruction is a requirement for all organized classes at UNT. The survey will be made available during weeks 13, 14 and 15 of the long semesters to provide students with an opportunity to evaluate how this course is taught. Students will receive an email from "UNT SPOT Course Evaluations via IASystem Notification" (no-reply@iasystem.org) with the survey link. Students should look for the email in their UNT email inbox. Simply click on the link and complete the survey. Once students complete the survey they will receive a confirmation email that the survey has been submitted. For additional information, please visit the [SPOT website \(http://spot.unt.edu/\)](http://spot.unt.edu/) or email spot@unt.edu.

Sexual Assault Prevention

UNT is committed to providing a safe learning environment free of all forms of sexual misconduct, including sexual harassment sexual assault, domestic violence, dating violence, and stalking. Federal laws (Title IX and the Violence Against Women Act) and UNT policies prohibit discrimination on the basis of sex, and therefore prohibit sexual misconduct. If you or someone you know is experiencing sexual harassment, relationship violence, stalking, and/or sexual assault, there are campus resources available to provide support and assistance. UNT's Survivor Advocates can assist a student who has been impacted by violence by filing protective orders, completing crime victim's compensation applications, contacting professors for absences related to an assault, working with housing to facilitate a room change where appropriate, and connecting students to other resources available both on and off campus. The Survivor Advocates can be reached at SurvivorAdvocate@unt.edu or by calling the Dean of Students Office at 940-565- 2648. Additionally, alleged sexual misconduct can be non-confidentially reported to the Title IX Coordinator at oeo@unt.edu or at (940) 565 2759

Biology 4590.301 - Forensic Microscopy Laboratory Fall 2024

Laboratory: Room 310 in the Life Science Building A

Laboratory Schedule and Assignments:

August 20th - Course Introduction, Good Laboratory Practices and Safety, Lab Manual

August 22th – Movie/video, and Ethics Assignment

August 27th - Pipetting Practice

August 29th - Ethics Assignment Discussion

September 3rd - Evidence Screening and Documentation

September 5th - Evidence Screening and Documentation

September 10th - Body Fluids Testing (Blood)

September 12th - Body Fluids Testing (Semen)

September 17th - Body Fluids Testing (Saliva)

September 19th - Case File Peer Review and Submission

September 24th - Solid Extraction

September 26th - Solid Extraction

October 1st - Differential Extraction

October 3rd - Differential Extraction

October 8th - DNA Quantification (qPCR: human-DNA-specific)

October 10th - Normalization

October 15th - PCR Amplification

October 17th - SeqStudio

October 22nd - Genetic Data Analysis/Profiles and Interpretation

October 24th - Genetic Data Analysis/Profiles and Interpretation

October 31st – Comparisons/Statistics

November 5th - Comparisons/Statistics

November 7th - Case File completion

November 12th - Case File Peer Review and Submission

November 14th - Case File Corrections

November 19th – Mock Trial Prep

November 21st - Mock Trial Prep

November 26st – Fall Break

November 28th – Fall Break

December 3rd – Mock Trial

December 5th – Mock Trial