Instructor: Michael Lawson, MSFS, ABC-MB
Thursday: 6:00pm-9:50pm
Email: mlawson@towson.edu
Office Hours: By appointment and virtual
Classrooms: SC 5252 (lectures) and SC 5325 (labs)

Course Description: This course is designed to teach students the theory and methods of forensic DNA analysis including data evaluation, interpretation of single source and mixed DNA profiles, statistics, report writing, and casefile completion. Students will also thoroughly learn about the internal validation process and complete an internal validation.

Hazardous Materials notification: Biological and potentially biohazardous materials will be handled on a regular basis. Universal Precautions must be observed at all times and the use of Personal Protective Equipment is required when handling biological and biohazardous materials. Eating, drinking or applying cosmetics is prohibited in the laboratory when working with these materials. Open toed shoes should not be worn in the laboratory.

Suggested Textbook: Advanced Topics in Forensic DNA Typing: Interpretation by John M. Butler

Materials: Laboratory safety eyewear, a bound notebook, calculator, access to computer for discussions found on Blackboard.

Requirements: There will be quizzes and assignments on the subjects listed in the schedule, to be given and/or assigned during class. Each student will work samples through extraction, quantitation, amplification and genetic analysis. There will be a cumulative final examination. On occasion, laboratory work may need to be conducted independently outside of class due to the length of protocol requirements or the student's ability to keep pace with the class. Some portions of the instruction and laboratory work are conducted as a group effort and each student is expected to stay on task with the group. Completing tasks during the class period is goal one, but please be aware that it may not always be possible. Each student will complete two oral board assessments.

Validation proposal and summary All students will write a validation proposal at the beginning of the semester outlining a potential workflow for the validation that will be performed this semester. The proposal should be thorough and cover studies that will be included, an estimated timeline for the validation, and specific numbers of samples needed for each study. The validation summary will cover the results of the validation performed.

Please note: Even though the data for the validation will be the same for all students, the validation proposal and summary should be completed by each individual student. This assignment cannot be worked on together. Also, if you do not have citations for work, it will be considered plagiarized and you will receive a zero.

Final Exam: The final exam will be cumulative and cover all topics discussed throughout the semester. The format of this exams will be a combination of short answer, fill-in the blanks, short essay, calculations, DNA interpretation, and multiple choice. Short answer and essay questions will be graded based on the students' demonstration of full comprehension of the question and their ability to correctly, eloquently and completely craft an answer. The exam should take approximately 2 to 3 hours.

Note: Please let me know if you have an accommodation for extended examination time.

Requirements:

It is expected that each student:

1. Attend each class and be prepared for the subject matter described on the class schedule. Information taught in each class should be retained in the form of personally transcribed class notes. Every effort will be made to provide handouts and to post lectures online for printing, however this does not take the place of personal notes and topics not found in electronic posts may be found on exams and quizzes.
2. Speak up! I want to hear your voice and your ideas. This is an interactive activity. I expect you to participate ACTIVELY. Avoid the awkward silences and share your thoughts in class!
3. Be ethical and truthful in all interactions with classmates, peers, professors, teaching assistants and/or any other individual participating in the course. In this same vein – if you see someone in class behaving unethically and you say nothing, you are giving them permission to continue. Say something to me or discreetly send me an email so I can deal with it. You will not be the first person to have ever done this and it is a requirement of forensic science work.
4. Cite all references, quotation, summaries and wording used when writing anything turned in for credit. Changing a few words in a sentence or paraphrasing another's work without an in-text and end-page citation will be considered plagiarism.
5. Refrain from using your phone during class unless asked to use it. If you need to use your phone, please leave the room to do so.
6. Will not use profanity or slang in any written submission. You are in graduate school preparing to be working professionals. I consider our class to be a workplace and am very picky about writing.
7. Participate in on-line discussions when posted in the time allowed. These will be posted at the discretion of the professor. The expectation for the discussion board is to create a place for the student to have lively, debate-style discussions with classmates and professors about various topics related to forensic DNA analysis. These may be shut down or opened up at any time. You will be emailed when one opens and are expected to post a comment within a week of opening.
8. Check your Towson email for correspondence and class announcements at least once every few days. Check Blackboard at least once every few days.
9. Be in the laboratory spaces, performing testing and examinations as is needed to obtain full data and maintain pace with the rest of the class. This may mean the student will need to perform laboratory work independently outside of the normal classroom hours.
10. Generate profiles from the samples provided in class. The samples will be simple samples of high quality which have been proven to generate results. The demonstration of basic competency using the methods taught in class is fundamental to the success of the student in this and the advanced section of this course which follows.
11. Have all work evaluated for originality. The professor reserves the right to process any work submitted as original through verification software designed to detect plagiarism and/or copying. If the software determines that a match has been sufficiently identified to published work which has not been properly cited, this may be considered as plagiarism and applicable university policies applied.
12. Complete all work on a timeline as described in this syllabus. Any deviations from this schedule must be approved by the professor. Similarly, the professor reserves the right to deviate from the schedule to accommodate the overall pace of the class or other impediment to forward progress.
13. Complete quizzes and assignments in subject matter described in the syllabus, to be given and/or assigned during class.
14. Complete analysis of samples assigned through at least the first genetic analysis run. Depending on the success of prior analyses, the speed of the class, availability of instruments or reagents, this may be modified. This may mean the class may conduct additional genetic analysis runs or possibly even not reach this stage. However, the goal of the first semester is to achieve data from the samples given and every effort will be made to accomplish this task.
15. Complete a mid-term and a final examination.
16. Complete two 5-page research papers and two oral boards.
17. Locate journal articles independently through mechanisms available as these will not always be provided by the professor.
18. Inform the professor of any need for consultation time outside of class in a timely manner so that an appointment can be made to assist the student quickly.
19. Behave ethically and professionally both inside and outside of class. Each student in the class is presumably considering employment in the field of forensic science. Therefore, each student should conduct themselves in an ethical fashion as their background, character and conduct will be evaluated prior to and during their employment. The forensic community is very small. Please be

aware that future employers can and will ask the professor for evaluations of your work in class as well as review your social media content.

20. Ask questions and engage in class discussions. Forensic scientists must testify in courts of law on a regular basis. Skill in public speaking and clear presentation of ideas and opinions is imperative and will be practiced in this class at every possible opportunity. You will be graded on your participation.

Administrative policies:

Attendance: Attendance in all classes is mandatory as ***the class progresses together*** at a particular pace in order to achieve the goals and requirements of the class. If you need to miss a class, notification to the instructor is required ***prior*** to the absence in order to make up the work. Making up the work will be the student's responsibility and you ***will need*** to make up missed laboratory procedures on your own. Failure to do so will prevent the rest of the class from using certain instrumentation and moving forward. Please note: the class will not be penalized for any one student's inability to keep up due to absence or the need to repeat experiments. We will move forward.

Grading:
Quizzes - 200 pts
Interpretation Assignment Sets - 200 pts
Statistics Assignment – 100pts
Report Writing Assignment – 100pts
Validation Proposal and Summary – 200 pts
Mock Casefile – 150 pts
Final Exam - 250 pts
Total - 1200 pts

Graduate Grading Scale

A	94-100
A-	90-93
B+	87-89
B	80-86
C	70-79
F	< 70

Integrity is your foundation as a forensic scientist. Cheating will not be tolerated. An act of cheating will result in the immediate failure of the work, notation of such action in the respective student's official college record and imposition of additional sanctions as deemed appropriate according to the rules of Towson University and the Department of Forensic Chemistry and Forensic Science.

Plagiarism is also unacceptable, if you use a source you must cite it in the body of your text and on a reference page using a proper format (to include pages on which the quote was taken from).

USING AI: You may not use AI in your writing submissions without fully citing all of the content and noting that you used the technology. Work will be checked against anti-AI software and any hits without accompanying citation and acknowledgement will be considered plagiarism. I expect you to have original content with your own ideas when writing. The use of AI is not necessarily prohibited, however, it must be used with caution and full transparency. Any University policies on this matter should be reviewed and will be enforced.

Academic Integrity: The faculty of the Department of Forensic Chemistry and Forensic Science take a strong stand against Academic Dishonesty of all forms. Academic Dishonesty will not be tolerated in any class. It includes but is not limited to, any form of cheating or unapproved help on an exam or academic exercise, copying someone else's written work without citation, presenting fabricated information as legitimate, any unauthorized collaboration among students, or assisting someone to cheat in any way.

All students have the ethical responsibility for doing their own work. A student who is uncertain about whether or not something constitutes academic dishonesty in a particular class has the obligation to see their instructor for clarification. Consistent with university policy, the minimum penalty for academic dishonesty in any form is determined by the individual faculty member in each class, and may consist of a "reduced grade (including "F" or zero) for the assignment; a reduced grade (including "F") for the entire course, or other options as stipulated in Appendix F of the Undergraduate Catalog.

Students who are charged with academic dishonesty must remain enrolled in the course and cannot withdraw. Instructors who make the determination that academic dishonesty has occurred will notify the student in writing of the finding, the penalty, and the process for appeal. The same written notice will be forwarded to the office of Judicial Affairs on campus, the Dean of the College of Liberal Arts, and to the Chair's Office in the department. Academic Dishonesty undermines the legitimate efforts of students and

involves serious repercussions. The faculty of the department urge all our students to act with integrity with regard to work submitted.

Special Considerations:

You work in a group/team environment. You must work together due to the limitations of reagents and instrumentation. Students will work at varying paces, as individuals are not identical, and each has their own strengths and weaknesses. Please be aware and considerate to what your own are as well as what someone else's might be. Be willing to help one another. Don't leave someone behind; rather, see what you may be able to do to assist. This is a learning environment for everyone. Questions are encouraged, constructive comments are helpful and a positive attitude is desired and greatly appreciated!

I want you to excel. I will work hard to make sure you have every opportunity to succeed in this class. My goal is for every student to excel and get the best possible outcome! Please do not hesitate to ask questions or for me to repeat something!!! In return, I expect you to work hard, read the assigned pages, study and put in the hours needed both in and out of class.

Please understand that this course will follow a schedule but WILL deviate from it from time to time. I gauge the abilities and aptitudes of the class members in order set the pace of the class. Some cohorts move swiftly while others require additional time. Do not mistake this for disorganization. We will also have to adjust on the fly when pandemic issues flare or when the university determines. I want you to get the most amount of instruction possible during our time together and if I feel we can skip a topic, change a scheduled event or spend less time on something it is because I have determined that your group is capable of doing so or it is by necessity. As always, it is up to you to speak up if you need additional assistance with something or want to review a topic!

1/29	Syllabus review, Class requirements, Class expectations Discuss group validation study to be performed. **Lecture:** DNA Data Evaluation **Lab work:** None	**Assignments**: Review the SWGDAM validation guidelines Review FBI QAS Section 8 Review PowerPlex Fusion Developmental validation
2/5	**Lecture:** DNA Data Evaluation – Examples/Review **Lab work:** DNA Data Evaluation Practice Set #1	**Assignments:** Attempt to complete Data Evaluation Practice Set #1
2/12	**Lecture:** Internal Validations **Lab work:** DNA Data Evaluation Practice Set #2	**Assignments:** Complete DNA Data Evaluation Assignment Set#1 Begin working on validation proposal
2/19	**Lecture:** DNA interpretation – Single source/DNA Mixtures **Lab work:** Extract samples for validation ***DNA Data Evaluation Assignment Set#1 due***	**Assignment:** Continue working on validation proposal Study for DNA Data Evaluation Quiz
2/26	***Quiz – DNA Data Evaluation*** **Lecture:** DNA interpretation – Examples/Review **Lab work:** DNA Interpretation Practice Set #1 – Single source/DNA mixtures	**Homework:** Complete validation proposal
3/5	**Lecture:** DNA interpretation – Examples/Review **Lab work:** Quant samples for validation DNA Interpretation Practice Set #2 - Single source/DNA mixtures ***Validation proposal due***	**Homework:** Complete DNA Interpretation Assignment Set#1 – Single source/DNA mixtures
3/12	**Lecture:** DNA interpretation – Complex DNA mixtures **Lab work:** DNA Interpretation Practice Set #3 – Complex DNA mixtures ***DNA Interpretation Assignment Set#1 due***	**Homework:** Complete DNA Interpretation Assignment Set#2 – Single source/DNA mixtures
3/19	**SPRING BREAK – No class**	**Homework:** Complete DNA Interpretation Assignment Set#2 – Single source/DNA mixtures
3/26	***Quiz – DNA interpretation*** **Lecture:** DNA interpretation – Examples/Review **Lab work:** Amp and run validation studies DNA Interpretation Practice Set #4 – Complex DNA mixtures ***DNA Interpretation Assignment Set#2 due***	**Homework**: Complete DNA Interpretation Assignment Set#3 – Complex DNA mixtures
4/2	**Lecture:** Statistics **Lab work:** Amp and run validation studies Statistics Practice Set#1 ***DNA Interpretation Assignment Set#3 due***	**Homework:** Attempt Statistics Practice Set#1
4/9	***Quiz – Complex DNA interpretation*** **Lecture:** Report writing/Casefile completion **Lab work:** Amp and run validation studies	**Homework:** Complete Statistics Assignment Set#1
4/16	***Quiz - Statistics*** **Lecture:** Technical reviews/CODIS **Lab work:** Amp and run validation studies ***Statistics Assignment Set#1 due***	**Homework:** Complete Report#1
4/23	**Lecture:** Expert testimony **Lab work:** Amp and run validation studies ***Report#1 due***	**Assignments:** Complete mock casefile Study for Tech review quiz
4/30	**Work on validation summary and mock casefile – No class!**	**Assignments:** Complete mock casefile Study for Tech review quiz
5/7	***Quiz – Technical review/CODIS*** ***Completed Mock Casefile due*** ***Validation Summary due***	**Assignments:** Study for Final Exam
5/14	***Comprehensive Final Exam***	