FRSC 880–003: Research Project in Forensic Science (3)
Instructor: Cynthia Zeller, Ph.D.
Lab: SC3323 Meeting Times: Thursdays 1-1:50 pm
Office: SC 5301B
Office Hours: TR 10-11 or by appointment
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Email is preferred method of communication

Catalog Description:

Laboratory investigation of a problem of forensic significance under the direction of a faculty member. The project can be carried out at a cooperating forensic laboratory under the joint supervision of a faculty member and a cooperating forensic scientist. Substantial written report and oral presentation required. May be repeated for a maximum of 6 units. Prerequisite: Approval of Research Faculty Mentor.

Objective:

Students will plan, perform and report on original research related to forensic science. The student will gain experience in forensic biology and analytical techniques, scientific method and report writing. Students will develop a research plan, implement the plan and report their findings in a journal article or review article format. Students are encouraged to publish their results with the faculty mentor in a peer-reviewed journal.

Assessment (100 points):

25%	Implementation of Research Plan/Generation of Data (25 points)
25%	Final Report (25 points)
25%	Final Presentation (25 points)
5%	Poster (5 points)
10%	Notebook Keeping (10 points)
5%	Annotated Bibliography (5 points)
5%	Attendance at research meetings (5 points)

Grade assignment will be based percent of achieved points above on the standard graduate student system: A = 92.9 points or above, A- = 90 – 92.9 points, B+ = 87.0-89.9 points, B=83-86.9 points, C=70-82.9 points, F= less than 70 points.

IMPORTANT: Students who fail to appear for the first two class sessions, or the first session of evening classes, may forfeit their space in class. Instructors have the right to release these spaces to other students wishing to add the class to their schedules. Students who lose their spaces must officially withdraw from the course through Enrollment Services to avoid earning an FX grade for non-attendance.

Important Dates:
February 6: Change of Schedule period ends for full term (14 weeks).
Last day to drop a course with no grade posted to academic record and last day to add.

April 6: Last day to withdraw from full term courses with a grade of W. Last day to change to pass/fail option or audit options.

No class:
March 15-22

Semester Class Tentative Schedule by Week*:

Week	Topic
1/29/26	Bring lab notebook, introduction to course, expectations, safety, determine budget and supplies needed, locate existing supplies and reagents, Sign up for[0] Laboratory Safety, Hazard Communication/ Right to Know class, and Bloodborne Pathogens classes (if not yet completed)
2/5/26	**Course contract[1]; Submit GSA and IRB forms (if needed and not yet completed)** **Hazard Communication/Right to Know (Online)** Obtain samples and reagents from stocks and order supplies needed Prepare solutions / begin experiments (if possible)
2/12/26	Order additional reagents / supplies / primers (as needed) Experiments / Data collection / Troubleshooting
2/19/26	Experiments / Data collection / Troubleshooting
2/26/26	Experiments / Data collection / Troubleshooting
2/26/26	Experiments / Data collection / Troubleshooting
3/5/26	Experiments / Data collection / Troubleshooting **Annotated Bibliography[2]** and **Poster outline[3]** (see below) **due 3/12/26**
3/12/26	Experiments / Data collection / Troubleshooting- **DRAFT Introduction to paper with References due 3/29/26**
3/29/26	Data analysis / Preparing Tables & Graphs & Figures **DRAFT Experimental/Methods due 4/2/26**
4/2/26	Data collection and analysis / Preparing Tables & Graphs & Figures Statistics (if applicable) **DRAFT Results and Data due 4/9/26**
4/9/26	Data collection and analysis / Preparing Tables & Graphs & Figures **DRAFT Conclusions due 4/16/26**
4/16/26	Data collection and analysis / Preparing Tables & Graphs & Figures **DRAFT Research PowerPoint Poster Presentation due 4/23/26**
4/23/26	Follow-up experiments and re-runs **DRAFT full paper and oral presentation due 4/30/26** for editorial feedback[7]
4/30/26	Practice Presentation **Final draft written research paper**[4] (paper in journal format) **and poster by 5/7/26**
5/7/26	**Final Project Presentation of Research[5]**
5/14/26	**Date for final presentation TBA**

Instructor may email additional topics or schedule changes. Additional meetings can be arranged via email for an appointment and students may attend office hours for extra help. All work should be uploaded to Blackboard. Notebooks and final presentation should be uploaded to One Note and Blackboard.

SWG DAM Guidelines
https://docs.wixstatic.com/ugd/4344b0_813b241e8944497e99b9c45b163b76bd.pdf

Safety:
Students are required to read and electronically sign a laboratory safety agreement provided electronically. Students are expected to follow all safety rules and regulations, both written and verbal, at all times in the laboratory. Students who fail to comply with safety regulations will be asked to leave the laboratory, and will be subject to the penalties below.

Dress Code: Long pants / ankle length skirts and closed-toed shoes that cover the top of the foot are required. Any student wearing shorts, shorter than ankle length skirts or open-toe shoes will be denied permission to work in the laboratory .

Food: Food and drinks (including water) are not permitted in the laboratory at any time. Any food or drink found in the laboratory will be immediately discarded. Please keep food and drink in the hallway.

Goggles: Approved safety goggles/glasses must be **worn at all times** in the laboratory as indicated by your instructor. If a student forgets to bring their goggles to lab, they may borrow a pair from the instructor.

Mandatory Training Classes:
[0]Hazard Communication/Right-to-Know/Personal Protective Equipment Training
For questions, please contact EHS at (410) 704-2949 or at safety@towson.edu. Advance registration is required. Sign up: https://www.towson.edu/public-safety/environmental-health-safety/programs/chemical-safety-hazard/communication.html

[0]Bloodborne Pathogens
Students working with human or animal blood must attend Bloodborne Pathogens Training
Sign up at: https://www.towson.edu/public-safety/environmental-health-safety/programs/biological-radiation-safety/pathogens.html

Institutional Review Board
Note that students proposing to work with human body fluids / donors must receive project approval from the Towson University Institutional Review Board before you start collecting samples/data.
https://www.towson.edu/academics/research/sponsored/comply/irb/

Graduate Student Association Grants
Note: It is also expected that you apply for GSA funding to help defray some of your project supply expenses. The maximum request is $600. There is no deadline for your application but you should apply early so you can obtain funds to make orders and not delay your project progress.
http://www.towson.edu/academics/graduate/gsa/awards.html

[1]Course Contract
Each student will contract an individualized project proposal and plan for the course (developed in FRSC 797). The contract should include the project research proposal and the number of hours and times for lab work (i.e. 10 hours per week, e.g., M 2-5 pm; W 12-5 pm, R 12-2 pm), scheduled weekly meeting time, project timeline and goals, the length and content of the final paper including target journal (e.g., *JFS*) and model paper.

Each contract must adhere to the following guidelines

1. **Lab work hours**: At least10 hours per week for a total of 150 hours. You are expected to be present in the laboratory during this time or course credit will not be given. Missed class time must be made up independently. A separate page must be kept listing research completed next to hours worked for submission with the notebook. Data analysis is considered research but should be performed at home. Please carefully plan lab time and experiments to run.
2. **One scheduled meeting once a week** scheduled with Dr. Zeller for individualized project feedback and troubleshooting.
3. **Project proposal to include (from FRSC 797):** 1) an abstract, 2) background, 3) description of the problem you are intending to study, 4) the methods that you will use to answer your research question, 5) materials/budget that you will need to complete your project, 6) data tables (projected), 7) methods of analysis / statistics, 8) a preliminary bibliography, 9) Timeline and dissemination You will not be permitted to start research unless I approve of your proposal. The proposal also will be reviewed by an external reviewer.
4. **Final research paper model** from a peer-reviewed journal, such as the *Journal of Forensic Sciences*. Include a copy of the article from the journal you will be following. Plan to follow the author guidelines for that journal precisely.
5. **Timeline with milestones.** Give a date when key aspects of the projects will be accomplished. For example, dates must be stated as stipulated above to include other milestones relevant to project.

[2]Annotated Bibliography

Each student must submit an Annotated Bibliography of relevant sources for their project (may be same as from the research proposal). This bibliography is expected to have a minimum of 10 peer-reviewed resources that encompass relevant topics to the student's research. It is expected that these will be resources included in your final paper and as such should be added to the reference section of your paper and poster. For each source, provide a paragraph summarizing the paper and describing the relevance to your research. If your project focus has changed from your FRSC 797 defense, update your annotated bibliography with relevant sources.

[3]Poster Outline

This should include the title, full Introduction along with any references cited listed in the Reference section, and the titles of the tables and/or figures (since you should already know the type of data you going to generate and how you will display it). The poster presentation should present the research performed by the student throughout FRSC 880. The poster should be prepared on one PowerPoint slide and be visually appealing. This should include the title, full Introduction, Materials and Methods, Data in tables/graphs/charts, Results, Conclusions along with any references cited listed in the Reference section. Emphasize the use of figures/diagrams/tables/charts etc. and do not over rely on words.

Using PowerPoint to Your Advantage, C&EN, 2008, http://cen.acs.org/articles/86/i13/Using-PowerPoint-Advantage.html

[4]Research Paper

Your research paper should be written for submission to the journal for which your work is suitable, e.g., *Journal of Forensic Sciences*. Please access the journal's website and follow the instructions for the manuscript format. Follow a model article/model paper from the journal (refer to the one you submitted with the course contract). At this point, do not set up an author account. Along with the scientific content, you will be graded on following the correct format. Note that references often have a unique format for each journal and you are expected to follow the format of your model paper. **The final paper with revisions from the defense is due 5/16/26 by 5 pm.**

[5]Formal Presentation of Research
This presentation is the culmination of the research performed by the student throughout the semester and will be scheduled May 11-14, 2026; an additional option may be made available earlier in the semester. This 15-minute presentation should be an organized, formal PowerPoint presentation of the research performed throughout the semester. This is meant to be a presentation to a knowledgeable audience comparable in caliber to a presentation at a scientific or professional meeting. This presentation will be evaluated by at least 3 individuals, one of which must be from outside the program. The rubric will be provided on Blackboard.

In Case of Emergency:
In the event of a University-wide emergency course requirements deadlines and grading schemes are subject to changes that may include alternative delivery methods, alternative methods of interaction with the instructor, class materials, and/or classmates, a revised attendance policy, and a revised semester calendar and/or grading scheme. In the case of a University-wide emergency, please refer to the following about changes in this course:

1. Web Site: www.towson.edu
2. Telephone Number(s)
3. TU Text Alert System: This is a service designed to alert the Towson University community via text messages to cell phones when situations arise on campus that affect the ability of the campus to function normally. Sign up: https://www.towson.edu/publicsafety/notification/

Cell Phones and Pagers:
Cell phone usage in the class meeting/lab is strictly prohibited. If you need to take a call in case of emergency (e.g., sick child, parent care, etc.), exit the classroom to the adjacent hallway.

Students with Disabilities:
This course is in compliance with Towson University policies for students with disabilities. Students with disabilities are encouraged to register with Disability Support Services (DSS) https://www.towson.edu/accessibility-disability-services/ 7720 York Road, Suite 232, 410-704-2638 (Voice) or 410-704-4423 (TDD). Students who expect that they have a disability but do not have documentation are encouraged to contact DSS for advice on how to obtain appropriate evaluation. A memo from DSS authorizing your accommodation is needed before any accommodation can be made.

Course repeat policy: "Students may not repeat a course more than once without prior permission of the Academic Standards Committee."

Student Academic Integrity Policy (TU 03.01.00):
The Towson University Code of Conduct prohibits "all forms of dishonesty including cheating (and) plagiarism." Plagiarism is copying the words of another or the use of ideas of another without proper citation. Plagiarism can result from copying an entire document to inappropriate paraphrasing. In order to avoid plagiarism, the use of words or ideas of another without proper citation, it is imperative to consciously think about what you have read and what you are trying to write. In scientific literature, we do not normally use direct quotes from the primary resources that we are using to gather our information. It is important to paraphrase the ideas and conclusions obtained from the primary literature and rewrite them in your own words. One method to assure that you will not plagiarize is to take notes on each of your primary resources and then write the paper based on your notes, not from the references. Your paper will summarize the works of others, not directly quote from them. If you have any questions about plagiarism and correct citations see https://libraries.towson.edu/get-help/citing-sources for further examples and methods to correct the problems. The consequences of cheating or plagiarism will be a failing grade of 0 points for the assignment and may result in failure of the course. Plagiarism, fabrication,

falsification, cheating, complicity in academic dishonesty, abuse of academic materials, multiple submissions of the same work or part thereof for multiple courses/assignments, will not be tolerated and will result in a failing grade of 0 for that assignment and may result in failure of the course.

Academic Dishonesty Policy: **All types of Academic Dishonesty are deplorable and will be dealt with accordingly. Please read and familiarize yourself with the University Academic Integrity Policy, found at the link below. Plagiarism, obtaining aid from or giving aid to another student as well as obtaining aid through electronic devices or notes constitutes cheating and will result in failure of the course. https://www.towson.edu/about/administration/policies/03-01-00-student-academic-integrity-policy.html**

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Your instructor retains all copyrights to all original materials distributed in this course (including, but not limited to, hard copies and electronic copies of lecture slides, notes, practice problems, worksheets, assignments, lab materials, and exams). Reposting, selling, or otherwise distributing these materials in any fashion at any time is prohibited.

Lab Fees
A lab fee of $100 is charged for this course. This fee pays for DNA extraction, PCR, and genetic analyzer reagents, solvents, gases, columns, pipette tips, PCR tubes, micro centrifuge tubes, GC vials, SPME filters, fingerprinting brushes, lifts, powders, chemicals
https://www.towson.edu/provostbudgetoffice/documents/class_lab_fee_list_posted_november_2017.pdf