Course Change Request

New Course Proposal

Date Submitted: 10/01/19 1:26 pm

Viewing: **FRSC 305 : Forensic Chemistry Laboratory**

Last edit: 10/07/19 9:11 pm

Changes proposed by: afalsett

Are you completing this form on someone else's behalf?

In Workflow

1. **FRSC Representative**
2. **SC Curriculum Committee**
3. SC Associate Dean
4. Assoc Provost-Undergraduate
5. Registrar-Courses
6. Banner

Approval Path

1. 10/01/19 2:00 pm Emily Rancourt (erancour): Approved for FRSC Representative
2. 10/01/19 2:04 pm Gregory Craft (gcraft): Rollback to FRSC Representative for SC Curriculum Committee
3. 10/07/19 9:13 pm Emily Rancourt (erancour): Approved for FRSC Representative

Yes

Requestor:

Name	Extension	Email
Brian Eckenrode	3-5071	beckenro@gmu.edu

Effective Term: Fall 2020

Subject Code: FRSC - Forensic Science

Course Number: 305

Bundled Courses:

Is this course replacing another course? No

Equivalent Courses:

Catalog Title: Forensic Chemistry Laboratory

Banner Title: Forensic Chemistry Laboratory

Will section titles vary by semester? No

Credits: 1

Schedule Type: Laboratory

Hours of Lab or Studio per week: 3

Repeatable: May be only taken once for credit, limited to 3 attempts (N3)

Max Allowable Credits: 3

Default Grade Mode: Undergraduate Regular

Recommended Prerequisite(s):

Recommended Corequisite(s):

Required Prerequisite(s) / Corequisite(s) (Updates only):

Minimum grade of C or higher in FRSC 200, 201, 304*, CHEM 211, 212, 213, and 214.

*FRSC 304 may be taken concurrently

Registrar's Office Use Only - Required Prerequisite(s)/Corequisite(s):

And/Or	(	Course/Test Code	Min Grade/Score	Academic Level	)	Concurrency?

Registration Restrictions (Updates only):

Registrar's Office Use Only - Registration Restrictions:

Field(s) of Study:

Class(es):

Level(s):

Degree(s):

School(s):

Catalog Description:

This course will correlate laboratory exercises to the theoretical and investigative principles of forensic chemistry. The laboratory experiments and activities have been designed to expand on and support the material taught in the lecture section of the Forensic Chemistry course (FRSC 304). Students will have hands-on experience with basic forensic chemistry procedures and commonly used laboratory instrumentation. This laboratory course will enable students to explore the use of presumptive testing, controlled substance analysis, blood alcohol measurements, explosive residue analysis, ignitable liquid residue analysis, and chemical enhancement techniques used at crime scenes and in investigative procedures. The students will have hands-on experience using TLC, GC, GC/MS, and FTIR instrumentation and they will learn the fundamentals of how they operate and how to interpret the data generated by these systems.

Justification:

The laboratory experiments and activities have been designed to expand on and support the material taught in the lecture section of the Forensic Chemistry course (FRSC 304).

Does this course cover material which crosses into another department? No

Learning Outcomes:

Development of basic chemistry laboratory skills relevant to forensics, including proficient use of alternate light sources, micropipettes, microscopes, capillary gas chromatography (GC), mass spectrometry (MS), and Fourier Transform Infrared (FTIR) spectroscopy.

Ability to understand and perform forensic chemical analysis procedures, draw logical conclusions based on data obtained, and present information in a scientific format.

An understanding of evidence handling, laboratory health and safety, and quality control measures.

Attach Syllabus

FRSC 305 Syllabus - Laboratory .pdf

Additional Attachments

Staffing:

Brian A. Eckenrode

Relationship to Existing Programs:

This will be a required forensic science core course for forensic science BS majors.

Relationship to Existing Courses:

Compliments forensic chemistry lecture FRSC 304.

Additional Comments:

Reviewer Comments

Gregory Craft (gcraft) (10/01/19 2:04 pm): Rollback: Per Email

Key: 16526

GEORGE MASON UNIVERSITY

FORENSIC CHEMISTRY LABORATORY - FRSC 305

Fall 2021

Discovery Hall

Instructor: Professor Brian Eckenrode, PhD
Office: Colgan Hall Room 434 (office hours TBD and by appointment)
Email: beckenro@gmu.edu (preferred method of contact)
Phone #: 703-928-3241 (mobile)
Text: Basic Principles of Forensic Chemistry - Laboratory Manual

Course Description: This course will attempt to correlate laboratory exercises to the theoretical and investigative principles of forensic chemistry. The laboratory experiments and activities have been designed to expand on and support the material taught in the lecture section of the Forensic Chemistry course (FRSC 304). Students will have hands-on experience with basic forensic chemistry procedures and commonly used laboratory instrumentation. This laboratory course will enable students to explore the use of presumptive testing, controlled substance analysis, blood alcohol measurements, explosive residue analysis, ignitable liquid residue analysis, and chemical enhancement techniques used at crime scenes and in investigative procedures. The students will have hands-on experience using TLC, GC, GC/MS, and FTIR instrumentation and they will learn the fundamentals of how they operate and how to interpret the data generated by these systems. The schedule is subject to change based on progress. The instructor will communicate with students throughout the semester via email; every student must check their GMU email frequently.

REQUIRED PRE-REQS: Minimum of C or higher in FRSC 200, 201, 304*, CHEM 211, 212, 213, and 214. FRSC 304 may be taken concurrently.

Course Objectives:

- Development of basic chemistry laboratory skills relevant to forensics, including proficient use of alternate light sources, micropipettes, microscopes, capillary gas chromatography (GC), mass spectrometry (MS), and Fourier Transform Infrared (FTIR) spectroscopy.
- Ability to understand and perform forensic chemical analysis procedures, draw logical conclusions based on data obtained, and present information in a scientific format.
- An understanding of evidence handling, laboratory health and safety, and quality control measures.

Missed Classes: Attendance is MANDATORY at all class meetings. A missed lab could affect all future labs, as some of the exercises are cumulative. Excused absences will only be considered when/if proper documentation of the absence is provided. Make-up labs for excused absences will be at the discretion and availability of the instructor.

Required Materials:

- Laboratory coats, safety goggles, a calculator, and closed-toed shoes are required.
- Three-ring binder with at least 12 index dividers
- For the data interpretation section, it is recommended that you bring a laptop computer but it is not required.

Grading & Exam: Pre-lab quizzes, your case file and report, and final exam, will determine your grade in this course. There will be no make-up quizzes or exams unless the student has an excused absence with proper documentation.

- **Pre-lab quizzes:** Each week, a pre-lab quiz will be posted in Blackboard that will assess whether you have read and understood key points in the laboratory procedure concerning setup, handling of chemicals and waste, safety, etc. These quizzes are due before the lab period begins.

- **Laboratory Notebook:** All students must purchase a 3-ring binder. Materials pertaining to each lab session should be stored together including lab protocols. Specific instructions and requirements will be posted on Blackboard.

- **Case/Lab file:** Your case/lab file should be a complete narrative of your work on the case/lab. It should contain all chain of custody documents, documentation of all communications, your case/lab notes, all analysis worksheets, data, and statistical analyses. Specific instructions and requirements will be posted on Blackboard.

- **Lab report:** You will be responsible for generating a final laboratory report for the results of your case. After completing the analysis of the case, you will collate your results and form conclusions based upon the profiles generated from the evidence. Specific instructions and requirements will be posted on Blackboard.

- **Final exam:** A calculator will be allowed during the final. You may use a programmable calculator provided the student can show that there are no programs on the calculator. Students arriving more than 10 minutes late to an exam will not be permitted in the classroom and will not be allowed to take the exam. Once the exam has started, you are not permitted to leave the room until you have turned in your exam so please be sure to use the restroom before class.

Course Evaluation:

- Pre-Lab Quizzes (10%)
- Laboratory Notebook (15%)
- Case File (25%)
- Lab report (25%)
- Final Exam (25%)

100	A+	87-89	B+	77-79	C+	60-69	D
95-99	A	83-86	B	73-76	C	0-59	F
90-94	A-	80-82	B-	70-72	C-		

<u>Late/Makeup Policy:</u>

Makeup participation points will not be given. If you are experiencing extreme circumstances that will prevent you from turning in an assignment on time, you must notify the Professor as soon as possible. For a late submission to be approved without penalty, documentation must be provided to the Professor (i.e. doctor's note). For late submissions that have not been approved, ten percent will be deducted each day an assignment is turned in late. Assignments received more than 5 days after the due date will not be accepted.

UNIVERSITY RESOURCES

GMU Honor Code:
Standards of academic integrity as set forth by the University are strictly observed and rigorously enforced in this class. The complete Honor Code is as follows: *To promote a stronger sense of mutual responsibility, respect, trust, and fairness among all members of the George Mason University community and with the desire for greater academic and personal achievement, we, the student members of the university community, have set forth this honor code:* **Student members of the George Mason University community pledge not to cheat, plagiarize, steal, or lie in matters related to academic work.**

GMU Email: http://masonlive.gmu.edu
Each student is responsible for activating their GMU email account and checking their account on a regular basis for University and class announcements.

GMU Police Policy: 703-993-2810
If you are currently employed with a law enforcement agency as a sworn officer and would like to carry a firearm on campus and into class, you must contact GMU Police Department as a courtesy.

GMU Students with Disabilities: http://ods.gmu.edu
If you are a student with a disability and you need academic accommodations, please see me and contact the Office of Disability Resources at 703-993-2474. All academic accommodations must be arranged through that office; your instructor is not obligated to make accommodations without documentation from ODS.

Writing Center: http://writingcenter.gmu.edu
For general questions and comments please contact wcenter@gmu.edu or call:
703-993-1200 (Robinson Hall A114, Fairfax Campus)
703-993-1824 (Enterprise Hall 076, Fairfax Campus)
703-993-4491 (Arlington Campus)
703-993-8451 (Prince William Campus)
All appointments are made through the online scheduling system so please do not email or call to schedule appointments. If you would like to cancel an appointment you may do so via the online scheduler, simply select your appointment and click the "Cancel appointment" box at the bottom of the reservation form and then "save.

University Libraries: "Ask a Librarian" http://library.gmu.edu/mudge/IM/IMRef.html
Margaret Lam, Physical Sciences Liaison Librarian; http://infoguides.gmu.edu/forensics
Fenwick Library, A244, 703-993-2212, mlam3@gmu.edu

Counseling and Psychology Services (CAPS): (703) 993-2380; http://caps.gmu.edu

University Policies:
The University Catalog, http://catalog.gmu.edu, is the central resource for university policies affecting student, faculty, and staff conduct in university academic affairs. Other policies are available at http://universitypolicy.gmu.edu/. All members of the university community are responsible for knowing and following established policies.

GEORGE MASON UNIVERSITY-FORENSIC CHEMISTRY ANALYSIS LABORATORY – FRSC 305

Week/Lab#	Topic	Due
1	Introduction and Lab Safety	
2	Instrumentation Use & Statistical Calculations: TLC and GC	Pre-Lab Quiz 1
3	Instrumentation Use & Statistical Calculations: MS and FTIR	Pre-Lab Quiz 2
4	Understanding Instrumentation Data Systems and Libraries Interpreting MS and IR spectra	Pre-Lab Quiz 3
5	Extraction Techniques and TLC of Acid/Base Indicators	Pre-Lab Quiz 4
6	Controlled Substance Analysis Part I Microscopy and microcrystalline tests – *non-destructive*	Pre-Lab Quiz 5
7	Controlled Substance Analysis Part II GC/MS	Pre-Lab Quiz 6
8	Controlled Substance Analysis Part III Unknown component or mixture	Pre-Lab Quiz 7
9	Solid Phase MicroExtraction (SPME) Methods of Analysis	Pre-Lab Quiz 8
10	Drug Facilitated Sexual Assault Analysis	Pre-Lab Quiz 9
11	Blood Alcohol	Pre-Lab Quiz 10
12	Explosive Residue Analysis	Pre-Lab Quiz 11
13	Ignitable Liquid Residues by GC/MS	
14	Final Case Preparation and Review	
15	**FINAL EXAM**	Case file and report Please bring your lab notebooks as well for grading.

Note: The schedule is subject to change, please listen for announcements during class. Additional reading assignments may be added throughout the semester.