



## Course Syllabus

### FS 430 Forensic Chemistry

Fall 2020

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Office: Eiben 207C

Office Hours: Monday 9:30 – 11:30 AM, Thursday 1:30 – 3:30 PM

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**Department Name:** Natural Sciences and Mathematics

**College/School/Division Name:** Chaminade University of Honolulu

**Course Credits:** 3

**Class Meeting:** Tuesday & Thursday 11:30 AM – 12:50 PM,

## University Course Catalog Description

This course introduces the application of analytical chemistry to forensic science. A focus will be placed on obtaining analytical results through sample preparation, instrumental analysis, data quality, and data interpretation in various forensic chemistry applications.

## Program Learning Outcomes

Upon completion of the program, students will have demonstrated the use of:

1. The scientific method as it is used in a forensic context;
2. Quality assurance programs, to include the legal system, ethics, and professional practice in the forensic sciences;
3. Knowledge from disciplines that comprise the forensic sciences; and
4. Techniques used for the recognition, documentation, and analysis of physical evidence.

## Course Learning Outcomes and Linkage to Program Learning Outcomes

Students who successfully complete this course will be able to:

Course Learning Outcomes	PLO 1	PLO 2	PLO 3	PLO 4
1. Demonstrate the knowledge and skills required of a forensic chemist	X	X	X	X
2. Discuss the theory and limitations of forensic chemistry analyses			X	X
3. Communicate verbally about a wide range of forensic chemistry evidence		X	X	
4. Explain the importance of quality assurance, quality control, ethics, accreditation and certification		X		
5. Critically evaluate the content and design of research in the field of forensic chemistry	X	X	X	X

## Course Prerequisites

Concurrent registration in FS 430L required. Prerequisites: CH 324/L, CH 334/L

## Recommended Learning Materials

Bell S (2013) Forensic Chemistry. 2nd Edition. Pearson: Boston, MA.

## Course Website:

Course materials will be made available through Canvas. Students are required to use the canvas course for this class.

## Technical Assistance for Canvas Users:

Search for help on specific topics at [help.instructure.com](http://help.instructure.com), [Chat live with Canvas Support 24/7/365](#). Watch this [video to get you started](#) with online guides and tutorials. Contact the Chaminade IT Helpdesk for technical issues: [helpdesk@chaminade.edu](mailto:helpdesk@chaminade.edu), or call (808) 735-4855

## Assessment

### *Oral Examinations*

Each student will complete 3 exams. The first two oral examinations will be administered during class periods. The third exam will be during finals week. Oral examinations will not be cumulative.

### *Presentation*

Each student will be required to give one oral presentation on a peer-reviewed study that demonstrates novel forensic chemistry research. Articles will be pre-approved by the instructor.

### *Critical Review*

Each student will provide a written review on the article chosen for their oral presentation including a summary, point-by-point analysis, and perspective.

### *Class Participation Marks (CPM)*

Oral quizzes will be given on previous lecture content at the beginning of each class. Students may request a written version of this task only for valid absences.

<b>Activity</b>	<b>Weight</b>
Oral Examination 1	15%
Oral Examination 2	15%
Oral Examination 3	20%
Presentation	20%
Critical Review	20%
Class Participation	10%

## Grading Scale

The grading scale is:

100% - 90%	A
89% - 80%	B
79% - 70%	C
69% - 60%	D
≤ 59%	F

## Course Schedule

Week	Date	Subject	Notes
1	Jan 14	Introduction	
	Jan 16	Metrology	
2	Jan 21	GUEST LECTURE	
	Jan 23	Chemical Microscopy	
3	Jan 28	Spectroscopy and Spectrometry	
	Jan 30	Sample Preparation	
4	Feb 4	Gas Chromatography	
	Feb 6	Liquid Chromatography	
5	Feb 11	Capillary Electrophoresis	
	Feb 13	Exam Review	
6	<del>Feb 18</del>	No Class	
	<del>Feb 20</del>	No Class	
7	Feb 25	<b>Oral Examination 1</b>	
	Feb 27	Combustion & Arson	
8	Mar 3	Explosives	Online Lecture
	Mar 5	Firearms Chemical Evidence	Online Lecture
9	Mar 10	Drugs as Physical Evidence	
	Mar 12	Drug Analysis	
10	Mar 17	Toxicology	
	Mar 19	Exam Review	
11	Mar 24	<i>Spring Recess – No Class</i>	
	Mar 26	<i>Spring Recess – No Class</i>	
12	Mar 31	<b>Oral Examination 2</b>	
	Apr 2	Soil Analysis	
13	Apr 7	Microtraces	
	Apr 9	Decomposition Chemistry	
14	Apr 14	Statistics	
	Apr 16	DNA Analysis	
15	Apr 21	<b>Oral Presentations</b>	Critical Review Due
	Apr 23	<b>Oral Presentations</b>	
16	Apr 28	Exam Review	
	Apr 30	Exam	

## Alignment of Natural Sciences Courses with Marianist and Hawaiian values of the University

The Natural Sciences Division provides an *integral, quality education*: sophisticated integrative course content taught by experienced, dedicated, and well-educated instructors.

- We *educate in family spirit* – every classroom is an *Ohana* and you can expect to be respected yet challenged in an environment that is supportive, inclusively by instructors who take the time to personally get to know and care for you.
- We *educate for service, justice and peace*, since many of the most pressing global issues (climate change, health inequity, poverty, justice) are those which science and technology investigate, establish ethical parameters for, and offer solutions to.
- We *educate for adaptation and change*. In science and technology, the only constant is change. Data, techniques, technologies, questions, interpretations and ethical landscapes are constantly evolving, and we teach students to thrive on this dynamic uncertainty.

The study of science and technology can be formative, exploring human creativity and potential in the development of technologies and scientific solutions, the opportunity to engage in the stewardship of the natural world, and the opportunity to promote social justice. We provide opportunities to engage with the problems that face Hawai‘i and

the Pacific region through the Natural Sciences curriculum, in particular, those centered around severe challenges in health, poverty, environmental resilience, and erosion of traditional culture. The Marianist Educational Values relate to Native Hawaiian ideas of *mana*, *na'auao*, *ohana*, *aloha* and *aina*. We intend for our Natural Sciences programs to be culturally-sustaining, rooted in our Hawaiian place, and centered on core values of *Maiau*, be neat, prepared, careful in all we do; *Makawalu*, demonstrate foresight and planning; *`Ai*, sustain mind and body; *Pa`a Na`au*, learn deeply.

### **Late Work and Absence Policy**

Each unexcused absence will result in:

- 0 points for attendance
- 0 points for participation

Unexcused absences for two consecutive weeks may result in being withdrawn from the course by the instructor.

A planned, excused absence must be communicated to the instructor at least one week prior to the class. Necessary arrangements will be made to meet student learning objectives.

An unplanned, excused absence must be communicated to the instructor within one week of the missed class. Necessary arrangements will be made to meet student learning objectives.

Determination of valid excuses for missed classes is at the sole discretion of the instructor.

Student athletes should communicate absences to the instructor with the earliest possible notice. Students are not allowed to miss class for practices.

### **Academic Integrity**

You are required to sign and follow the Forensic Sciences Code of Conduct. Violation of the Code of Conduct will result in a hearing in front of the Forensic Sciences Ethics Committee. In addition, students are expected to read and abide by the Student Rules of Conduct, which are available in your copy of the Student Handbook. A link to the Student Rules of Conduct will be made available on the home page of the canvas course. Cheating in the form of plagiarism, collusion, deception and will not be tolerated.

### **Grades of "Incomplete"**

Students and instructors may negotiate an incomplete grade when there are specific justifying circumstances. An Incomplete Contract (available from the Divisional Secretary and the Portal) must be completed. When submitting a grade the "I" will be accompanied by the alternative grade that will automatically be assigned after 90 days. These include IB, IC, ID, and IF. If only an "I" is submitted, the default grade is F. The completion of the work, evaluation, and reporting of the final grade is due within 90 days after the end of the semester or term. This limit may not be extended.

### **Writing Policy**

All written products should follow instructions as noted in the assignments tab on Canvas.

### **Instructor and Student Communication**

Questions for this course can be emailed to the instructor, sent in Canvas, or addressed during office hours as noted on the first page of this syllabus. Online, in-person and phone conferences can be arranged. It is the responsibility of the student to check their email frequently. Report email-related problems to the Helpdesk at 808-735-4855 or helpdesk@chaminade.edu.

The instructors may post images or products from this class to social media. A photo release form will be provided if you have not already signed one in another course. Please inform the instructor in the first week of the class if you do not want to appear in these communications.

### **Cell phones, tablets, and laptops**

*Music Devices and Cellular Phones:* Unless specifically permitted by your instructor, use of music devices and cell phones is prohibited during all Natural Science and Mathematics classes, as it is discourteous and may lead to suspicion of academic misconduct. Students unable to comply will be asked to leave class. Out of consideration for your classmates, please set your cell phone to silent mode during class. Students are encouraged to bring

laptops or tablets to class as the instructor will assign online activities and readings that will require the use of a laptop or tablet. Laptops and tablets should not be misused, such as checking distracting websites. Use your best judgment and respect your classmates and instructor.

### **Disability Access**

If you need individual accommodations to meet course outcomes because of a documented disability, please speak with me to discuss your needs as soon as possible so that we can ensure your full participation in class and fair assessment of your work. Students with special needs who meet criteria for the Americans with Disabilities Act (ADA) provisions must provide written documentation of the need for accommodations from the Counseling Center by the end of week three of the class, in order for instructors to plan accordingly. If a student would like to determine if they meet the criteria for accommodations, they should contact the Counseling Center at (808) 735-4845 for further information ([counselingcenter@chaminade.edu](mailto:counselingcenter@chaminade.edu)).

### **Title IX Compliance**

Chaminade University of Honolulu recognizes the inherent dignity of all individuals and promotes respect for all people. Sexual misconduct, physical and/or psychological abuse will NOT be tolerated at CUH. If you have been the victim of sexual misconduct, physical and/or psychological abuse, we encourage you to report this matter promptly. As a faculty member, I am interested in promoting a safe and healthy environment, and should I learn of any sexual misconduct, physical and/or psychological abuse, I must report the matter to the Title IX Coordinator. If you or someone you know has been harassed or assaulted, you can find the appropriate resources by visiting Campus Ministry, the Dean of Students Office, the Counseling Center, or the Office for Compliance and Personnel Services.

### **Attendance Policy**

The following attendance policy is from the 2018-2019 Academic Catalog (p. 57-58): Students are expected to attend regularly all courses for which they are registered. Student should notify their instructors when illness or other extenuating circumstances prevents them from attending class and arrange to complete missed assignments. Notification may be done by emailing the instructor's Chaminade email address, calling the instructor's campus extension, or by leaving a message with the instructor's division office. It is the instructor's prerogative to modify deadlines of course requirements accordingly. Any student who stops attending a course without officially withdrawing may receive a failing grade. Unexcused absences equivalent to more than a week of classes may lead to a grade reduction for the course. Any unexcused absence of two consecutive weeks or more may result in being withdrawn from the course by the instructor, although the instructor is not required to withdraw students in that scenario. Repeated absences put students at risk of failing grades. Students with disabilities who have obtained accommodations from the Chaminade University of Honolulu ADA Coordinator may be considered for an exception when the accommodation does not materially alter the attainment of the learning outcomes. Federal regulations require continued attendance for continuing payment of financial aid. When illness or personal reasons necessitate continued absence, the student should communicate first with the instructor to review the options. Anyone who stops attending a course without official withdrawal may receive a failing grade or be withdrawn by the instructor at the instructor's discretion.

### **Academic Conduct Policy**

See the current [Undergraduate Academic Catalog](#) and the [Student Handbook](#) available from Student Affairs.

*The instructor may modify elements of this syllabus according to the operational needs of the class.*