CHS 3530C – Forensic Analysis of Controlled Substances

University of Central Florida – Fall 2022

Section	Times (P mode: in person only)	Room	Course Number
0001 Lecture	Tuesday/Thursday 9:00 – 10:15 AM	CB1 - 307	86414
0012 Lab	Tuesday 10:30 AM – 1:20 PM	CHEM 202	86415
0013 Lab	Tuesday 10:30 AM – 1:20 PM	CHEM 104	89149

Instructors:

Dr. Tamra Legron-Rodriguez (she/her). Office PSB 231, 407-823-1167

Graduate Teaching Assistants**:** Jillian Morgan & Kaitlyn Bonilla

Zoom times for office hours will be posted in Webcourses. Office hours will not be held during finals week.

Names and Pronouns: If you go by a different name than what is indicated on the class roster/Webcourses, please let me know. If I accidentally use an incorrect pronoun when addressing you, please let me know in whatever manner you feel comfortable.

Online Communication and Webcourses:

Our official mode of communication is through the Webcourses inbox. Allow 48 hours (not including weekends) for responses. Information you will need for this course is available through the Webcourses course management system. You are responsible for checking this site **daily** (available at my.ucf.edu then the "Online Course Tools" tab). Webcourses will also contain your course grades.

Enrollment Verification: Faculty are required to document students' academic activity at the beginning of each course. In order to document that you began this course, complete the *"Laboratory Safety and PPE Quiz (enrollment verification)"* on Webcourses before lab on Aug 23 at 10:30 AM. Failure to do so may result in a delay in financial aid disbursement. **This quiz must be complete with a 90% or higher before entering the lab on Aug 23**. There will be an experiment the first week. Come dressed for lab.

Prerequisites: A "C" grade or better in all of the following: CHM 2211, CHM 22211L, CHM 3120, CHM 3120L, CHS 3505C. It is assumed students have a functional understanding of the topics covered in all of the prerequisite and lower-level chemistry courses. This class will build on what you have learned previously: Atomic structure, electron configurations, structure and bonding theories, resonance, hybridization, writing balanced chemical reactions, gas laws, thermodynamics, intermolecular forces, kinetics, equilibrium, acid-base chemistry, functional groups, stereochemistry, and using IR and MS to identify compounds.

Learning Goals:

Students in this course will demonstrate a functional understanding of the following topics:

- Drug scheduling and legislation, acid-base chemistry, partitioning and separation methods, instrumental techniques, color tests, microcrystalline tests, pharmacology, and toxicology.
- Preparing conference abstracts, posters, and presentations that relate to laboratory experiments.
- Work collaboratively in learning teams to develop conceptual understandings and solve problems related to course topics.
- Complete lists of learning objectives are on the module page for each test.

Required Materials:

- Textbooks - free through the UCF Library. See syllabus tab in Webcourses for links to books:
  - *ACS Guide to Scholarly Communication* ISBN: 9780841235830; Write Like a Chemist ISBN 978-0195305074
- Non-programmable calculator, new composition notebook, long lab coat, safety glasses/goggles, USB drive, tri-fold poster board (minimum size: 36" x 48")
- Office 365, OneNote and Microsoft Excel - free for all UCF students https://tpc.ucf.edu/product/microsoft-office-2016/
- Accessibility information for Microsoft https://www.microsoft.com/en-us/accessibility?rtc=1
- Computer that has a Webcam with microphone for online quiz, test, and exam proctoring.
- Pink/raspberry Scantron with the UCF Pegasus logo are required for every quiz, test, and the final exam. Scantrons are available for free through SGA. https://studentgovernment.ucf.edu/services/academic/scantrons/

Course Description: CHS 3530C is a four-credit, one-semester course that studies the chemical properties and analysis drugs. This course may be structured differently than many other courses you've taken. To design this course, I have heavily referenced a large body of research on effective teaching in higher education, some specifically in chemistry education. This is a team-based learning (TBL) course. TBL is a structured form of small-group learning. It is designed around units of instruction that are taught in a three-step cycle: Preparation before class, in-class readiness assessment, and application-focused exercises. Each class meeting is structured with the assumption that you have completed the independent learning before class. In class, there will be an individual readiness assurance quiz (i-RAQ) and a team readiness assurance quiz (t-RAQ). After the readiness assurance process, we will spend class time working through problems together based on the assigned videos and readings. An in-depth explanation of instructional strategies can be found on the Course Overview page in Webcourses.

Ethics: Upholding ethical standards is critical for students and practitioners in the field of forensics. As reflected in the UCF creed, integrity and scholarship are core values that should guide our conduct and decisions as members of the UCF community. Plagiarism and cheating contradict these values, and so are very serious academic offenses. Penalties can include a failing grade in an assignment or in the course, or suspension or expulsion from the university. Students are expected to familiarize themselves with and follow the University's Rules of Conduct (see https://scai.sdes.ucf.edu/student-rules-of-conduct/).

Academic Integrity

Students should familiarize themselves with UCF's Rules of Conduct at <https://scai.sdes.ucf.edu/student-rules-of-conduct/>. According to Section 1, "Academic Misconduct," students are prohibited from engaging in

1. Unauthorized assistance: Using or attempting to use unauthorized materials, information or study aids in any academic exercise unless specifically authorized by the instructor of record. The unauthorized possession of examination or course-related material also constitutes cheating.
2. Communication to another through written, visual, electronic, or oral means: The presentation of material which has not been studied or learned, but rather was obtained through someone else's efforts and used as part of an examination, course assignment, or project.
3. Commercial Use of Academic Material: Selling of course material to another person, student, and/or uploading course material to a third-party vendor without authorization or without the express written permission of the university and the instructor. Course materials include but are not limited to class notes, Instructor's PowerPoints, course syllabi, tests, quizzes, labs, instruction sheets, homework, study guides, handouts, etc.
4. Falsifying or misrepresenting the student's own academic work.
5. Plagiarism: Using or appropriating another's work without any indication of the source, thereby attempting to convey the impression that such work is the student's own.
6. Multiple Submissions: Submitting the same academic work for credit more than once without the express written permission of the instructor.
7. Helping another violate academic behavior standards.
8. Soliciting assistance with academic coursework and/or degree requirements.

Responses to Academic Dishonesty, Plagiarism, or Cheating

Students should also familiarize themselves with the procedures for academic misconduct in UCF's student handbook, *The Golden Rule* <https://goldenrule.sdes.ucf.edu/>. UCF faculty members have a responsibility for students' education and the value of a UCF degree, and so seek to prevent unethical behavior and respond to academic misconduct when necessary. Penalties for violating rules, policies, and instructions within this course can range from a zero on the exercise to an "F" letter grade in the course. In addition, an Academic Misconduct report could be filed with the Office of Student Conduct, which could lead to disciplinary warning, disciplinary probation, or deferred suspension or separation from the University through suspension, dismissal, or expulsion with the addition of a "Z" designation on one's transcript. Being found in violation of academic conduct standards could result in a student having to disclose such behavior on a graduate school application, being removed from a leadership position within a student organization, the recipient of scholarships, participation in University activities such as study abroad, internships, etc. Let's avoid all of this by demonstrating values of honesty, trust, and integrity. No grade is worth compromising your integrity and moving your moral compass. Stay true to doing the right thing: take the zero, not a shortcut.

Professional Conduct and Electronic Devices: Professionalism is also an important part of forensic science. Students are required to maintain a high standard of professional conduct in the classroom, laboratory, and online. Students must respect the culture, values, beliefs, and rights of their peers. Alternative points of view are encouraged and should be received by others with respect. All students are expected to act in a professional manner and be respectful and supportive of their fellow students and instructors. Please be respectful of your colleagues, and do not engage in disruptive behaviors. Disruptions may result in dismissal from the classroom and/or the course. Electronic devices may **NOT** be used during lecture unless needed for a class activity. If an electronic device is regularly needed, students must provide written authorization from Student Accessibility Services.

Red Zone Policy: In this course, the last 24 hours prior to an assignment due date, quiz, test, exam, etc. is known as "The Red Zone". During the red zone, there is no guarantee that the instructor will be available to answer any questions or to assist with any issues (i.e., power outages, computer crashes, questions about learning objectives, etc.) you may encounter that inhibits completion of the assignment. Do not wait until the last minute to complete your assignments.

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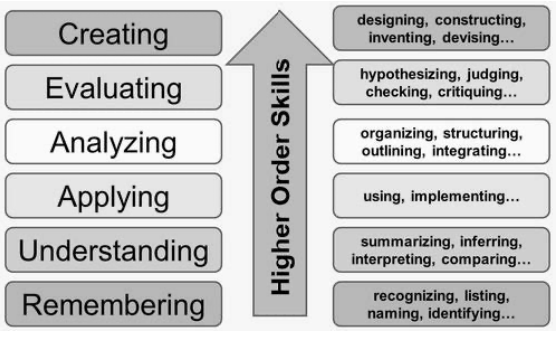
Grading: (weights for each will be determined during the first class meeting and posted on Webcourses)
All grades will be recorded in Webcourses. Questions related to graded assignments must be addresses within two weeks of the grade posting on Webcourses. After that period, the grade will stand as posted. Grades will be determined as described below.

1. **Assignments (5% of final grade*)*** Various activities will be submitted throughout the semester on Webcourses. These include Learn Before Lecture assignments (LBL), problem sets, etc.
   - **Learn Before Lecture Activities.** Class meetings are designed based on the assumption that students have completed the assigned reading, videos, and LBL assignments. LBL assignments are submitted though Webcourses within the corresponding week's module.
2. **Readiness Assessment Quizzes (10% of final grade i-RAQ, 15% of final grade t-RAQ*)*** Given at the beginning of class each Tuesday. All quizzes will count toward the final grade.
   - The first quiz will be an individual readiness assessment quiz **(**i-RAQ), focused on the key concepts and ideas of the readings and Learn Before Lecture Assignments. They are designed both to assess comprehension of these concepts as well as to maintain accountability for reading the assignments on time. You then take the same quiz as a team (team readiness assessment quiz, t-RAQ). You earn an individual score and a team score.
   - Students who arrive late will not be permitted to take the RAQ once the first student has turned in their quiz.
   - Restroom breaks are not allowed during quizzes.
3. **Cumulative Mini Tests (25% of final grade)** Six mini tests (50 points each) designed to evaluate the entire course content (lecture and laboratory). Each test may include various types of questions (multiple choice, short answer, calculations, etc.). Mini tests are cumulative, and all will count toward the final grade. All mini tests will be completed during class time. No outside materials are permitted except a non-programmable calculator.
   - Students who arrive late will not be permitted to take the test once the first student has turned in their test.
   - Restroom breaks are not allowed during tests.
4. **Cumulative Final Exam (20% of final grade)** The final exam is mandatory; not taking the final exam will result in a failing grade in the class. The final exam may contain a variety of question formats (multiple choice, calculation, short answer, essay, etc.). Per the Registrar's Office schedule, the final exam date and time is listed in the *Schedule of Course Activities* below.
   - Students who arrive late will not be permitted to take the final exam once the first student has turned in their exam.
   - Restroom breaks are not allowed during the final exam.
5. **Laboratory (25% of final grade)** The laboratory will consist of various assignments (pre-labs, summary sheets, abstracts, posters, presentations, etc.) and a semester long research project. The research project will account for approximately half of the laboratory grade. Notebooks will be assessed via periodic notebook checks (unannounced, during lab). All laboratory assignments are submitted though Webcourses. Assignments send through the Webcourses inbox or email will not be accepted.
   - Lab cleanliness (individual spaces, team spaces, community spaces), housekeeping, and safety will be assessed each week as part of the lab grade. This also includes arriving on time and leaving on time.
   - Pre-lab assignments are due Tuesdays at 9:00 am the day the laboratory activity is performed.
   - Post-lab assignments are due one week after the laboratory activity is performed, due Tuesdays at 11:30 pm.
   - All laboratory assignments must be completed **individually**. For some experiments you will work with your team to compile and discuss experimental data, however, all laboratory assignments must be completed individually.
6. **Team Evaluation** Teams will complete three team/peer evaluations during the semester. Your peer evaluation scores will be used as a percentage multiplier for all team items (t-RAQ, team assignments, etc.)
   - For example, if the t-RAQ score is 100% and you earn 95% on your team evaluation score, your score for the t-RAQ is 95%.
   - Team evaluations are submitted though Webcourses will be available in the Modules page.
   - Sample team evaluation multiplier calculation can be found in the General Course Information module on Webcourses.

Bloom's Taxonomy is a hierarchical model used to classify educational learning and promote higher order thinking (analyzing, evaluating, creating) rather than just remembering facts. Homework, activities, quizzes, tests, and exams will focus on the top four levels of Bloom's Taxonomy. Memorizing and understanding the concepts in the course will not be sufficient to be successful in the course. The grading system below relates the letter grade percentages to Bloom's Taxonomy.



Grading System: The overall percentage determines the letter grade. Percentages do not round up.

Grade	Percentage	Bloom's Taxonomy Characteristics
A	90.000–100%	Excellent mastery of the subject and outstanding scholarship at all levels of Bloom's Taxonomy
B	80.000–89.999%	Good mastery of the subject and good scholarship at all levels of Bloom's Taxonomy
C	70.000–79.999%	Acceptable mastery of the subject at most levels of Bloom's Taxonomy
D	60.000–69.999%	Borderline understanding of the subject, marginal performance at lower levels of Bloom's Taxonomy
F	< 60.000%	Failure to understand the subject and unsatisfactory performance

Makeup Assignment, Tests, Exams, Late Work: Late assignments will have a penalty of 25% per day, you must submit assignments by the due date, even if you are absent. All assignments are submitted on Webcourses and will be available for a minimum of 7 days. Extensions and makeup assignment will be handled on a case-by-case basis for prolonged illness or hospitalization. Extensions for assignments due to excused absences must be requested via the Webcourses inbox, verbal requests are not permitted.
A missed test or final exam due to an excused absence may be offered as a makeup pending instructor approval. It is the student's responsibility to contact the instructor within 2 days of the missed test/exam to request a makeup. Not taking the final exam will receive a failing grade, regardless of other scores in the course. There are no makeup opportunities for quizzes.

Excusable reasons ONLY include:

(a) personal illness (verifiable by a doctor's note)
(b) serious family emergencies (such as a death, verifiable by an obituary or funeral program)
(c) military duty (verifiable by documentation from your supervisor)
(d) representing the university in authorized events and activities (verifiable by documentation from your advisor)
(e) court-imposed legal obligations (verifiable by court documentation)
(f) severe weather conditions (as confirmed by university-wide statements and/or relevant media)

Note that transportation issues and employment schedules are not on the list of excusable reasons.

In-Class Recording Statement: Students may, without prior notice, record video or audio of a class lecture for a class in which the student is enrolled for their own personal educational use. A class lecture is defined as a formal or methodical oral presentation as part of a university course intended to present information or teach enrolled students about a particular subject. Recording class activities other than class lectures, including but not limited to lab sessions, student presentations (whether individually or part of a group), class discussion (except when incidental to and incorporated within a class lecture), clinical presentations such as patient history, academic exercises involving student participation, test or examination administrations, field trips, private conversations between students in the class or between a student and the faculty member, and invited guest speakers is **prohibited.** Recordings may not be used as a substitute for class participation and class attendance, and may not be published or shared without the written consent of the faculty member. Failure to adhere to these requirements may constitute a violation of the University's Student Code of Conduct as described in the Golden Rule.

- Students are prohibited from recording class activities other than lectures. There are no lectures during class time, therefore recording is not permitted.

Honorlock: If you must miss a test due to quarantine for COVID-19, the test will be administered through Webcourses using Honorlock. It is your responsibility to ensure that you have the technology requirements to complete the test using Honorlock. There is a Honorlock Practice quiz (zero points) in the course modules. You must send Dr. Rodriguez a Webcourses inbox message as soon as possible, but no later than 7:00 AM the day of the of the test. Tests using Honorlock will be available only during the regularly scheduled class test time.

Honorlock is an online proctoring service that allows you to complete your assessment from the comfort of your home. You DO NOT need to create an account, download software, or schedule an appointment in advance. Honorlock is available 24/7, and all that is needed is a computer, a working webcam, Google Chrome, and a stable Internet connection. To get started, you will need Google Chrome and to download the Honorlock Chrome Extension. You can download the extension at www.honorlock.com/extension/install. When you are ready to test, log into Webcourses@UCF, go to your course, and click on your assessment. Clicking "Launch Proctoring" will begin the Honorlock authentication process. Once authentication is complete, Honorlock will record your quiz/exam session by

webcam as well as recording your screen. Honorlock also has an integrity algorithm that can detect search-engine use, so please do not attempt to search for answers, even if it's on a secondary device. In the event that your webcam access is lost during the assessment and Honorlock does not reconnect you within an acceptable time, you will be required to take the exam in the presence of the instructor or GTA via Zoom at an appropriate date and time decided by your instructor. Honorlock support is available 24/7/365. If you encounter any issues, you may contact them via the live chat at https://honorlock.com/support/.

Authorized University Events: Students who represent the university in an authorized event or activity (for example, student-athletes) and who are unable to meet a course deadline due to a conflict with that event must provide the instructor with documentation in advance to arrange a make-up. No penalty will be applied. For more information, see the UCF Authorized Events Policy.

Religious Observances: Students must notify their instructor no later than the tenth business day of the term if they intend to miss class for a religious observance. For more information, see the UCF Religious Observances Policy.

Course Accessibility: The University of Central Florida is committed to providing access and inclusion for all persons with disabilities. Students with disabilities who need access to course content due to course design limitations should contact the professor as soon as possible. Students should also connect with Student Accessibility Services (SAS). (Ferrell Commons 185, sas@ucf.edu, phone 407-823-2371). For students connected with SAS, a Course Accessibility Letter may be created and sent to professors, which informs faculty of potential course access and accommodations that might be necessary and reasonable. Determining reasonable access and accommodations requires consideration of the course design, course learning objectives and the individual academic and course barriers experienced by the student. Further conversation with SAS, faculty and the student may be warranted to ensure an accessible course experience.

Turnitin: In this course we will use turnitin, an automated system that instructors can use to quickly and easily compare student assignment with web sites, as well as a database of student papers that grows with each submission. After the assignment is processed, the instructor receives a report from turnitin.com that states if and how another author's work was used in the assignment. For a more information, visit http://www.turnitin.com.

Copyright: This course contains copyright protected materials such as audio or video clips, images, text materials, etc. These items are being used with regard to the Fair Use doctrine in order to enhance the learning environment. Do not copy, duplicate, download or distribute these items. The use of these materials is strictly reserved for this online classroom environment and your use only. All copyright materials are credited to the copyright holder.

Unauthorized Distribution of Class Notes: Third parties may attempt to connect with you to sell your notes and other course information from this class. Distributing course materials to a third party without instructor authorization is a violation of our University's Rules of Conduct. Please be aware that such class materials that may have already been given to such third parties may contain errors, which could affect your performance or grade. If a third party should contact you regarding such an offer, I would appreciate your bringing this to my attention. We all play a part in creating a course climate of integrity.

Campus Safety Statement: Emergencies on campus are rare, but if one should arise during class, everyone needs to work together. Students should be aware of their surroundings and familiar with some basic safety and security concepts.

- In case of an emergency, dial 911 for assistance.
- Every UCF classroom contains an emergency procedure guide posted on a wall near the door. Students should make a note of the guide's physical location and review the online version.
- Students should know the evacuation routes from each of their classrooms and have a plan for finding safety in case of an emergency.
- If there is a medical emergency during class, students may need to access a first-aid kit or AED (Automated External Defibrillator). To learn where those are located (click on link from menu on left).
- To stay informed about emergency situations, students can sign up to receive UCF text alerts by going to https://my.ucf.edu and logging in. Click on "Student Self Service" located on the left side of the screen in the toolbar, scroll down to the blue "Personal Information" heading on the Student Center screen, click on "UCF Alert", fill out the information, including e-mail address, cell phone number, and cell phone provider, click "Apply" to save the changes, and then click "OK."
- Students with special needs related to emergency situations should speak with their instructors outside of class.
- To learn about how to manage an active-shooter situation on campus or elsewhere, consider viewing this video.

Deployed Active Duty Military Students: Students who are deployed active duty military and/or National Guard personnel and require accommodation should contact their instructors as soon as possible after the semester begins and/or after they receive notification of deployment to make related arrangements.

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Helpful Resources

UCF Cares: During your UCF career, you may experience challenges including struggles with academics, finances, or your personal well-being. UCF has a multitude of resources available to all students. Please visit UCFCares.com if you are seeking resources and support, or if you are worried about a friend or classmate. Free services and information are included for a variety of student concerns, including but not limited to alcohol use, bias incidents, mental health concerns, and financial challenges. You can also e-mail ucfcares@ucf.edu with questions or for additional assistance. You can reach a UCF Cares staff member between 8 a.m. and 5 p.m. by calling 407-823-5607. If you are in immediate distress, please call Counseling and Psychological Services to speak directly with a counselor 24/7 at 407-823-2811, or please call 911.

Modification of the Course Syllabus: The instructor reserves the right to modify the course syllabus at any time during the course to address changes needed in content, resources, assignments, due dates, etc. Changes will be made so as not to impact student grades negatively. Students will be notified of any changes via Webcourses.

Schedule of Course Activities: Subject to change. Any changes will be reflected in the Webcourses modules. Weekly quizzes are on Tuesdays at the beginning of class time. For important university dates review the academic calendar.

Date (2022)	Lecture Topics & Tests	Lab Activities
Week 1 M Aug 22	• Drug classifications and Identification	• Laboratory Safety Quiz with a 90% or higher to enter the lab • Solubility and Separation of Dyes
Week 2 M Aug 29	• Partitioning, Miscibility, and Extractions • **Mini Test 1 – Thursday Sept 1**	• Investigating Partitioning (Part 1)
Week 3 M Sept 5	• Designing Extractions	• Investigating Partitioning (Part 2)
Week 4 M Sept 12	• Multiple Extractions	• Thin-Layer Chromatography
Week 5 M Sept 19	• Drug Ionization and Solubility • **Mini Test 2 – Thursday Sept 22**	• Identification of an Unknown Drug Exhibit – Part 1
Week 6 M Sept 26	• FT-IR	• Identification of an Unknown Drug Exhibit – Part 2
Week 7 M Oct 3	• TLC and Partitioning • **Mini Test 3 – Thursday Oct 6**	• GC-MS
Week 8 M Oct 10	• Gas Chromatography	• Breathalyzer
Week 9 M Oct 17	• Mass Spectrometry • **Mini Test 4 – Thursday Oct 20**	• Research Projects (Week 1 of 4)
Week 10 M Oct 24	• Pharmacology	• Research Projects (Week 2 of 4)
Week 11 M Oct 31	• Toxicology • **Mini Test 5 – Thursday Nov 3**	• Research Projects (Week 3 of 4)
Week 12 M Nov 7	• Controlled Substances Part 1	• Research Projects (Week 4 of 4)
Week 13 M Nov 14	• Controlled Substances Part 2 • **Mini Test 6 – Thursday Nov 17**	• Hurricane Make Up Day
Week 14 M Nov 21	• Research Poster Showcase • **No class Thursday – Thanksgiving**	• Research Poster Showcase
Week 15 M Nov 28	• Research Poster Showcase	• Research Poster Showcase
	• **Cumulative Final Exam – Thursday, December 8th, 2022. 8:00 a.m. – 9:50 a.m.**	