

COURSE SYLLABUS
CHM 585 FORENSIC TOXICOLOGY AND DRUG ANALYSIS
4 CREDIT HOURS
SPRING 2008

Lecture: Tu/Th 11:00 – 12:20 in CFS 104
Lab: Mon 1:00 - 4:50 in CFS 219
Instructor: Dr. Sarah Kerrigan
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Office: CFS Building 221A
Office Hours: Tuesdays 9:30 – 11:00
Wednesdays 9:30 – 2:30
Thursdays 9:30 – 11:00
Other times by appointment.
Email is the preferred method for making appointments.

Course Description

This is a one semester laboratory course on forensic toxicology and drug analysis. Forensic toxicology involves the study of drugs and poisons for the purposes of the law. The course will cover the three major disciplines: postmortem forensic toxicology, human performance toxicology and forensic drug testing in addition to commonly encountered drugs and toxins. Students will develop an understanding of drug origins, history, forms, physico-chemical characteristics, pharmacology and effects of important drug classes, including central nervous system (CNS) stimulants, CNS depressants, opioids (natural and synthetic narcotic analgesics), cannabinoids, hallucinogens and other drugs of interest. Topics will include sample handling and pre-treatment, isolation of drugs from matrices using solid phase and liquid-liquid extraction, chemical derivatization, donor manipulation, interpretation of results and quality assurance issues. An advanced knowledge of the scientific literature and the ability to integrate toxicological theory into practical applications and research is required. During the course students will develop independent learning skills and improve their ability to present complex scientific information in writing.

Prerequisites

Students must be enrolled in the Master of Science in Forensic Science.

Course Objectives

1. Familiarize the student with the three major disciplines of forensic toxicology
2. Familiarize the student with the most frequently encountered substances in forensic toxicology and drug-related casework.
3. Develop an understanding of the uses, effects and pharmacology and toxicology of these drugs.
4. Apply important chemical and physical properties of drugs to explain how drugs are extracted or isolated from non-biological and biological evidence including blood, urine and human tissues.
5. Apply important chemical and physical properties of drugs to explain how drugs are distributed throughout the body.
6. Apply knowledge of chemical and physical properties of drugs to explain how drugs are differentiated, derivatized, and analyzed.
7. Compare and contrast different drugs within the same classification and discuss the relative advantages and disadvantages of analytical approaches.
8. Understand and apply advanced evidence handling concepts.
9. Familiarize the student with drug testing issues such as interferences, donor manipulation and interpretation of results.
10. Apply knowledge of methods and techniques to detect substances such as benzodiazepines, barbiturates, narcotics, cocaine, methamphetamine, cannabinoids and other abused drugs in the laboratory.
11. Evaluate analytical methods and/or published research in the scientific literature and present those findings in writing.
12. Complete a laboratory-based proficiency test involving the examination of biological and non-biological evidence containing unknown drugs.

Course Text

Principles of Forensic Toxicology, 2nd Edition, Ed. Barry Levine, AACC Press, Washington DC, © 2003. ISBN : 1890883875. Pages : 385. Supplemental material will be provided in class.

Examinations & Assignments

There will be one final examination during the week of May 10, 2008 in accordance with university policy. There will be three or four tests throughout the semester, as time permits. The final examination and the tests will be composed of multiple choice questions, true-false questions, fill in the blank questions, and/or short answer questions. The final examination and tests may be composed of any combination of the aforementioned question types or may be composed of only two or three of the question types. The tests and assignments will help prepare the student for the final examination. The tests will be conducted in class and will be *non-comprehensive* in nature. That is, they will cover only a specific topic or topics.

In addition to the written examination there will be a final laboratory-based proficiency test. This proficiency test will consist of one or more pieces of biological or non-biological evidence. Evidence will be analyzed to determine the presence of drugs of forensic interest. Students will be required to apply their acquired knowledge to process this evidence and analyze it using techniques that are widely accepted by the scientific community.

Assignments consist of lab reports and a written paper. Additional assignments may include but are not limited to information retrieval, presentation of material from the scientific literature and problem-based questions that will require the student to apply the acquired knowledge from class to forensic issues.

Lab reports will summarize data and address pertinent questions. Successful completion of lab reports will require the student to apply advanced knowledge acquired in class to forensic laboratory techniques. Assignments are due at the beginning of class on the due date. The instructor reserves the right to refuse late work, but will make reasonable accommodations for students who experience unfortunate circumstances.

Students will write a 2500 word research paper on an assigned drug/toxicology topic. This research paper must be fully referenced and cite published studies in the peer reviewed scientific literature. Reports must be submitted no later than noon on Thursday May 1, 2008. Electronic submission is acceptable.

The total combined weight of the lab reports will be 20% of the final grade. The written paper contributes 10% and the combined performance on the tests throughout the semester contributes 30% towards the final grade. The laboratory-based proficiency test will account for 10% of the final grade and the remaining 30% will be based on the performance in the final examination.

	Number	Scope	Timeframe	Weight of Grade
Lab Reports	Variable	Non-comprehensive	Throughout term	20%
Written Paper	1	Defined	May 1, 2008	10%
Tests	3-4	Non-comprehensive	Variable	30%
Lab Proficiency Test	1	Comprehensive	End of term	10%
Final Examination	1	Comprehensive	Week of May 10, 2008	30%

Material for the final exam and tests may come from class material, supplemental reading material or class discussion that was not covered in the reading material. *In other words, attendance and active participation in class is extremely important in order to complete the course successfully and receive a good grade.*

If a student is absent from the laboratory he/she may not be given an opportunity to make up the laboratory exercise, even if prior notice has been given the instructor. No make-ups will be given for the final exam unless arrangements have been made prior to the exam date. It is the student's responsibility to monitor the accuracy of the grades.

Deadlines for assignments, lab reports and other important announcements such as test times and locations will be announced in class or by email. As a result, students *must* read their SHSU email in order to remain current.

Grading Policy

Final grades will be based upon the following scale: 90 plus average an "A"; 80 to 89 a "B"; 70 to 79 a "C"; 60 to 69 a "D"; and below 60 an "F". Students should not count on a curve of the final grade. The instructor reserves

the right to modify the grading scheme to accommodate for a missed test or final examination in extenuating circumstances.

The instructor reserves the right to assign a final exam grade of 0% should she deem the absence was not properly handled or was unjustified. Appeals will be handled in accord with University Policy Statement 900823, Academic Grievance Procedures for Students.

Attendance Policy

Attendance will be recorded in keeping with University policy. Students are expected to attend class. Class attendance requirements will be followed in accordance with Academic Policy Statement 800401. In accordance with university policy, students will not be penalized for absences of up to three hours as long as examinations and other assigned work have not been missed. If a student is absent it is their responsibility to obtain the class material and remain current with information distributed during class. Occasionally changes in schedule may be announced in class. *These changes apply to all students, even those who were absent from class.* One letter grade may, at the discretion of the instructor, be deducted from students' final grade if they miss more than four classes. There will be no distinctions between "excused" and "unexcused" absences. Students are expected to be on time to class. After the beginning of the class, late students may be counted as absent.

Student Absences on Religious Holy Days: Students are allowed to miss class and other required activities, including examinations, for the observance of a religious holy day, including travel for that purpose. Students remain responsible for all work. *See Student Syllabus Guidelines.*

Class Rules

Students will refrain from behavior in the classroom that intentionally or unintentionally disrupts the learning process and thus impedes the mission of the university. Pagers and cell phones will be turned off before class. Students are absolutely prohibited from text messaging while in the classroom. If a pager or cell phone sounds during class, the student responsible will immediately leave the class and may be counted as absent. Inappropriate behavior in the classroom shall result in a directive to leave class. Students are not to read any material that is unrelated to the course during class. Students will not be permitted to attend class wearing attire containing messages or symbols that are offensive, abusive, or derogatory in nature. Students failing to abide by these rules will be expelled from the classroom.

In order to ensure safety, students must strictly adhere to the directives of the instructor during the laboratory exercises. Equipment or reagents must not be removed from the laboratory under any circumstances.

Academic Dishonesty

Students are expected to conduct their academic work with integrity and honesty. Acts of academic dishonesty will not be tolerated and can result in the failure of a course and dismissal from the University. Academic dishonesty includes, but is not limited to, cheating on an examination or other academic work which is to be submitted, plagiarism, collusion, or the abuse of resource materials. The University's policy on academic honesty and appeal procedures can be found in the manual entitled Student Guidelines, distributed by the Division of Student Services. (Reference Section 5.3 of the SHSU Student Guidelines.)

If it is obvious that an assignment is a copy of another student's work, both copies will receive a grade of 0%, and both students will be on notice that they will be reported for scholastic dishonesty should they be involved in any questionable work in the future. The instructor reserves the right to ask for an oral explanation of work submitted to determine if the student actually performed the work. This should not be construed as an accusation of academic dishonesty. It is merely a tool to ensure that student's are able to explain their work. Only in cases where the student cannot demonstrate the most basic explanation of what they submitted as their original work will there be suggestion of dishonesty.

Visitor Policy

Only registered students may attend class. Exceptions can be made on a case-by-case basis by the professor. In all cases, visitors must not present a disruption to the class by their attendance. If the visitor is not a registered student as evidenced by an official and current SHSU identification card, the instructor will decide whether or not the visitor will be allowed to remain in the classroom.

Instructor Evaluation

The students are asked to formally evaluate all courses and instructors at the end of each semester. These evaluations are an important tool for improving the faculty, courses, and student experiences at Sam Houston State University. Sarcastic, derisive, and inappropriate language should not be used. Both positive and negative thoughtful comments are taken to heart by the faculty and administration.

The instructor encourages informal feedback at any time during the semester. In an effort to continually improve the quality of the learning experience, all students are encouraged to actively participate and engage in constructive dialogue.

Students with Disabilities

It is the policy of Sam Houston State University that individuals otherwise qualified shall not be excluded, solely by reason of their disability, from participation in any academic program of the university. Further, they shall not be denied the benefits of these programs nor shall they be subjected to discrimination. Students with disabilities that might affect their academic performance should visit with the Office of Services for Students with Disabilities located in the Counseling Center. *See Student Syllabus Guidelines.*

Services for Disabled Students

The University's information on services available for disabled students may be found at the following address:
<http://www.shsu.edu/~counsel/sswd.html>

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