Concepts of Forensic Science 2

FIS 20600
Spring Course Syllabus

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Prerequisites: FIS 205. Chemistry 105 and 125 or equivalent, Biology K-101 or equivalent.

Textbook: Houck, M and Siegel, JA, Fundamentals of Forensic Science, Academic Press, Boston, MA, 2006.

Course Description
Continuation of FIS 20500. Learn basic concepts in forensic chemistry and forensic biology. Apply the basic concepts towards evidence analysis. Learn instrumental procedures and methods used in forensic chemistry and forensic biology to analysis and evaluate evidence. Topics will include microscopy, spectroscopy, chromatography, hairs and fibers, arson and explosions, paints and inks, serology and DNA, illicit drugs and toxicology.

Course Content and Organization
Forensic science is the application of scientific methods to matters involving the public. One of its principle applications is the scientific analysis of chemical, biological, and trace evidence generated by criminal activity. This course will cover four major aspects of chemical, biological, and trace evidence using real criminal and civil cases:

1. The generation of chemical, biological, and trace evidence by criminal activity
2. Collection and preservation of chemical, biological, and trace evidence
3. Analysis of chemical, biological, and trace evidence by a forensic science laboratory
4. Presentation of scientific analysis court

Course objectives:

1. Explain and describe areas in forensic science
2. Describe the possible job functions of a chemist and biologist in a forensic science laboratory.
3. Describe methods for collection and preservation of chemical, biological, and trace evidence from crime scenes
4. List and describe the various types of chemical, biological, and trace evidence and classify them by type
5. Describe how each type of chemical, biological, and trace evidence is analyzed by forensic scientists

6. Explain the principles, instrumentation and applications of chromatographic techniques such as thin layer chromatography, high performance liquid chromatography, and gas chromatography
7. Explain the principles, instrumentation and applications of spectroscopic techniques such as UV-Vis and Infrared spectroscopy
8. Explain the principles, instrumentation and applications of microscopic techniques such as light microscopy, polarizing light microscopy, hot stage microscopy, and microspectrophotometry.
9. Describe forensic techniques used on questioned documents
10. Describe how to recognize, collect, and preserve biological evidence.
11. Describe the principles and techniques of blood spatter pattern analysis, identification of body fluids and DNA isolation from various biological evidence
12. Explain principles, instrumentation and application of DNA typing techniques.

Class procedures

1. During the semester there will be three exams plus a final exam. The three exams during the course will be taken on a computer in the computer lab in room SL 070C. You can take the exam anytime during the Thursday, Friday, Saturday or Sunday exam testing times designated for the exam. Therefore there will be no make-up tests given. You can only take it once. No materials (books, notes, cell phones, pagers, etc.) may be brought into the computer lab when you take the test. You will be given a user name and password to access the test on the computer. The tests will all be 50 questions of the multiple choice type. All students must take the final exam, which is cumulative of the entire semester's work and made up of 100 questions. No make-ups will be given for this exam.

2. There will be quizzes given at the end of each lecture over the material covered. The quizzes will be on OnCourse CL and submitted on OnCourse CL. Each quiz will be available to take on OnCourse CL following the lecture and will be available for 72 hours. This is the allotted time that you will have to complete the quiz. The quiz will cover material from lecture as well as reading assignments in the textbook from the current chapter. There will be 15 quizzes throughout the semester each worth 10 points, totally to 150 points. There will be not make-up quizzes and you will only be allowed to take the quiz during the 72 hour time period.

3. All of the course materials including the answers to exams, assignments, news and announcements, last minute changes outlines of my lectures will be kept in an OnCourse CL file for this class. In order to read the various documents about this course, you must have Acrobat Reader installed on your computer. It is a free download from the Adobe website. I will also use the 2007 version of Windows, you can either download a patch for Windows 2003 or upgrade to the new version from UTIS website, which I recommend.

4. Owing to the large size of this class, the instructional model will be largely lecture. There will be guest speakers on most topics including their experiences in their

forensic science field. There may also be some hands on activities throughout the semester on certain topics and/or discussion on certain topics. There will be 150 points given throughout the semester based on attendance and class participation. You will be responsible for anything covered in lecture. We will make liberal use of audio and visual aids to enhance the material.

5. There may be extra credit opportunities during the semester. These would include going to Forensic Science events, lectures, activities, etc. that are offered throughout the semester and writing a one page paper reporting the event content and your personal option of the event material. Events will be through both the IUPUI and Indianapolis community. These will be announced in class as well as on OnCourse CL. The points available to receive for attending the event and paper will be issued on an event basis and will be announced with the event description.

Grading

The three exams will each consist of 50 multiple choice questions that count two points each. Therefore, each exam will total to 100 points. The final exam is cumulative of the whole semester and is worth 100 points. It will consist of 100 multiple choice questions. YOU MUST TAKE THE FINAL EXAM during the period set aside during final exam week.

There will be 15 quizzes each worth 10 points for a total of 150 points. You will be allowed to miss one quiz without a deduction of points. You will also be responsible for attending class and participating in class activities which will make up 150 points, 10 points per class period.

	Points
3 midterm exams each worth 100 points	300
Final Exam	100
15 OnCourse CL quizzes each worth 10 points	150
Attendance and Class involvement	150
Total	**700**

Grading Scale

Your grade will be based on a strict grading scale as outlined below. There will be no curving of final grades.

A: 100 – 93%	A-: 92.9 – 90%	B+: 89.9 – 87%	B: 86.9 – 83%	B-: 82.9 – 80%	C+: 79.9 – 77%
C: 76.9 – 73%	C-: 72.9 – 70%	D+: 69.9 – 67%	D: 66.9 – 63%	D-: 62.9 – 60%	F: less than 60%