FIS 20600
Concepts of Forensic Science 2
COURSE SYLLABUS AND DESCRIPTION

SPRING

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Prerequisites: FIS 205 and College level chemistry.

Textbook (REQUIRED): Houck, M and Siegel, JA, Fundamentals of Forensic Science 2nd Edition, Elsevier, Boston, MA, 2010.

Attendance Policy:
You are required to attend class each meeting. Attendance will be taken every class and be calculated into your overall course grade. To receive attendance points you must arrive to class on time and stay for the entire period. There will be no excused absences; however, there will be an allotment of 2 absences during the semester.

Administrative Withdrawal
A basic requirement of this course is that you will participate in class and conscientiously complete writing and reading assignments. Keep in touch with me if you are unable to attend class or complete an assignment on time. If you miss more than half our class meetings within the first four weeks of the semester without contacting me, you will be administratively withdrawn from this section. Our class meets twice per week; thus if you miss more than four classes in the first four weeks, you may be withdrawn. Administrative withdrawal may have academic, financial, and financial aid implications. Administrative withdrawal will take place after the full refund period, and if you are administratively withdrawn from the course you will not be eligible for a tuition refund. If you have questions about the administrative withdrawal policy at any point during the semester, please contact me.

Policy
Students who miss more than 50% of their class meetings of a given section during the first four weeks of the fall or spring semesters may be administratively withdrawn from that course unless documentation of contact with their course instructor, academic unit or academic advisor is provided. Undergraduate students may be administratively withdrawn regardless of class level.

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 analyze and evaluate evidence. Topics will include microscopy, spectroscopy, chromatography, hairs and fibers, arson and explosions, soils, glass, paints and inks, serology and DNA, blood splatter, illicit drugs and toxicology.

Course Content and Goals

Module 1 will include 1 unit. The overall goal of this module is to be able to navigate through the online information and have a general idea of what will be covered throughout the semester.

Module 1: Unit 1 – Introductory in Concepts in Forensic Science

- Locate tools used in OnCourse CL used throughout the course
- To interpret the basics of forensic chemistry and forensic biology
- Describe possible job functions of forensic chemists and biologists

Module 2 will include 3 units. The overall goal of this module is to become knowledgeable about commonly used instrumentation applied in a forensic laboratory. This module covers microscopy, spectroscopy and separation methods used to analysis forensic evidence.

Module 2: Unit 1 – Microcopy

- Explain the principles and terminology associated with microscopy
- Identify parts of commonly used microscopes in forensic science
- Apply microscopy techniques to forensic science evidence
- Be familiar with different types of microscopy techniques such as compound light, stereo, polarizing light, microspectrophotometer, hot stage, infrared, comparison

Module 2: Unit 2 – Spectroscopy

- Explain principles and terminology associated with spectroscopy
- Identify parts of a spectrometer
- Apply spectroscopy techniques to forensic science evidence
- Be familiar with different types of spectroscopy techniques such as microspectrophotometry, Fourier Transform infrared, Ultraviolet and visible light, Raman, and fluorescence

Module 2: Unit 3 – Separation Methods

- Explain principles and terminology associated with separation methods
- Identify parts of a chromatograph, include gas, liquid, thin-layer, and capillary electrophoresis
- Apply separation methods techniques to forensic science evidence
- Be familiar with different types of separation methods such as gas chromatography, liquid chromatography, thin-layer chromatography, and capillary electrophoresis

Module 3 will include 3 units. The overall goal of this module is to comprehend a variety of forensic biological evidence. This module will cover general information about forensic serology, bloodstain pattern analysis and DNA uses in forensic science.

Module 3: Unit 1 – Serology
- Explain methods for collection, preservation, and visualization of biological evidence from crime scenes
- Explain the various types of biological and classify them by type
- Illustrate how each type of biological evidence is analyzed by forensic scientists

Module 3: Unit 2 – Bloodstain Pattern Analysis
- Explain how bloodstain pattern evidence can be used in an investigation
- Distinguish patterns from blood splatter

Module 3: Unit 3 – DNA
- Explain principles and instrumentation applied to DNA typing techniques
- Interpret different methods used to analyze DNA

Module 4 will include 4 units. The overall goal of this module is to classify different types of forensic chemical evidence analyzed. This module will cover chemical evidence such as toxicology, illicit drugs, fire residue, and explosives.

Module 4: Unit 1 – Toxicology
- Summarize the 4 principles used in digestion
- Illustrate how drugs/alcohol and poisons are subjected to digestion

Module 4: Unit 2 – Illicit Drugs
- Explain different types of illicit drugs by schedules, affect, and type of material
- Indicate how illicit drugs are analyzed by forensic scientists

Module 4: Unit 3 – Fire and Arson
- Indicate how fire residue is analyzed by forensic scientists
- Explain the 3 main principles of a fire
- Distinguish patterns seen during a fire investigation

Module 4: Unit 4 – Explosives
- Indicate how explosives are analyzed by forensic scientists
- Explain the different types of explosives by class and effect

Module 5 will include 4 units. The overall goal of this module is to distinguish types of trace evidence analyzed in forensic science. This module will cover trace evidence such as hairs, fibers, glass and paint evidence.

Module 5: Unit 1 – Hairs
- Indicate how hairs are analyzed by forensic scientists
- Illustrate the 3 main features of a hair and the growth stages
- Explain how hair evidence is used in forensic investigations

Module 5: Unit 2 – Fibers

- Indicate how fibers are analyzed by forensic scientists
- Classify fibers from natural to man-made, animal to plant, and fully synthetic to partially synthetic
- Explain how fiber evidence is used in forensic investigations

Module 5: Unit 3 – Glass

- Indicate how glass is analyzed by forensic scientists
- Give examples of different types of glass evidence analyzed
- Explain how glass evidence is used in forensic investigations

Module 5: Unit 4 – Paints

- Indicate how paints are analyzed by forensic scientists
- Give examples of different types of paint evidence analyzed
- Explain how paint evidence is used in forensic investigations

Class procedures

1. Exams: During the semester there will be four exams plus a final exam. The four 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 Wednesday, Thursday, Friday, or Saturday exam testing times designated for the exam. Therefore there will be no make-up tests given. If you miss an exam you must have a doctor's note and email the instructor before the class period after completion of the exam. 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. All students must take the final exam, which is cumulative of the entire semester's work. It will be given in the lecture room on the date and time specified in the schedule below. You must take the exam on this date. No make-ups will be given.

2. Quizzes: There will be quizzes given at the end of each unit within each module over the material covered. The quizzes will be on OnCourse and submitted on OnCourse. The quiz over the unit must be completed during the week the unit is covered. Therefore, you will have until the next unit starts to complete the quiz. This will usually be one week; however, some times may be shorter or longer. Please see the schedule when quizzes are due. Each quiz will be available to take on OnCourse and will be available for 15 minutes once the quiz in started. This is the allotted time that you will have to complete the quiz. There are no make-up quizzes. The quiz will cover material from lecture, reading assignments in the textbook, activities associated with the materials, and even writing responses of the material. Quizzes will have questions that are multiple choice, short answer and essay. The quizzes are not graded automatically and will be graded within 24 hours of taking the quiz, with an exception to quizzes taken Friday evening through Sunday; these will be graded on Monday. Each quiz is worth 10 points.

3. Response Writings: There are two different types of response writings. One type will be complete as a word document and attached as an assignment under the assignment tool on OnCourse. The second type will be completed on the discussion forums under the forums tool on OnCourse. Response writings will be included in specific units of each module. Responses writings may include reviewing a newspaper article or a journal article over the covered topic. You may be responsible for find an appropriate article. Make sure that you read the directions for each writing response. **These will require the submission of a Microsoft Word document. Document submitted in Microsoft Works will not be accepted.** A due date will be associated with each response writings, even the forum discussions. No late assignments will be accepted. The rubric must be followed to receive full credit for the response writings. Response writings will be worth a total of 30 points.

4. Lecture Material, Reading Assignments, and Activities: You are responsible to review the section material including lecture material, reading assignments, and activities. Some power points will be available for review. You will not be graded on completing this material, however, you will need to learn the information and will be tested on the material. Most of this information will be kept in the Resource tool of OnCourse CL.

5. Communication: Announcements will be made on OnCourse to changes in course content. To contact me with questions, concerns, or comments please email me directly. I will not use the messaging tool on OnCourse. I will respond to your email within 24 hours, with an exception to email sent Friday evening through Sunday. I will respond to your email on Monday. Please feel free to use the Chat Tool on OnCourse to communicate with me and other students. I will only be available during Monday through Friday, 9am to 4pm, to answer questions on the chat. To communicate with other students in the course, a student forum will be set up through the Forum Tool on OnCourse. Remember, I can see and edit what is written on all the forums.

6. Course Material: 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. You will need this to access word documents and power point slides that I post under resources.

7. Internet: **YOU MUST HAVE ACCESS TO THE INTERNET USING A BROWSER**. 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.

8. Instructional Model: 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 100 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.

9. Extra Credit Opportunities: 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 four 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 12 quizzes each worth 10 points for a total of 120 points. You will also be responsible for attending class and participating in class activities which will make up 130 points, 5 points per class period. You will be allowed to miss two class periods without a deduction of points.

There will be 5 writing responses each worth 30 points for a total of 150 points. These will include article summaries and discussion forums. Please see the rubrics below for point assessment.

No late assignments or quizzes will be accepted for partial credit.

	Points
4 exams each worth 100 points	400
Final Exam	100
12 OnCourse CL quizzes each worth 10 points	120
Attendance and Class involvement	130
5 Response Writings each worth 30 points	150
Total	**800**

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%

Rubrics

Response Writing Rubric for article reviews, discussion questions and essays

Content to Include in Writing Responses	**Points**
Clarity in writing	5
Organization of material	5
Understand of topic	5
Answering the question(s)	10
Spelling and grammar	5
Overall Total	**30**

Response Writing Rubric for discussion forums

Content to Include in Forum Post	**Points**
One post with your personal answer to the question or comment	10
Three posts with replies to other posts at 5 points each	15
Spelling and grammar	5
Overall Total	**30**