

2013

## 110-01 Our Universe- Forensic Studies

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**Our Universe: Forensic Studies**  
**Physics 110 – Fall 2013**

<b>Instructor:</b> Dr. Heidrun Schmitzer <b>Office:</b> 105 Lindner Hall <b>Phone:</b> 745-4963	<b>e-mail:</b> <a href="mailto:schmitzer@xavier.edu">schmitzer@xavier.edu</a> <b>Office Hours:</b> Mo, Wed 10:50-11:50 and by appointment
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**CORE CURRICULUM GOAL:**

Students gain knowledge, ask questions, develop skills, and form conclusions through reflective thinking

**Student learning outcomes:**

*Students find, evaluate and logically convey information and ideas in written and oral presentations.*

*Students evaluate real-world problems using quantitative methods and arguments*

**Text:** **Criminalistics** by Richard Saferstein and handout provided by the instructor

**Homework assignments:** Homework for each topic is listed on the next page. Additional homework is assigned during class.

**Exams and Final:**

There will be one midterm exam given and one comprehensive final exam during the last scheduled class session. Exams must be taken when scheduled. Missed exams will count for zero credit. A **legitimate written excuse must be provided** before any make-up exam will be considered.

**Grading policy:**

Homework, Quizzes	20 %
Midterm, Sept. 16 <sup>th</sup>	20 %
Midterm, Oct. 14 <sup>th</sup>	20 %
Midterm, Nov. 13 <sup>th</sup>	20 %
final	20 %
<b>Total</b>	<b>100%</b>

**Attendance:**

Class attendance is expected. You are responsible for the information presented in the lectures and for any assignments made during the class time. If you are late to class or absent, you are responsible for obtaining any pertinent information that was given during class.

**Scale:**

<b>A</b>	<b>96-100%</b>
<b>A-</b>	<b>91-95%</b>
<b>B+</b>	<b>88-90%</b>
<b>B</b>	<b>84-87%</b>
<b>B-</b>	<b>81-83%</b>
<b>C+</b>	<b>78-80%</b>
<b>C</b>	<b>74-77%</b>
<b>C-</b>	<b>71-73%</b>
<b>D+</b>	<b>68-70%</b>
<b>D</b>	<b>64-67%</b>
<b>D-</b>	<b>60-63%</b>
<b>F</b>	<b>&lt;60</b>

***If your final grade is within 3 % of the next higher grade, your participation in class is taken into consideration. No opportunity for extra credit is given otherwise.***

### Homework and Quizzes

<b>Introduction</b>	<ol style="list-style-type: none"> <li>1. Read the article <i>CSI: Reality</i> by Max. M. Houck in <i>Scientific American</i>, July 2006, page 85-89. Discuss the following questions: <ol style="list-style-type: none"> <li>a. How is the reality of forensic science different from its public perception which is schooled by forensic TV series? Name at least four differences!</li> <li>b. What effects does this public interest in forensic science have on the police and on the forensic laboratories?</li> </ol> </li> <li>2. Read the section in your book on how to make a <i>sketch of a crime scene</i> and sketch the scene in the Sherlock Holmes Story posted on Canvas</li> <li>3. Work in groups: eye witness statements/Venn Diagrams</li> </ol>
<b>Fingerprints</b>	<ol style="list-style-type: none"> <li>1. Read Chapter <b>Fingerprints</b> and answer review questions: 3- 28</li> <li>2. Read section <b>Voice Examination</b></li> <li>3. Work in groups: Henry groups/decision trees/combinatorics</li> </ol>
<b>Glass</b>	<ol style="list-style-type: none"> <li>1. Read Chapter <b>Glass</b> and answer review questions: 1-34</li> <li>2. Read the BBC Story on <i>Amanda Knox and bad math in court</i> on <a href="http://www.bbc.co.uk/news/magazine-22310186">www.bbc.co.uk/news/magazine-22310186</a></li> <li>3. Work in groups: frequency of occurrence of glass fragments/linear function</li> </ol>
<b>Microscopes</b>	<ol style="list-style-type: none"> <li>1. Read Chapter <b>Microscopes</b> and answer review questions: 1-28</li> <li>2. Work in groups: magnification/algebra/inverse relationships</li> </ol>
<b>Hair</b>	<ol style="list-style-type: none"> <li>1. Read Chapter <b>Hair</b> and answer review questions: 1-21</li> <li>2. Work in groups: hair and glass as evidence/probabilities</li> </ol>
<b>Blood</b>	<ol style="list-style-type: none"> <li>1. Read Chapt.12 and answer review questions: 1-20 and 34-40</li> <li>2. Read Section <b>Stain Patterns of Blood</b></li> <li>3. Work in groups: <i>The case of the stolen i-Pad</i>/probabilities</li> <li>4. Work in groups: Luminol testing/Venn Diagrams/concept maps</li> </ol>
<b>Time of death</b>	<ol style="list-style-type: none"> <li>1. Work in groups: cooling/non-linear function/concept maps</li> </ol>
<b>Ballistics</b>	<ol style="list-style-type: none"> <li>1. Work in groups: Momentum conservation/concept maps/algebra</li> <li>2. Work in groups: Momentum conservation/concept maps/algebra</li> </ol>
<b>Cryptography</b>	Work in groups: number of keys/combinatorics/decision trees
<b>Spectroscopy</b>	<ol style="list-style-type: none"> <li>1. Read Chapter Spectroscopy and answer review questions: 1-16 and 30-45</li> <li>2. Work in groups: wavelength and frequency/algebra/inverse relationships</li> </ol>