2014

111 Our Universe: Forensic Studies Lab

Heidrun Schmitzer

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Our Universe: Forensic Studies Lab  
Phys 111

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Office Hours: Wednesday 11:00 to 12:00 and by appointment

CORE CURRICULUM GOALS AND STUDENT LEARNING OUTCOMES of this course:

GOAL 1: Students will be effective communicators in writing and orally  
Students will formulate clear and arguable theses, supported by evidence drawn from appropriate sources

GOAL 2: Students will be critical thinkers  
Students will analyze and interpret texts, images, objects, artifacts, and quantitative and qualitative data  
Students will evaluate the strength of an argument or claim and its evidence

GOAL 4: Students will be able to understand and appreciate the arts, humanities and science disciplines, and reflect on connections among these studies  
Students will utilize mathematical and logical reasoning and the language of mathematics with its own symbols, syntax, and semantics.

Components:
You will perform 10 performance tasks which will be assessed through short assignments. The labs will sometimes cover material from the lecture. Some labs are independent from the lecture, therefore you need to prepare in advance for all labs.

Forensic photography  
Identifying Finger Prints
Fracture Patterns in glass  
Determination of the Time of Death
Face Bertillonage  
Voice Analysis
Blood Typing  
Fluorescent Scavenger Hunt
Blood spatter
Examination of Hair

In addition there will be one lab exam. The dates will be announced on CANVAS.

Grading :

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Lab assignments</td>
<td>60%</td>
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<tr>
<td>Photography project</td>
<td>10%</td>
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<tr>
<td>Crime Scene</td>
<td>10%</td>
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<tr>
<td>Lab exam</td>
<td>20%</td>
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<td>Total</td>
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Lab Preparation: Prior to each lab, you must fully understand the procedure to be followed. Read each lab handout prior to the lab period. Students who are unprepared for lab will have their grade lowered for that week.

Lab Partners: You will work in pairs during the lab sessions. Both students in the pair are expected to participate fully. You must hand in your own individual lab report. Data will be identical for each partner, but the memos and reports must be written in your own words and must not be identical. Placing your name on another student’s lab report DOES NOT COUNT as handing in a lab.

Due Dates: All lab reports are due at the beginning of the next lab period, one week after the lab has been completed. Partial credit will be given to lab reports submitted one week late. Lab reports will not be accepted if they are more than one week late. Attendance is mandatory at all lab sessions.

Lab reports: For most of the labs, once the experiment has been completed, you will prepare a report summarizing the data, analysis and conclusion. Reports must contain all data and any graphs or diagrams generated during the analysis.

Photo Project (Due Tuesday, April 15): You will be staging your own murder scene, complete with lots of physical evidence. You will then “investigate” your own scene, making sketches, taking notes, and preparing detailed photographs. A full report must accompany this project. More details and materials will be given to you in lab.

Crime Scene: Towards the end of the semester, you will be faced with a crime scene. As a group, you must discover, document, preserve, and analyze evidence. You must question witnesses, identify suspects, and create a theory of the crime. You will be graded on your successful solution of the crime, as well as on the role you play individually. At the end of the exercise, you will write a memo to me, outlining the approach the team took, and parts in which you were directly involved. This is designed to be both fun and challenging, and to act as a capstone to this course.

Lab Final Exam (Tuesday, April 29, 9:30-11:20): You are expected to understand the concepts behind each lab, as well as the procedure followed. The test will be a combination of multiple choice questions, short answer questions, and some practical activities. You should be able to perform the techniques used in the lab. The lab handouts will provide a good study guide. This exam is closed notes.
1. Critical Thinking:
   **Explanation of issues:** clearly describe the issue/problem to be considered critical and deliver all relevant information necessary for full understanding.
   **Evidence:** Select and use information to investigate a point of view or conclusion. Take information from source(s) with enough interpretation or evaluation to develop a comprehensive analysis or synthesis. Question the viewpoints of experts.
   **Influence of context and assumptions** Thoroughly (systematically and methodically) analyze your own and others' assumptions and carefully evaluate the relevance of contexts when presenting a position.
   **Your position (perspective, thesis/hypothesis)** should be imaginative, taking into account the complexities of an issue.
   **Your conclusions and related outcomes (implications and consequences)** should be logical and reflect your informed evaluation and ability to place evidence and perspectives discussed in priority order.

2. Quantitative Literacy:
   **Interpretation:** Be able to explain information presented in mathematical forms (e.g., equations, graphs, diagrams, tables, words). Provide accurate explanations of information presented in mathematical forms. Make appropriate inferences based on that information. For example, you should be able to accurately explain the trend data shown in a graph and make reasonable predictions regarding what the data suggest about future events.
   **Representation:** Be able to convert relevant information into various mathematical forms (e.g., equations, graphs, diagrams, tables, words) Skillfully convert relevant information into an insightful mathematical portrayal in a way that contributes to a further or deeper understanding. Competently convert relevant information into an appropriate and desired mathematical portrayal.
   **Calculation:** All your calculations should be successful and sufficiently comprehensive to solve the problem. Your calculations should also be presented elegantly (clearly, concisely, etc.)
   **Application / Analysis:** Be able to make judgments and draw appropriate conclusions based on the quantitative analysis of data, while recognizing the limits of this analysis. You should use the quantitative analysis of data as the basis for deep and thoughtful judgments, drawing insightful, carefully qualified conclusions from this work.
   **Assumptions:** Be able to make and evaluate important assumptions in estimation, modeling, and data analysis. Explicitly describe assumptions and provide compelling rationale for why each assumption is appropriate. Show awareness that confidence in final conclusions is limited by the accuracy of the assumptions.
   **Communication:** Use quantitative information in connection with the argument or purpose of the work, present it in an effective format, and explicate it with consistently high quality.
Attendance:

Attendance is mandatory, and no make-up labs will be allowed. Absences due to family or medical emergencies will be considered on a case by case basis.

Scale:

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<th>Grade</th>
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