CALIFORNIA STATE UNIVERSITY CHANNEL ISLANDS

NEW COURSE PROPOSAL

PROGRAM: BIOLOGICAL AND PHYSICAL SCIENCES

1. Catalog Description of the Course. Include the course prefix, number, full title, and units. Provide a course narrative including prerequisites and corequisites. If any of the following apply, include in the description: Repeatability (May be repeated to a maximum of ___ units); time distribution (Lecture ___ hours, laboratory ___ hours); non-traditional grading system (Graded CR/NC, ABC/NC). Follow accepted catalog format.

BIOL 343. FORENSIC SCIENCE (3)
Two hours of lecture and three hours of lab per week.
A survey of the various chemical and biological techniques used in obtaining and evaluating criminal evidence. Topics include: chromatography; mass spectrometry (LC-MS, GC-MS); atomic absorption spectrometry; IR, UV, fluorescence, and X-ray spectroscopies; fiber comparisons; drug analysis; arson/explosive residue analysis; toxicological studies; blood typing; DNA analysis; population genetics; firearm identification; and fingerprint analysis. Lab fee required.
Same as CHEM 343. GenEd: B1, B2 and Interdisciplinary

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2. Mode of Instruction.

<table>
<thead>
<tr>
<th>Units</th>
<th>Hours per Unit</th>
<th>Benchmark Enrollment</th>
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<tbody>
<tr>
<td>Lecture</td>
<td>2</td>
<td>1</td>
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<tr>
<td>Seminar</td>
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<tr>
<td>Laboratory</td>
<td>1</td>
<td>3</td>
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<tr>
<td>Activity</td>
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3. Justification and Learning Objectives for the Course. (Indicate whether required or elective, and whether it meets University Writing, and/or Language requirements) /Use as much space as necessary/

Elective in Chemistry and GE: B1, B2 and Upper division Interdisciplinary

Students who successfully complete this course will be able to:
- Describe the scientific method and how it is used to approach scientific problems
- Explain the basic scientific principles that form the basis for forensic science analysis techniques, including chromatography, mass spectrometry, spectrophotometry, toxicology, and DNA analysis
- Perform experimental techniques used by Forensic Scientists
- Interpret experimental results obtained from crime scene analysis
- Integrate chemical and biological concepts as they relate to forensic science
- Explain the scientific principles behind and limitations of forensic science analysis techniques

4. Is this a General Education Course

YES

NO

NEWCRSFR 9/30/02
If Yes, indicate GE category:

<table>
<thead>
<tr>
<th>A (English Language, Communication, Critical Thinking)</th>
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<tbody>
<tr>
<td>B (Mathematics &amp; Sciences)</td>
<td>X</td>
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<tr>
<td>C (Fine Arts, Literature, Languages &amp; Cultures)</td>
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<td>D (Social Perspectives)</td>
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<td>E (Human Psychological and Physiological Perspectives)</td>
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5. Course Content in Outline Form. [Be as brief as possible, but use as much space as necessary]

An Introduction to Forensic Science
  Definition and Scope of Forensic Science
  Historical context of the development of Forensic Science
  Deductive and Inductive Reasoning
  Scientific Method

The Crime Scene
  Measurements and observations
  Collection of physical evidence
  Types of physical evidence

Chemical Analysis
  Gas and liquid chromatography
  Spectrophotometry
  Mass spectrometry
  Atomic absorption spectrophotometry

Physical Analysis
  Optical microscopy
  Scanning electron microscopy

Toxicology of Drugs and Alcohol
  Drug classifications and characteristics
  Physiological effects of drugs
  Drug and alcohol laws
  Identification of drugs
  Toxicology

Arson and Explosives
  Chemistry of fire
  Analysis of flammable residues
  Explosive classifications and characteristics

Serology
  Protein/enzyme structure and function
  Identification of body fluids

DNA Analysis
  Structure, function, and replication of DNA
  Heredity and DNA
  Basic probability and statistics
  DNA fingerprinting and population genetics

Fingerprints
  History of classification system for fingerprinting
  Digital imaging and methods of detecting fingerprints

Trace Evidence
  Hair and fibers
  Paint

6. References. [Provide 3 - 5 references on which this course is based and/or support it.]

7. **List Faculty Qualified to Teach This Course.**

   Dr. Simone Aloisio, Dr. Philip Hampton, Dr. Louise Lutze-Mann, Dr. Ching-Hua Wang

8. **Frequency.**
   a. Projected semesters to be offered: Fall ☒ Spring ☒ Summer ☐

9. **New Resources Required.**
   None. Equipment available from chemistry and biology laboratories

10. **Consultation.**
    Attach consultation sheet from all program areas, Library, and others (if necessary)
    *(See Attached Forms)*

11. If this new course will alter any degree, credential, certificate, or minor in your program, attach a program modification.

    Philip Hampton ____________________________ 1/8/03 ____________________________
    Proposer of Course                       Date
<table>
<thead>
<tr>
<th>Name</th>
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<tbody>
<tr>
<td>Prof. Ching-Hua Wang</td>
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