BIOL 402 TOXICOLOGY (3)

Three hours of lecture per week.

Prerequisite: CHEM 122; BIOL 201 with a grade of C or better.

An in depth study of toxic chemicals and their interactions within the ecosystems. Topics include the origin, fate, chemical and biological detection, and quantification of pollutants and toxins and their impact on organisms at the molecular, biochemical, cellular, physiological, organismal, and community levels of organization. Basic toxicology, genetic toxicology, environmental mutagenesis and the molecular basis of mutation induction will be covered.

2. Mode of Instruction.

<table>
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<tr>
<th>Lecture</th>
<th>Hours per Unit</th>
<th>Benchmark Enrollment</th>
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<tbody>
<tr>
<td>3</td>
<td>1</td>
<td>30</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]

This is an elective course designed to introduce biology students to the latest advances in toxicology.

Students that successfully complete this course should be able to:

1. Apply problem-solving skills to toxicity problems and issues.
2. Evaluate biological factors that influence toxicity.
3. Demonstrate their ability to reason both inductively and deductively with experimental information and data.
4. Describe the nature and actions of chemicals on biological systems.
5. Select and apply experimental procedures to toxicity testing.

4. Is this a General Education Course

No

If Yes, indicate GE category:

<table>
<thead>
<tr>
<th>A (English Language, Communication, Critical Thinking)</th>
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<tr>
<td>B (Mathematics &amp; Sciences)</td>
</tr>
<tr>
<td>C (Fine Arts, Literature, Languages &amp; Cultures)</td>
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<td>D (Social Perspectives)</td>
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<tr>
<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]

- Introduction
- Biochemistry and Metabolism of Xenobiotics
- Cytochrome P-450
- Biological Oxidations
• Chemical Mutagenesis
• Carcinogenesis
• Toxic Effects of Chemicals
• Clinical Toxicology
• Antidotal Therapy

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

Toxicology, Marquardt, Schafer, McClellan, and Welsch eds. Elsevier Science, ISBN 0-12-473270-4

7. List Faculty Qualified to Teach This Course.

Biology faculty

8. Frequency.
a. Projected semesters to be offered: Fall _____ Spring X _____ Summer _____

9. New Resources Required.
a. Computer (data processing), audio visual, broadcasting needs, other equipment
b. Library needs
c. Facility/space needs

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

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

____________________________________ 1 JAN 2003
Ching-Hua Wang
Proposer of Course Date