MEMORANDUM

To: Dr. Dave Reed, GOC Dean and Chair, Graduate Programs Council
College of Agriculture & Life Sciences

From: Dr. Pete D. Teel, Associate Department Head for Academic Programs

Subject: Course changes for ENTO 619 Insect Toxicology.

We respectfully request the Graduate Programs Council approval for the following two changes to ENTO 619 Insect Toxicology. We wish the course be changed from a 4 credit-hour course to a 3 credit-hour course with the corresponding change from a lecture-laboratory course to a lecture-based course only. The new syllabus and course change form is submitted as attachments. Please let me know if you have any questions, or need additional information.

Cc: Dr. David Ragsdale, Head

Attachments: As described.
Texas A&M University
Departmental Request for a Change in Course
Undergraduate ♦ Graduate ♦ Professional
• Submit original form and attachments •

Form Instructions
1. Request submitted by (Department or Program Name): Entomology
2. Course prefix, number and complete title of course: ENTO 619

Attach a brief supporting statement for changes made to items 3a thru 3d, and 6 below.

3. Change requested
   a. Prerequisite(s): From: ___________________________ To: ___________________________
   b. Withdrawal (reason): ___________________________
   c. Cross-list with: ___________________________

   Cross-listed courses require the signature of both department heads.

   d. Change in course title and description. Enter complete current course title and current course description in item 5; enter proposed course title and proposed course description in item 6. Complete item 7 for change in title.

   e. Change in course number, contact hours (lab & lecture), and semester credit hours. Complete item 7. Attach a course syllabus.

4. For informational purposes only, please indicate course number if this course will be stacked: ___________________________

5. Complete current course title and current catalog course description:

6. Complete proposed course title and proposed catalog course description (not to exceed 50 words):

7. a. As currently in course inventory:

   Prefix | Course # | Title (excluding punctuation)
   ------ | -------- | -------------------------------------
   ENTO   | 619      | INSECT TOXICOLOGY

   Lect. | Lab   | SCH | CIP and Fund Code | Admin. Unit | FICE Code | Level
   ------ | ------ | ---- | ----------------- | ------------ | --------- | -----
   0 3 0 3 | 0 4 0 1 1 1 0 1 0 0 0 5 1 0 5 0 0 0 3 6 3 2

   b. Change to:

   Prefix | Course # | Title (excluding punctuation)
   ------ | -------- | -------------------------------------
   ENTO   | 619      | INSECT TOXICOLOGY

   Lect. | Lab   | SCH | CIP and Fund Code | Admin. Unit | Acad. Year | FICE Code
   ------ | ------ | ---- | ----------------- | ------------ | 1 4 0 0 3 6 3 2
   0 3 0 0 | 0 3 0 1 1 1 0 1 0 0 0 5 1 0 5 0 1 3

   Approval recommended by: David Ragsdale 01/21/2012
   Department Head or Program Chair (Type Name & Sign)
   Date
   Chair, College Review Committee
   Date
   Dean of College
   Date
   Submitted to Coordinating Board by: Chair, GC or UCC
   Date
   Effective Date

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra-williams@tamu.edu.
Curricular Services – 02/11
Insect Toxicology  ENTO 619
Spring Semester
Lecture: MWF 10:20-11:10 a.m.
Location: Heep Center Room 207
Credit: 3

COURSE DESCRIPTION: Classification and properties of major types of insecticides; chemistry, metabolism and mode of action; selectivity, use hazards, residues and resistance; environmental problems: biological magnification, persistence and effects on non-target organisms.

PREREQUISITES: one course in organic chemistry and ENTO 615 (Insect Physiology) or approval of instructor.

LEARNING OUTCOMES: Upon completion of the course, students should be able to demonstrate competency by:

- Describing the mode of action of the major groups of insecticides, comparing broad chemical structures by chemical group and/or site of action (target site).
- Describing the most common mutations in target sites that lead to insecticide/acaricide resistance through target site insensitivity, and the applications of molecular biology to insect toxicology (resistance detection).
- Comparing organismal symptoms, biochemical and molecular responses of insects to synthetic and biological insecticides or plant pesticides (transgenic plants) and when known, to symptoms in mammals.
- Predicting, evaluating and assessing health and environmental risks to insecticides in novel situations.
- Comparing and contrasting the molecular basis of insecticide selectivity, efficacy and safety to non-targets, especially mammals.
- Assessing best practices for safe insecticide handling and disposal.
- Constructing a bioassay (theory-dry/lab), analyzing data and interpreting numeric and graphical summaries (Probit analysis) to assess the presence of insecticide resistance.
- Demonstrating mastery of a selected topic through classroom presentation and supporting


**Instructor:** Patricia V. Pietrantonio, Professor  
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Email: p-pietrantonio@tamu.edu  
Phone Office: (979) 845-9728 / Lab: 845-9755  
Fax: (979) 845-6305

Consultation & Office Hours: By appointment.

**Resource Materials:** Reading assignments, supporting reference materials, and lectures will be posted to the course website [http://insects.tamu.edu/students/grad/gcourses/ent0619/](http://insects.tamu.edu/students/grad/gcourses/ent0619/)

**Grading Policies:**

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Maximum Points</th>
<th>Percentage of Grade</th>
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<tbody>
<tr>
<td>Mid-term Examination</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>Master Lecture*</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Final Comprehensive Exam</td>
<td>40</td>
<td>40</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>100</strong></td>
<td><strong>100</strong></td>
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**Final Grade:**  
A-90-100% of total points, B-80-89%, C-70-79%, D-60-69%, F-Below 60%.

*Student Master Lectures are 45 minute power-point presentations on an instructor-approved topic pertaining to insect toxicology, based upon a scientific review of the topic (consisting of 12-15 sources). Presentation is to be accompanied by handouts and bibliography. Evaluation will include written assessments by student audience and instructor.

Student Attendance: Class attendance is a student responsibility (see Student Rules at [http://student-rules.tamu.edu](http://student-rules.tamu.edu)); 3 or more unexcused absences to lectures will result in a 5% reduction of course grade. Students are responsible for communicating with the instructor about absences and for obtaining the material(s) and handouts given while absent.

**Lecture Topics and Schedule (Weekly basis):**


Concept of LD\(_{90}\), LD\(_{50}\), LC\(_{50}\), LC\(_{90}\), etc. Bioassay principles and techniques. Synergism. Additive effects. EPA and WHO pesticide toxicity classifications. Introduction to the concept of insecticide resistance (see also 15). Resistance ratio. A tutorial on probit and resistance and real world Texas example can be found at: http://insecticideresistance.tamu.edu


5. **Insect channels as targets for insecticides:** Cl- channels. Avermectin and GABA receptor. Glutamate receptors in insects (Glu\(_4\) and Glu\(_i\)). Molecular structure of Glutamate receptors. Avermectins and Glutamate-activated Cl- channel (Caenorhabditis elegans). Structure-activity relationships. Resistance.


9. **Insect Targets:** Midgut. Bacterial Toxins. *Bacillus thuringiensis* toxins. Lepidopteran


12. **Metabolism:** Enzymes involved in metabolism of xenobiotics. Mixed function oxidases (cytochrome P450). Esterases. Esterases and gene amplification. Glutathione-S-transferases. Synergists and enzyme inhibitors. PBO, DEF, etc.


14. **Student master lectures:** The instructor will provide a list of current topics to be selected by students within the first week of classes. Students are welcome to propose topics as long as they are NOT their research for graduate studies.

15. **Student master lectures (cont.).** Last lecture of this week for review session and conclusions: Review of the insecticide classification by target site presented in lecture 1. Summary of the key knowledge and understanding acquired through this course. Student evaluations of instructor at end of lecture. The instructor is available for an extra “out of schedule” review session if students indicate this need. **FINAL EXAM according to University Calendar.**
**Americans with Disabilities Act (ADA)**

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 845-1637. For additional information visit [http://disability.tamu.edu](http://disability.tamu.edu)

**Academic Integrity**

"An Aggie does not lie, cheat, or steal or tolerate those who do."

*For additional information please visit: [http://aggiehonor.tamu.edu](http://aggiehonor.tamu.edu)*