



University of Puerto Rico at Mayagüez
College of Arts and Sciences
Department of Biology
Graduate Program in Zoology



Course Syllabus

ZOOL 6058 - Insect Taxonomy

Semester: 1 st Semester 2006/2007	Credit hours: 3 credit hours	Contact hours: 5 contact hours
Course instructor: Dr. Nico M. Franz Office: B-304; Lab: B-323 E-mail: franz@uprm.edu Phone: (787) 832-4040, x3005 academic.uprm.edu/~franz/	Location, dates, and times: Zoology Lab B-322 (lectures and labs) Lectures: Tuesday 2:30-3:30 pm & Thursday 2:30-3:15 pm Labs: Tuesday 3:30-5:30 pm & Thursday 3:15-4:30 pm Field trips: various prearranged dates and times	
Prerequisites: BIOL 4446, or instructor's permission.	Concurrent requisites: None.	
Description: A thorough introduction to the systematics and evolution of the Hexapoda (insects), including advanced methods of collecting, specimen preparation, and identification beyond the family level.		
Descripción: Una introducción profunda a la sistemática y evolución de los Hexapoda (insectos), incluso métodos avanzados de recolección, preparación de especímenes, e identificación más allá del nivel de familia.		
Objectives: <ul style="list-style-type: none">- To understand and apply core themes and methods in modern systematic research.- To understand and critically evaluate major theories explaining the evolutionary history (morphology, life history traits) of the Hexapoda.- To acquire advanced skills related to the collection, preparation, and identification of adult insects beyond the family level, focusing on the Puerto Rican fauna.- To apply the aforementioned knowledge and skills towards an individual course project.		
Teaching strategies: x conference x select writing and discussion assignments x laboratory x field trips x practical (collection) x individual research projects (with final presentation)		
Course materials: <ul style="list-style-type: none">- Johnson, N. F. & C. A. Triplehorn. 2005. Borror and DeLong's Introduction to the Study of Insects, 7th Edition. Brooks Cole. 864 pp. [required; link to purchase]- Grimaldi, D. & M. S. Engel. 2005. Evolution of the Insects. Cambridge University Press. 772 pp. [optional]- Schuh, R. T. 2000. Biological Systematics: Principles and Applications. Cornell University Press. 236 pp. [optional]- Wolcott, G. N., editor. 1948. The Insects of Puerto Rico. Journal of Agriculture of the University of Puerto Rico, Volume 32.- Select articles and other resources made available to students via UPRM's WebCT service.- Available literature and other resources for identifying Puerto Rican insects.		

Sequence of topics: [*subject to changes]

Date	Lecture	Lab
Aug. 10 (Thu)	Introduction, What is Systematics?	Introduction to Course Resources
Aug. 15 (Tue)	History of Systematics	Character Coding and Optimization I
Aug. 17 (Thu)	Concept of Homology	Character Coding and Optimization II
Aug. 22 (Tue)	Phylogenetic Inference	Using WinClada I
Aug. 24 (Thu)	Species Concepts	Using WinClada II
Aug. 29 (Tue)	Methods of Classification	Insect Collecting and Preparation I
Aug. 31 (Thu)	Systematic Monography	Insect Collecting and Preparation II
Sept. 5 (Tue)	Introduction to Hexapoda	Identification of Insect Orders
Sept. 7 (Thu)	Insect Phylogeny	Entognatha - Paleoptera
Sept. 12 (Tue)	Insect Paleontology	Orthoptera - Embiidina
Sept. 14 (Thu)	Review Session	Grylloblattaria - Blattaria
Sept. 19 (Tue)	Midterm (lectures)	Paraneoptera / Hemiptera I
Sept. 21 (Thu)	Discussion: DNA Taxonomy	Hemiptera II
Sept. 26 (Tue)	Polyneoptera Systematics	Review Session
Sept. 28 (Thu)	Hemiptera Systematics	Midterm (labs)
Oct. 3 (Tue)	Coleoptera Systematics	Neuroptera / Coleoptera I
Oct. 5 (Thu)	Beetles and Fungi	Coleoptera II
Oct. 10 (Tue)	Hymenoptera Systematics	Hymenoptera I
Oct. 11 (Wed)	Parasitoid and Social Hymenoptera	Hymenoptera II
Oct. 17 (Tue)	Lepidoptera Systematics	Trichoptera / Lepidoptera I
Oct. 19 (Thu)	Caterpillars and Plants	Lepidoptera II
Oct. 24 (Tue)	Diptera Systematics	Siphonaptera / Diptera I
Oct. 26 (Thu)	Parasitic Flies	Diptera II
Oct. 31 (Tue)	Review: Insect Diversity	Project Work I
Nov. 2 (Thu)	TBA	Project Work II
Nov. 7 (Tue)	Insect Biogeography	Project Work III
Nov. 9 (Thu)	TBA	Project Work IV
Nov. 14 (Tue)	Armed Insects	Presentation of Projects
Nov. 16 (Thu)	TBA	Review Session
Nov. 23 (Thu)	Insect Systematics in Puerto Rico	Final (labs)
Nov. 28 (Tue)	Review Session for Final (lectures)	End of Lab Section: Submission of Collections and Projects
Exam Period	Final (lectures)	

Total contact hours:

30 lecture + 45 lab = 75 hours

Field trips:

At least *five* field trips will be offered (weekday or weekend) to various locations, including UPRM's Miradero Forest and nearby State Forests (Guánica, Maricao, Río Abajo, Toro Negro, etc.). *Three* field trips are mandatory, including one weekend field trip to UPRM's station at Toro Negro State Forest.

Available resources:

Resources for the entomological laboratory work are limited. If the need arises, students will be required to contribute to purchasing equipment necessary to complete to laboratory sessions and individual project work. Students are also required to contribute to replacing any course materials or resources that were handled carelessly, or lost.

Grading strategies and their relative weight:

<u>Task</u>	<u>Percent</u>
2 lecture exams	15 + 15 = 30%
2 lab exams	10 + 10 = 20%
1 insect collection	25%
1 research project	15%
X course participation	10%
Total:	100%

Grading system:

quantifiable (letter grade) not quantifiable

Special needs:

Students with special needs must identify themselves with the instructor and institution in order to receive proper accommodation in their courses and evaluations. Please contact the Servicio a Estudiantes con Impedimentos at (787) 832-4040, ext. 3250 or 3258, for additional information.

Annex

WebCT. Course resources will be made available through UPRM's WebCT service at resources <http://webct.uprm.edu>. Students are expected to access the Webpage several times per week for documents and announcements.

Lecture exams. The lecture exams will take the form of freely written answers to topics and problems introduced and discussed in the lectures. [total: 300 points]

Lab exams. The lab exams will consist mainly of insect identifications, either "by sight" (orders and common families), or using available keys. Follow-up questions regarding the natural history of an insect are admissible. [total: 200 points]

Collection. The collection should consist of 150 or more insects (mainly adults) with proper mounting, labeling, and identification to the lowest possible taxonomic level, typically beyond the family level. Genus and species identifications and "rare insects" will receive extra points, up to a total of 250 points. The collection should include at least 15 families of Hemiptera, 25 families of Coleoptera, 20 families of Hymenoptera, 20 families of Lepidoptera, 20 families of Diptera, and 20 families of nonholometabolous insects. [total: 250 points]

Individual research project. Possible themes include: biodiversity inventories at a particular location, the elaboration of keys for identifying Puerto Rican insects, the curation of particular taxa in UPRM's Insect Collection, projects related to ongoing undergraduate or graduate research, a thorough written examination of a current topic in insect systematics, etc. The theme should be specified in written form and mutually agreed upon by the time of the lab midterm. The results will be presented in a "course symposium". [total: 150 points]