ENY 4004C ENTOMOLOGY: FALL 2013

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Office: BL 442, Phone: 823-4003
Lecture: BL 105, Mon & Wed 8:30am – 9:20am
Lab: BL 105, Mon & Wed 9:30am – 12:50pm
Course Website: www.schistocerca.org/ENTOMOLOGY

Course Description: The goal of this course is to provide you with a general introduction to the field of entomology, covering a wide range of topics including morphology, physiology, insect diversity and various subdisciplines within entomology. The laboratory work will include hands-on exercises in insect anatomy and insect classification as well as a number of field trips. A collection is required that will further refine your ability to collect using a number of field techniques and to properly prepare and identify insects to the level of order and family. You will also learn to illustrate insects using high-resolution digital macrophotography. This course will have a service-learning (S-L) component through which you will learn to engage with the local community to raise awareness about insects.

Course Prerequisites: BSC 2010 (Biology I) AND BSC 2011 (Biology II), or similar introductory biology courses

Required Textbook:
Johnson, N.F. & Triplehorn, C.A. 2004. *Introduction to the Study of Insects, 7th Edition.* Cengage Learning.
* For some lectures, there will be additional readings, which will be available in the website.

Grading: You will receive one grade that combines your lecture and laboratory points totals. Exam scores will be posted on my UCF grades, and no grades will be given over the phone or by email according to Federal law (FERPA regulations). The grading scale will be A=90-100, B=80-89, C=70-79, D=60-69, F=below 60. There will be no pluses/minuses in this course, but the final grade will be rounded up if it is less than 1% from the next grade up (e.g. 89.1~89.9 will be rounded up to A). Your grade will be calculated as follows:

Lecture Exam 1:	10%
Lecture Exam 2:	10%
Lecture Final:	20%
Lab Practical:	10%
Insect Collection:	20%
Service Learning:	20%
Digital Imaging:	5%
Class Participation:	5%
	100%

Course Schedule:

Wk.	Date	Lec #	Lecture topic	Reading	Lab	Due
1	8/19	1	Introduction to entomology	Ch. 1, 35	Overview of lab requirement, basics of insect collecting, curatorial techniques (UCF Arboretum Natural Area)	
	8/21	2	Insect classification and phylogenetics; non-insect hexapods & lower insects	Ch. 3, 6, 7, 8	Lab Exercise I: Insect diversity lab I (non-insect hexapods and lower insects)	SL: Group Formation
2	8/26	3	"Palaeoptera" (Odonata and Ephemeroptera)	Ch. 9, 10	Field trip (UCF East Parcell) and specimen preparation	
	8/28	4	Polyneoptera I (Plecoptera, Dermaptera, Embioptera, Zoraptera, Grylloblattodea, Mantophasmatodea)	Ch. 13, 14, 15, 16, 17, 18	Lab Exercise II: Insect diversity lab II (Polyneoptera)	SL: Select a topic
3	9/2	-	No class - Labor Day		No class - Labor Day	
	9/4	5	Polyneoptera II (Orthoptera, Phasmatodea, Dictyoptera)	Ch. 11, 12, 19, 20, 21	Lab Exercise III: Insect diversity lab III (Paraneoptera)	SL: Finalize a lesson plan
4	9/9	6	Paraneoptera (Psocodea, Thysanoptera, Hemiptera)	Ch. 22, 23, 24, 25	Field trip (Econ River Wilderness Area) and specimen preparation	
	9/11	7	Holometabola I (Neuropterida, Strepsiptera, Coleoptera)	Ch. 26, 27, 33	Lab Exercise IV: Insect diversity lab IV (Holometabola I)	SL: Prepare a lesson for Group 1 & 2
5	9/16	8	Holometabola II (Diptera, Mecoptera, Siphonaptera)	Ch. 32, 33, 34	Field trip (UCF NW Parcell-Lake Claire Loop) and specimen preparation	
	9/18	9	Holometabola III (Trichoptera, Lepidoptera, Hymenoptera)	Ch. 28, 29, 30	Lab Exercise V: Insect diversity lab V (Holometabola II)	SL: Lesson rehearsal for Group 1 & 2
6	9/23	-	**Exam 1**		Field trip (Chuluota Wilderness Area) and specimen preparation	
	9/25	10	External anatomy I (cuticle, segmentation, tagmosis, head)	Ch. 1, suppl.reading	Service-Learning at Carillon Elementary (Group 1 & 2), Specimen preparation for the rest	SL: Prepare a lesson for Group 3 & 4
7	9/30	11	External anatomy II (thorax [leg, wing], abdomen)	Ch. 1, suppl.reading	Lab Exercise VI: External anatomy of insects	
	10/2	12	External anatomy III (comparative morphology, locomotion)	Ch. 1, suppl.reading	Service-Learning at Carillon Elementary (Group 1 & 2), Specimen preparation for the rest	SL: Lesson rehearsal for Group 3 & 4
8	10/7	13	Internal anatomy I (muscular, nervous, endocrine, circulatory, respiratory system)	Ch. 1, suppl.reading	Lab Exercise VII: Internal anatomy of insects	SL: Reflection for Group 1 & 2
	10/9	14	Internal anatomy II (digestive, excretory, reproductive system)	Ch. 1, suppl.reading	Service-Learning at Carillon Elementary (Group 3 & 4), Specimen preparation for the rest	
9	10/14	15	Sensory systems (vision, chemical, acoustic)	Ch. 1, suppl.reading	Lab Exercise VIII: Biodiversity survey I (setting traps at UCF Arboretum) and specimen preparation	
	10/16	16	Insect development (metamorphosis)	Ch. 1, suppl.reading	Service-Learning at Carillon Elementary (Group 3 & 4), Specimen preparation for the rest	
10	10/21	17	Insect reproduction	Ch. 1, suppl.reading	Lab Exercise IX: Biodiversity survey II (processing trap samples and calculating diversity index)	SL: Reflection for Group 3 & 4
	10/23	-	**Exam 2**		Specimen preparation and identification	
11	10/28	18	Insect-plant interaction	Ch. 2, suppl.reading	Review session for lab practical, specimen preparation and identification	Preliminary Insect Collection / Choose a subject for digital imaging
	10/30	19	Insect ecology	Ch. 2, suppl.reading	**Lab Practical**	

Wk.	Date	Lec #	Lecture topic	Reading	Lab	Due
12	11/4	20	Insect defensive system	Ch. 2, suppl.reading	Digital imaging / Continue working on insect collection	
	11/6	21	Social insects	Suppl. Reading	Digital imaging / Continue working on insect collection	
13	11/11	-	No class - Song in conference		No formal lab; lab open for specimen prep & identification	
	11/13	-	No class - Song in conference		No formal lab; lab open for specimen prep & identification	
14	11/18	22	Medical/vetenary/forensic entomology	Suppl. Reading	Digital imaging / Continue working on insect collection	
	11/20	23	Applied entomology and IPM	Suppl. Reading	Digital imaging / Continue working on insect collection	
15	11/25	24	Cultural entomology (guest lecture)	Suppl. Reading	Continue working on insect collection	Final product for digital imaging
	11/27	-	Final Exam		No lab	Final insect collection

Lecture Exams: Exams 1, 2 and Final Exam will be given during regular class period. ***Final exam is scheduled on November 27 (Wed).*** Lecture exams will include multiple-choice, short-answer, fill-in-the-blank or short-essay questions. You are responsible for the materials presented in the lectures. Exam I will cover lectures 1 to 9, focusing on insect classification and phylogeny. Exam II will cover lectures 10 to 17, focusing on insect anatomy & physiology, development and reproduction. The final will be semi-comprehensive with ~40% of the materials from lectures 18 to 25, with the remaining ~60% from the materials covered in exams 1 and 2.

Lab Practical: There will be nine hands-on laboratory exercises, which will be the basis for the lab practical. You are responsible for identifying specific structures and functions of different morphological features based on dissected specimens. You are also responsible for identifying various insect specimens to family and orders. There will be a review session prior to the lab practical in which you will have a chance to examine specimens under microscope.

Insect Collection: Creating your own insect collection is an excellent way to learn insect morphology and diversity and in this course, you are required to make an insect collection, which represents 20% of your grade. You are responsible for collecting, preparing, labeling, and identifying specimens. All necessary equipments will be provided at the first lab. *The collection requirement for is to collect and identify **15 orders and 50 families.*** It takes tremendous amount of time and effort to create a well-curated collection and you cannot complete a collection at the last minute. To help you progress, I have set up a deadline for a preliminary collection (**October 28**). More specific guidelines for creating your collection will be given to you as a separate handout in the first lab. The final insect collection is due at the beginning of the final exam period (**November 27, 8:30am**).

Service-Learning (S-L): UCF defines Service-Learning as "a teaching method that uses community involvement to apply theories or skills being taught in a course. Service-learning furthers the learning objectives of the academic course, addresses community needs, and requires students to reflect on their activity in order to gain an appreciation for the relationship between civics and academics." For this course, we will work with the Carillon Elementary School 5th grade science class. In Florida, the Sunshine State Standards identify what public school students (K-12) should know and be able to do at each grade level, which is then assessed through a

standardized test called the Florida Comprehensive Assessment Test (FCAT). There are several core benchmarks in science for 5th graders, which we will teach as a part of our S-L exercises. We will divide our class into four groups of six students, who will prepare and teach the 5th graders. In order to engage with the Florida public schools, you need to apply for the Seminole County D÷v÷dends School Volunteer. Please register at http://www.scps.k12.fl.us/dividends/Home.aspx. Details about the S-L will be provided later in the semester.

Digital Imaging: There have been tremendous advances made in the field of digital imaging and you will learn techniques involved in deep-field macrophotography (also known as image-stacking or automontage) using a digital imaging station called the BK Plus Imaging System, located in the Song Lab. You will first learn how to use the system, and then you will choose an insect specimen of your choice from your own collection for imaging. You are required to identify this specimen to species level. For this course, you will produce a single image of a magnified view of a specific structure of interest. There will be a sign-up sheet for specific body parts. There will be a separate handout and sign-up sheet for using the BK Plus machine, available later in the semester. Based on the images you have taken, we will create a poster that highlights the intricate details of insect morphology, which will be displayed in the wall of the biology building. The final image is due on **November 25 (Mon)** and it counts 5% of your final grade.

Field Trips: In order to maximally expose you to various habitats that insects live in, we will conduct several field trips during this course. The field trips will take place during the regular lab period. When you are out collecting in the field, there are several creatures that can harm you including ticks, chiggers, spiders, mosquitoes, biting flies, snakes, and other poisonous plants, and thus I suggest you dress properly. Appropriate field dress includes shoes (hiking shoes or tennis shoes, but no sandals or flip-flops), long pants, and a hat. Insect repellant and sunscreen are also recommended for these trips along with snacks and water.

Additional collecting opportunities: In addition to the class field trips, you should also collect insects on your own. There will be some additional collecting opportunities that you should take advantage of.

- September 29-30 – Overnight camping trip. Location TBD.
- October 12 – Bioblitz at the Wekiva Springs State Park. This all day event will be an excellent chance to collect various insects throughout the park.

Attendance: Students are responsible for all material presented and discussed in class. In the case of missed class, students are advised to obtain lecture notes and handouts from classmates unless there is a good reason, in which case I will be happy to help. Lecture exams will be given during class time. Make-up exams for exams 1 and 2 will be provided only for students who must miss the exam due to official University business at which your presence was required (e.g. a university-sponsored team event). Hard-copy documentation must be provided 48 hours in advance from the appropriate university body. For all other cases (e.g., unforeseen emergencies) you must contact me as soon as reasonably possible and provide hard-copy documentation (a signed document from a doctor, police officer, judge etc. - not by e-mail). The absence must have been caused by a valid emergency as defined by UCF, including but not limited to: major

illness, serious family emergency, jury duty, military obligation, etc. There will not be a make-up for the lab practical. If you must miss the lab practical due to legitimate reasons listed above, your grade for the insect collection will be used to replace the missed lab practical. All students are required to take the final exam, and there will be no make-up exams for the final.

Classroom Conduct: By enrolling at UCF, all students have agreed to abide by the Golden Rule. Please become familiar with this document at: http://www.goldenrule.sdes.ucf.edu. All students are expected to act maturely in the classroom and show consideration for their peers and the instructor. Please use common courtesy in class by arriving and departing on time and by not snoring or talking during class. Turn off cell phones and other electronic devices. Any student who consistently distracts other students or the instructor will be removed from the course. *Cheating on exams or other assignments including insect collection and literature review will not be tolerated.* Any person caught copying another paper, signing in for someone else, attempting to steal part or all of an exam, plagiarizing, or cheating in any other way will receive zero points for the course and the matter will immediately be referred to the UCF Office of Student Conduct for disciplinary action.

Disability Access Statement: The University of Central Florida is committed to providing reasonable accommodations for all persons with disabilities. This syllabus is available in alternate formats upon request. Students with disabilities who need accommodations in this course must contact the instructor at the beginning of the semester to discuss needed accommodations. No accommodations will be provided until the student has met with the instructor to request accommodations. Students who need accommodations must be registered with Student Disability Services, Student Resource Center Room 132, phone (407) 823-2371, TTY/TDD only phone (407) 823-2116, before requesting accommodations from the instructor.

Final Note: It is likely that the field collecting may be affected by weather conditions, and thus we will keep the lab schedule flexible. These changes will be announced in lecture.