ENTMLGY 5623 Insect Morphology
2 Semester Credits (two 80-min labs per week)

A. Instructor:
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B. Course Objectives
1.) Students will demonstrate that they can use common techniques required for hexapod preservation, histology and dissection.
2.) Students will use and demonstrate biological illustration techniques.
2.) Students will learn general hexapod internal and external morphology sufficient for them to perform entomological techniques that require finding, analyzing and using common hexapod organs.
3.) Students will learn external morphological characteristics used to identify hexapods in common morphology-based keys.

C. Course Topic Outline
Week 1 (7 & 9 January)
Lab 1 – Introduction, What is Morphology/Anatomy, Taxonomy/Systematics? The Tools – making tools needed for morphological investigations, collecting & preserving hexapod specimens, clearing specimens. (D&M, Appendix II & IV)
Lab 2 – Biological Illustrating – It Isn't Art!!

Week 2 (14 & 16 January)
Lab 3 – Arthropod Body Plan: spider, centipede, crayfish. (D&M, Lab 2) (spider drawing)
Lab 4 – Arthropod Segmentation & Hexapod Abdomen. (handout + D&M, Lab 3 & 5)

Week 3 (21 & 23 January)
Lab 5 – Grasshopper Thorax (D&M, 6 & 7) (thorax drawing)
Lab 6 – Honey Bee Thorax (D&M, Lab 6 & 7) (thorax drawing)

Week 4 (28 & 30 January)
Lab 7 – Cicada Thorax; (D&M, Lab 6 & 7) (thorax drawing)
Lab 8 – Wing Anatomy & Evolution (D&M, Lab 10 & 11): cockroach, bug, fly, bee (cockroach wings & bases drawing)

Week 5 (4 & 6 February)
Lab 9 – Head Capsule (D&M, Lab 12): grasshopper or cockroach (head drawing)
Lab 10 – Head Capsule (D&M, Lab 12): honey bee
Week 6 (11 & 13 February)
Lab 11 – Mouthparts (D&M, Lab 13 & 14): cockroach, beetle (ground beetle mouthparts drawing)
Lab 12 – Mouthparts (D&M, Lab 13 & 14): squash bug & housefly (bug drawing)

Week 7 (18 & 20 February)
Lab 13 – Digestive Tract (D&M, Lab 15 & 16): caterpillar & cockroach (caterpillar sketch)
Lab 14 – Digestive Tract (D&M, Lab 15 & 16): honey bee and milkweed bug (milkweed bug sketch)
EXAM I assignments (take-home assignment to demonstrate knowledge of morphology & terms)

Week 8 (25 & 27 February)
Lab 15 – EXAM I demonstrations (demonstrate ability to locate and show external and internal insect anatomy – external anatomy through the digestive tract)
Lab 16 – Circulatory & Respiratory Systems (D&M, Lab 17 & 18): cockroach

Week 9 (4 & 6 March)
Lab 17 – Female Reproductive System (D&M, Lab 20): cockroach & milkweed bug (sketch one)
Lab 18 – Male Reproductive System (D&M, Lab 24): cockroach & milkweed bug (sketch one)

Week 10 (18 & 20 March)
Lab 19 – Insect Central Nervous System (D&M, Lab 25): caterpillar & honey bee (sketch supraoesophageal, suboesophageal and thoracic ganglia)
Lab 20 – Sensory Organs (D&M, Lab 26) (sketch compound eye structures)

Week 11 (25 & 27 March)
Lab 21 – Begin Individual Projects (illustrate morphology of selected insect)
Lab 22 – Histology of Insect Tissues (digestive, reproductive, muscular, etc.)

Week 12 (1 & 3 April)
Lab 23 – Individual Project Time
Lab 24 – The Insect Embryo

Week 13 (8 & 10 April)
Lab 25 – Individual Project Time
Lab 26 – Insect Histology I: preservation and sectioning

Week 14 (15 & 17 April)
Lab 27 – Insect Histology II: staining
Lab 28 – Individual Projects Due

No Final Exam! Individual projects will take place of final exam.
D. Textbooks


E. Grade Determination

Laboratories -
Students will show instructor dissections (through actual dissections, labeled pictures and/or illustrations) to demonstrate that they have found and observed designated structures (30% of grade)

Exams – One exam (essentially a midterm) - demonstration of knowledge of morphological techniques and terminology (students will be given two to four specimens and asked to find and show 10 structures). (40% of grade)

Morphology Report
Each student will select an insect that will be dissected, illustrated and labeled (external and internal morphology) and labeled. (30% of grade)

Grading Scale - standard OSU percent scale, curve not used. (e.g., 91-100% = A; 89 & 90 = A-; 87-88 = B+; 81-86 = B; 79-80 = B-; 77-78 = C+; 71-76 = C; 69-70 = C-; etc.

F. Academic Misconduct Statement
Students will be encouraged to work on assignments together but they will still be held accountable for normally defined situations of academic misconduct (plagiarism, cheating, and other forms of misconduct as defined by the university). Such misconduct will not be tolerated in this course. According to Faculty Rule 3335-31-02, Academic Misconduct is defined as any activity which tends to compromise the academic integrity of the institution or subvert the educational process. Please see the Student Resource Guide or the instructor if you have questions about this policy.

G. Disability Statement
This course normally requires some physical dexterity to examine, dissect specimens and to demonstrate knowledge of morphological characteristics. However, if any student feels that she/he may need an accommodation based on the impact of a disability as documented through the Office for Disability Services (614-292-3307 in room 150 Pomerene Hall) we will work diligently to coordinate reasonable accommodations for students with such documented disabilities.