**Biology 332**

**Entomology**

**Fall 2016**

**Instructor:**

**Dr. Robert F. Mitchell**

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**Office hours**

Mon 4:00-5:00PM, Weds/Fri 3:00-4:00PM, or by appointment.

**Course Description**

Biology 332 is an introduction to the study of insects, which comprise over half of the species of living organisms on the planet.

**Course Objectives**

Students will be introduced to the diversity and evolution of the insect orders, the taxonomic features used in identification of these groups, and the impact of insects on human society. Students will be expected to recall unifying features of each insect order and family discussed in class, as well as the relevant ecology, physiology, behavior, and medical importance. Students will also complete a collection of local insect species.

**Communication**

You will be expected to check your uwosh.edu email and D2L regularly. Communication outside of class and office hours will be via email, and additional information such as lectures and handouts will be posted on the D2L course website.

**lecture information**

***Lecture Schedule*:** 11:30-12:30 PM, Mondays and Fridays in Halsey Science 457.

***Lecture Text:*** Gullan and Cranston, The Insects: An Outline of Entomology, Fifth Edition, Wiley.

***Lecture Format:*** Lectures will be presented via Powerpoint. The lectures will be available on D2L the night before each class period, and are specifically designed to help you in note-taking. I strongly suggest you print the lectures and bring them to class.

***Lecture Assignments***: We will have three lecture exams on the scheduled dates (please see the lecture/lab schedule). Each exam will be worth 100 points and consist of mixed multiple choice, matching, short answer, and essay questions.

***Cell Phones***: All cell phones must be turned off or silenced and may not be used during lecture and laboratory time. If you are expecting an emergency call (e.g., relative on deathbed, wife in labor), you may leave the phone on, but let me know before the lecture.

***Other electronic devices***: iPods, iPhones, and other music players cannot be listened to during lectures and especially during exams, so turn them off and take the earbuds out. Laptops and tablets should be used only for taking notes and not for browsing the internet. At the very least, be sneaky about it - I will not be pleased if I catch you posting to Facebook or Twitter, even if it is complimentary of my lecture.

**Laboratory Information**

***Laboratory Schedule*:** 10:20-1:20PM, Wednesday, in Halsey Science 30.

***Laboratory Text***: Photographic Atlas of Entomology and Guide to Insect Identification, J. Castner.

***Laboratory Format:*** Laboratory sections will include additional lectures on the life history and notable representatives of each insect order, followed by lessons on the identification of families within the order and individual study of specimens in the teaching collection. Material from the lecture portion will be included in the lecture exams, but your identification skills will be tested through the laboratory practicals and insect collection.

***Laboratory Assignments*:** We will have brief laboratory assignments (30 pts total), three lab practical exams (50 pts each) and each student will be responsible for curating an insect collection (120 pts). Lab practicals will test your ability to identify prepared specimens and structures we have viewed in lab. Laboratory assignments will include identifying and developing individual taxonomic keys of insects observed during the laboratory period.

**Grading**

***Course grade****:* Your total grade in the course will be based on: three lecture exams worth 100 points each (300 points); three lab practicals worth 50 points each (150 pts); and an insect collection (120 pts). Total points possible will be 600, and your final grade will be calculated by dividing your total points earned by 600.

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| **Evaluation** | **Percentage** | **Points** |
| Lecture Exams | 50% | 300 |
| Lab Practicals | 25% | 150 |
| Lab Assignments | 25% | 130 |
| Insect Collection | 20% | 120 |
| **TOTAL** | **100%** | **600** |

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| **Percentage Score** | **Letter Grade** | **Point Range** |
| 93-100% | A | 558-600 |
| 90-92% | A- | 540-557 |
| 87-89% | B+ | 522-556 |
| 83-86% | B | 498-521 |
| 80-82% | B- | 480-497 |
| 77-79% | C+ | 462-479 |
| 73-76% | C | 438-461 |
| 70-72% | C- | 420-437 |
| 67-69% | D+ | 402-419 |
| 63-66% | D | 378-401 |
| 60-62% | D- | 360-377 |
| < 60% | F | <360 |

 ***Accessing Grades and Class Information****:*Grades will be posted on D2L. If you have any questions or problems using the site please see me.

 ***Extra Credit***: Specific extra credit assignments will not be offered. However, extra credit questions may accompany tests or practicals. Extra credit will not increase a score beyond the total possible point value of each evaluation category. For instance, the three lab practicals are each worth 50 points, for a total of 150 points. Thus, if a student receives grades of 45, 50, and 55, the total point value may add to 150. However, if a student receives grades of 50, 50, and 55, the total point value is capped at 150.

**The Insect Collection**

Student collections will be graded out of 120 points, based on the presentation, identification, and diversity of insects. The grade will be broken down as follows:

***Presentation***: 20 pts. Each specimen must have proper collection labels with the date, location, collector, and order/family identification, and specimens must be preserved, pinned and/or spread according to proper technique. One-half point will be deducted for each error in labeling or curation, to a maximum of 20 points.

***Identification***: Each specimen must be correctly identified to order and family. No points will be awarded for a specimen that is incorrectly identified. Partial credit may be awarded in some cases, if the identification is very difficult or very nearly correct, but this is entirely at the discretion of the instructor.

***Diversity***: 100 pts. 3 points will be awarded for every unique order of insect collected, 2 points for every unique family, and 1 point for every ADDITIONAL species in the same family. You do not need to identify the species, but it should be recognizably different from the other specimens. Example: You present three beetles in your collection. Two are in the family Cerambycidae, and one is in the family Curculionidae. The point total for these specimens is 3 (Coleoptera) + 2 (Cerambycidae) + 1 (another cerambycid) + 2 (Curculionidae) = 8.

**Policies**

***Attendance*:**  You are expected to arrive to class on time (see "Make-up Policy” below) and to actively participate in the classroom. If you miss all or a portion of a class, then **you are solely responsible for obtaining missed class material from fellow students**.

***Make-ups*:**  Absences may be excused in some circumstances, such as military service, court, jury duty, religious holiday, personal emergency, or illness, but you will be asked to provide documentation. You must make arrangements in advance to make up an expected absence. If you miss class due to an emergency or illness, you must contact me as soon as possible, preferably by the next class meeting. No formal make-up labs will be provided (thus, it may not be possible to make up work that is directly related to lab activities or field trips). If you miss an exam due to emergency, illness, or other excused absence, you must take the exam before the end of the day in most cases. Make-up exams will not be allowed after the exam has been graded and returned. Excused make-up lab practicals will not be possible after the practical materials have been cleared, which is usually by the end of the same day.

***Statement on Academic Dishonesty*:** Students are referred to the University of Wisconsin Oshkosh Student Discipline Code as detailed in specific provisions of Chapter 14 of the State of Wisconsin Administrative Code. Any student(s) found in violation of any aspect of the above Code (as defined in sections UWS 14.02 and 14.03) will receive a sanction as detailed in UWS 14.05 and 14.06. Examples of violations include: looking at another student’s exam or answer sheet and copying the answers during an exam, talking or whispering to another student during an exam, receiving text messages during an exam on an electronic device, or listening to answers or information recorded on an electronic device via earphones during an exam. Note that work submitted for this course must not have been submitted previously in another course. Sanctions range from an oral reprimand to a grade of zero for the assignment in question to expulsion from the University of Wisconsin Oshkosh. Students have the right to request a hearing and to appeal sanctions (as defined in UWS 14.08-14.10).

***Grade Rebuttals***: If you disagree with your grade, I highly encourage you to address your grievances, either by a written note turned in to me during class, or by email. Be specific and attach your assignment and any other documentation required (e.g., “point total is incorrect because 1+1 = 2, not 3, please see attached assignment”; or, “I believe that my answer is correct because on slide X of lecture Y, it says [this], please see attached assignment”). The deadline for rebuttals is one class period after assignments or tests have been returned.

***Disabilities***: Students who have physical or learning disabilities and wish to request academic adjustments should notify the Disabilities Office so that appropriate accommodations can be made. For more information contact the Counseling Center or Disabilities Services at (920)-424-2404.

**For Graduate Students (BIO532)**

Graduate students are expected to demonstrate a greater depth of knowledge, a higher level of synthesis, and a more sophisticated level of communication than undergraduate students. Graduate students are therefore held to a higher standard in this course, which is reflected in the requirements for the insect collection, lecture exams, and final grade:

***Insect Collection***: Specimens are worth fewer points, requiring a larger and more diverse collection. Orders remain at 3 points, but families are 1 point, and additional species are ½ point.

***Lecture Exam***: Each exam includes two complex essay or diagram questions, of which undergraduate students are required to answer only one. Graduate students must answer both of the questions on the exam to demonstrate their more complete understanding of the material. Correspondingly, the point values for simpler questions (e.g., multiple choice) are lower for graduate students.

***Course Grade***: A grade less than a C is a failing grade.

# Lecture and Laboratory Schedule: Biology 332

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| **Lecture/Lab** | **Date** | **Lecture/Lab Topic** |
| **L1** | Sep. 7 | **Lab:** Introduction to Insect Collecting |
| 1 | Sep. 9 | A Brief History of Entomology |
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| 2 | Sep. 12 | Overview of the Insect Orders |
| \* | Sep. 14 | **Lab**: Collecting Field Trip |
| 3 | Sep. 16 | External Anatomy |
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| 4 | Sep. 19 | Non-Insect Arthropods |
| \* | Sep. 21 | **Lab**: Collecting Field Trip |
| 5 | Sep. 23 | Internal Anatomy I |
|  |  |  |
| 6 | Sep. 26 | Non-Insect Hexapods and Paleoptera  |
| **L2** | Sep. 28 | **Lab**: Non-Insect Arthropods, Hexapods, and Paleoptera |
| 7 | Sep. 30 | Internal Anatomy II |
|  |  |  |
| 8 | Oct. 3 | Orthopteroid Orders |
| **L3** | Oct. 5 | **Lab**: Orthopteroid Orders |
| \* | Oct. 7 | **LECTURE EXAM 1** (1-8) |
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| \* | Oct. 10 | Lab Review |
| \* | Oct. 12 | **LAB PRACTICAL 1** (L1-L3) |
| 9 | Oct. 14 | Sensory Biology |
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| 10 | Oct. 17 | Paraneopteran Orders |
| **L4** | Oct. 19 | **Lab**: Paraneopteran Orders |
| 11 | Oct. 21 | Reproduction |
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| 12 | Oct. 24 | Coleoptera and Minor Holometabola |
| **L5** | Oct. 26 | **Lab:** Coleoptera and Minor Holometabola |
| 13 | Oct. 28 | Life Histories |
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| \* | Oct. 31 | Lab Review |
| \* | Nov. 2 | **LAB PRACTICAL 2** (L4-L5) |
| 14 | Nov. 4 | Sociality |
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| 15 | Nov. 7 | Lepidoptera |
| **L6** | Nov. 9 | **Lab**: Lepidoptera |
| \* | Nov. 11 | **LECTURE EXAM 2** (9-14) |
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| 16 | Nov. 14 | Diptera |
| L7 | Nov. 16 | **Lab**: Diptera |
| 17 | Nov. 18 | Agricultural Entomology |
|  |  |  |
| 18 | Nov. 21 | Apiculture and Sericulture |
| \* | Nov. 23 | **Thanksgiving – NO CLASS** |
| \* | Nov. 25 | **Thanksgiving – NO CLASS** |
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| 19 | Nov. 28 | Hymenoptera |
| **L8** | Nov. 30 | **Lab**: Hymenoptera |
| 20 | Dec. 2 | Medical and Forensic Entomology  |
|  |  |  |
| \* | Dec. 5 | Lab Review |
| \* | Dec. 7 | **LAB PRACTICAL 3** (L6-L8) |
| 21 | Dec. 9 | Phylogeny and Genomics  |
|  |  |  |
| \* | Dec. 12 | **LECTURE EXAM 3** (15-21) |
| \* | Dec. 14 | **Lab**: Last-Minute Collection Work ☺ |
| \* | Dec. 16 | **COLLECTIONS DUE** |