

# **Biology of Insects BIOL 4070/5070**

## **Fall 2022**

**Instructor:** Dr. James H. Kennedy  
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**Office Hours:** Monday & Wednesday 0930 – 11:00 or by appointment. See note below.

**Required Text:** *The Insects An Outline of Entomology* 5<sup>th</sup> Edition by P. J. Gullan and P.S. Cranston.

**Attendance:** Attendance is expected in both the lecture and the laboratory.

**INSECT BIOLOGY (Entomology)** is a basic course in the study of insects. Insects are the most diverse group of animals found on Earth, outnumbering all other species of animals and plants combined. Course emphasis is placed on understanding factors that contribute to the success of insects and the diversity of forms and behaviors. The course is intended to provide a general background in entomology, to satisfy general knowledge, and /or provide a foundation for research/teaching careers in ecology, conservation or environmental science.

### **OBJECTIVES:**

The overall course objective is to examine the role that insects play in the ecosystems they inhabit and to understand how ecosystems influence the insects that live in them.

Upon completion of this course, a student should be able to:

1. Demonstrate knowledge of the taxonomy of adult insects and identify:
  - a. basic morphological structures common to all insects.
  - b. all insects to order on sight.
  - c. common insects to the family on sight.
  - d. most insects to family and genus with taxonomic keys and microscope.
2. Describe selected aspects of the biology of insects:
  - a. behavior
  - b. habitat preferences
  - c. feeding habits
  - d. life history
  - e. metamorphosis
  - f. physiology
  - g. reproduction
  - h. adaptations to the environment

- i. functions in ecosystems
3. Demonstrate current methods used in entomology:
- a. collecting
  - b. preserving
  - c. preparing specimens for study
  - d. curating

### TENTATIVE SCHEDULE

Date	Topic	Reference
<b>Structure and Function</b>		
30 Aug. 2022	<b>Introduction: Class policies, Definition of insects, Biodiversity of Insects</b>	Chap 1,& notes
01 Sep. 2022	<b>Arthropods other than Insects, Evolution, Classification</b>	Chap 1 Chap 7
06 Sep. 2022	<b>General morphology of Adult insects, Integument</b>	Chap 2
08 Sep. 2022	<b>Internal Anatomy – muscles locomotion-flight</b>	Chap 2
<b>MAJOR LIFE SYSTEMS</b>		
13 Sep. 2022	<b>Tracheal System – getting oxygen to the tissues –structural and behavior</b>	Chap 3
15 Sep. 2022	<b>Tracheal System cont'd</b>	Chap 3
20 Sep. 2022	<b>Circulatory System – Cardiac physiology</b>	Chap. 3
22 Sep. 2022	<b>Insect Feeding and the Digestive System</b>	Chap. 3
27 Sep. 2022	<b>Excretory System</b>	
29 Sep. 2022	<b>EXAMINATION #1</b>	Chap. 3
04 Oct. 2022	<b>The Nervous System ... Sensing the Environment</b>	Chap. 3
06 Oct. 2022	<b>Sensory Mechanisms and receptors ... mechanoreceptors, chemoreceptors.</b>	Chap. 4 (Section 4.1 - 4.2)

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11 Oct. 2022	<b>Sensory Mechanisms and receptors ... mechanoreceptors, chemoreceptors. Continued</b>	Chap. 4 (Section 4.1 - 4.2)
13 Oct. 2022	<b>Exocrine and Endocrine Glands and their Functions</b>	Chap. 3 (Section 3.3)
18 Oct. 2022	<b>Reproduction: Male systems and Female systems; Mating Strategies</b>	Chap. 3 (Sections 3.81 - .82)
20 Oct 2022	<b>Insect Development and Life Histories</b>	Chap. 6
25 Oct. 2022	<b>Insect Development and Life Histories cont'd</b>	
27 Oct. 2022	<b>Examination #2</b>	
01 Nov 2022	<b>Insects and Plants</b>	Chap 10
03 Nov 2022	<b>Insects and Plants ... Cont'd</b>	
08 Nov. 2022	<b>Insect Societies</b>	Chap. 11
10 Nov. 2022	<b>Insect Societies ... Cont'd</b>	
15 Nov. 2022	<b>Introduction to Medical Entomology</b>	
17 Nov. 2022	<b>Medical Entomology Cont'd</b>	
22 Nov. 2022	<b>Examination #3</b>	
24 Nov. 2022	<b>No Class Thanksgiving Vacation ... Go south &amp; collect insects.</b>	
29 Nov. 2022	<b>Forensic Entomology</b>	Chap 9 section 9.4
01 Dec. 2022	<b>Forensic Entomology continued</b>	
06 Dec. 2022	<b>Overview Reminder Collections Due by 4:00.</b>	
08 Dec. 2022	<b>Insects are food. Induction into The Dead Bug Society.</b>	Chap 1
13 Dec. 2022	<b>FINAL EXAMINATION ... 10:30 - 12:30 EESAT 190</b>	

Please note that this syllabus is tentative. I will make every attempt to cover the materials in the syllabus as outlined but reserve the right to make changes.

**Grading:** The grade you earn in Insect Biology is an average of your Lecture and Laboratory grade. Regardless of the final lecture/lab average, to receive a final course grade of A or B, a student must earn a minimum of a C in the lab and lecture portion of the course. If your semester grade in either the lecture or the lab is an F, the highest grade you can earn in the course is a D

Participation points: You can add up to 3 percentage points to each lecture test (opportunity) based on class participation. Participation points are based primarily on quizzes. Quizzes are usually given in the first 10 minutes of the class. The quizzes are not scored and are not returned. However, to get credit for taking the quiz, you are expected to make an effort to answer the questions. Your answers provide me feedback on your progress. They also offer you insight into the type of questions and material that will be covered in the opportunities.

Lecture requirements are the same for undergraduates and graduate students. However, graduate students are considered separate from undergraduate students when calculating lecture test grades. Graduate student exams will often include additional short answer questions. Graduate scores on opportunities will not be considered if a curve is applied to an opportunity. The requirements of the insect biology laboratory differ for graduate students. These differences are outlined in the laboratory syllabus.

Final lecture grades are based on the following scale: Grade Average Total Pts needed A 90-100 360- 400 B 80-89.99 320 – 359.99 C 70-70.99 280 - 319.99 D 60-69.99 240 - 279.99 F 59.99-0 239.99 - 0

Final Insect Biology grade = (lecture percentage + laboratory percentage) / 2

Grade	Average	Total Pts Needed
A	90-100	360- 400
B	80-89.99	320 – 359.99
C	70-70.99	280 - 319.99
D	60-69.99	240 - 279.99
F	59.99-0	239.99 - 0

Although I do not anticipate any reason to modify this grading plan, I reserve the right to do so if circumstances warrant. I will inform the class if modifications to the grading scale are necessary.

**Office Hours:** If you are having problems with the class material, you are encouraged to talk with me as soon as possible; there is not much I can do for you during the last few weeks of the class. Please feel free to drop by during posted office hours. My office is in EESAT 310F or you may e-mail me for an appointment at [kennedy@unt.edu](mailto:kennedy@unt.edu). It is always a good idea to contact me (even for visits during posted office hours) before you visit.

**Dishonesty:** Academic dishonesty in this class is unacceptable and will not be tolerated in any form. Cheating affects the entire class. All persons involved in academic dishonesty will be disciplined in accordance with University regulations and procedures. See the end of this syllabus for examples of academic dishonesty and consequences. Before you can proceed in

either the lecture or laboratory, you must have on file a signed ***BIOL 4070/5070 Biology of Insects Policy on Plagiarism and Cheating***. This policy is applicable in lecture and laboratory.

**Drop Information:** If you decide to drop the class, ALL EQUIPMENT assigned to you (collecting and insect preparation materials) **MUST** be returned to the lab instructor. There are no exceptions to this policy. Failure to turn in equipment is CONSIDERED THEFT OF UNIVERSITY PROPERTY and will be reported to the UNT police department

**ACCEPTABLE STUDENT BEHAVIOR** Student behavior that interferes with an instructor's ability to conduct a class or other students' learning opportunities is unacceptable and disruptive and will not be tolerated in any instructional forum at UNT. Students engaging in inappropriate behavior will be directed to leave the classroom. The instructor may refer the student to the Center for Student Rights and Responsibilities to consider whether the student's conduct violated the Code of Student Conduct. The University's expectations for student conduct apply to all instructional forums, including University and electronic classrooms, labs, discussion groups, field trips, etc. The Code of Student Conduct can be found at <https://policy.unt.edu/policy/07-012>

It is expected that student behavior will be courteous of the course instructors and other students. Students should arrive for class early and leave only at the end. On those days that you must arrive late, **please quietly enter the classroom and do not disrupt the class during your entrance.** If you missed the handouts, **please wait** until the end of the class to receive them.

Cell phones must be turned off during class. This course is taught in a small class room texting, surfing the internet is a distraction to the instructor and students. Students violating such norms will be asked and expected to leave the classroom.

**Students do not have permission to video or audio record lectures or laboratory presentations.**

### **SEXUAL DISCRIMINATION, HARASSMENT, & ASSAULT**

**UNT** is committed to providing an environment free of all forms of discrimination and sexual harassment, including sexual assault, domestic violence, dating violence, and stalking. If you (or someone you know) has experienced or experiences any of these acts of aggression, please know that you are not alone. The federal Title IX law makes it clear that violence and harassment based on sex and gender are Civil Rights offenses. UNT has staff members trained to support you in navigating campus life, accessing health and counseling services, providing academic and housing accommodations, helping with legal protective orders, and more. UNT's Dean of Students' website offers a range of on-campus and off-campus resources to help support survivors, depending on their needs. A summary of Student Resources for Sexual Assault, Sexual Misconduct, Relationship Violence, and Stalking can be found at <https://studentaffairs.unt.edu/dean-of-students>

**Disability Accommodation:** *The University of North Texas makes reasonable academic accommodation for students with disabilities. Students seeking reasonable accommodation must*

*first register with the Office of Disability Accommodation (ODA) to verify their eligibility. If a disability is verified, the ODA will provide you with a reasonable accommodation letter to be delivered to Faculty to begin a private discussion regarding your specific needs in a course. You may request reasonable accommodations at any time. However, ODA notices of reasonable accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of reasonable accommodation for every semester and must meet with each faculty member prior to implementation in each class. Students are strongly encouraged to deliver letters of reasonable accommodation during faculty office hours or by appointment. Faculty members have the authority to ask students to discuss such letters during their designated office hours to protect the privacy of the student. For additional information, see the Office of Disability Accommodation website at <http://www.unt.edu/oda>. You may also contact them by phone at 940.565.4323.*

## **ACADEMIC SUPPORT & STUDENT SERVICES**

### **Mental Health**

UNT provides mental health resources to students to help ensure there are numerous outlets to turn to that wholeheartedly care for and are there for students in need, regardless of the nature of an issue or its severity. Listed below are several resources on campus that can support your academic success and mental well-being:

- Student Health and Wellness Center (<https://studentaffairs.unt.edu/student-health-and-wellness-center>)
- Counseling and Testing Services (<https://studentaffairs.unt.edu/counseling-and-testing-services>)
- UNT Care Team (<https://studentaffairs.unt.edu/care>)
- UNT Psychiatric Services (<https://studentaffairs.unt.edu/student-health-and-wellness-center/services/psychiatry> )
- Individual Counseling <https://studentaffairs.unt.edu/counseling-and-testing-services/services/individual-counseling> )

### **Chosen Names**

A chosen name is a name that a person goes by that may or may not match their legal name. If you have a chosen name that is different from your legal name and would like that to be used in class, please let the instructor know.

### **Pronouns**

You can add your pronouns to your Canvas account so that they follow your name when posting to discussion boards, submitting assignments, etc.

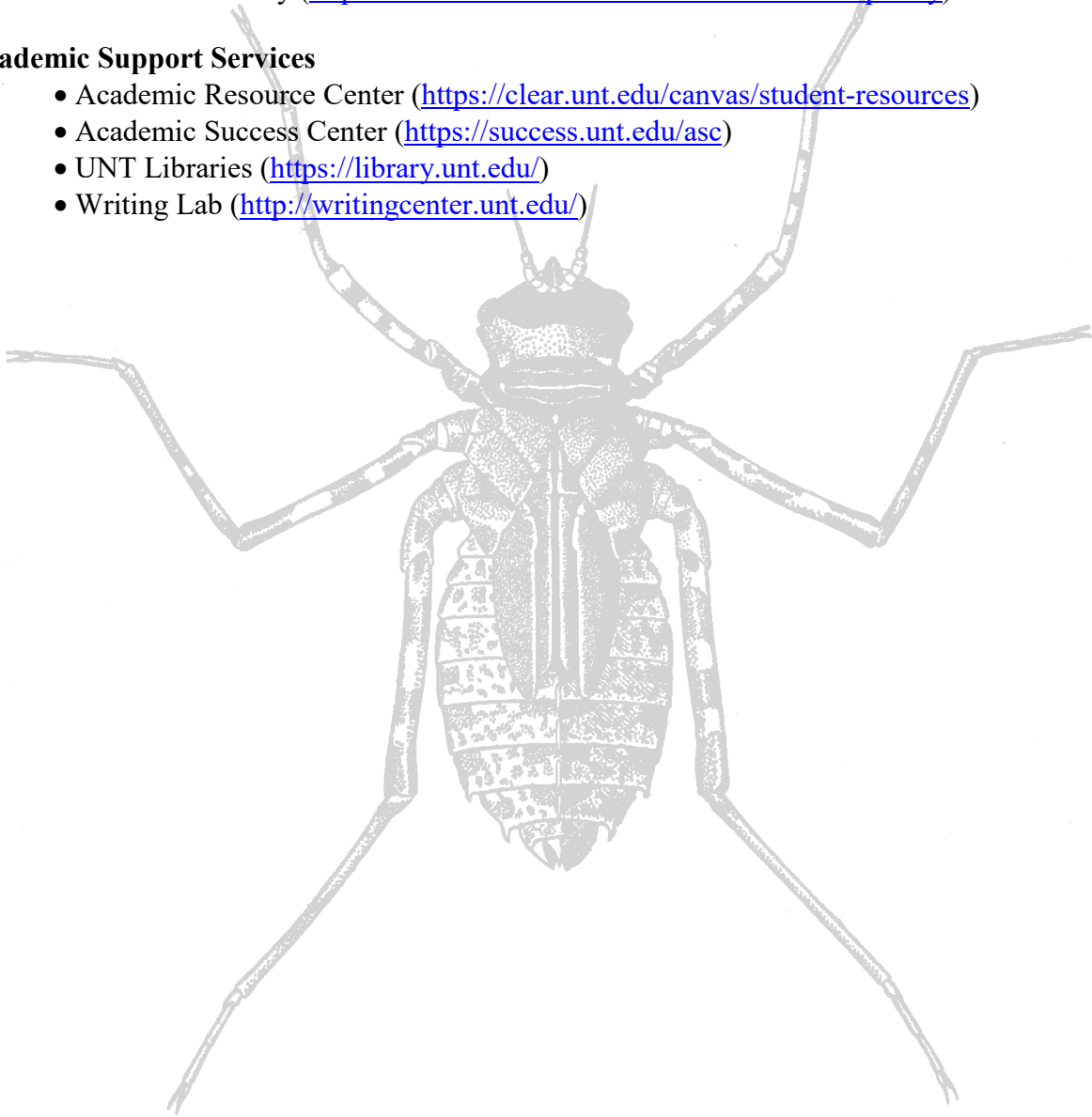
### **Additional Student Support Services**

- Registrar (<https://registrar.unt.edu/registration>)
- Financial Aid (<https://financialaid.unt.edu/>)

- Student Legal Services (<https://studentaffairs.unt.edu/student-legal-services>)
- Career Center (<https://studentaffairs.unt.edu/career-center>)
- Multicultural Center (<https://edo.unt.edu/multicultural-center>)
- Counseling and Testing Services (<https://studentaffairs.unt.edu/counseling-and-testing-services>)
- Pride Alliance (<https://edo.unt.edu/pridealliance>)
- UNT Food Pantry (<https://deanofstudents.unt.edu/resources/food-pantry>)

### **Academic Support Services**

- Academic Resource Center (<https://clear.unt.edu/canvas/student-resources>)
- Academic Success Center (<https://success.unt.edu/asc>)
- UNT Libraries (<https://library.unt.edu/>)
- Writing Lab (<http://writingcenter.unt.edu/>)





## **BIOL 4070/5070 BIOLOGY OF INSECTS**

### **POLICY ON PLAGIARISM AND CHEATING <sup>1</sup>**

**University Policy:** Your Instructors (lecture and laboratory) support and will enforce the University of North Texas policies concerning academic misconduct. Academic dishonesty in this class is unacceptable and will not be tolerated in any form. Please consult the website <https://vpaa.unt.edu/ss/integrity> for details.

Categories of Misconduct for which students are subject to discipline falls into the following categories: **Acts of Dishonesty, including but not limited to:**

1. Academic dishonesty -- cheating. The term "cheating" includes, but is not limited to:
  - a. copying or any unauthorized assistance in taking quizzes, tests, or examinations,
  - b. dependence upon the aid of sources beyond those authorized by the instructor in writing papers, preparing reports, solving problems, or carrying out other assignments,
2. Academic dishonesty -- plagiarism. The term "plagiarism" includes, but is not limited to:
  - a. the knowing or negligent use by paraphrase or direct quotation of the published or unpublished work of another person without full and clear acknowledgment, and the knowing or negligent unacknowledged use of materials prepared by another person or by an agency engaged in the selling of term papers or other academic materials (for example turning in insects bought on eBay).

### **Penalties for Academic Misconduct**

- First offense: A "0" will be recorded as the score for that activity **AND** the final course grade reduced by one complete grade.
- Second offense: Assignment of F (Fail) for the final course grade.
- For grievous infractions such as, but not limited to, a systematic or collaborative event: An assignment of F (Fail) for the final course grade may be issued in the case of a first offense. An example of a grievous 1<sup>st</sup> offense that will result in an "F" in the course would be turning in collections that you have stolen, borrowed, or otherwise not personally collected and try to pass them off as your work.



I acknowledge that:

- (1) I have been provided a copy of and read the BIOL 4070/5070 Policy on Plagiarism and Cheating located in the course syllabus.
- (2) I understand that instructors of this course have a zero tolerance policy for plagiarism and cheating and that policies as outlined in the syllabus will be enforced, without exception.

Print Name: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

