AINSECT BIOLOGY LAB **FALL 2023**

Tuesdays 1-3:50pm
Room: EESAT 358
TA: Maddy Hannappel
TA email: MaddyHannappel@my.unt.edu

Objectives and Requirements

To learn, memorize and sight ID families of insects in our region. Students will collect insects to be identified, pinned, and submitted as an insect collection. Students' insect collections will be graded on the number of insect families collected, quality of pinning and labelling. Identification skills will be assessed in 2 practical exams: students will sight ID insect orders and families covered in lab.

Attendance

Attendance is required - attendance points are based on participation and completion of lab assignments. Use of cellphone for non-lab activities, leaving lab early without TA permission and working on non-Insect Biology assignments are examples of actions resulting in loss of attendance points (see grading breakdown below). Email Maddy Hannappel and James Kennedy in advance if you will be absent from lab. Lack of communication will result in a reduction of attendance points.

Office Hours/Questions

I am available by email for questions and can set up a time to meet in person.

Insect Biology Laboratory Schedule

Date	Lab Activity
Aug 22	Introduction; Morphology and Microscope lesson; Grasshopper external morphology dissection
Aug 29	Equipment distribution **Orders:** Collembola, Diplura, Protura, Archaeognatha, Zygentoma, Ephemeroptera & Odonata
Sep 5	***FIELD TRIP!!!!!*** *B*ring collecting equipment, snack, water, sunscreen, hat and backpack.
Sep 12	**Orders:** Plecoptera, Dermaptera, Orthoptera, Embioptera, Phasmatodea, Mantodea & Blattodea
Sept 19	***FIELD TRIP!!!!!*** *B*ring collecting equipment, snack, water, sunscreen, hat and backpack.
Sept 26	**Orders:** Psocodea, Phthiraptera, Thysanoptera, Hemiptera, Neuroptera, Megaloptera, Raphidioptera
Oct 3	***** Break up orders to fill this week**
Oct 10	**Collection Check** Minimum 10 orders, 25 families, total 30 insects pinned and labeled
Oct 17	**LAB PRACTICAL**
Oct 24	**Orders:** Coleoptera
Oct 31	**Orders:** Diptera, Mecoptera, Siphanoptera
Nov 7	**Orders:** Trichoptera, Lepidoptera
Nov 14	**Orders:** Hymenoptera
Nov 21	**THANKSGIVING - NO LAB**
Nov 28	**LAB PRACTICAL**
Dec 5	**FINAL COLLECTION & EQUIPMENT Due by 4pm**

Assignment Schedule and Grade Breakdown

ASSIGNMENT	POINTS	DUE DATE
Collection Check	30	October 13
Practical 1	100	October 20
FINAL Collection	234 (UG) 283 (G)	December 8
Practical 2	100	December 1
Attendance	100 points	
Pop quizzes	20 points	
TOTAL	584 (UG) 633(G)	

Collection Requirements

Minimum collection requirements:

The following point system will be used for grading insect collections. A passing collection grade (70% or above) will only be granted to collections that meet these minimum requirements

Category	Minimum Undergraduate	Minimum Graduate
Total insects	50	75
Orders	12	14
Families	36	42
Collection Locations	4	5

* A minimum of **50/75**-pinned insects must be turned in *
* A minimum of **12/14**-Orders must be turned *
* A minimum of **36/42**-Families must be turned in *
* A minimum of **4/5** – Unique Collecting Locals* (see below for definition)

Collection grading rubric:

All insects turned in must be **adults**, except for those needed to meet the immature category. If not labeled as immature then it is assumed that the life stage was mis-identified and no points will be awarded for identification. Below are the points awarded for taxonomy, collection and optional. Items in grey under General Collection are required for a passing collection grade.

Taxonomic Point Values	**Points**	**Undergraduate Scoring**	**Graduate Scoring**
Order	2 pts/ unique Order	24 min / 26 max	28 min / 30 max
Repeated Order	0 pts	0	0
Family	1 pt / unique Family	36 min / 42 max	42 min / 50 max
Repeated Family	1 pt each	0 min / 4 max	0 min / 4 max
Collection Locations	**Points**	**Undergraduate Scoring**	**Graduate Scoring**
Unique Locals	2 pts ea	8 min / 12 max	10 min / 14 max
General Collection Points	**Points**	**Undergraduate Scoring**	**Graduate Scoring**
Correct Mounting/Labeling	1 pts each	50 min / 65 max	75 min / 100 max
Specimen Condition	10 pts	10 maximum	10 maximum
Neatness/ Organization	10 pts	10 maximum	10 maximum
Phylogenetic Spreadsheet	15 pts	15 maximum	15 maximum
Ecological Categories	1-2 pts each (see list)	21 min / 39 max	21 min / 39 max
Micro-pinned/pointed	1 pt each (5 required)	5 points only	5 points only
Spread Wings	1 pt each (3 required)	3 points only	3 points only
Odonata Envelope*	1 pt (1 required)	1 point only	1 point only
2 slide mounted Orders**	1 pt (2 required)	2 points only	2 points only
Immature specimens***	1 pt (1 required)	1 min / 5 max	0 min / 5 max
Total		**165 min / 234 max**	**200 min / 283 max**
Optional Points	**Points**	**Undergraduate**	**Graduate Scoring**
Identified Exuviae (Order)	2 pt each	4 pts maximum	4 pts maximum
Reared Specimen ****	3 pts each	6 pts maximum	6 pts maximum
Multiple life stages *****	5 pts each	5 pts maximum	5 pts maximum
Total Additional Pts		**15 pts**	**15 pts**

* Enveloped Odonata specimen will count as a pinned Order

** Orders that can be slide mounted are: Thysanura, Collembola, Psocoptera, Pthiraptera (Mallophaga/Anoplura), Siphonoptera

*** Immature specimens can only be variations of: 5 holometabolous, 0 hemimetabolous OR 4 holometabolous, 1 hemimetabolous

**** Reared specimen must contain the last larval exuviae or pupal skin and the adult (identified to family)
***** Multiple life stages can be a series for any Order (i.e. Hymenoptera Wasp, egg (if possible), larvae, pupae and adult. Lepidoptera Butterfly egg (if possible), larvae, chrysalis, and adult). Shed exuviae would be acceptable for orders that do not contain pupae.

Unique Collection Local – defined as different locations and is NOT to be same location different days. Places such as UNT campus will be considered the same location even though collection may have occurred in a variety of areas.

Collection Label Guidelines

Insect labels: Must be typed, Aerial 4pt font; minimize white space on labels. Cardstock is provided in the lab as well as use of the lab printer. Have your labels done beforehand and on a jump drive – the computer is not connected to the Internet. See template on Blackboard.

Locality label:
Country: State: County
General location
Reference to landmark
Date (day-month in roman numerals-year)
Coll: *first initial and last name of person that collected*

USA: TX: Denton Co.
Apogee Stadium Pond
.5 mi west of IH-35 on Highland Drive
(GPS cords are also fine)
24-VIII-2013
Coll: S.C. Moore

Determination label:
Order:
(you may also include the suborder here, but not required)
Family:
Det by *first initial and last name of person and year determined*
Eco Cat:

Hemiptera
Heteroptera
Pentatomidae

Det. SC Moore 2013
Eco Cat: Chem Defense

Arrangement of Collection & Spreadsheet

Your collection and collection spreadsheet will be arranged phylogenetically (follow the phylogenetic tree diagram in the back of your book for this order). The insects in your collection should follow chronologically with your spreadsheet (ex. If the first insect you have pinned is Odonata: Gomphiidae it should also be the first insect on your spreadsheet) and be organized from left to right, top to bottom in your collection box (as if you were reading a book). **ORDERS should follow the PHYLOGENETIC tree located in the back of your book. FAMILIES should be placed in ALPHABETICAL order within each ORDER.** Specimens that are in vials, slides or envelopes can be stored in a separate container but must follow the phylogenetic order and be placed accordingly in your spreadsheet. Only specimens that you wish to have graded should be submitted; points will be deducted for misidentifications.

A spreadsheet template is provided on CANVAS, please enter identification, count, life stage and location information for each specimen turned in; this will then be uploaded into our museum database for future use by students and researchers.

Ecological Categories

Your collection must contain at least one representative of the following ecological categories. Specimens you select to fulfill an ecological category must be labeled with the Eco Cat that they fulfill and can be placed on your determination

label. You cannot turn in two identical specimens for the same category and get multiple credits (ex. Leaf Chewing must have a grasshopper and a walking stick, NOT two grasshoppers).

# Families	Category	Code for Label	Example
2	Leaf feeding (chewing)	LEAF CHEWING	Grasshopper
2	Plant sucking	PLANT SUCKING	Aphid
2	Feeds on vertebrate	VERT. SUCKER	Mosquito
2	Predatory on Insect*	INSECT PREDATOR	Dragonfly
1	Parasite on other insects	INSECT PARASITE	Ichneumon wasp
1	Aquatic as immature & adult	AQUATIC ADULT	Water boatman
2	Litter inhabitant	LITTER	Ground beetle
2	Rotten wood dweller	WOOD	Termite
2	Household pest	HOUSE PEST	House fly
2	Nocturnally active	NIGHT	Moth
2	Social insect	SOCIAL	Ant
2	Sound producer	ACOUSTIC	Cricket
2	Pollinators	POLLINATOR	Honey bee
2	Aposematic coloration	WARNING COLOR	Yellow jacket
2	Camouflage coloration	CRYPTIC COLOR	Katydid
2	Casemaking insect	CASE MAKER	Caddisfly larvae
2	Aquatic larvae	AQUATIC LARVAE	MAYFLY NAIAD
2	Batesian mimic	MIMIC	Hoverfly
2	Chemical defenses	CHEM DEFENSE	Stink bug
2	Agricultural pests	AG PEST	Too many to pick
1	Dung or carrion feeder	SAPROPHYTE	Dung beetle
21/39	Total Points		

*Adults whose larvae fulfill this category may be used

Field Trips Rules & Stuff to Bring

1. Have Fun
2. DO NOT KILL any other animal on our field trips (**this will result in an F for the course**)
3. Ride in University provided vehicles (parking is limited at some field locations or permits are required)
4. Bring a water bottle and food
5. Appropriate Clothing (you will get dirty)
    a. Long pants
    b. Shirts with sleeves
    c. Extra clothing (we may get wet)
6. Appropriate Shoes (they will get muddy)
    a. Close toed shoes are recommended – NO FLIP FLOPS
7. Equipment
    a. Net
    b. Jars
    c. Backpack
    d. Envelopes
    e. Writing Utensils
    f. Extra storage for delicate insects
8. Stuff you may encounter: snakes, poison ivy, bull nettle, spiders & webs, and other various wild animals
9. If you bring it with you, remember to take it with you – this includes trash.
10. Medical condition – ALLERGIES to stinging insects please email me and let me know emergency contact information if needed and what medications you carry with you (i.e. epi pen), or if there are other medical

information that I would need to know on a field trip if you are unable to communicate. EMAIL me or talk to me in private concerning this, it will remain confidential except in the case of an emergency.

Disability Accommodation: *The University of North Texas makes reasonable academic accommodation for students with disabilities. Students seeking 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 an accommodation letter to be delivered to faculty to begin a private discussion regarding your specific needs in a course. You may request accommodations at any time, however, ODA notices of 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 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 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.*

Dishonesty:
Academic dishonesty in this class is unacceptable and will not be tolerated in any form. Cheating impacts the entire class. All persons involved in academic dishonesty will be disciplined in accordance with University regulations and procedures. 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*. Insects from collections submitted in any other course may not be used. Likewise, insects taken from any of the UNT collections may not be used in your collections. You may not use purchased insects. Insects that you may have collected during the preceding summer are fine. Trading insects between members of the class is permitted, even encouraged, it helps build collegiality among the class, but you alone are responsible for the accuracy of the label data associated with all specimens that you submit. The name of the collector (whether it was you or not is immaterial) must be indicated on the date-locality label accompanying all specimens. Inclusion of specimens according to the guidelines of the course constitutes grounds for complete failure of your collection.

Miscellaneous Warnings:
Certain insects, such as dermestid (carpet) beetles and ants (particularly a problem in EESAT building) feed on dry insect specimens. Your collection can be kept free of these pests by sticking the head of a common household straight pin into a naphthalene ball (a "moth ball") and then sticking the pin into the collection box. I will provide you with material to put in your collection to aid in deterring these unwanted insects.

Collecting Equipment: Each student will receive the following collection equipment which must be returned at the end of the semester. If the equipment is not returned or replaced, a grade of F will be assigned for the laboratory. If you withdraw without turning in your equipment a WF will be recorded.