Biology 3212FA
Invertebrate Zoology
Course syllabus

Fall term 2025

TEXTS: Textbook: **There is no required textbook, I can provide advice regarding choices if you would like a reference on hand.**
Lab Manual: **Available for download from mycourselink.**
Dissecting kit: **You will need to purchase a dissecting kit, available in the bookstore. This has a cost of about $50.00.**
iClicker: **Subscription based, cost based on subscription is $16 - $25 depending on length of subscription**

INSTRUCTOR: Dr. Joe Carney
office: CB 4020
phone: 766-7223
email: jcarney@lakeheadu.ca

LAB INSTRUCTOR:

OFFICE HOURS: posted on office door or by appointment

LECTURES: MWF – 09:30 – 10:30 pm – ATAC 2004

LABORATORY: Th – 2:30 – 5:30 pm – CB 3012 (**First lab: 4 September 2025**)

EVALUATION: Lecture Midterm = value 15 % date 10 October
Lecture Final = value 15 % (date TBA)
iClicker = value 15 %

Lab Supermarket = value 5 % due date October 23
Lab Midterm Exam = value 10 % date October 9
Lab Final Exam = value 20 % date November 27

Term Paper = value 20% due date 28 November

GRADES: A+ ≥ 90
A = 80 – 89 (1st class standing)
B = 70 – 79
C = 60 – 69
D = 50 – 59
E = 40 – 49 (failed)
F = 1 – 39 (failed)
F Academic Dishonesty = 0

Withdrawal without academic penalty: 7 November 2025

COURSE OBJECTIVES:
This course surveys the diversity of animals that lack notochords and/or vertebrae, ranging from single celled species to the great variety of multicellular body forms. Emphasis will be on form and function from a phylogenetic and evolutionary framework. Lectures will proceed through selected taxa following phylogenesis and the evolution of key innovations that define each group. Discussion of key concepts such as species concepts, body plans, and types of development will be incorporated into the lecture material. In the lab you will examine live and preserved specimens, and will be expected to recognize specific structures and understand the function(s) they serve, how they compare to structures that may perform the same (or different) function in other taxa, and how those structures may serve to define taxonomic groups. At the conclusion of the course you should be able to recognize species of the major invertebrate taxa, how they function, survive and persist in their environment and, hopefully, have an appreciation of the great array of animal diversity that currently exists.

Course Learning Outcomes
The learning outcomes of this course are for you to be able to:

1. Demonstrate the ability to use microscopes.
2. Demonstrate the ability to perform dissections using a variety of taxa
3. Describe diversity of animals that lack notochords and/or vertebrae, ranging from single celled species to the great variety of multicellular body forms.
4. Explain the role and methods of phylogenetics in understanding relationships among taxa.
5. Identify the evolution of key innovations in each taxonomic group.
6. Identify synapomorphies that define each taxonomic group.
7. Describe key concepts such as species definitions, animal body plans, and types of development in the evolution of major taxa.
8. Recognize specific structures and understand the function(s) they serve, how they compare to structures that may perform the same (or different) functions in other taxa.
9. Demonstrate the ability to organize, analyze, critically interpret, and present information in written format.
10. Describe the great array of animal diversity that currently exists.

Course Policies
Exams:
Missed exams will receive a grade of zero unless you are absent for a documented valid reason such as a family or medical emergency. If you wish to have an exam regraded you must submit a written explanation of why you think the assigned grade was incorrect within 2 weeks of return of the exam. Be aware the entire exam will be re-evaluated and your mark may go up, remain the same, or go down.
Note: this does not apply to arithmetic errors such as incorrect addition. You may bring these types of errors to my attention for correction, without a written explanation, at any time.

Term Paper

Papers submitted late will be penalized 10% per day except for a documented valid reason such as a family or medical emergency. Papers will not be graded in the absence of a completed and signed form indicating the understanding of plagiarism in its many forms. **This will require the completion of an online exercise and quiz relating to plagiarism**. Additional direction regarding topics and format will be provided in class.

GenAI Use Permitted

Generative artificial intelligence (Generative AI or GenAI) is a category of AI systems capable of generating text, images, or other media in response to prompts. These systems include ChatGPT and its variant Bing (built by OpenAI) and Bard (built by Google) among several others. Other generative AI models include artificial intelligence art systems such as Stable Diffusion, Midjourney, and DALL-E.

GenAI tools can provide valuable assistance and support in academic work. However, it is essential to use them responsibly and ethically. The following information and guidelines apply to the use of AI-based tools in this course:

Student Responsibility – It is the responsibility of the student to understand the limitations of AI-based tools. While these tools can provide suggestions and insights, final decisions and critical thinking should come from the student's own understanding and effort. Before submitting, review your work with this in mind. If you don't understand what type of GenAI usage is appropriate, ask the course instructor for clarification.

Formative Usage – In this class, you may use GenAI for formative, but not summative, work. That means it can be used as a "possibility engine" (brainstorm tool), a "study buddy," a "collaboration coach," a "guide on the side," a "personal tutor," a "co-designer," etc. to help you learn course content, but it cannot be used as the primary vehicle for any work that is submitted for marks or evaluation. (See UNESCO's "ChatGPT and Artificial Intelligence in Higher Education Quick Start Guide," page 9, for explanations and examples of these and other roles GenAI can productively serve in a formative capacity.)

Error & Bias – AI content is created by computer algorithms that have been trained using large amounts of data. The AI learns from patterns and examples in the data to generate new content that resembles what it has been trained on. If the training data used to train the AI model is biased or limited in scope, the AI may reproduce content that is inaccurate, incomplete, offensive, and/or biased. Computers cannot think for themselves, and it can't distinguish between valid information and invalid information, or even good data that is inappropriate, and good data that is appropriate. Students should weigh this when considering material produced by AI. Remember the old computer programming adage: Garbage in, garbage out.

Trustworthiness – Generative AI can be vulnerable to manipulation and misuse. It can be used to generate fake news, misinformation, or deepfake content, which can have harmful consequences. Students should check AI generated content against reputable sources.

Plagiarism – Because [writing and critical thinking ability] are learning outcomes of this course, all work submitted for evaluation must be the student's original work. Using the work of others

(including content curated/generated by AI) without proper citation is considered plagiarism. See "Citing Artificial Intelligence" for assistance with correct documentation.

Citation of Sources – If you use material generated by an AI program for an assignment in this course, it must be cited like any other source (with due consideration for the quality of the source, which may be judged as poor). Failure to do so will be considered a violation of academic integrity. See Student Code of Conduct – Academic Integrity.

Academic Dishonesty

(The following is taken directly from the University website, with minor modification.)
The University takes a most serious view of offences against academic honesty. Penalties for dealing with such offences will be strictly enforced.
The following rules shall govern the treatment of candidates who have been found guilty of attempting to obtain academic credit dishonestly.

(a) The minimum penalty for a candidate found guilty of plagiarism, or of cheating on any part of a course will be a zero for the work concerned.

(b) A candidate found guilty of cheating on a formal examination or a test, or of serious or repeated plagiarism, or of unofficially obtaining a copy of an examination paper before the examination is scheduled to be written, will receive zero for the course and may be expelled from the University.

A copy of the "Code of Student Behaviour and Disciplinary Procedures" may be obtained from the Office of the Registrar.

iClicker

The iClicker app on your phone is required for in-class participation and voting in this course. You download this at https://www.iclicker.com/students/. iClicker is a response system that allows you to respond to questions I pose during class; you will be graded on that feedback and/or your in-class participation. In order to receive this credit, you will need to register your iClicker (first lab, September 12). iClicker will be used every day in class and in lab.

The iClicker website (www.iclicker.com) has support documentation, video tutorials, and FAQs for students.

Part of the course evaluation will be through make use of very short in class quizzes using iClicker app on your phone. You will answer questions in class and lab (all multiple choice). These will provide you and me with insight regarding your understanding of various concepts and principles as the course proceeds. Scoring is 1 point for answering the question and 1 point for providing a correct answer. The final score for the clicker portion of your grade will be based on 80% of the total number of available points. For example, if there are 100 total points, your score will be calculated out of 80. If you answer every question, and get them all wrong, then you would still get 50/80. This allows for absences and reduces any punitive aspect to this part of the grade. It also means you can score more than 100% for this part of your grade, which has happened in almost every class I have done this. If you are not present, then you will have missed that quiz, there is no do-over.