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|-------------------|-----------------------------|------------------------------|
| <b>Course ID:</b> | <b>Course Title:</b>        | <b>Winter 2020</b>           |
| <b>ZOO 275</b>    | <b>Invertebrate zoology</b> | <b>Prerequisite: BIO 133</b> |
|                   |                             | <b>Credits: 3</b>            |

| Class Information         |                                     | Instructor Information |  | Important Dates                                    |              |
|---------------------------|-------------------------------------|------------------------|--|--|--------------|
| <b>Days:</b>              | Tues/Thurs                          | <b>Instructor:</b>     | Dr. Matthew Morris   | <b>First day of classes:</b>                       | Tue, Jan 7   |
| <b>Time:</b>              | 9:45-11:00 am                       | <b>Email:</b>          | <a href="mailto:Matthew.Morris@ambrose.edu">Matthew.Morris@ambrose.edu</a> | <b>Last day to add/drop, or change to audit:</b>   | Sun, Jan 19  |
| <b>Room:</b>              | A2133                               | <b>Phone:</b>          | ext. 6932  | <b>Last day to request revised exam:</b>           | Mon, Mar 9   |
| <b>Lab/<br/>Tutorial:</b> | 3                                   | <b>Office:</b>         | Wednesdays   | <b>Last day to withdraw from course:</b>           | Fri, Mar 20  |
|                           | Mondays, 1-3:45<br>A2151 (Dr. Pike) | <b>Office Hours:</b>   | All day  | <b>Last day to apply for coursework extension:</b> | Mon, Mar 30  |
| <b>Final Exam:</b>        |                                     |                        |  | <b>Last day of classes:</b>                        | Thurs, Apr 9 |

### Course Description

This course deals with the organization and morphology of the invertebrate phyla.

### Expected Learning Outcomes

Coming out of this class, students will:

1. Develop a knowledge of animal diversity and the relationship between animal form and function
2. Be able to identify animals to phylum and class
3. Describe the evolutionary history of invertebrates
4. Read, interpret, and create dichotomous keys
5. Understand the ecosystem services provided by invertebrates
6. Gain experience at dissection techniques and scientific drawings

### Textbooks

Biology of the Invertebrates, Pechenik, Jan A. McGraw-Hill, 6<sup>th</sup> ed.

Animal Earth, Piper, Ross. 2013. Thames and Hudson.

## Course Schedule

| Date     | Topic   | Ross chapters   | Pechenik chapters |
|----------|---|---|-------------------|
| Jan 7    | What is an animal?  | Introduction  | 1, 2              |
| Jan 9    | In the beginning  |   |                   |
| Jan 14   | Your epidermis is showing   | Placozoa, Porifera  | 4                 |
| Jan 16   | The circle of life  | Ctenophora, Cnidaria  | 5, 6, 7           |
| Jan 21   | The circle of life II   | Cnidaria continued  |                   |
| Jan 23   | A tale of two penises   | Ectoprocta (Bryozoa),<br>Entoprocta, Cycliophora,<br>Chaetognatha | 18, 19            |
| Jan 28   | Just disgusting   | Platyhelminthes   | 8                 |
| Jan 30   | PROGRAM DAY   |   |                   |
| Feb 4    | Wheel-bearers and worms<br>with teeth                             | Rotifera, Micrognathozoa,<br>Gnathostomulida                      | 9, 10, 18         |
| Feb 6    | Extremely specific parasites<br>and hairy grandmothers            | Orthonectida, Dicyemida,<br>Gastrotricha                          |                   |
| Feb 11   | Look at that S-car go!  | Mollusca  | 12                |
| Feb 13   | The smartest invertebrates  | Mollusca  | 12                |
| Feb 18   | READING BREAK   |   |                   |
| Feb 20   | READING BREAK   |   |                   |
| Feb 25   | Exploding sperm bombs   | Annelida  | 13                |
| Feb 27   | Tastes like chicken!  | Guest lecture with John<br>Wood                                   |                   |
| March 3  | Bloodsuckers and dirt-eaters                                      | Annelida II   |                   |
| March 5  | The frustrating world of<br>things that look like other<br>things | Nemertea, Brachiopoda,<br>Phoronida                               | 11, 19            |
| March 10 | Just disgusting II  | Nematoda,<br>Nematomorpha   | 16, 17            |
| March 12 | Spitting "worms", water<br>"bears"                                | Tardigrada, Onychophora   | 15, 14            |
| March 17 | Armoured monsters   | Arthropoda  | 14                |
| March 19 | Rulers of the sea   | Arthropoda: Crustacea   | 14                |
| March 24 | Rulers of the land  | Arthropoda: Hexapoda  | 14                |
| March 26 | The scientific name is "penis<br>worm"                            | Priapulida, Loricifera,<br>Kinorhyncha                            | 17                |
| March 31 | Surprisingly like us  | Echinodermata   | 20                |
| April 2  | Your grandmother was a<br>(xenoturbellid) worm                    | Xenacoelomorpha,<br>Hemichordata                                  | 22, 21            |
| April 7  | Almost human  | Cephalochordata,<br>Urochordata (Tunicata)                        | 23                |
| April 9  | Invertebrate Olympics<br><b>Dichotomous keys due</b>              |   |                   |

## Laboratory Schedule

The labs will be weekly. You will be performing several dissections and examinations of species of each of the major phyla. Attendance at the laboratory sessions is COMPULSORY. Any lab missed without a valid excuse cannot be made up. Lab coats are required. The lab portion of this course will consist of graded scientific drawings and a graded dissection.

| Date     | Lab topic  | Due date              | Value (%) |
|----------|--|-----------------------|-----------|
| Jan 13   | Introduction to scientific drawings and dichotomous keys |                       |           |
| Jan 20   | Porifera, Ctenophora, Cnidaria                           | Drawing end of class  | 2         |
| Jan 27   | Cnidaria   | Drawing end of class  | 2         |
| Feb 3    | Platyhelminthes  | Drawing end of class  | 2         |
| Feb 10   | Rotifera   | Drawing end of class  | 2         |
| Feb 17   | Reading break  | NO LABS               |           |
| Feb 24   | Mollusca   | Drawings end of class | 2         |
| March 2  | Midterm  |                       | 20        |
| March 9  | Annelida and Nematoda                                    | Drawing end of class  | 4         |
| March 16 | Crustacea  | Drawing end of class  | 2         |
| March 23 | Hexapoda   | Drawing end of class  | 2         |
| March 30 | Echinodermata  | Graded dissection     | 5         |
| April 6  | Life in a pond   | Participation only    | 2         |

## Requirements:

This course consists of 3 hours of lectures per week, plus a 3-hour lab. The midterm will occupy one lab session. There is no exam for the lab, but the anatomy learned in class will be highlighted in the lab and will be important for the midterm and final exam. The final exam will be scheduled by the Registrar's office Jan 30.

Each class will begin with a 5 minute quiz on classification and anatomy.

## Attendance:

While attendance at lectures is not mandatory, it will help ensure success on course exams and assignments. Attendance at laboratory sessions is mandatory. Lab reports will not be accepted unless the lab has been attended or exceptions have been made with the instructor.

## Grade Summary:

Midterm – 20%

Final – 25%

Labs – 25%

Quizzes – 10%

Dichotomous key – 15%

Invertebrate Olympics – 5%

The available letters for course grades are as follows:

| Grad | Percent | Grade Point Value | Description   |
|------|---------|-------------------|---|
| A+   | 96-100  | 4.00              | Outstanding   |
| A    | 92-96   | 4.00              | Excellent - superior performance, showing comprehensive understanding of subject matter.                                  |
| A-   | 88-92   | 3.70              |   |
| B+   | 83-88   | 3.30              |   |
| B    | 78-83   | 3.00              | Good-clearly above average performance with knowledge of subject matter generally complete.                               |
| B-   | 73-78   | 2.70              |   |
| C+   | 68-73   | 2.30              |   |
| C    | 64-68   | 2.00              | Satisfactory – basic understanding of the subject matter. Grade point average below 2.00 is not sufficient for promotion. |
| C-   | 60-64   | 1.70              | Minimum grade required if needed as a prerequisite course   |
| D+   | 55-60   | 1.30              |   |
| D    | 50-55   | 1.00              | Minimal pass – marginal performance; generally insufficient preparation for subsequent courses in the same subject.       |
| F    | <50     | 0                 | Fail – unsatisfactory performance or failure to meet course requirements.   |

Because of the nature of the Alpha 4.00 system, there can be no uniform University-wide conversion scale. The relationship between raw scores (e.g. percentages) and the resultant letter grade will depend on the nature of the course and the instructor's assessment of the level of each class, compared to similar classes taught previously.

Please note that final grades will be available on student registration system. Printed grade sheets are not mailed out.

### Late assignment policies

Lab assignments and the dichotomous key cannot be submitted late without cause and approval from the professor. Lab assignments **are due at the end of lab**; the dichotomous key **at the beginning of the lecture**. Anything after the end of lab will be considered late. The penalty for late homework or lab assignments are as follows:

- 5%/day for late assignments that have been communicated to the professor ahead of time.
- 10%/day for late assignments if the professor has to track you down to find out what is going on.
- 0% on any assignments passed in one week after the due date, unless otherwise stated by the instructor. *These assignments will still be "graded" so that you can have feedback before the exam, even if your official grade is 0.*

**If your name is not on the assignment, it will not be graded and you will receive a grade of 0 for failing to submit an assignment.**

Missed midterms or final exams, without cause, cannot be made up. The only acceptable reason for missing an exam is illness, for which a doctor's note will be required, or death of an immediate family member. Give yourself plenty of time to get to school on exam days. Traffic or weather is no reason for missing an exam.

### **Plagiarism policy**

Some lab assignments will be submitted as a single copy per lab group. It is expected that all members of the group contribute equally to the assignment. This is a good opportunity to help your fellow students understand concepts they may be struggling with. Please ensure all members of the group are named on such assignments. **Group members whose names are not on the submitted assignment will receive a grade of zero.**

All other assignments will be submitted as one original piece of work per person. If you submit an assignment with only your name on it, it is assumed that you are the sole contributor of the work.

See below for Ambrose's statement defining plagiarism and outlining its consequences. In brief, it is your responsibility as a citizen of Ambrose to be aware of the policies of Ambrose and abide by them. Ignorance is no excuse. Plagiarism will not be tolerated.

Examples of plagiarism include, but are not limited, to:

1. Copying an assignment from someone else and submitting it as your own work.
2. Working with a friend and writing down identical answers, whether you understand the content or not, and submitting the assignments separately.
3. Quoting directly from a source without supplying quotation marks or a citation.
4. Quoting directly from a source without supplying quotation marks, even if it is referenced.
5. Copying nearly word-for-word from a source, changing only the occasional word, without providing quotation marks, even if it is referenced.
6. Submitting an assignment in which >30% of the content is properly quoted; that is, at least 70% of the words in an assignment need to be your own. A general rule of thumb: for every line quoted, there should be three lines of your own material explaining that quote.
7. Submitting the same or similar assignment for more than one class, or more than one iteration of the same class.
8. Not citing illustrations used in a paper.

### **Penalties for plagiarism**

For a first offense in any one of my classes, a zero on the assignment with no chance of rewriting it, and a note in your academic file.

For a second offense in any one of my classes, a zero in the class, and recommendation for a note on your transcript.

For a third offense in any one of my classes, a zero in the class and a recommendation for expulsion from the university.

Note that Ambrose has an appeals process in place if you feel that allegations of plagiarism are unfounded; these are for final marks only, and not for individual assignments.

Note that my record of a student's past plagiarism does not reset with each semester.

## Classroom Etiquette:

It is expected that students will take an active role in the learning process. This includes: (a) regular class and lab attendance, (b) reading course material in advance of class or labs, and (c) engaging in discussions during class or labs.

In respect to the professor and to your fellow students, we ask that you:

- a) Turn your phone off during class and that you don't use it for texting during lecture or lab;
- b) Not have conversations with the people beside you during lecture – it is very distracting to the people around you;
- c) Use your laptops for lecture material and assignments only – that you are not using the internet or Facebook during class time;
- d) Arrive to lecture and lab on time;
- e) Don't listen to music in class or lab.

These will help to maximize the learning experience for you and your fellow students (and will keep your professor in a good mood).

## Mental Health Support

All of us need a support system. We encourage students to build mental health supports and to reach out when help is needed.

On Campus:

- Counselling Services: [ambrose.edu/counselling](http://ambrose.edu/counselling)
- Peer Supportive Listening: One-to-one support in Student Life office. Hours posted at [ambrose.edu/wellness](http://ambrose.edu/wellness).
- For immediate crisis support, there are staff on campus who are trained in Suicide Intervention and Mental Health First Aid. See [ambrose.edu/crisissupport](http://ambrose.edu/crisissupport) for a list of staff members.

Off Campus:

- Distress Centre - 403-266-4357
- Sheldon Chumir Health Care Centre - 403-955-6200
- Emergency - 911

## Sexual Violence Support

All staff, faculty, and Residence student leaders have received *Sexual Violence Response to Disclosure* training. We will support you and help you find the resources you need. There is a website with on and off campus supports – [ambrose.edu/sexual-violence-response-and-awareness](http://ambrose.edu/sexual-violence-response-and-awareness).

Off Campus:

- Clinic: Sheldon Chumir Health Centre - 403-955-6200
- Calgary Communities Against Sexual Abuse - 403-237-5888

## Ambrose University Academic Policies:

### Communication

All students have received an Ambrose e-mail account upon registration. It is the student's responsibility to check this account regularly as the Ambrose email system will be the professor's instrument for notifying students of important matters (cancelled class sessions, extensions, requested appointments, etc.) between class sessions. If students do not wish to use their Ambrose accounts, they will need to forward all messages from the Ambrose account to another personal account.

### Registration

During the **Registration Revision Period** students may enter a course without permission, change the designation of any class from credit to audit and /or voluntary withdraw from a course without financial or academic penalty or record. Courses should be added or dropped on the student portal by the deadline date; please consult the List of Important Dates. After that date, the original status remains and the student is responsible for related fees.

Students intending to withdraw from a course after the Registration Revision Period must apply to the Office of the Registrar by submitting a "Request to Withdraw from a Course" form or by sending an email to the Registrar's Office by the **Withdrawal Deadline**; please consult the List of Important Dates on the my.ambrose.edu website. Students will not receive a tuition refund for courses from which they withdraw after the Registration Revision period. A grade of "W" will appear on their transcript.

Students wishing to withdraw from a course, but who fail to do so by the applicable date, will receive the grade earned in accordance with the course syllabus. A student obliged to withdraw from a course after the Withdrawal Deadline because of health or other reasons may apply to the Registrar for special consideration.

### Exam Scheduling

Students, who find a conflict in their exam schedule must submit a Revised Examination Request form to the Registrar's Office by the deadline date; please consult the List of Important Dates. Requests will be considered for the following reasons only: 1) the scheduled final examination slot conflicts with another exam; 2) the student has three final exams within three consecutive exam time blocks; 3) the scheduled final exam slot conflicts with an exam at another institution; 4) extenuating circumstances. Travel is not considered a valid excuse for re-scheduling or missing a final exam.

### Electronic Etiquette

Students are expected to treat their instructor, guest speakers, and fellow students with respect. It is disruptive to the learning goals of a course or seminar and disrespectful to fellow students and the instructor to use electronics for purposes unrelated to the course during a class session. Turn off all cell phones and other electronic devices during class. Laptops should be used for class-related purposes only. Do not use iPods, MP3 players, or headphones. Do not text, read, or send personal emails, go on Facebook or other social networks, search the internet, or play computer games during class. Some professors will not allow the use of any electronic devices in class. The professor has the right to disallow the student to use a

laptop in future lectures and/or to ask a student to withdraw from the session if s/he does not comply with this policy. Repeat offenders will be directed to the Dean. If you are expecting communication due to an emergency, please speak with the professor before the class begins.

### Academic Policies

It is the responsibility of all students to become familiar with and adhere to academic policies as stated in the Academic Calendar. Personal information (information about an individual that may be used to identify that individual) may be required as part of taking this class. Any information collected will only be used and disclosed for the purpose for which the collection was intended. For further information contact the Privacy Compliance Officer at [privacy@ambrose.edu](mailto:privacy@ambrose.edu).

### Extensions

Although extensions to coursework in the semester are at the discretion of the instructor, students may not turn in coursework for evaluation after the last day of the scheduled final examination period unless they have received permission for a course Extension from the Registrar's Office. Requests for course extensions or alternative examination time must be submitted to the Registrar's Office by the deadline date; please consult the List of Important Dates. Course extensions are only granted for serious issues that arise "due to circumstances beyond the student's control."

### Appeal of Grade

An appeal for change of grade on any course work must be made to the course instructor within one week of receiving notification of the grade. An appeal for change of final grade must be submitted to the Registrar's Office in writing and providing the basis for appeal within 30 days of receiving notification of the final grade, providing the basis for appeal. A review fee of \$50.00 must accompany the appeal. If the appeal is sustained, the fee will be refunded.

### Academic Integrity

We are committed to fostering personal integrity and will not overlook breaches of integrity such as plagiarism and cheating. Academic dishonesty is taken seriously at Ambrose University as it undermines our academic standards and affects the integrity of each member of our learning community. Any attempt to obtain credit for academic work through fraudulent, deceptive, or dishonest means is academic dishonesty. Plagiarism involves presenting someone else's ideas, words, or work as one's own. Plagiarism is fraud and theft, but plagiarism can also occur by accident when a student fails or forgets to acknowledge to another person's ideas or words. Plagiarism and cheating can result in a failing grade for an assignment, for the course, or immediate dismissal from the university. Students are expected to be familiar with the policies in the current Academic Calendar that deal with plagiarism, cheating, and the penalties and procedures for dealing with these matters. All cases of academic dishonesty are reported to the Academic Dean and become part of the student's permanent record.

**Note:** Students are strongly advised to retain this syllabus for their records.