Course: BIOL 3030 4.0 PHYSIOLOGY OF THE INVERTEBRATES

Term: Winter 2014

Prerequisite / Co-requisite: BIOL 2030 4.0

Course Instructor:
Dr. Jean-Paul Paluzzi
Room 221, Lumbers Building
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Office Hours: Tuesdays 10 to 11 AM or by appointment in Lumbers 221A.

Laboratory Teaching Assistant:
Mr. Dennis Kolosov
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Office Hours: TBA and by appointment.

Time and Location:
Lectures Tuesday & Thursday: 8:30 - 10AM in Life Sciences Building 101
Laboratory Group 1 Wednesday: 2:30 - 5:30 PM in Lumbers 124
Laboratory Group 2 Thursday: 2:30 - 5:30 PM in Lumbers 124

Expanded Course Description:
The invertebrates are a medically, economically and ecologically important group of animals. A number of invertebrates act as pathogens or vectors of disease. Malaria is one of the most important diseases in the world and is caused by a protozoan that is transmitted by anopheline mosquitoes. Economically speaking, invertebrates can be detrimental, serving as pests that destroy crops, but can also benefit us by serving as sources of food (eg. shrimp, lobster). Ecologically, invertebrates are an integral part of the food chain and can be utilized as bioindicators. Therefore it is in our best interest to study and understand the unique physiological processes of each phylum. In addition to lectures, students will write a concise 1 page review of an article published in a peer reviewed journal on a physiologically relevant topic and will present the hi-lights of this paper to the class. The laboratories will consist of hands-on experiments which demonstrate physiological mechanisms in the invertebrates. The majority of lab exercises will utilize insects because they are cheap to obtain and make convenient models for studying these processes.

Course Learning Objectives:
Through this course students will gain an appreciation for the importance and impact of invertebrates on our society. Students will understand and be able to describe invertebrate adaptations to important physiological processes.

Specific Learning Objectives:
- develop an awareness of specific invertebrates that are important to our society from an economic standpoint, and/or from a health perspective. Assessment: written term tests and examinations, written reports and oral presentations
- understand and be able to describe the morphology and associated physiology of invertebrate adaptations to locomotion, feeding, the maintenance of solute balance, extreme temperature tolerance and the processing of sensory information through the nervous system. Assessment: written term tests
and examinations, written reports and oral presentations, laboratory experiments with associated
written reports.
- acquire knowledge of various experimental techniques and how to apply them to solve
physiological questions. Assessment: laboratory experiments with associated written reports, written
examinations and term tests.
- development of scientific writing skills and oral presentation skills.
Assessment: written review, laboratory reports, oral presentation

Course Text / Readings:
There is no text book for the course. Several books are on reserve in the Steacie Library for background
and supplemental reading:
2. Invertebrate Zoology, D.T. Anderson (Editor) QL 362 I58 2001
4. Protozoa and other protists, M.A. Sleigh QL 366 S53 1989
5. Insect Endocrinology, Lawrence I. Gilbert
6. Biology of Ticks, Daniel E. Sonenshine and R. Michael Roe

Evaluation (in the order of the due date):
Test 1 (January 30th, 2014, in lecture) 15%
Full Lab Report 1 (Earthworm) (February 4th, 2014) 7%
Results Lab Report 1 (Proteins/Nitrogenous wastes) (Feb 12th/13th, 2014) 3%
Test 2 (March 6th, 2014 in lecture) 15%
Results Lab Report 2 (Malpighian tubules) (March 11th, 2014) 3%
Full Lab Report 2 (Daphnia) (March 19th/20th, 2014) 7%
Group Reviews and Presentations (April 2nd/3rd, 2014) 15%
Final Exam (Formal Exam Period) 35%

Grading, Assignment Submissions Lateness Penalties and Missed Exams Grading: The grading
scheme for the course conforms to the 9-point grading system used in undergraduate programs at York
(e.g., A+ = 9, A = 8, B+ = 7, C+ = 5, etc.). Assignments and tests will bear number grade (e.g. A' = 90
to 100, A = 80 to 90, B' = 75 to 79, etc.)
(For a full description of York grading system see the York University Undergraduate Calendar -
http://calendars.registrar.yorku.ca/pdfs/ug2004cal/calug04_5_acadinfo.pdf)

Group Review and Presentation Due Date Rules: Proper academic performance depends on students
doing their work not only well, but on time. Accordingly, the literature review for this course must be
received on April 2nd or 3rd (depending on your laboratory day) at the beginning of the laboratory
time and All individuals (ALL members of each group) must present their work on April 3 or 4 in
lab (depending on your laboratory day). A late penalty of 10% of the final grade, per day will apply.
(example: if an individual is given 70% for the report and presentation but, the report was handed in on
April 4th (if due on 3rd) then their final grade for the report and presentation will be 63%. If a member
of a group is absent, then that member will receive a grade of zero on the oral presentation
portion of the grade (Exceptions to the lateness penalty for valid reasons such as illness, compassionate
grounds, etc., may, but not necessarily, be entertained but will require supporting documentation,
example, an Attending Physicians Statement). NO EXTENSIONS WILL BE GIVEN.

Lab Reports Due Date Rules: Proper academic performance depends on students doing their work not
only well, but on time. Accordingly, the formal lab reports and results sections must be handed in on the
due dates. A late penalty of 10% of the final grade, per day will apply. NO EXTENSIONS WILL BE GIVEN.

Missed Tests: Students with a documented reason for missing a test, such as illness, compassionate grounds, etc., which is confirmed by supporting documentation (e.g., Attending Physicians statement) may be permitted to either take an oral make-up test no later than 1 week after the scheduled test date or transfer the weight of the missed test to another test at the course director’s discretion. Further extensions or accommodation will require students to submit a formal petition to the Faculty.

Other Important Considerations:

1. All students are expected to familiarize themselves with the following information, available on the Senate Committee on Curriculum & Academic Standards webpage (see Reports, Initiatives, Documents)
   - [http://calendars.registrar.yorku.ca/2012-2013/policies/index.htm](http://calendars.registrar.yorku.ca/2012-2013/policies/index.htm)
   - York’s Academic Honesty Policy and Procedures/Academic Integrity Website
   - Ethics Review Process for research involving human participants
   - Course requirement accommodation for students with disabilities, including physical, medical, systemic, learning and psychiatric disabilities
   - Student Conduct Standards
   - Religious Observance Accommodation

2. Students who feel that there are extenuating circumstances that may interfere with their ability to successfully complete the course requirements are encouraged to discuss the matter with Prof. Paluzzi as soon as possible.

3. Students with physical, learning or psychiatric disabilities who require reasonable accommodations in teaching style or evaluation methods should consult with the Office for Persons with Disabilities (OPD) and ensure that requests for appropriate accommodations are arranged with Prof. Paluzzi early in the term.