1 Course Details

1.1 Calendar Description

This course involves independent literature research of a current topic in any of the biomedical sciences (such as anatomy, physiology, pharmacology, toxicology, genetics, biochemistry). Students will present critical appraisals of primary research literature and are required to submit an annotated bibliography and research proposal in addition to their publication-quality literature review paper. Students work under the supervision of individual faculty. Faculty consent must be obtained prior to being admitted into the course by the course coordinator.

Pre-Requisite(s): 12.00 credits
Restriction(s): HK*4230 Instructor consent required. Enrolment restricted to BSC.BIOM majors or BSC.NEUR minors.

1.2 Timetable

Timetable is subject to change. Please see WebAdvisor for the latest information.

1.3 Final Exam

Exam time and location is subject to change. Please see WebAdvisor for the latest information.

2 Instructional Support

2.1 Instructional Support Team

Course Co-ordinator: Jim Petrik
Email: jpetrik@uoguelph.ca
Telephone: +1-519-824-4120 x54921
Office: OVC 3627

Program Advisor: Kimberly Best
Email: kbestb@uoguelph.ca
Telephone: +1-519-824-4120 x54918
Office: OVCE 2633
3 Learning Resources

4 Learning Outcomes

The review course is designed to expose students to biomedical research where information is created, interpreted and integrated with current knowledge, and to teach effective skills for communicating scientific information orally and in writing.

BIOM*4500 is designed to give the student a realistic view of research by providing an opportunity for critical review of the literature.

4.1 Course Learning Outcomes

By the end of this course, you should be able to:
1. develop an appreciation for research
2. improve library skills by researching the literature on a specific topic
3. develop awareness of current research techniques
4. develop the techniques and attitudes of critical thinking through evaluation of research data (student's and/or published reports)
5. teach problem solving
6. improve written and oral communications skills.

5 Teaching and Learning Activities

6 Assessments

6.1 Assessment Details

Formal Seminar Presentation (30%)

All students are required to give a oral presentation. This formal seminar will be presented using the 10/5 format commonly used in scientific meetings - a 10 minute presentation and a 5 minute question period. The emphasis in the presentation, and in the evaluation, should be on development of logical ideas and on effective communication. Ideally, the seminar should include the following components:

• Introduction - general terms to orient the audience and provide background information.
• Objectives/Hypothesis - definition of the scope of the experimental project, or subject of the literature review
• Methodology/Experimental Design - provide an overview of the methods were used, database accessed or literature
• Summary of Literature
• Discussion of Literature
• Summary/Conclusions - review of the main points and concise

Seminar Preparation

Supplemental audiovisual aids are not permitted and “presenter view” will not be available. The presenter must keep in mind the time restrictions for the seminar. The presentations will be timed.

Specific rehearsal times will be provided in the week before the seminars. A sign-up sheet will be set up the week before rehearsals begin, and you will be notified when this is available.

Students are required to submit their presentation for uploading, with the deadline being 8a the day of the presentation. If not received by 8a, 5% will be deducted from your final grade.

Students are strongly encouraged to verify the performance of their presentation on the classroom computer during rehearsal time.

Seminar Presentation

Specific days have been designated for the seminar presentations. After soliciting student/supervisor input (Seminar Questionnaire), a program will be scheduled for a specific morning(s) and/or afternoon(s) of these days. Every attempt being made to accommodate your first choice of day/time (am/pm). It is important that your presentation be thoroughly rehearsed to ensure that it meets these time restriction. Presentations will not be allowed to run overtime.

Students are required to assist with the evaluation of their colleagues’ presentations and to participate in the question periods. Each students must submit, at least 5, evaluations for their peer presentations. These evaluations must have your name, and the presenter’s name, clearly printed to receive the five marks. All present in the audience will be asked to evaluate and grade each seminar. Only seminar scores provided by the faculty present will be used in determining the grade for the presentation. All evaluation forms will ultimately be returned to the student and his/her supervisor, and the supervisor will be expected to review these with the student as a means of providing feedback on the oral presentation.
Details of Seminar Requirement

Students are required to present one 10 minute seminar and answer questions from the audience for 5 minutes afterwards. By your seminar day, you should have a good understanding of the problem and what you aim to do to address it. You will have had time to read most of the relevant literature: you can introduce your subject and take your audience as far into the problem as your knowledge allows. The emphasis in the presentations and in the evaluations should be on development of logical ideas and on effective communication with appropriate audiovisual materials. The style of presentation is important for creating a good impression but you will want to avoid giving a theatrical performance without substance. Generally, the subject should be introduced without any audiovisuals by looking at audience and telling them in simple terms why you are interested in the subject and how it might relate to them: then, the problem can be defined with the aid of an outline of the entire project, indicating perhaps that you will only cover the first 1-3 or 4 points in your presentation. Your audience will know where you will be directing your efforts in the weeks ahead. You can then present the details regarding the first 1-4 points and conclude. This format applies to literature reviews and experimental projects. During the question period, students (and faculty) will receive critical feedback before they go too far. The departmental evaluation form will be marked by everyone present. Faculty should feel free to come and go during these seminars like in a typical scientific meeting.

You should realize now that 10 minutes is very little time to make a presentation but this is what is standard at scientific meetings. It is sometimes very difficult to sort out what to present because you have so much stuff! However, this is part of your training in this course. The worst thing that you could do to overcome the problem is talk fast and try to cram the information into the time available. A better approach is to:

1. Decide on a few opening lines using familiar words to introduce the subject (do not put outline up yet - look at audience). Why are you working on this topic? How does this relate to the audience or people in general?
2. Outline what you want to
3. Cover it restricting yourself to 4 or 5 slides each with 5-6 lines
4. Conclude

You have to introduce your topic well because the audience may not know anything about it. Relating the relevance of the work to you, the field or the Department gives the talk a context and helps people to become interested in what you say. If you are doing a review of literature, you can outline the full scope of the review indicating that you will only be covering the first 1-4 headings in your seminar. If you are presenting experimental findings, describe your idea and then your methods and results (if any): this an orderly approach that scientists can follow even if they are not familiar with your topic.

The short period allowed for each seminar has generally been handled well by the students. The main problem has involved developing the topics well but this comes back to focussing on the problem at hand rather than trying to give a crystal clear picture of the ‘universe’ in 10 minutes! The 10 minute format in regular meetings of various Societies forces scientists to be
brief and to the point. The clarity comes from them thinking in the planning stages about the points they really want to make. Students also need practice to develop this skill.

The assessment forms will be scanned and returned to you, and your supervisor, shortly after the end of the presentations. Your supervisor should review your comments with you. The comments made on the evaluation forms may seem a little nit picky but our intention is to help students improve their communication skills. Take heed especially to common elements in the evaluations. Since there are usually fairly large differences between marks given by different faculty, we attempt to have each paper evaluated by at least 3 people. The average should be a reasonable indication of a student’s ability to communicate scientific information orally. Try to use the comments to improve your next presentation.

The faculty realize that these research project courses are the first exposure that students will have had to research. You are not expected to perform at the level of an MSc or PhD student. Having said this though, it is reasonable to expect students in the last semesters of the BSc degree to be able to speak clearly in front of people, to use neat visual materials and to organize their thoughts when they introduce their subjects and progress from literature through their hypotheses, methods, data and its interpretation to conclusions. Data and conclusions are not required in the seminars for this course - they have been scheduled too early for that.

Finally, you should take comfort from the fact that you and your supervisor probably know much more about your project than anyone else in the room.

**Evaluation of your colleagues’ seminars (5 in total) (5%)**

**Final Written Report in the form of a literature review paper and research proposal (2 reviewers) (40%)**

The date given for the final written report on the literature review (Semester Deadlines) is to be used as a guideline. The report should be submitted in duplicate for assessment by the supervisor and by a second senior reviewer not from their lab but delegated by the supervisor (electronic or paper submission? between supervisor and student).

Literature review and research proposal (LR) reports should be arranged in a logical manner which allows development of the topic. The format is flexible but there should be a Title Page, Abstract, Key Words, Introduction, appropriate sub-headings, Summary and Conclusions, and References. The references for both types of report should be in the format of one of the principle journals consulted during your research project.

It is proper for the supervisor to read a draft of the project final report once, and offer specific suggestions for improvement before the student submits the final version. Graduate faculty provide advice to their graduate students when the latter are drafting MSc or PhD thesis. This feedback is part of the learning process and should be part of these research project courses experiences as well. Students should schedule this preliminary reading with their supervisors.
well in advance of the due date of the report.

Assessment by the Supervisor* - 25% for research projects and reviews. (25%)
* The supervisor’s assessment might include factors such as: interaction with others on the laboratory, organization of time, preparation for meetings, development of technical competence. The student should discuss the specific criteria for this assessment with the supervisor before the project begins.

7 Course Statements

7.1 Faculty and Student Commitments
Bio-Medical Science Majors may require both the single (BIOM*4500) and one of the double-weighted courses (BIOM*4510 // BIOM*4521/2) for their programs. Thus, accepting a student may involve a commitment to 3 single course equivalents of research taken over 2 or 3 sequential semesters (depending on how the courses are arranged). The ‘0-6’ and ‘0-12’ h/week labels on the courses should be regarded as the minimum time commitment for students. In other courses, students are expected to work on course material after lectures and laboratories are finished. Research course students (particularly those doing ‘hands-on’ experimental projects) can expect that they will have to spend more like 12-20 h/wk and/or work irregular hours to complete their research work. Students may have to deliberately limit the time that they devote to these courses if they find the work particularly interesting or demanding. If a student feels that a problem is arising, he/she must talk to the supervisor about either becoming more efficient, or limiting the workload. Students should also feel free to talk to the course coordinator.

7.2 Animal Utilization Protocol’ Approval
Some projects may require working with live animals. Faculty supervisors are responsible for obtaining the appropriate Animal Utilization Protocols to cover the work being done by Research project students under their supervision. Students should be aware of these protocols and understand their purpose. Discuss these with your supervisor.

7.3 A CHECK-LIST FOR STUDENTS

1. Criteria for the supervisors assessment (25% component of the final grade) should be discussed and agreed upon at the first meeting with your

1. When the semester begins, contact your supervisor and proceed according to his/her

1. Arrange a time each week to meet with your supervisor to discuss your
1. You need to discuss the points raised in the *Seminar Questionnaire*. This form needs to be returned to Kim Best, Room 2633 before the deadline date to facilitate planning the seminar.

1. All final seminar presentations will be uploaded to V The deadline to submit your presentation, for uploading, is 8a the day of your presentation. (You will lose 5% off your final grade if past the deadline.)

1. Preview your completed computer-generated presentation with your Book a time(s) on the sign-up sheet that will be posted on the seminar room door several days before the practice times are scheduled.

1. You are expected to participate and to critique your colleagues’ presentations (5 in total). Evaluation forms will be Your name and the name of the presenter’s must be clearly marked.

1. Complete the course evaluation on-line, during the last 2 weeks of classes, at https://courseeval.uoguelph.ca/CEVAL_LOGIN.php.

1. A preliminary draft of your *Final Written Report* should be submitted to your supervisor for general comments and feedback before the final copy is Allow time for this to occur. Two copies of the final report are due to your supervisor by the specified date given (see *Semester Deadlines* - use this date as a guideline).

1. Direct questions to the course coordinator Jim Petrik - ipetrik@uoguelph.ca - ext 54921; Rm 3627 or Kim Best - kbestb@uoguelph.ca - ext 54918; Rm 2633, Biomedical Sciences.

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### 8 University Statements

#### 8.1 Email Communication

As per university regulations, all students are required to check their e-mail account regularly: e-
mail is the official route of communication between the University and its students.

8.2 When You Cannot Meet a Course Requirement

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact. The regulations and procedures for Academic Consideration are detailed in the Undergraduate Calendar.

8.3 Drop Date

Courses that are one semester long must be dropped by the end of the fortieth class day; two-semester courses must be dropped by the last day of the add period in the second semester. The regulations and procedures for Dropping Courses are available in the Undergraduate Calendar.

8.4 Copies of Out-of-class Assignments

Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

8.5 Accessibility

The University promotes the full participation of students who experience disabilities in their academic programs. To that end, the provision of academic accommodation is a shared responsibility between the University and the student.

When accommodations are needed, the student is required to first register with Student Accessibility Services (SAS). Documentation to substantiate the existence of a disability is required, however, interim accommodations may be possible while that process is underway.

Accommodations are available for both permanent and temporary disabilities. It should be noted that common illnesses such as a cold or the flu do not constitute a disability.

Use of the SAS Exam Centre requires students to book their exams at least 7 days in advance, and not later than the 40th Class Day.

More information: www.uoguelph.ca/sas

8.6 Academic Misconduct

The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community – faculty, staff, and students – to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff and students have the responsibility of supporting an environment that discourages misconduct. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.
The Academic Misconduct Policy is detailed in the Undergraduate Calendar.

8.7 Recording of Materials

Presentations which are made in relation to course work—including lectures—cannot be recorded or copied without the permission of the presenter, whether the instructor, a classmate or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

8.8 Resources

The Academic Calendars are the source of information about the University of Guelph’s procedures, policies and regulations which apply to undergraduate, graduate and diploma programs.