BIOM*4150- BIOM*6702
Hybrid Course on Cancer Biology
Winter Semester 2014

Class location and meeting times:
Monday and Wednesday 10 am-11:20 am, Room: Alex 117
2-hour tutorial on Friday 9:30 am-11:20 am, Room: Alex 259
Class size: 40 undergraduate students (US), 10 graduate students (GS)

Coordinator:
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Other Instructors:
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I. Rationale:
Cancer is one of the major afflictions of mankind, and causes a significant number of deaths worldwide. In recent years, our knowledge about the origin of cancer and on how it progresses to become life threatening has significantly increased. Descriptive knowledge has been replaced with mechanistic understanding of cancer behavior at the molecular, cellular, organ and organism levels. Concomitant with the development of this extensive body of knowledge has been the development of scientists devoted to elucidate and solve problems in cancer biology. The aim of these scientists is to become allies with the clinical oncology sciences to improve cancer prevention, detection, diagnosis and treatment. The department of Biomedical Sciences wishes to participate in this worldwide initiative by offering students the possibility of learning about cancer biology, thus increasing their interest in the field and the probability of forming professionals dedicated to the study of this discipline.

II. Course Aims and Objectives:
The general aim of this course is to familiarize students with general concepts in cancer biology and how these concepts apply to the clinical definition and management of the disease. More specifically, the objectives of this course are:
(1) To give students an historical perspective on the most commonly studied topics in cancer biology.
(2) To link specific cancer biology subjects with clinical aspects of the disease.
(3) To enhance participants' critical thinking abilities by researching and writing a review on any subject within the cancer biology topics covered by the course.
(4) To enhance students' abilities to give logical and concise oral presentations.
Achievement of these aims will contribute toward the ultimate goal of providing students with a critical overview of cancer biology and the importance of its study for the improvement of the clinical management of the disease.

Specific Learning Objectives by Unit:
Each unit will: (i) give students an overview and historical perspective of a specific subject in cancer biology. (ii) Improve their critical thinking capacities by allowing them to research and

write a review and participate in discussions on particular subjects covered by the unit. (iii) Enhance their ability to give a logical and succinct oral presentation on the unit's subject. (iv) Provide them with the tools to understand clinical aspects of cancer based on the concepts taught in the unit.

III. Format and Procedures:
This is a lecture-based course. Students are expected to participate in tutorial discussions and to conduct themselves in a scholarly and respectful manner at all times.

IV. Course Resources:
(a) Weinberg, RA (2014). *The Biology of Cancer*. Garland Science, Taylor & Francis Group, LLC, New York, NY, USA (Recommended).
(b) Access to online journals in the cancer and biomedical sciences fields.

V. Calculation of Course Grades

Requirement	Details	Due date
Tutorial Participation US: 10 % of final grade GS: 20% of final grade	For every unit covered in the lectures, students will attend a 2-hour tutorial, where they will give oral presentations on the topic, and all the students will participate in discussions.	Friday of each week.
Midterm exam US: 20% of final grade GS: 15% of final grade	This will cover units 1 to 6. The exam will be written and will consist of a small multiple-choice component, in addition to a significantly larger component where the students will give short to medium length answers to specific questions.	Friday February 28, 9:30 am -11 am, Room: Alex 259
Final Exam US: 30% of final grade GS: 15% of final grade	This will cover units 7 to 12. The exam will be written and will consist of a small multiple-choice component, in addition to a larger component of short to medium length answers to specific questions.	April 17, 2014; Time: 7:00-9:00 pm. **Room TBA**
One (undergraduate) or two (graduate) critical reviews on a course topic US: 20 % of final grade GS: 30 % of final grade (each review 15% of final grade) ***One oral presentation*** (20 % of final grade)	Students will be assigned **a general subject to write a critical review on and give an oral presentation.** The student will choose the specific topics he/she wishes to write on, but the subjects will be randomly assigned (by the course coordinator) from the general ones covered by the specific units. In addition, **graduate students will write a second review on any subject of their choice within the topics covered by the 12 units of the course. This second review must be completely unrelated to the student's subject of research.**	Seminars will be presented every Friday. Exact date will depend on the topic. First review due one week after oral presentation. Second review (graduate students only) due on April 4, 2014 (see section XI for specific rules)

US= Undergraduate Students; GS= Graduate Students

VI. Academic Integrity
The University of Guelph takes a very serious view of Academic Misconduct. Included in this category are such activities as cheating on examinations, plagiarism, misrepresentation, and

submitting the same material in two different courses without written permission. Students are expected to be familiar with the section on Academic Misconduct in the Graduate Calendar and should be aware that expulsion from the University is a possible penalty.

VII. Accommodations for students with disabilities
In compliance with university policy, I am available to discuss appropriate academic accommodations that may be required for students with disabilities. Requests for academic accommodations are to be made on the first day of classes so that arrangements can be made. Students should register with the Centre for Students with Disabilities to verify their eligibility for appropriate accommodations.

VIII. Course Schedule: Two 80-minute lectures and one 2-hour tutorial per week.

Week	Unit	Instructor
Jan 6-10	The Nature of Cancer*	Alicia Viloria-Petit
Jan 13-17	Control of Cell proliferation, Cell Cycle and Cell Death	Jim Petrik and Roger Moorehead
Jan 20-24	Cancer Virology	Sarah Wootton
Jan 27-Jan 31	Growth Factors, Receptors and Cancer	Roger Moorehead
Feb 3-7	Tumor Angiogenesis	Jim Petrik
Feb 10-14	Carcinogenesis, DNA Damage, and DNA repair..	Brenda Coomber
Feb 24-February 28*	Cancer Genetics and Epigenetics ***Midterm exam: units 1-6*** ***Friday February 28, 9:30-11:00 am***.	Brenda Coomber
March 3-7	Tumor Invasion and Metastasis	Alicia Viloria-Petit
March 10-14	*In Vitro* and *In Vivo* Tumor Models	Alicia Viloria-Petit
March 17-21	Tumor Immunology	Byram Bridle
March 24-27	Cancer Stem Cells	Alicia Viloria-Petit
March 30-April 4*	Clinical Oncology*	Anthony Mutsaers
April ?	***Final exam: units 7-12.***	Alicia Viloria-Petit

* No seminar-based tutorial on the specified week or unit.

IX. Course Evaluation

Students will be asked to complete a questionnaire on the instructors' teaching abilities. This information is required by the university to evaluate faculty performance for purposes of Tenure, Promotion and Selective Increases. Administered by a third party rather than the instructors, these evaluations will be delivered to the instructors only after the final grades have been submitted to the Registrar's Office. The numerical ratings from the form will be made available to the Chair for administrative purposes. If a student wishes the Chair to see his/her written comments in addition to the scores, he/she must include with those comments his/her name (legibly printed) and signature.

X. Additional Resource Readings

Selected readings chosen from cancer research literature on line.

XI. Rules for preparation and evaluation of literature review

1. The manuscript should be double-spaced, with 12-point characters, and a one-inch margin on each side of the document.

2. The manuscript should be at least eight pages long and no more than ten pages long.

3. Any discussion of published findings; theories and hypotheses must be accompanied by a citation, regardless of whether or not you quote it directly. At least 10 original sources (references) must be cited. Sixty percent (60 %) of these references must be primary articles (i.e., the original study, no a literature review). The course textbook will not be included among the original sources. The reference page will not be counted as part of the 10-page limit.

4. Figures or tables are not necessary but can be included, proven they truly improve the thesis of the manuscript. A maximum of two items (figures and/or tables) can be included. They should be placed after the main text but before the reference page. They will not be included in the total page count.

5. Citations should follow the rules from the *Proceedings of the National Academy of Sciences, USA*; which are as follows:

"References should be cited in numerical order as they appear in text. Because tables and figures will be inserted in the text where first cited, references in these sections should be numbered accordingly. **Include the full title for each cited article.** Authors must translate foreign language titles into English, with a notation of the original language. All authors (unless there are more than 5) should be named in the citation. If there are more than 5, list the first author's name followed by et al. Provide inclusive page ranges for journal articles and book chapters. Cite databases in the text or as footnotes.

Journal articles are cited as follows:

10. Neuhaus J-M, Sitcher L, Meins F, Jr, Boller T (1991) A short C-terminal sequence is necessary and sufficient for the targeting of chitinases to the plant vacuole. *Proc Natl Acad Sci USA* 88:10362-10366.

For correct abbreviations of journal titles refer to *Chemical Abstracts Service Source Index* (CASSI).

Articles or chapters in books are cited as follows:

14. Hill AVS (1991) in *Molecular Evolution of the Major Histocompatibility Complex*, eds Klein J, Klein D (Springer, Heidelberg), pp 403-420."

6. The literature review due date **is one week after the student's oral presentation, on Friday at 5 pm**. An exception will be made for the presentation just before reading week; the review will be due on the Monday after reading week. The second review (graduate students only) is **due on Friday April 4, 2014**.

7. The penalty for late reviews is **2 marks per day (including weekends) for a maximum period of one week**. Reviews submitted later than a week after the due date **will not be accepted and will not be evaluated.**

Presentation and literature review evaluation form
BIOM*4150/BIOM*6702: Cancer Biology

Student name: Date:
Title of seminar:

Evaluation system: a grade of 1 to 5 will be assigned to each of the specified rubrics.
1= Poor
2= Marginally adequate
3= Adequate
4= Good
5= Excellent

A) Oral presentation Final grade: /100 %

Insight and ideas	1	2	3	4	5
Quality of the presentation	1	2	3	4	5
Organization of the seminar	1	2	3	4	5
Address of the target audience	1	2	3	4	5
Timing	1	2	3	4	5

Note: Order of rubrics from top to bottom suggests their relative weight in the final mark.

Comments:

B) Literature review Final grade: /100 %

Insights and ideas	1	2	3	4	5
Choice and use of evidence	1	2	3	4	5
Integration of source material	1	2	3	4	5
Organization and use of presentation formats	1	2	3	4	5
Address of target audience	1	2	3	4	5
Grammar and style	1	2	3	4	5

Note: Order of rubrics from top to bottom suggests their relative weight in the final mark.

Comments: