Class location and meeting times:
Monday and Wednesday 2:30 pm -3:50 pm, Room: MCKN 116
2-hour tutorial on Friday 9:30 am -11:20 am, Room: MACS 209
Maximum class size: 50 students

Coordinator:
Dr. Alicia Viloria-Petit, Department of Biomedical Sciences, OVC-3647
Ext. 54925
E-mail: aviloria@uoguelph.ca

Other Instructors:
Dr. Byram Bridle; bbridle@uoguelph.ca
Dr. Brenda Coomber; bcomber@uoguelph.ca
Dr. Robert Jones; rjones12@uoguelph.ca
Dr. Roger Moorehead; rmoorehe@uoguelph.ca
Dr. Anthony Mutsaers; mutsaers@uoguelph.ca
Dr. Jim Petrik; jpetrik@uoguelph.ca
Dr. Sarah Wootton; kwootton@uoguelph.ca

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 and basic general knowledge 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 on a topic within the cancer biology subjects covered by the course, and by participating in weekly tutorial discussions.
4) To enhance students' abilities to give logical and concise oral presentations.
5) To enhance students' abilities to write a scientific literature review.
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 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) Enhance their scientific writing skills. (v) 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:
(b) Access to online journals in the cancer and biomedical sciences fields.

V. Calculation of Course Grades

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Details</th>
<th>Due date</th>
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<tbody>
<tr>
<td><strong>Tutorial Participation</strong> 10 % of final grade</td>
<td>For 10 of the units covered in the lectures, students will attend a 2-hour tutorial, where those students that choose to do so will give their oral presentations on an assigned topic, while all the students in the course will participate in discussions.</td>
<td>Friday of each week, except for holidays and the day assigned to the invited speaker; see section XI for details</td>
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<tr>
<td><strong>Midterm exam</strong> 20% of final grade</td>
<td>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.</td>
<td>Friday, March 2, 2018; Time: 9:30 am - 11:00 am; Room: MACS 209</td>
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<tr>
<td><strong>Final Exam</strong> 30% of final grade</td>
<td>This will cover units 7 to 12. The exam will be written and will have the same format as the midterm exam, in addition to a bonus question related to the topic covered by the invited speaker.</td>
<td>Day, Time and Room: TBA</td>
</tr>
<tr>
<td><strong>One oral presentation (seminar) on assigned topic</strong> 20% of final grade AND <strong>One literature review on same assigned topic</strong> 20 % of final grade</td>
<td>Students will be assigned a topic by alphabetical order and they will give an oral presentation and will write a literature review on this topic. The topic will be assigned from the general subjects covered by 10 of the course units, on Friday January 12, 2018.</td>
<td>Every Friday, starting on January 26, 2018. Exact date for each student will depend on the topic (see section XI, XII and XIII for details and guidelines).</td>
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</table>
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.

<table>
<thead>
<tr>
<th>Week/day</th>
<th>Unit</th>
<th>Instructor</th>
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<tbody>
<tr>
<td>Jan 8-12</td>
<td>1: The Nature and Hallmarks of Cancer*</td>
<td>Alicia Viloria-Petit</td>
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<tr>
<td>Jan 15-19</td>
<td>2: Control of Cell proliferation, Cell Cycle and Cell Death</td>
<td>Robert Jones/Roger Moorehead</td>
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<tr>
<td>Jan 22-26</td>
<td>3: Cancer Virology</td>
<td>Sarah Wootton</td>
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<tr>
<td>Jan 29-Feb 2</td>
<td>4: Cancer Metabolism</td>
<td>Alicia Viloria-Petit</td>
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<tr>
<td>Feb 5-9</td>
<td>5: Growth Factors, Receptors and Cancer</td>
<td>Roger Moorehead</td>
</tr>
<tr>
<td>Feb 12-16</td>
<td>6: Tumor Angiogenesis</td>
<td>Jim Petrik</td>
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<tr>
<td>Feb 26-March 2*</td>
<td>7: Tumor Invasion and Metastasis</td>
<td>Alicia Viloria-Petit</td>
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<td></td>
<td><strong>Midterm Exam: Units 1-6</strong></td>
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<td><strong>Friday March 2, 9:30 am - 11:00 am;</strong></td>
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<td><strong>Room: MACS 209</strong></td>
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<tr>
<td>March 5-9</td>
<td>8: Tumor Immunology</td>
<td>Byram Bridle</td>
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<tr>
<td>March 12-16</td>
<td>9: Carcinogenesis, DNA Damage, and DNA Repair</td>
<td>Brenda Coomber</td>
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<tr>
<td>March 19-23</td>
<td>10: Cancer Genetics and Epigenetics</td>
<td>Brenda Coomber</td>
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<tr>
<td>March 26-March 30*</td>
<td>11: Cancer Stem Cells*</td>
<td>Alicia Viloria-Petit</td>
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<tr>
<td>April 2-April 6*</td>
<td>12: Clinical Oncology*</td>
<td>Anthony Mutsaers</td>
</tr>
<tr>
<td>April (Day TBA)</td>
<td>11: Cancer Stem Cells*</td>
<td>Alicia Viloria-Petit</td>
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<td><strong>Final Exam: Units 7-12</strong></td>
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<td></td>
<td><strong>Time and Room: TBA</strong></td>
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*No seminar-based tutorial on this specific week or unit. *Invited speaker on Friday, April 6: Geoffrey Wood, Department of Pathobiology, University of Guelph.

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. Tutorial details and evaluation

1. Each seminar-based tutorial will consist of a maximum of 5 oral presentations and their corresponding discussion, involving presenter and attendant students.
2. The duration of the presentation is 12-15 minutes, followed by a 5-10 minutes discussion period, depending on the number of students registered in the course.
3. During the discussion period, the attendants will ask questions to the presenters and/or provide comments, and this will be modulated and evaluated by the course coordinator.
4. The presentation will be evaluated by 2 instructors: the course coordinator and another instructor with expertise in the subject area. The final grade will be calculated as follows:
   a. If the difference between the two grades is less or equal to 4 marks, the final grade will be the higher of the two independent grades.
   b. If the difference between the two grades is higher or equal to 5 marks, the final grade will be the average of the two independent grades.
5. Discussion participation will be evaluated by the course coordinator.

XII. Seminar guidelines (see evaluation form on page 6)

1. It is strongly advised that students make an appointment with the instructor of the unit of the assigned topic, at least one week before their seminar presentation. An outline of their presentation should be ready for this appointment, which is intended to ensure that the student is approaching the topic as indicated by the title, and to suggest ideas to improve the presentation, as needed.
2. The duration of the seminar is 12-15 minutes, followed by a 5-10 minutes discussion period.
3. Among the basic features, the power point presentation should:
   a. Outline the points to be discussed, which should flow in a logic and cohesive manner
   b. Provide an introduction with the conceptual and/or historical basis of the topic
   c. Consist of clear, concise and easy to follow slides.
      This can be achieved by using slide formats with clean color contrasts, visible font sizes and guiding tittles, and by avoiding excessive writing or excessive number of figures within a single slide.
   d. Present supporting data from original research articles (cited in the same slide where the data is presented).
   e. Include a summary or conclusion, and future directions.
4. For the actual oral presentation and to facilitate the transmission of information and fairness among speakers, it is encouraged to:
   a. Speak with adequate tone and pace of voice (loud enough to be heard by the whole room, and at a rate that allows your audience to understand what you are saying).
   b. Use the pointer to guide the audience.
   c. Stick to the time limit.

XIII. Guidelines for preparation and evaluation of literature review (see evaluation form on page 7)

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 8 pages long and no more than 10 pages long. The last page should be a full page, and the title page will not be counted as part of the aforementioned page limit.

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 12-page limit.

4. Figures or tables are not necessary but can be included, if they truly improve the thesis of the manuscript. A maximum of 2 items (figures and/or tables) can be included. They should be placed after the main text but before the reference page, and 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:**


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

**Articles or chapters in books are cited as follows:**


6. The literature review due date is **one week after the assigned date for oral presentation, on Friday at 5 pm.** Students will upload a PDF version of their review to a Dropbox folder, named with the number and title of the unit corresponding to each week. This folder will become available to authorized students on the Thursday prior to the seminar date, at noon.

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.
Oral Presentation Evaluation Form  
BIOM*4150: Cancer Biology

Student name:                                                                                             Date:
Seminar title:

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

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<tr>
<th></th>
<th>25%</th>
<th>1</th>
<th>2</th>
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<th>4</th>
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<tbody>
<tr>
<td>Insight and ideas</td>
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<tr>
<td>Quality of the presentation</td>
<td>25%</td>
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<tr>
<td>Organization of the seminar</td>
<td>25%</td>
<td>1</td>
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</tr>
<tr>
<td>Address of target audience</td>
<td>15%</td>
<td>1</td>
<td>2</td>
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<td>5</td>
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<td>Timing</td>
<td>10%</td>
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</table>

Note: Contribution of each rubric to the final mark is specified as percentage.

Comments:
Literature Review Evaluation Form
BIOM*4150: Cancer Biology

Student name: ___________________________ Date: ___________________________

Review title: __________________________

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

<table>
<thead>
<tr>
<th>Rubric</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Insights and ideas</td>
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<tr>
<td>Choice and use of evidence</td>
<td>20%</td>
<td>1</td>
<td>2</td>
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<td>5</td>
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<tr>
<td>Integration of source material</td>
<td>20%</td>
<td>1</td>
<td>2</td>
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<tr>
<td>Use of presentation formats</td>
<td>20%</td>
<td>1</td>
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<tr>
<td>Address of target audience</td>
<td>10%</td>
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<td>5</td>
</tr>
<tr>
<td>Grammar and style</td>
<td>10%</td>
<td>1</td>
<td>2</td>
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<td>5</td>
</tr>
</tbody>
</table>

Final grade: _______/100

Note: Contribution of each rubric to the final mark is specified as percentage.

Comments: __________________________

Cancer Biology- A. Viloria-Petit (coordinator)