

**Department of Biology Course Outline**

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| SC/BIOL 4010 3.0 Biology of Cancer  Winter 2018 |

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| Course Description |
| This course will explore the molecular and cellular mechanisms that underlie the development and progression of cancer. The course will consider the genetic basis of cancer and how an understanding of cancer informs treatment and prevention strategies. Lecture topics will include: retroviruses and DNA tumour viruses; oncogenes and tumour suppressor genes; cell cycle regulation; cell death and survival pathways; limitless replicative potential; infection and cancer; cancer treatment.  Three lecture hours. One term. Three credits. |

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| Prerequisites |
| SC/BIOL 3130 3.00 or SC/BCHM 3130 3.00. |

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| Course Instructors and Contact Information |
| Samuel Benchimol, PhD  Department of Biology  Life Sciences Building, Room 429F  Email: benchimo@yorku.ca  You may contact me by e-mail at: benchimo@yorku.ca  Please include “BIOL 4010” in the subject line and your full name and student number in your e-mail text. If you wish to have an appointment with me, please contact me by e-mail first. |

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| Schedule |
| Mondays 2:30 pm – 5:30 pm  PSE 321 |

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| Evaluation |
| The final grade for the course will be based on the following items weighted as indicated:  Mid-term test 1 (February 5) 25%  Mid-term test 2 (March 12) 25%  Final exam (cumulative) 50%  The Final Examination will take place during the scheduled examination period following the end of the term. The date and location will be determined by the Registrar’s office. For the exam, students are required to know and understand the material presented in the lectures and slides, and in the required readings.  NOTE: Final course grades may be adjusted to conform to Faculty grades distribution profiles. |

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| Important Dates |
| Last date to add a course without permission of the course instructor is Jan 17, 2018  Last date to add a course with permission of the course instructor is Jan 31, 2018  Last date to **DROP** the course without receiving a grade is **March 9, 2018**  NOTE: for additional important dates such as holidays, refer to the “Important Dates” section of the Registrar’s Website at <http://registrar.yorku.ca/enrol/dates/fw17>  NOTE: There will not be a class on Mon Feb 19 (Family Day). The University is closed. |

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| Resources |
| **Recommended Textbook:** The Biology of Cancer (Second Edition, 2014), by Robert A. Weinberg. Publisher: Garland Science  Reading materials will be posted on the course website on Moodle. |

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| Learning Outcomes |
| Upon successful completion of this course, students should be able to:  1. Describe basic principles and concepts of cancer biology.  2. Understand experimental approaches used in cancer research.  3. Describe the role of oncogenes and tumour suppressor genes.  4. Understand the signalling pathways that are disrupted in cancer. |

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| Course Content |
| This course will explore the molecular and cellular mechanisms that underlie the development and progression of cancer. We will examine the genetic basis of cancer and learn fundamental concepts that are common to all forms of human cancer. We will consider how an understanding of cancer informs treatment and prevention strategies. The course will expose students to modern cancer biology and the primary cancer research literature.  Teaching slides will be posted after each lecture on Moodle. Slides are meant to enhance the lectures, not replace them.  Topics to be covered in the course include:  The nature of cancer  Retroviruses and DNA tumour viruses  Oncogenes  Growth factors, receptors and signalling pathways  Tumour suppressor genes  Cell cycle regulation  Apoptosis  Cellular survival pathways  Limitless replicative potential  Infection and Cancer  Cancer Treatment  A lecture schedule will be posted on Moodle. |

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| Experiential Education and E-Learning |
| Course website: http://moodle.yorku.ca |

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| Other Information |
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| Course Policies |
| **Missed Test or Exam:**  Students with a documented reason for missing a course test (illness, compassionate grounds), which is confirmed by supporting documentation (e.g., doctor’s letter) may request accommodation from the Course Instructor by providing information and submitting documentation online through the **Department of Biology - Document Submission System:** <http://science.apps01.yorku.ca/machform/view.php?id=84113>  Appropriate documentation must be submitted as soon as possible. There will NOT be an opportunity to make up a missed mid-term test. After acceptable justification for a missed test has been received, the percentage value of the missed mid-term test will be added to the final exam (which will be worth 75% of the final grade).  If the final exam is missed, the student is required to complete a Deferred Standing Agreement Form and request permission from the course director to write a deferred exam. If the course director does not approve the request for deferred standing, the student may petition the Registrar for deferred standing (permission to write a deferred exam).  **Deferred Standing:** <http://myacademicrecord.students.yorku.ca/deferred-standing>  **Recording lectures:** Students are welcome to record lectures. |

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| University Policies |
| **Academic Honesty and Integrity**  York students are required to maintain the highest standards of academic honesty and they are subject to the Senate Policy on Academic Honesty (http://secretariat-policies.info.yorku.ca/policies/academic-honesty-senate-policy-on/). The Policy affirms the responsibility of faculty members to foster acceptable standards of academic conduct and of the student to abide by such standards.  There is also an academic integrity website with comprehensive information about academic honesty and how to find resources at York to help improve students’ research and writing skills, and cope with University life. Students are expected to review the materials on the Academic Integrity website at - http://www.yorku.ca/academicintegrity/  **Access/Disability**  York University is committed to principles of respect, inclusion and equality of all persons with disabilities across campus. The University provides services for students with disabilities (including physical, medical, learning and psychiatric disabilities) needing accommodation related to teaching and evaluation methods/materials. These services are made available to students in all Faculties and programs at York University.  Student's in need of these services are asked to register with disability services as early as possible to ensure that appropriate academic accommodation can be provided with advance notice. You are encouraged to schedule a time early in the term to meet with each professor to discuss your accommodation needs. Please note that registering with disabilities services and discussing your needs with your professors is necessary to avoid any impediment to receiving the necessary academic accommodations to meet your needs.  **Additional information is available at the following websites:**  Counselling & Disability Services - http://cds.info.yorku.ca/  York Accessibility Hub - http://accessibilityhub.info.yorku.ca/  **Religious Observance Accommodation**  York University is committed to respecting the religious beliefs and practices of all members of the community, and making accommodations for observances of special significance to adherents. Should any of the dates specified in this syllabus for an in-class test or examination pose such a conflict for you, contact the Course Director within the first three weeks of class. Similarly, should an assignment to be completed in a lab, practicum placement, workshop, etc., scheduled later in the term pose such a conflict, contact the Course director immediately. Please note that to arrange an alternative date or time for an examination scheduled in the formal examination periods (December and April/May), students must complete an Examination Accommodation Form, which can be obtained from Student Client Services, Student Services Centre or online at http://www.registrar.yorku.ca/pdf/exam\_accommodation.pdf (PDF)  **Student Conduct in Academic Situations**  Students and instructors are expected to maintain a professional relationship characterized by courtesy and mutual respect. Moreover, it is the responsibility of the instructor to maintain an appropriate academic atmosphere in the classroom and other academic settings, and the responsibility of the student to cooperate in that endeavour. Further, the instructor is the best person to decide, in the first instance, whether such an atmosphere is present in the class. The policy and procedures governing disruptive and/or harassing behaviour by students in academic situations is available at - http://secretariat-policies.info.yorku.ca/policies/disruptive-andor-harassing-behaviour-in-academic-situations-senate-policy/ |