DEPARTMENT OF SCIENCE
COURSE OUTLINE – FALL 2016
BI1070 A2 – INTRODUCTION TO CELL BIOLOGY 3 (3-1-3), 105 HOURS FOR 15 WEEKS

INSTRUCTOR: Dr. Shauna Henley, PhD
PHONE: 539-2439
OFFICE: J215 E-MAIL: SHenley@gprc.ab.ca

Monday 10:00 – 11:30, Tuesday 11:20 – 12:20
OFFICE HOURS: Wednesday 1:50 – 2:50, Thursday 11:20 – 12:20

CALENDAR DESCRIPTION: All life functions are based on cells, and this course will provide an introduction to cell structure and function. Major topics will include the origin of life, the development of prokaryotic and eukaryotic cell lineage, energy conversions, the compartmentalization of biochemical functions within a cell and communication from cell to cell. The genetic control of cell activities is examined through methods of molecular genetic analysis and their application in genetic engineering and biotechnology.

PREREQUISITE(S)/COREQUISITE: Biology 30 and Chemistry 30

REQUIRED TEXT/RESOURCE MATERIALS:
1. “Biology” by Campbell et al. (1st Canadian Edition), Benjamin Cummings Publishing Company.
DELIVERY MODE(S):
Lectures – Tues and Thurs, 8:30 – 9:50, Rm J201
Labs – L1 Tues, 2:30 – 5:20, Rm J126
    L2 Wed, 2:30 – 5:20, Rm J126
Seminars – S2 Mon, 11:30 – 12:20, Rm J229
    S1 Fri, 11:30 – 12:20, Rm H211

COURSE OBJECTIVES:
Upon completion of the course, students should be able to:
   1. Apply knowledge of the structure of molecules and cells to explain how energy, matter, and information moves within and between cells of eukaryotes and prokaryotes.
   2. Apply knowledge of laboratory skills and techniques to generate data and conduct analyses of that data.
   3. Demonstrate written communication skills in laboratory reports and seminars.

LEARNING OUTCOMES:
   1. To gain an understanding of the structures and functions of basic components of prokaryotic and eukaryotic cells.
   2. To gain a knowledge of the cellular components underlying cell movement and cell division.
   3. To understand the flow of energy and information in cells and apply this knowledge to cell biology.
   4. To develop the ability to design, analyze and report the findings of scientific experiments.
   5. To foster critical thinking skills.

TRANSFERABILITY: UA, UC, UL, AU, AF, CU, KUC
*Warning: Although we strive to make the transferability information in this document up-to-date and accurate, the student has the final responsibility for ensuring the transferability of this course to Alberta Colleges and Universities. Please consult the Alberta Transfer Guide for more information. You may check to ensure the transferability of this course at Alberta Transfer Guide main page http://www.transferalberta.ca or, if you do not want to navigate through few links, at http://alis.alberta.ca/ps/tsp/ta/tbi/onlinesearch.html?SearchMode=S&step=2
** Grade of D or D+ may not be acceptable for transfer to other post-secondary institutions. Students are cautioned that it is their responsibility to contact the receiving institutions to ensure transferability.
EVALUATIONS: Midterm Exam – 20%
Final exam – 35%
Laboratory – 35%
Seminar – 10%

The midterm exam will be held in class on **Thursday October 13**. The final exam will be cumulative and will take place during the scheduled exam period. Failure to write the midterm or exam will result in a grade of zero unless appropriate documentation is provided.

GRADING CRITERIA: Please note that most universities will not accept your course for transfer credit **IF** your grade is less than C-.

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COURSE SCHEDULE:

<table>
<thead>
<tr>
<th>Topics</th>
<th>Required Text Readings (pages)</th>
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<tbody>
<tr>
<td>1. Introduction to BI 1070</td>
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<tr>
<td>2. Chemistry Review</td>
<td>35-46, 64-96</td>
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<tr>
<td>3. Classification of Organisms</td>
<td>12-14, 589-591, 606-613</td>
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<td>9th edition</td>
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<td>4. Cell Membranes</td>
<td>135-149</td>
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<td>5. Prokaryotic Cell Structure</td>
<td>595-599</td>
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<tr>
<td>7. Cytoskeleton and Molecular Motors</td>
<td>123-128</td>
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<td>8. Cell walls and Extracellular Matrix</td>
<td>128-131</td>
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<td>9. Biological Order and Energy</td>
<td>152-170</td>
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<td>10. Glycolysis &amp; Anaerobic Metabolism</td>
<td>173-180, 188-190</td>
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<tr>
<td>11. Citric Acid Cycle (Kreb’s Cycle)</td>
<td>181-182, 170-172</td>
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12. Electron Transport Systems 183-188 172-177
13. Chloroplasts and Photosynthesis 196-206 184-193
15. Calvin Cycle and Photorespiration 210-216 197-203
16. Bacterial Cell Growth 251-252, 599-603 236-237, 559-564
17. Cell Division, Mitosis, Meiosis 243-251, 253-259, 228-236, 238-243
     268-276 250-257
18. DNA Chemistry 328-334 305-310
19. The Eukaryotic Nucleus 344-346 320-322
20. DNA Replication 334-344 311-319
21. Genes, mRNA and Proteins 349-356 325-331
22. Transcription and RNA Processing 356-361 331-336
23. Regulation of Transcription 377-390 351-364
24. Translation 361-370 337-346

STUDENT RESPONSIBILITIES: Students are expected to attend all classes, seminars and laboratory sessions. All assignments must be completed in full and handed in by the date specified. Refer to the College Policy on Student Rights and Responsibilities at https://www.gprc.ab.ca/about/administration/policies/#academic_policies

STATEMENT ON PLAGIARISM AND CHEATING:
Cheating and plagiarism will not be tolerated and there will be penalties. For a more precise definition of plagiarism and its consequences, refer to the Student Conduct section of the College Admission Guide at http://www.gprc.ab.ca/programs/calendar/ or the College Policy on Student Misconduct: Plagiarism and Cheating at http://www.gprc.ab.ca/about/administration/policies/

**Note: all Academic and Administrative policies are available on the same page.