DEPARTMENT OF SCIENCE

COURSE OUTLINE – FALL 2018

BI1070 A2 – INTRODUCTION TO CELL BIOLOGY 3 (3-1-3) , 105 HOURS FOR 15 WEEKS

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

OFFICE HOURS: Monday 10:30 – 11:30, Tuesday 2:00 – 3:00, Wednesday 9:00 – 10:30, Friday 9:00 – 10:00

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:

DELIVERY MODE(S):
Lectures – Tues and Thurs, 8:30 – 9:50, Rm H211
Labs – L1 Tues, 2:30 – 5:20, Rm J126
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](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](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 18. 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:

1. Introduction to BI 1070
2. Chemistry Review
3. Classification of Organisms
4. Cell Membranes
5. Prokaryotic Cell Structure
6. Cell structure – Organelles
7. Cytoskeleton and Molecular Motors
8. Cell walls and Extracellular Matrix
9. Biological Order and Energy
10. Glycolysis & Anaerobic Metabolism
11. Citric Acid Cycle (Kreb’s Cycle)

Required Text Readings (pages)
1st edition | 2nd edition
---|---
35-46, 64-96 | 32-45, 63-95
12-14, 589-591, 606-613 | 11-12, 598-600, 614-622
135-149 | 136-151
595-599 | 603-613
108-122 | 108-122
123-128 | 123-129
128-131 | 129-132
152-170 | 154-172
173-180, 188-190 | 175-182, 191-193
181-182 | 182-185
13. Chloroplasts and Photosynthesis 196-206 198-208
15. Calvin Cycle and Photorespiration 210-216 212-218
16. Bacterial Cell Growth 251-252, 599-603 251-252, 606-612
17. Cell Division, Mitosis, Meiosis 243-251, 253-259, 243-251, 253-260
268-276 268-278
18. DNA Chemistry 328-334 329-335
19. The Eukaryotic Nucleus 344-346 345-348
20. DNA Replication 334-344 335-345
22. Transcription and RNA Processing 356-361 358-363
23. Regulation of Transcription 377-390 380-394
24. Translation 361-370 363-376

**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](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/](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/](http://www.gprc.ab.ca/about/administration/policies/)

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