



Course Documentation Outline

School of Business, Biosciences and Justice Studies

SECTION I

1. Program (s): Biotech, Biofood, Chemical, Environmental
2. Course Name Biology I
3. Course Code: BIOS 1000 4. Credit Value: 5
5. Course Hours:

Class	Lab	Field	Other	Total
42	28	0	0	70

6. Prerequisites/Corequisites/Equivalent Courses

PR/CO/EQ	Course Code	Title
None		

7. Faculty: **Dr. Wallace Rendell (lec)** Date: **4 Sept 2009** Effective Date: **8 Sept 2009**
Nathan Manion, MSc (lab)
8. Dean/Chair's Approval: *Jim Whiteway* Date: **September 2009**
9. Revision Number: Date: Effective Date:
10. Notes: **A passing grade is 60%.
Grade 12 Biology recommended**

Section II

11. Calendar Description:

Biology 1 is an introductory course focusing on topics of cell structure and function, cell physiology, the flow of energy in cells, and the exchange of information in and between cells. Basic biological laboratory exercises augment theoretical material.

12. Provincial Context:

This course meets the following Ministry of Education and Training requirements:

a). Prior Learning Assessment (PLA)

Students may apply to receive credit by demonstrating achievement of the course learning outcomes through previous life and work experiences.

This course is eligible for challenge through the following method(s) indicated by *

Challenge Exam	Portfolio	Interview	Other	Not Eligible
Theory / Lab				

PLAR Contact: Sandy Novroski, 613-969-1913 ext 2373, or snovroski@loyalistc.on.ca

13. Employability Skills emphasized in this course

X	communication - written	X	communication - visual		communication - oral
X	analytical		creative thinking		decision making
X	interpersonal	X	numeracy	X	organizational
X	problem solving	X	technological		other (specify)

14. Required Texts, Materials, Resources or Technical Materials Required:

No specific biology text is required for this course. Second-hand, recent (published since ~ 2005) biology texts are recommended to help the student with some concepts. Such texts may be purchased, or are available in the Loyalist College library.

15. Evaluation Plan

Students will demonstrate learning in the following ways:

Assignment Description	Evaluation Methodology	Due Date
Lecture – 60%		
Lecture material Tests – 3 tests – 30%	Professor-assessed by answer key	~ Monthly
In-class Quizzes (5) – 10%	Professor-assessed by answer key	~ Ea. 2 weeks
Critical-thinking Assignments (4) – 20%	Professor-assessed by answer key	~ Ea. 2 weeks

Laboratory – 40%		
Lab Books – 3 assessments – 15%	Rubric	~ Monthly
Post-lab Questions – 15%	Answer key	Weekly
Lab Quizzes – 5%	Answer key	Monthly
Lab Competency – 5%	Subjective assessment of skills and safety	Ongoing

16. **Other**

a. You must always submit **your own** work for evaluation. Please read the policies concerning academic honesty as outlined in the Registrar's Handbook for Students, and the Biosciences Handbook for Students. Plagiarism is an extremely serious academic offence that carries a **minimum** penalty of a mark of 0% on the assignment, report, test, etc.

b. Lab assignments are due at the beginning of lab period one week following completion of the lab, unless otherwise stated. Lab assignments received up to one day late will receive a penalty of 10%; an additional penalty of 10% will be received for each subsequent day, to a maximum of 50%. Lab assignments received more than one week late will receive a mark of zero. Class assignments must be submitted at the beginning of class on the due date, unless otherwise stated. No late assignments will be accepted without arrangements being made prior to the due date. Once a marked assignment has been returned to the class, it cannot be accepted from a student for evaluation. If accepted for evaluation, a late penalty (of up to 50%) will apply.

c. Missed tests or quizzes will receive a mark of zero. Every effort will be made to accommodate students unable to meet specified deadlines as a result of extenuating circumstances, however, the faculty member reserves the right to refuse to reschedule tests. In the event that a test or quiz is rescheduled, the student may be asked to write in the Academic Centre for Testing, at a cost to the student of \$10.

Faculty Contact Information:

Wallace Rendell: 2L25a, 613-969-1913 ext 2290, wrendell@loyalistic.on.ca

Nathan Manion: 2L25a, 613-969-1913 ext ???, nmanion@loyalistic.on.ca

Section III

17. Curriculum Delivery, Learning Plan and Learning Outcomes:

Course Components/Content	Related Learning Outcomes	Learning Activities/Resources
<p>1. The World of the Cell</p> <ul style="list-style-type: none"> a) science of biology b) cell biology c) cell chemistry d) organic molecules e) cell structure & function f) cell organelles and compartmentalization g) cell membranes & membrane transport 	<p>Explain modern cell theory and relate cell macromolecules to chemical functioning</p> <p>Differentiate cell structure and function</p> <p>Discuss primary properties and strategies of cells, with particular emphasis on differentiating prokaryote and eukaryote systems</p> <p>Examine the importance of membrane structure and function: reflect on the implications of the fluid mosaic model of membrane structure</p>	<p>ACTIVITIES</p> <ol style="list-style-type: none"> 1. Lecture and demonstration 2. Required reading 3. Laboratory activities as described in lab manual 4. In-class and take-home critical-thinking assignments, which may include computer-assisted learning <p>EVALUATION (Lecture)</p> <ol style="list-style-type: none"> 1. In-class quizzes (~1) 2. Critical-thinking assignments (~1)
<p>2. Energy Flow in Cells</p> <ul style="list-style-type: none"> a) chemotrophic energy metabolism b) phototrophic energy metabolism c) influence of enzymes, and enzyme action 	<p>Contrast the metabolic energy pathways, including chemotrophic (i.e. respiration and fermentation) and phototrophic systems</p> <p>Depict the flow of energy in cells (i.e. bioenergetics), cellular catalytic functions and membrane systems</p> <p>Relate the need for cellular energy to bioenergetic principles and enzymatic functioning</p>	<p>ACTIVITIES</p> <ol style="list-style-type: none"> 1. Lecture and demonstration 2. Required reading 3. Laboratory activities as described in lab manual 4. In-class and take-home critical-thinking assignments, which may include computer-assisted learning <p>EVALUATION (Lecture)</p> <ol style="list-style-type: none"> 1. Lecture material test (1) 2. In-class quizzes (~1) 3. Critical-thinking assignments (~1)
<p>3. Information Flow in Cells</p> <ul style="list-style-type: none"> a) DNA & RNA: structural basis of cellular information, and the basis of heredity b) the cell cycle, mitosis and meiosis c) gene expression and regulation 	<p>Describe the cell life-cycle, the processes of DNA, cell replication and cellular reproduction</p> <p>Discuss the chemical nature, structure and organization of genetic material</p> <p>Explain how character</p>	<p>ACTIVITIES</p> <ol style="list-style-type: none"> 1. Lecture and demonstration 2. Required reading 3. Laboratory activities as described in lab manual 4. In-class and take-home critical-thinking assignments, which may include computer-assisted learning

Course Components/Content	Related Learning Outcomes	Learning Activities/Resources
d) patterns of inheritance	expression is based on genes and the environment	5. Computer-assisted learning for laboratories EVALUATION (Lecture) 1. Lecture material test (1) 2. In-class quizzes (~1) 3. Critical-thinking assignments (~1)
4. Cell Physiology: Making the Body Function a) in humans and non-humans b) materials exchange c) nutrition d) hormones e) immunity f) reproduction	Give examples of the physiological characteristics common among living organisms Draw conclusions regarding general health while incorporating knowledge of cell physiology, energy flow, and gene and hormone expression	ACTIVITIES 1. Lecture and demonstration 2. Required reading 3. Laboratory activities as described in lab manual 4. In-class and take-home critical-thinking assignments, which may include computer-assisted learning EVALUATION (Lecture) 1. Lecture material test (1) 2. In-class quizzes (~2) 3. Critical-thinking assignments (~1)
5. Applications of Cell Biology and Biotechnology	Justify research in biology and biotechnology based on case studies of current applied research	ACTIVITIES 1. Lecture and demonstration 2. Required reading 3. Short term paper on selected topics in biotechnology
6. Laboratory Competency	Demonstrate the ability to work in a laboratory environment safely, cooperatively, and competently	ACTIVITIES 1. Lecture and demonstration 2. Required reading 3. Laboratory activities as described in lab manual 4. In-class and take-home laboratory assignments 5. Maintenance of a lab notebook