



CAMOSUN COLLEGE
School of Arts & Science
Department of Environmental Technology

ENVR-206B-001
Environmental Biotechnology
Fall 2018

COURSE OUTLINE

The course description is online @ <http://camosun.ca/learn/calendar/current/web/envr.html>

Ω Please note: This outline will not be kept indefinitely. It is recommended students keep this outline for their records, especially to assist in transfer credit to post-secondary institutions.

1. Instructor Information

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|------------------|---------------------|--------------------|
| (a) Instructor | Ian Browning | _____ |
| (b) Office hours | See schedule on D2L | _____ |
| (c) Location | P326 | _____ |
| (d) Phone | 250-370-3342 | Alternative: _____ |
| (e) E-mail | browning@camosun.ca | _____ |
| (f) Website | _____ | _____ |

2. Intended Learning Outcomes

Upon completion of this course the student will be able to:

1. Culture and subculture plant explants under sterile conditions.
2. Use the tools of biotechnology, including DNA extraction techniques, restriction enzymes, agarose gel electrophoresis, PCR and protoplast fusion and discuss these molecular biology techniques.
3. Use *Agrobacterium* and tissue culture techniques to introduce a foreign gene into selected plants.
4. Explain the principles of bioremediation and phytoremediation.
5. Explain the principles of genetic engineering and biotechnological techniques and their application to agriculture and the environment.

3. Required Materials

- (a) Texts - none
- (b) Other - Lab manual and lecture notes are available on the course D2L site.

4. Course Content and Schedule

Lecture: Ewing 334 Friday 11.30 – 12.20 P.M. Labs: F222 Tuesday 10.00am – 12:20am (A) 1.00pm – 15.20pm (B).
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The schedule, which follows, is an attempt to outline the weekly activities of the class. It is subject to change or modification as the need arises.

Week	Date (lab./lec.)	Lecture	Lab
1	Sept. 4, 7	Introduction to Environmental Biotechnology: more than just Genetic Engineering!	Lab 1 - Review of Lab skills Lab 2 - Phytoremediation - overview and discussion of experimental setup
2	Sept. 11, 14	Review of DNA/Molecular Biology	Lab 2 - Phyto. - set up and standard curves Lab 3 - Tissue Culture
3	Sept. 18, 21	Tools in Biotechnology Recombinant DNA technology	Lab 2 - Phyto. Sample 1 Lab 3 - Tissue Culture – cont'd
4	Sept. 25, 28	Tools in Biotechnology Restriction enzymes	Lab 2 - Phyto. Sample 2 Lab 4 - Isolation of DNA
5	Oct. 2, 5	Tools continued... Electrophoresis	Lab 2 - Phyto. Sample 3 Lab 5 - Protoplast Fusion
6	Oct. 9, 12	Tools continued... PCR	Lab 2 - Phyto. Sample 4 Lab 6 - Restriction digests
7	Oct. 16, 19	<i>Agrobacterium</i> and cloning Conclusion of DNA Theory	Lab 2 - Results, Root analysis Lab 6 - Electrophoresis of DNA
8	Oct. 23, 26	Exam #1 – includes all lecture material to date and Labs 1 to 4a	Lab 7 - Characteristics of <i>Agrobacterium</i>
9	Oct. 30 Nov. 2	Student Case Study Presentations	Lab 7 - Results Lab 8 - PCR: PV92 loci
10	Nov. 6, 9	Student Case Study Presentations	Lab 8 - Electrophoresis of PCR
11	Nov. 13, 16	Student Case Study Presentations	Lab 9 - GMO PCR setup
12	Nov. 20, 23	Student Case Study Presentations	Lab 9 - Electrophoresis of GMO
13	Nov. 27, 30	NO LECTURE	NO LAB
14	Dec. 4, 7	NO LECTURE	NO LAB: All assignments due

Note: ENVR206B is a 12-week course.

5. Basis of Student Assessment (Weighting)

Exam #1	18%
Exam #2	18%
Phytoremediation report	15%
Case Study Assignments (4)	20%
Case Study Presentation	5%
Lab. Participation, Worksheets, and assignments	24%

Note: Subject to change. See D2L gradebook for up-to-date weightings.

6. Grading System

- Standard Grading System (GPA)
- Competency Based Grading System

7. Recommended Materials to Assist Students to Succeed Throughout the Course

See course D2L site.

8. College Supports, Services and Policies



Immediate, Urgent, or Emergency Support

If you or someone you know requires immediate, urgent, or emergency support (e.g. illness, injury, thoughts of suicide, sexual assault, etc.), **SEEK HELP**. Resource contacts @ <http://camosun.ca/about/mental-health/emergency.html> or <http://camosun.ca/services/sexual-violence/get-support.html#urgent>

College Services

Camosun offers a variety of health and academic support services, including counselling, dental, disability resource centre, help centre, learning skills, sexual violence support & education, library, and writing centre. For more information on each of these services, visit the **STUDENT SERVICES** link on the College website at <http://camosun.ca/>

College Policies

Camosun strives to provide clear, transparent, and easily accessible policies that exemplify the college's commitment to life-changing learning. It is the student's responsibility to become familiar with the content of College policies. Policies are available on the College website at <http://camosun.ca/about/policies/>. Education and academic policies include, but are not limited to, Academic Progress, Admission, Course Withdrawals, Standards for Awarding Credentials, Involuntary Health and Safety Leave of Absence, Prior Learning Assessment, Medical/Compassionate Withdrawal, Sexual Violence and Misconduct, Student Ancillary Fees, Student Appeals, Student Conduct, and Student Penalties and Fines.

A. GRADING SYSTEMS <http://camosun.ca/about/policies/index.html>

The following two grading systems are used at Camosun College:

1. Standard Grading System (GPA)

Percentage	Grade	Description	Grade Point Equivalency
90-100	A+		9
85-89	A		8
80-84	A-		7
77-79	B+		6
73-76	B		5
70-72	B-		4
65-69	C+		3
60-64	C		2

50-59	D		1
0-49	F	Minimum level has not been achieved.	0

2. Competency Based Grading System (Non GPA)

This grading system is based on satisfactory acquisition of defined skills or successful completion of the course learning outcomes

Grade	Description
COM	The student has met the goals, criteria, or competencies established for this course, practicum or field placement.
DST	The student has met and exceeded, above and beyond expectation, the goals, criteria, or competencies established for this course, practicum or field placement.
NC	The student has not met the goals, criteria or competencies established for this course, practicum or field placement.

B. Temporary Grades

Temporary grades are assigned for specific circumstances and will convert to a final grade according to the grading scheme being used in the course. See Grading Policy at <http://camosun.ca/about/policies/index.html> for information on conversion to final grades, and for additional information on student record and transcript notations.

Temporary Grade	Description
I	<i>Incomplete:</i> A temporary grade assigned when the requirements of a course have not yet been completed due to hardship or extenuating circumstances, such as illness or death in the family.
IP	<i>In progress:</i> A temporary grade assigned for courses that are designed to have an anticipated enrollment that extends beyond one term. No more than two IP grades will be assigned for the same course.
CW	<i>Compulsory Withdrawal:</i> A temporary grade assigned by a Dean when an instructor, after documenting the prescriptive strategies applied and consulting with peers, deems that a student is unsafe to self or others and must be removed from the lab, practicum, worksite, or field placement.