UNIVERSITY OF CALGARY
FACULTY OF SCIENCE
DEPARTMENT OF BIOLOGICAL SCIENCES
COURSE OUTLINE

1. Course: PLANT BIOLOGY 401 – PLANT BIOTECHNOLOGY

Lecture Sections: L01 MWF 11:00-11:50 ST 130 WINTER 2018

Course Coordinator: Dr. P. Facchini

Instructor(s):				
	Dr. P. Facchini	BI 396	220-7651	pfacchin@ucalgary.ca
	Dr. D. Muench	BI 397	220-7935	dmuench@ucalgary.ca

D2L course name: PLBI 401 L01 (Winter 2018) – Plant Biotechnology

Biological Sciences Department BI 186; (403) 220-3140; biosci@ucalgary.ca

2. PREREQUISITE(S): Biology 331 and one of Biochemistry 341 or 393
See section 3.5.C in the Faculty of Science section of the online Calendar
(http://www.ucalgary.ca/pubs/calendar/current/sc-3-5.html)

3. Grading: The University policy on grading and related matters is described sections F.1 and F.2 of the online University Calendar. In determining the overall grade in the course the following weights will be used:

Assignment	10%	
Midterm	30%	In-Class February 16, 2018
Term paper	25%	
Debate	5%	
Final Examination	30%	

The Final Exam will be scheduled by the Registrar's Office.

DEFERRALS:

Deferrals of term work (including the mid-term exam): Any deferrals of term work will be arranged by the student in consultation with the lecturer for that section of the course. Deferrals will be allowed only for legitimate conflicts. Please see www.ucalgary.ca/registrar/exam_info . Students should read the Attendance section in the University of Calgary Calendar at www.ucalgary.ca/pubs/calendar/current/e-3.html . Students will be expected to attend examinations on the day and at the time indicated in the course outline if they have no legitimate conflicts. Medical difficulties that lead to the missing of term work will require a written excuse from an M.D. Notification must be given to the instructor within 48 hours. Documentation must be provided upon student's return to the university.

Each piece of work (assignment, term paper, midterm test or final examination) submitted by the student will be assigned a percentage score. The student's average percentage score for the various components listed above will be combined with the indicated weights to produce an overall percentage for the course, which will be used to determine the course letter grade.

Letter Grade	A+	A	A-	B+	B	B-	C+	C	C-	D+	D
Min. Percent Required	90	85	80	77	73	70	67	63	60	55	50

4. Missed Components of Term Work: The regulations of the Faculty of Science pertaining to this matter are found in the Faculty of Science area of the Calendar in Section 3.6. It is the student's responsibility to familiarize himself/herself with these regulations. See also Section E.6 of the University Calendar

5. Scheduled out-of-class activities: Dates and times of approved class activities held outside of class hours. N/A

REGULARLY SCHEDULED CLASSES HAVE PRECEDENCE OVER ANY OUT-OF-CLASS-TIME-ACTIVITY.

6. Course Materials: TEXT: N/A

7. Examination Policy: All examinations are closed book. The use of camera devices, MP3 Players and headphones, or wireless access devices such as cell phones, Blackberries, etc., during the examination will not be allowed. Calculators are not allowed for this examination. Students should also read the Calendar, Section G, on Examinations.

8. **Writing across the curriculum statement:** In this course, the quality of the student's writing in assignments will be a factor in the evaluation of this component. See also Section E.2 of the University Calendar.

9. **Human studies statement:** Students in the course are not expected to participate as subjects or researchers. See also Section E.5 of the University Calendar.

STUDIES IN THE BIOLOGICAL SCIENCES INVOLVE THE USE OF LIVING AND DEAD ORGANISMS.

ETHICS IN THE BIOLOGICAL SCIENCES

Studies in the Biological Sciences involve the use of living and dead organisms. Students taking laboratory- and field-based courses in these disciplines can expect involvement with and experimentation on such materials. Students perform dissections on dead or preserved organisms in some courses. In particular courses, students experiment on living organisms, their tissues, cells, or molecules. Sometimes field work requires students to collect a variety of living materials by many methods, including humane trapping.

All work on humans and other animals conforms to the Helsinki Declaration and to the regulations of the Canadian Council on Animal Care. The Department strives for the highest ethical standards consistent with stewardship of the environment for organisms whose use is not governed by statutory authority. Individuals contemplating taking courses or majoring in one of the fields of study offered by the Department of Biological Sciences should ensure that they have fully considered these issues before enrolling. Students are advised to discuss any concern they might have with the Undergraduate Program Director of the Department.

10. OTHER IMPORTANT INFORMATION FOR STUDENTS:

(a) **Misconduct:** Academic misconduct (cheating, plagiarism, or any other form) is a very serious offence that will be dealt with rigorously in all cases. A single offence may lead to disciplinary probation or suspension or expulsion. The Faculty of Science follows a zero tolerance policy regarding dishonesty. Please read the sections of the University Calendar under Section K. Student Misconduct to inform yourself of definitions, processes and penalties.

(b) **Assembly Points:** In case of emergency during class time, be sure to FAMILIARIZE YOURSELF with the information on assembly points.

(c) **Student Accommodations:** Students needing an Accommodation because of a Disability or medical condition should contact Student Accessibility Services in accordance with the Procedure for Accommodations for Students with Disabilities available at http://www.ucalgary.ca/policies/files/policies/procedure-for-accommodations-for-students-with-disabilities_0.pdf

Students needing an Accommodation in relation to their coursework or to fulfil requirements for a graduate degree, based on a Protected Ground other than Disability, should communicate this need, preferably in writing, to the Associate Head of Biological Sciences, Dr. H. Addy by email addy@ucalgary.ca or phone 403 220-3140.

(d) **Safewalk:** Campus Security will escort individuals day or night (http://www.ucalgary.ca/security/safewalk). Call 220-5333 for assistance. Use any campus phone, emergency phone or the yellow phones located at most parking lot pay booths.

(e) **Freedom of Information and Privacy:** This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPP). As one consequence, students should identify themselves on all written work by placing their name on the front page and their ID number on each subsequent page. For more information see also http://www.ucalgary.ca/secretariat/privacy

(f) **Student Union Information:** VP Academic Phone: 403 220-3911 Email: suvpaca@ucalgary.ca SU Faculty Rep. Phone: 403 220-3913 Email: science1@su.ucalgary.ca, science2@su.ucalgary.ca and science3@su.ucalgary.ca;
Student Ombuds Office: 403 220-6420 Email: ombuds@ucalgary.ca; http://ucalgary.ca/provost/students/ombudss

(g) **Internet and Electronic Device Information:** You can assume that in all classes that you attend, your cell phone should be turned off unless instructed otherwise. Also, communication with other individuals, via laptop computers, Blackberries or other devices connectable to the Internet is not allowed in class time unless specifically permitted by the instructor. If you violate this policy you may be asked to leave the classroom. Repeated abuse may result in a charge of misconduct.

(h) **U.S.R.I.:** At the University of Calgary, feedback provided by students through the Universal Student Ratings of Instruction (USRI) survey provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses (www.ucalgary.ca/usri). Your responses make a difference - please participate in USRI Surveys.

LEARNING OUTCOMES

- Describe how plant biotechnology is used to develop new crop varieties
- Describe the tissue culture methods that are used to propagate plants
- Describe the general characteristics of plant genomes and plant gene regulation
- Describe the plant 'omics' and how they are important in plant biotechnology
- Have the ability to read, summarize and provide a written critique of high impact plant biotechnology research publications
- Describe how plant biotechnology can be used to increase crop yield and quality
- Describe how plant biotechnology can be used to produce value added products
- Discuss the pros and cons of plant biotechnology and crop improvement to the layperson

Department Approval ORIGINAL SIGNED Date

TENTATIVE LECTURE SCHEDULE

Date	Topic	Instructor
January 8	Plant genomes I	PJF
January 10	Plant genomes II	PJF
January 12	Plant genomes III	PJF
January 15	Gene structure and transcriptional regulation I	PJF
January 17	Gene structure and transcriptional regulation II	PJF
January 19	Plant genetic transformation I	PJF
January 22	Plant genetic transformation II	PJF
January 24	Plant genetic transformation III	PJF
January 26	‘Omics technologies I	PJF
January 29	‘Omics technologies II	PJF
January 31	‘Omics technologies III	PJF
February 2	‘Omics technologies IV	PJF
February 5	Transposable elements I	PJF
February 7	Transposable elements II	PJF
February 9	From functional genomics to biotechnology I	PJF
February 12	From functional genomics to biotechnology II	PJF
February 14	Review	PJF
February 16	MIDTERM EXAM – in class	
February 19-23	READING WEEK	
February 28	Post-transcriptional gene regulation I	DGM
March 2	Post-transcriptional gene regulation II	DGM
March 5	Post-transcriptional gene regulation III	DGM
March 7	Chloroplast and mitochondrial genomes	DGM
March 9	Herbicide resistance	DGM
March 12	Insect resistance	DGM
March 14	Modification of starch quality and quantity I	DGM
March 16	Modification of starch quality and quantity II	DGM
March 19	Engineering of male sterility and hybrid seed production I	DGM
March 21	Engineering of male sterility and hybrid seed production II	DGM
March 23	Plant bioplastics	DGM
March 26	Molecular mechanisms of phytoremediation I	DGM
March 28	Debate: Background and preparation	DGM
March 30	GOOD FRIDAY	
April 2	Debate: Topic I	PJF
April 4	Debate: Topic II	PJF
April 6	Debate: Topic III	PJF
April 9	Debate: Topic IV	PJF
April 11	Review	DGM