

# BIOL 402

## Experiments in Plant Physiology

Winter Term (2013-14)

### CALENDAR DESCRIPTION

**Laboratory-based course emphasizing experimental approaches to understanding the principles of plant physiology covered in BIOL 341/3.0.**

COREQUISITE BIOL 341/3.0. EXCLUSION BIOL 301/3.0. EQUIVALENCY BIOL 342/3.0.

### SCHEDULE

**Tutorial: Tuesday 10:30-11:30, BIOSC 2109. Lab: Thursday 8:30-11:30, BIOSC 3306**

<b>Instructor</b>	<b>W. Snedden, K. Ko</b>
<b>Instructor Contact</b>	<a href="mailto:Wayne.snedden@queensu.ca">Wayne.snedden@queensu.ca</a> , Phone: 613-533-6154, Rm. 3509 Bioscience <a href="mailto:kok@queensu.ca">kok@queensu.ca</a> , Phone: 613-533-6155
<b>Office Hours</b>	By appointment or just drop by instructor's office
<b>TA:</b>	Midhat Ubaid, Allyson Hill
<b>TA Contact Information</b>	<a href="mailto:5mu@queensu.ca">5mu@queensu.ca</a> ; <a href="mailto:7ath@queensu.ca">7ath@queensu.ca</a>
<b>Office Hours</b>	TBA

### Learning Objectives

The main goal of Biol 402 is to help students acquire a comprehension of experimental plant biology. The course explores various lab exercises in plant cell biology, physiology, anatomy, bioinformatics, and biochemistry. The course objectives, broadly speaking, are to help students to:

- (i) understand plant biology through experimental methods
- (ii) understand the scientific method of hypothesis development and testing
- (iii) learn a number of new technical skills applicable to a broad range of scientific endeavours

### Learning Hours:

The table below provides an **estimate** of hours of study for Biol402. This is for general reference purposes only and is not intended to describe the precise duration of time the course will require. The nature of assignments will vary year to year and thus the allocation of time to various activities will vary accordingly. A 3.0-unit course would normally require a total of 110 to 130 total learning hours (or hours on task) and Biol402 will fall within that window on any given calendar year. It is prudent to keep in mind however that time commitment to some tasks will vary widely among students depending upon individual aptitude, level of background, etc.

<i>Teaching method</i>		<i>Average hours per week</i>	<i>Number of weeks</i>	<i>Total hours</i>
In-class hours	Lectures			
	Seminars			
	Laboratories	3	12	36
	Tutorials	1	12	12
	Group learning	3	2	6
	Individual instruction			
Other	Online activities	3	5	~15
	Private study	4	12	~48
Total learning hours				~117 (typical range 110-130)

### **Course Outline**

The course explores a broad range of concepts in experimental plant physiology. Topics covered may vary somewhat year-to-year, and are subject to change, but generally include labs exercises on photosynthesis/respiration, plant enzyme analysis, growth and development, phytohormones, genomics/bioinformatics, protein electrophoresis/western blotting, gene expression. In addition, a major independent project is carried out (in pairs) in the final weeks of the course and allows students to participate in discovery-based research where they conduct experiments of their own design. Students present their project to the class in the final lab (and tutorial if necessary) slot. Periodic in-class quizzes are used to help students gauge their understanding of course material and a lab exam covers all material from the course prior to independent projects. The nature of graded assignments will vary year-to-year but could include one or more of the following: in-class quizzes, online quizzes/assignments, major independent lab project (in pairs), lab write-ups, participation in discussions in class, class presentation (on your project topic).

### **Textbooks/Readings**

There is no assigned text for this course. Lab protocols and related materials will be provided as pdf via online access (Moodle or similar) or handed out in class

### **Grading Scheme**

<b>Component</b>	<b>Weight (%)</b>	<b>Date</b>
Lab write-ups (6 labs, grading weight varies)	40%	TBA
Participation	5%	In-class discussion
Independent Project	20%	TBA
Quizzes (3 quizzes @4% each)	12%	TBA
Project presentation in class	10%	TBA (last week of classes)
Lab exam	13%	TBA

### **Grading Method**

- In this course, some components will be graded using numerical percentage marks. Other components will receive letter grades, which for purposes of calculating your course average will be translated into numerical equivalents using the Faculty of Arts and Science Letter Grade Input Scheme.

When letter grades are employed, the following scale will be employed for purposes of calculating your course average:

#### ***Arts & Science Letter Grade Input Scheme***

<b>Assignment mark</b>	<b>Numerical value for calculation of final mark</b>
A+	93
A	87
A-	82
B+	78
B	75
B-	72
C+	68
C	65
C-	62
D+	58
D	55
D-	52
F48 (F+)	48
F24 (F)	24
F0 (0)	0

Your course average will then be converted to a final letter grade according to Queen's Official Grade Conversion Scale:

#### ***Queen's Official Grade Conversion Scale***

<b>Grade</b>	<b>Numerical Course Average (Range)</b>
A+	90-100
A	85-89
A-	80-84
B+	77-79
B	73-76
B-	70-72
C+	67-69
C	63-66
C-	60-62
D+	57-59
D	53-56
D-	50-52
F	49 and below

### **Academic Integrity and Queen's Code of Conduct**

Students are responsible for familiarizing themselves with the regulations concerning academic integrity and for ensuring that their assignments and conduct conform to the principles of academic integrity. Information is available in the Arts and Science Calendar (see Academic Regulation 1 -

<http://www.queensu.ca/artsci/academic-calendars/regulations/academic-regulations>, on the Arts and Science website (see <http://www.queensu.ca/artsci/academics/undergraduate/academic-integrity>), and at Biology's website (<http://www.queensu.ca/biology/undergrad/integrity.html>) and from the instructor of this course. Departures from academic integrity include plagiarism, use of unauthorized materials, facilitation, forgery and falsification, and are antithetical to the development of an academic community at Queen's. Given the seriousness of these matters, actions which contravene the regulations on academic integrity carry sanctions that can range from a warning or the loss of grades on an assignment to the failure of a course to a requirement to withdraw from the university.

### **Accommodation Policy, Exam Conflicts, and Other Conflicts**

Students who feel they need accommodations for disabilities or extenuating circumstances, or have a conflict between exams or other commitments should consult the Biology Department's website for details about how to proceed (<http://www.queensu.ca/biology/undergrad/integrity.html>). In general, the earlier a course coordinator is apprised of an extenuating circumstance, the more likely an accommodation can be made. Students are encouraged to be proactive in anticipating difficulties, when it is possible to do so.

Students may apply to write a make-up or deferred exam if they have an exam conflict as defined in the Academic Regulations of the Faculty (See Arts and Science Calendar Regulation 8 - <http://www.queensu.ca/artsci/academic-calendars/regulations/academic-regulations>). In this case, the student should report to the Exams Office first to verify that there is a genuine exam conflict. Biology professors will not consider your situation to be a conflict unless it meets the criteria set out by the Faculty of Arts and Sciences.

Students may request a make-up or deferred exam if they have an exam conflict with off-campus travel associated with a field course (e.g BIOL-307/3.0 or 407/3.0) that is held during the fall or winter terms.

### **Late Policy**

Late assignments will be penalized at 5% per day. Consult the Biology Departmental Policy on missed exams and assignments: <http://www.queensu.ca/biology/undergrad/integrity/missexams.html>

### **Copyright**

Course material for Biol402 is copyrighted and is for the sole use of students registered in Biol402. Third party copyrighted materials (such as book chapters and articles) have either been licensed for use in this course or fall under an exception or limitation in Canadian Copyright law. This material shall not be distributed or disseminated to anyone other than students registered in Biol402. The material on the Biol402 course website may be downloaded for a registered student's personal use, but shall not be distributed or disseminated to anyone other than students registered in Biol402. Failure to abide by these conditions is a breach of copyright, and may also constitute a breach of academic integrity under the University Senate's Academic Integrity Policy Statement.

### **Accommodation of Disabilities**

*Queen's University is committed to achieving full accessibility for persons with disabilities. Part of this commitment includes arranging academic accommodations for students with disabilities to ensure they have an equitable opportunity to participate in all of their academic activities. If you are a student with a disability*

*and think you may need accommodations, you are strongly encouraged to contact the Disability Services Office (DSO) and register as early as possible. For more information, including important deadlines, please visit the DSO website at: <http://www.queensu.ca/hcds/ds/>*