

BIOL 3BO3: Plant Physiology 2017

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Mark Distribution:

Lab Reports (7 each at 5%; see note on Lab Reports below)	35%
Midterm: Friday, Feb 10th; 10:30 to 11:20 am (Location TBA)	25%
Final (Scheduled by the Registrar's Office)	40%

Recommended Texts:

Plant Physiology and Development, 6th Edition by L. Taiz, E. Zeiger, I.M. Moller, and A. Murphy Sinauer Associates Inc. 2015

No readings will be assigned from the text. You may, however, find this text useful for completing your labs and enhancing your understanding of the lecture material. Taiz and Zeiger have earlier editions of Plant Physiology published (eg. 2010) which, though dated, are still helpful and used copies should be available.

Reference Materials on Avenue to Learn:

Course lecture slides will be posted a day or two before the lecture. To assist you with completing lab reports, references or links to articles will be available on Avenue to Learn. Class or lab updates are often posted so you should check the site frequently for course-related news.

Learning Objectives:

- To develop an understanding of mechanisms underlying plant management of water, nutrients and the production and allocation of photosynthate.
- To practise and master laboratory skills including liquid handling, spectrophotometry, enzyme activity, and organelle isolation.
- To set hypotheses, produce and analyse data, and present and discuss results in the context of a formal write-up.

Lab Reports:

The lab exercises are an integral component of this course since they provide an opportunity to cover the topics discussed in lectures in greater depth. Material covered in labs will be included in exams (midterm and final). Unless otherwise stated, lab reports are due one week plus a day (the following Friday) after completion of the exercise. Late reports will be subject to a mark reduction of 10% per day overdue. You will be provided with more information about lab write-up formats during the lab.

Your first official lab will be held in the Greenhouse.

Absences from the Lab

This course has a compulsory lab component. It is the responsibility of the student to attend all labs as scheduled. A missed lab will result in a grade of zero unless the absence is documented on-line (MSAF) or it is supported by the Associate Dean's Office. Unfortunately, due to the preparations needed for the labs there can be no provision for make-up exercises/lab content in the event of illness, so this is not an option for relief. Your prompt attention to an absence will make it easier to determine appropriate relief for missed lab work.

Midterm Exam:

The mid-term exam will be held during the Feb 10th lecture slot. The location of the midterm will be confirmed. You will be given one hour to write the exam so make sure you arrive to begin promptly at 10:30 am. Calculators and other electronic devices are not permitted.

In order to return exams promptly to the class there will only be one opportunity to redo a missed midterm: Time and Location TBA.

Workshop: Introduction and Laboratory Skills:

The workshop is not considered a laboratory exercise but your participation is **highly recommended**. If you complete the 1.5h session and obtain confirmation of completion from your IA or TA you will receive 3 BONUS marks to the laboratory component of the course. You can complete this module during the assigned lab time the first week on **Thursday, January 5 (9:30 to 10:30 OR 2:30 to 3:30) OR Wednesday, January 11 from 2:30 to 3:30 pm**. More details will be given in class and posted on Avenue to Learn.

McMaster Policy on Academic Integrity:

Academic dishonesty consists of misrepresentation by deception or by other fraudulent means and can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: "Grade of F assigned for academic dishonesty"), and/or suspension or expulsion from the university.

It is your responsibility to understand what constitutes academic dishonesty. For information on the various kinds of academic dishonesty please refer to the Academic Integrity Policy, specifically Appendix 3, located at http://www.mcmaster.ca/senate/academic/ac_integrity.htm

Three of the forms of academic dishonesty may take are:

- Plagiarism, e.g. the submission of work that is not one's own or for which other credit has been obtained.
- Improper collaboration in group work including lab reports

In BIOL 3BO3 you will be paired with a partner to perform the lab experiments. You may also have class data to incorporate into your lab write-up. However, while the lab experiment is a collaborative effort, your lab report should be written independently and to do otherwise would be considered improper collaboration.

- Copying or using unauthorized aids in tests and examinations.

For absences from classes lasting up to 3 days:

If you are absent from the university for a minor medical reason, lasting fewer than 3 days, you may report your absence, once per term, without documentation, using the McMaster Student Absence Form. Absences for a longer duration or for other reasons must be reported to the Associate Dean of Science Office, with documentation, and relief from term work may not necessarily be granted. When using the MSAF, report your absence to the to the Instructor (weretil@mcmaster.ca) and Instructional Assistant, Sinah Lee (leesk2@mcmaster.ca) and then follow up immediately (normally within 2 working days) by email with the Instructor to learn what relief may be granted for the work you have missed, and relevant details such as revised deadlines, or time and location of a make-up exam. Please note that the MSAF may not be used for term work worth 25% or more, nor can it be used for the final examination. Please note above the policy on a missed mid-term and labs for this class.

Online Conduct:

As a student enrolled in this course you have been granted permission to access an online learning management system, Avenue to Learn.

Avenue to Learn course pages are considered an extension of the classroom and usage is provided as a privilege subject to the same code of conduct expected in a lecture hall (see relevant section of the student code of conduct below). This privilege allows participation in course discussion forums and access to supplementary course materials. Please be advised that all areas of Avenue to Learn, including discussion forums, are owned and operated by McMaster University. Any content or communications deemed inappropriate by the course instructor (or designated individual) may be removed at his/her discretion. Per the University Technology Services Code of Conduct, all members of the McMaster community are obligated to use computing resources in ways that are responsible, ethical and professional. Avenue to Learn Terms of Use are available at <http://avenue.mcmaster.ca>.

Student Code of Conduct - Appendix D

Major Offences include, but are not limited to: (h) engaging in disruptive behaviour. Disruptive behaviour is behaviour in class or out of class which involves substantial disorder and/or disrupts the operation of the University (j) engaging in verbal or non-verbal behaviour or communication toward an individual or group which is considered to be intimidating, harassing and/or discriminatory.

McMaster Policy on course elements:

The instructor and university reserve the right to modify elements of the course during the term. The university may change the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes. It is the responsibility of the student to check their McMaster email and course websites weekly during the term and to note any changes.

Tentative Outline: BIOL 3BO3: Plant Physiology (2017)

Day (We/Fr)	MDCL 1116 We @ 8:30-9:20 am/Fr @ 10:30-11:20 am	Date	Lab (R am or pm) : LS 107 (or Greenhouse)	
Lecture Topic:				
Jan	4	Introduction/Water movement	Jan 5	Skills workshop (1.5 hr; no report)
	6	Measuring water status		
	11	Soil properties and water movement	Jan 12	Mineral nutrition (set up): (Greenhouse)
	13	Root structure and water uptake		
	18	Water and leaves: Transpiration	Jan 19	Root membrane properties
	20	Mineral nutrition		
	25	Solute movement	Jan 26	Tissue water potential
	27	N assimilation		
Feb	1	N assimilation/S assimilation	Feb 2	Nitrate reductase
	3	P and Fe assimilation; Review		
	8	Photosynthesis: Light reactions	Feb 9	Mineral nutrition (completion)
	10	MIDTERM		
	15	Photosynthesis: Light Reactions	Feb 16	No lab
	17	Photosynthesis: Carbon fixation		
	22	Mid-term break	Feb 23	Mid-term break: No lab
	24	Mid-term break		
Mar	1	CO ₂ -concentrating mechanisms: C4	Mar 2	Chloroplast isolation
	3	CO ₂ -concentrating mechanisms: CAM		
	8	Photosynthesis: Ecological considerations	Mar 9	Photosynthesis (Greenhouse)
	10	Photosynthesis: Measurements		
	15	Translocation and phyllotaxy	Mar 16	Senescence (set up)
	17	Assimilate partitioning		
	22	Sink development	Mar 23	Senescence (completion)
	24	Senescence		
	29	TBA (Invited speaker if possible)	Mar 30	No Lab
	31	Stress responses		
Apr	5	Review	Apr 6	No Lab