BIOLOGY 2D03: PLANT BIODIVERSITY & BIOTECHNOLOGY

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Lectures: Monday, Wednesday, Thursday, Friday 1:30 – 2:20pm in MDCL 1102
Labs: weekly as scheduled in LSB 104

Textbook:
Recommended: *Plant Biology*, Smith A.M., G. Coupland, L. Dolan, N. Harberd, J. Jones, C. Martin, R. Sablowski & A. Amey. Garland Science, NY, NY.
Available at McMaster University Campus Store, the McMaster University bookstore (used and new copies)
13:978-0-8153-4025-6
An e-book version is available directly from the publisher 9781136977459 or Amazon.ca ASIN B008ZJKUZ8
A copy of the text is available on reserve at the Thode Library
May be of interest: When is a flower not a flower? and other intriguing questions about plants, Larry and & Carol Peterson. Available online at www.petersonbook.com for $25.

Lab Manual: Chapters will be posted weekly to Avenue to Learn

Course Description:
Plant Biodiversity and biotechnology will introduce key concepts in plant biology and biodiversity, including the origin of plants, plant structure and development, plant genomes, plant responses to the environment, plant interactions with other organisms, agriculture and plant biotechnology.

Avenue to Learn:
In this course we will be using Avenue to Learn. Students should be aware that, when they access the electronic components of this course, private information such as first and last names, user names for the McMaster e-mail accounts, and program affiliation may become apparent to all other students in the same course. The available information is dependent on the technology used. Continuation in this course will be deemed consent to this disclosure. If you have any questions or concerns about such disclosure please discuss this with the course instructor.

STATEMENT OF UNDERSTANDING REGARDING AVENUE TO LEARN USAGE
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
If you require this information in an alternate/accessible format, please contact Mihaela Georgescu at mgeorg@mcmaster.ca

Laboratories for Biology 2D03
Labs are every week! Students must attend the lab section they have been assigned to.
In the event of university closure due to a storm, make-up labs will be attempted as soon as possible.

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 A2L webpage weekly during the term and to note any changes.

Lab Expectations
Students work in pairs, but complete the weekly lab assignments individually.
Students are **expected to clean up their work area** at the end of each lab by:

- Unplugging microscopes, wrapping the cords around them and putting the dust cover on.
- Returning all prepared slides to the appropriate slide boxes on the center and back benches.
- Disposing of their waste in the appropriate containers.

LAB SUPPLIES – Students should bring to each lab (no loaners available)

- ✓ Lab coat (available at the bookstore)
- ✓ Lab manual (printed from Avenue)
- ✓ Pens, pencils, coloured pencils or markers
- ✓ Digital camera or other digital imaging device. Students are permitted to use digital cameras or other digital imaging devices in the Biology 2D03 labs. **These devices are not required laboratory supplies**. Students can obtain equally good lab notes (and marks) by making their own hand drawn diagrams during the labs. If you elect to use a digital imaging device, read the policy regarding their use (outlined in the lab manual) carefully. **The use of such devices is a privilege and may be withdrawn if the policy is not followed.**

LECTURE SCHEDULE		LAB SCHEDULE	
Week of	**Topic**	**Lab Topic**	**Lab Exercises**
Sept 4: Lecture 1	Introduction to course Origin of Plants - evolution of photosynthesis, eukaryotic cells, land & seed plants, angiosperms	**No labs**	
Sept 10: Lecture 2	Plant Genomes	**Lab 1: Origin of Plants**	Meet in lab, accompany TA to greenhouse, Scavenger Hunt I.
Sept 17: Lecture 3	Plant Cells (importance of cell wall, vacuole, cuticle, plasmodesmata)	**Lab 2: Seedlings**	Fern spore germination (to be observed all term). Cauliflower tissue culture.
Sept 24: Lecture 4	Development in Angiosperms (embryogenesis to plant sex)	**Lab 3: Plant organs I** -roots and shoots	Sectioning and staining of different plant organs.
Oct 1: Lecture 5	Plant plumbing & nutrition **Midterm, Oct. 1st** in class, covers Lectures 1 to 4 (20%)	**Lab 4: Plant organs II** -leaves and flowers	Protoplast Isolation.
Oct 8 - 12	**Mid-term Recess**	**No labs**	
Oct 15: Lecture 6	Plant responses I Perception of Light -seed germination, shade avoidance Perception of Hormones – Ethylene, ABA & GA signal transduction	**Lab 5: Reproduction, Seeds, fruits (Life cycles)**	**Lab Test 1 covers labs 1 to 4 (10%)**
Oct 22: Lecture 7	Plant Responses II - Environmental Stress	**Lab 6: Light & hormone responses**	Photosynthesis exercise. Seed germination response to hormones. Effect of hormones on tissue regeneration in tissue culture.
Oct 29: Lecture 8	Plant Responses III – Biotic Interactions, plant immunity & disease, symbiotic interactions – **Dr. Robin Cameron**	**Lab 7: Environmental Responses**	Hrp exercise- inoculate bacteria into leaves.
Nov 5: Lecture 9	Domestication & Agriculture	**Lab 8: Biotic Interactions**	Hrp exercise – collect leaves & bacteria, plate serial dilutions. PCR of GMO food products.
Nov 12: Lecture 10	Biotechnology I – current GM crops in Canada, ethical issues, organic vs conventional farming	**Lab 9: Discussions**	Hrp Exercise - review Hrp images, produce a class chart; discuss Hrp and PCR results.
Nov 19: Lecture 11	Biotechnology II –GM crops in developing world, plants as factories, future GM crops	**Lab 10: Agriculture Greenhouse Scavenger Hunt II**	Agriculture and wood exercise, then accompany TA to greenhouse for Scavenger Hunt II
Nov 26: Lecture 12	Plant Ecology – **Dr. Susan Dudley**	**Lab Test 2, covers labs 5 to 10 (10%)**	
Dec 3: Lecture 13	**Finish and Review**		

Grading Schemes	**1**	**2**	**3 / 4**	**5 / 6**
Laboratory Practical Test 1	10%	10%	0%/0%	0%/0%
Laboratory Practical Test 2	10%	10%	10%/10%	0%/0%
Laboratory Practical Test Make-up	0%	0%	10%/10%	20%/20%
Midterm (in class)	20%	0%	20%/0%	20%/0%
Lab Assignments	15%	15%	15%/15%	15%/15%
Final Exam (cumulative)	45%	65%	45%/65%	45%/65%
TOTAL	100%	100%	100%/100%	100%/100%

EXPLANATION OF GRADING PROCEDURES USED IN BIOLOGY 2D03

A. **Final Exam (45% or 65%)** A copy of a past final exam will be posted to A2L under Content.

B. **Laboratory Practical Tests (20%) -** The practical tests will be held in lab. Lab Test 1 will take place the week of Oct 15 - 19, Lab Test 2, the week of Nov 26 – 30. Lab Practical Tests provide you the opportunity to review and check your understanding of laboratory and related lecture material. Practice questions will be provided before each Lab Practical Test. If you miss Lab Test 1 or Lab Test 2, you will write a Lab Test Make-up for the Lab Test you missed during the week of Dec. 3rd If you miss both Lab Test 1 & 2, you will write a Lab Test Make-up that will cover both Lab Test 1 & 2 during the week of Dec 3rd.

C. **Midterm (20%)**, will cover LECTURE material. The Midterm will be held in class on Monday October 1st. Practice Midterm questions and answers will be posted to A2L under Content. If you don't write the Midterm, your exam will be worth 65%. We strongly encourage you to write the Midterm to practice for the exam. If you do poorly on the Midterm you will not be penalized and instead will receive Grading Scheme 2, 4 or 6 in which the 20% Midterm will be transferred to the Final Exam.

D. **Lab Assignments (15%)** A small assignment will be completed by each student and submitted to your TA by the end of each lab.

Students who fail to clean up their work area at the end of each lab will have marks deducted from the lab assignment component of their grade.

POLICY REGARDING MISSED WORK IN THE FACULTY OF SCIENCE:

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 your Faculty/Program office, with documentation, and relief from term work may not necessarily be granted.
For Biology 2D03 you should list **Mihaela Georgescu (mgeorg@mcmaster.ca)** as the course contact. **Immediately after using the online tool, students MUST contact Mihaela Georgescu regarding the nature of the relief. Failure to do so may negate the opportunity for relief.**

Additional Information on Missed Work in Biology 2D03:
NOTE: To receive credit for completing Biology 2D03, students must complete a majority of the labs and course tests. An MSAF does NOT exempt students from completing the course lab or test requirements. If a student misses more than 75%[1] of the labs and/or test components, credit in Biology 2D03 may NOT be given. This applies even if the absences from the labs or tests are validated by AN MSAF AND the student has a passing grade for the portion of the course the student has completed.

Missed Midterm: If you miss the Midterm, contact Mihaela Georgescu as soon as possible after submitting the MSAF. The weight of the Midterm (20%) will be added to that of your final exam (Grading Scheme 2, 4 or 6).

[1] Note: 75% refers to **completion** of 75% of the term work, NOT achieving a grade of 75% on the term material!

Missed Labs or Lab Practical Test: Please contact Mihaela Georgescu (mgeorg@mcmaster.ca) as soon as possible after submitting the MSAF. If you miss a lab every effort will be made to put you into a later lab slot in the same week. If you MSAF one of the Lab Tests the 10% will be reweighted to the other Lab Test. If you do not hand in a lab assignment but submit an MSAF or can provide a valid reason that is approved by the Associate Dean of Science Office, your accommodation will be a 48 hour extension from the lab assignment due date, regardless of when the MSAF was submitted.

Academic Accommodation of Students with Disabilities

Students who require academic accommodation must contact Student Accessibility Services (SAS) to make arrangements with a Program Coordinator. Academic accommodations must be arranged for each term of study. Student Accessibility Services can be contacted by phone 905-525-9140 ext. 28652 or e-mail sas@mcmaster.ca. For further information, consult McMaster University's Policy for Academic Accommodation of Students with Disabilities.

Academic Integrity:

You are expected to exhibit honesty and use ethical behavior in all aspects of the learning process. Academic credentials you earn are rooted in principles of honesty and academic integrity.

Academic dishonesty is to knowingly act or fail to act in a way that results or could results in unearned academic credit or advantage. This behavior can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with at 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 types of academic dishonesty please refer to the Academic Integrity Policy, located at http://www.mcmaster.ca/academicintegrity

The following illustrates only three forms of academic dishonesty:

1. Plagiarism, e.g. the submission of work that is not one's own or for which other credit has been obtained.
2. Improper collaboration in group work.
3. Copying or using unauthorized aids in tests and examinations.

Grades obtained for Bio 2D03 will be converted according to the following scheme, which is the one in general use at McMaster University.

90 - 100%	A+	12
85 - 89%	A	11
80 - 84%	A-	10
77 - 79%	B+	9
73 - 76%	B	8
70 - 72%	B-	7
67 - 69%	C+	6
63 - 66%	C	5
60 - 62%	C-	4
57 - 59%	D+	3
53 - 56%	D	2
50 - 52%	D-	1
0 - 49%	F	0