



University  
of Regina

## ***BIOL 399AD – Plant Energetics*** **Syllabus for Winter 2026 (“202610”)**

### **Instructor**

**Harold Weger**

e-mail: [harold.weger@uregina.ca](mailto:harold.weger@uregina.ca)

LB 255

### **Lectures:**

- CL 247
- MWF 8:30 to 9:20 am

### **BIOL 399AD (3:3-0) Course Description:**

Environmental, physiological and biochemical regulation of photosynthesis and respiration, energetic implications of acclimation to abiotic stress, interactions between photosynthesis and stress. \*\*\*Prerequisites: BIOL 266 and one of BIOL 288 or BIOC 221\*\*\*

### **Communication within the Course**

- E-mail is the preferred way to communicate; simply use the above e-mail address.
- Please check **your U of R email address** for important information about this course and your other courses.
- If you prefer to use a different email address (e.g. gmail), it is possible to set your U of R email address to forward to your preferred email address.
- Emails to the class are also visible via the **News Forum** section of the UR Courses site.



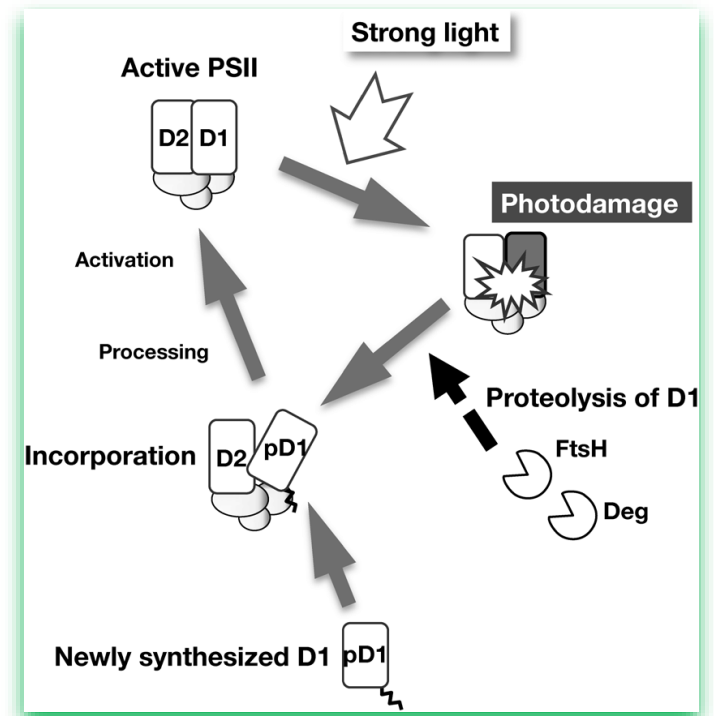
**Student Accessibility** (<https://www.uregina.ca/accessibility/student/>) upholds the University's commitment to a diverse and inclusive learning environment by providing services and supports for students based on disability, religion, family status, and gender identity. Students who require these services are encouraged to contact Student Accessibility to discuss the possibility of academic accommodations or other supports as early as possible. For further information, please email [accessibility@uregina.ca](mailto:accessibility@uregina.ca) or phone 306-337-2200.

### Grading Scheme:

Mid-Term Test #1	13%
Mid-Term Test #2	19%
Mini-Review Topic (by deadline)	2%
Preliminary Reference List	2%
Presentation	4%
Mini-Review – First Draft	5%
Mini-Review – Final Draft	15%
Final Exam	40%
<b>TOTAL</b>	<b>100%</b>

The grading scheme is the same for all students. If you miss a mid-term test (with a valid excuse), you will have the option of writing a make-up mid-term test or transferring the weight of the test to the final exam.

Norikazu (2017) Bull. Plankton Soc. Japan 64: 40–44



*The D1 damage and repair cycle.*

## Important Dates for Winter 2026 BIOL 399AD:

Jan. 6 (T)	First day of lectures
Jan. 7 (W)	<b>First day of BIOL 399AD lectures</b>
Jan. 21 (W)	<b>Due date</b> to register topic for Report on Current Research
Jan. 30 (F)	<b>Due date</b> for Preliminary Reference List
Feb. 4 (W)	<b>Mid-term Test #1</b>
Feb. 16-21 (M-S)	Reading Week (no classes); includes Family Day
Mar. 11 (W)	<b>Mid-term Test #2</b>
Mar. 16 (M)	<b>Due date</b> for first draft of Report on Current Research
Mar. 18 (W)	<b>First day of student presentations</b>
Apr. 6 (M)	<b>Due date</b> for Report on Current Research
Apr. 13 (M)	<b>Last day of BIOL 399AD lectures</b>
Apr. 16 (R)	First day of final exams
Apr. 20 (M)	<b>BIOL 399AD Final Exam</b> (9:00 AM; tentatively 3 hours; might be less)



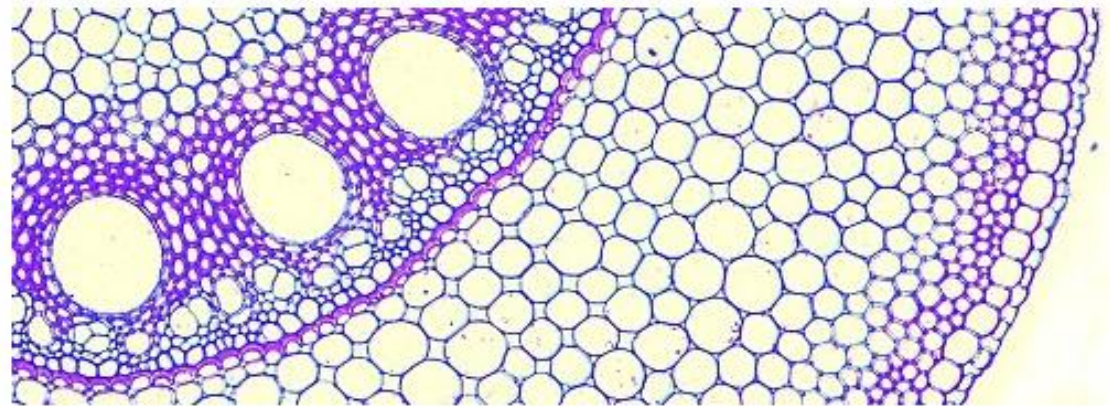
## Course Materials:

Materials Posted on UR Courses: **Very important (critical, in fact).**

Textbook (for reference only): **Plants in Action**. This is an open access book; available from <http://plantsinaction.science.uq.edu.au/>. The textbook is produced via a collaboration between the Australian Society of Plant Scientists and the New Zealand Society of Plant Biologists. There are two editions of the textbook, although the 2<sup>nd</sup> edition is only a partial revision (it's a work in progress). Use of a textbook is entirely optional; there are no assigned readings and material for tests is generated in-class.

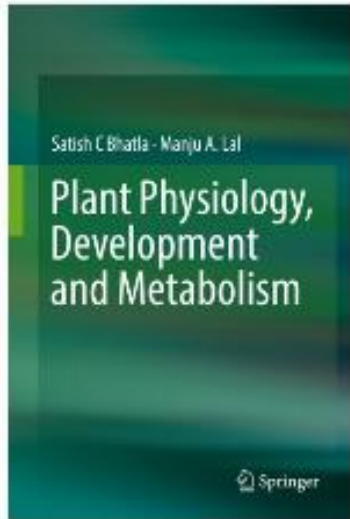
## Plants in Action

A resource for teachers and students of plant science



Open access  
textbook

Another  
textbook that is  
open access for  
U of R students



And, the U of R has access to another on-line textbook:

Bhatla, SC, Lal MA eds. (2018) Plant Physiology, Development and Metabolism

<https://link.springer.com/book/10.1007%2F978-981-13-2023-1>

### **Course Topic Outline (Subject to Change):**

- *Plant Respiration Review*
- *Respiratory Carbon Metabolism*
- *Respiratory Thermogenesis and Alternative Pathway Respiration*
- *Respiratory Temperature Acclimation*
- *Respiration and Pressurized Mass Flow*
- *Growth and Maintenance Respiration*
- *Photosynthesis Review*
- *Calvin Cycle Regulation*
- *Adaptation and Acclimation to Low Light Conditions*
- *Chlorophyll a Fluorescence as a Tool for Monitoring Photosynthesis*
- *Effects of Excess Light Energy and Mechanisms of Photoinhibition*
- *Mechanisms for Dissipation of Excess Light Energy*
- *Alternative Photosynthetic Electron Flow Pathways*
- *Interactions between Photosynthesis and Water Stress and Low Temperature Stress*
- *Effects of Intermittent/Fluctuating Light Availability on Photosynthetic C Gain*
- *Different Types/Modes of Photosynthesis*
- *A Survey of Photosynthesis Articles from the Literature*

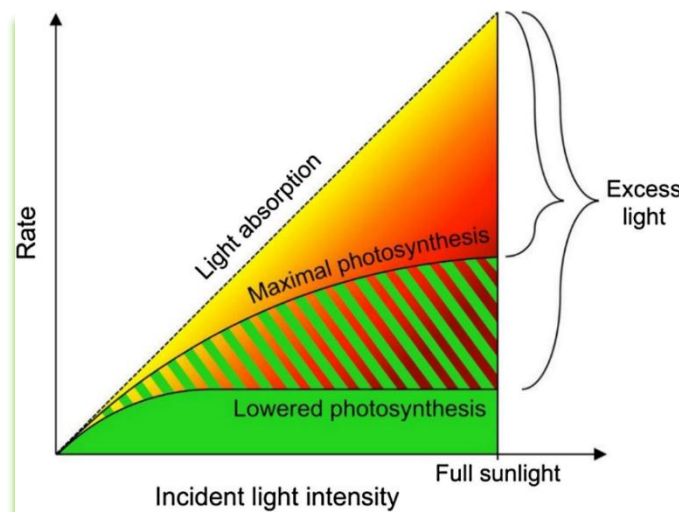
**Material to Know for Lecture Tests/Exams** – Students are responsible for understanding the material at the level of detail provided in the lectures.

Material that is not covered in lecture will not appear on a test/exam.



## Policies and Procedures

- 1) The final exam covers the entire course.
- 2) This course falls under the Academic Regulations of the University of Regina and the Faculty of Science (these regulations are printed in the General Calendar, available at <https://www.uregina.ca/registrar/academic-calendars-and-schedule/undergraduate-calendar.html>).
- 3) The grading scheme for the course is the same for all students in the course. There is no opportunity to boost a grade by doing “extra work”, and there are no adjustments to grade allocations to the various mid-terms and assignments.
- 4) For missed mid-terms (with a valid excuse; vacations and family trips are not a valid excuse), students will have the option of writing a make-up mid-term or transferring the weight to the final exam.
- 5) “Deferred” final exams can only be granted by the Associate Dean, Academic (for Faculty of Science students), or by the Deans and/or Associate Deans of other Faculties or Federated Colleges. Course instructors cannot grant deferred final exams.
- 6) “Required” course elements: a) final exam, b) term paper, and c) presentation.



Demmig-Adams & Adams III (2018) Environmental and Experimental Botany 154: 103.  
<https://doi.org/10.1016/j.envexpbot.2018.05.006>

## Plant Energetics (BIOL 399AD) Academic Policies

Work that is not original, i.e. submitted previously by any student, including yourself, for evaluation, or in which sources are not paraphrased or properly cited, will be penalized. In more severe cases your work will be sent to the Associate Dean (Academic) of Science for disciplinary action.

**Plagiarism includes**, but is not limited to, the following practices:

- Not acknowledging an author or other source for one or more phrases, sentences, thoughts, code, formulae, or arguments incorporated in written work, software, or other assignments.
- Presenting passages and/or portions of another person's paper, report, piece of software, etc., as an assignment for credit, even if that paper or other work is cited as a source in the accompanying bibliography or list of references. This includes copying sources of information found on the Internet.
- Paraphrasing text while maintaining the basic paragraph and sentence structure.

### **Generative AI is not allowed to be used in BIOL 399AD**

- Generative AI is not to be used in writing the Report on Current Research or in producing the Presentation, for text or images.
- Word processors (e.g. Word) perform checks for spelling, grammar and conciseness; this is fine. But is also the limit of what can be used; Copilot (now included with Microsoft Office) is not allowed.
- Do not use ChatGPT, Grammarly, QuillBot, etc, nor any paraphrasing services/websites.
- If you have questions about what is permissible, please feel free to ask.


## Student Code of Conduct (Student Conduct Office)

<https://www.uregina.ca/student-conduct/index.html>

### Academic Misconduct regulations.

### Non-academic Misconduct regulations.

- Both sets of regulations are enforced in this course. Please have a quick read of the regulations in the Undergraduate Calendar.
- Misconduct (academic, non-academic) is reported to the Associate Dean of Science (Academic).



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## 2025-2026

## UNDERGRADUATE CALENDAR

The information published in this Undergraduate Calendar outlines the rules, regulations, curricula, programs and fees for the 2025-2026 academic year, including the spring/summer term 2025, the fall term 2025 and the winter term 2026.

Revision Information:

Date	Description
March 7, 2025	Initial Publication
May 5, 2025	Additions and Revisions
Aug 27, 2025	Additions and Revisions

For a list of additions and revisions please visit the [Undergraduate Calendar](#) webpage.



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# Resources

## Student Central

<https://www.uregina.ca/students/>

- Student Central has lots of resources, including
- Student Mental Health
- Student Health Services
- Student Success Centre
- Global Learning Centre
- Protective Services (formerly Campus Security)
- Online Therapy Unit
- and more





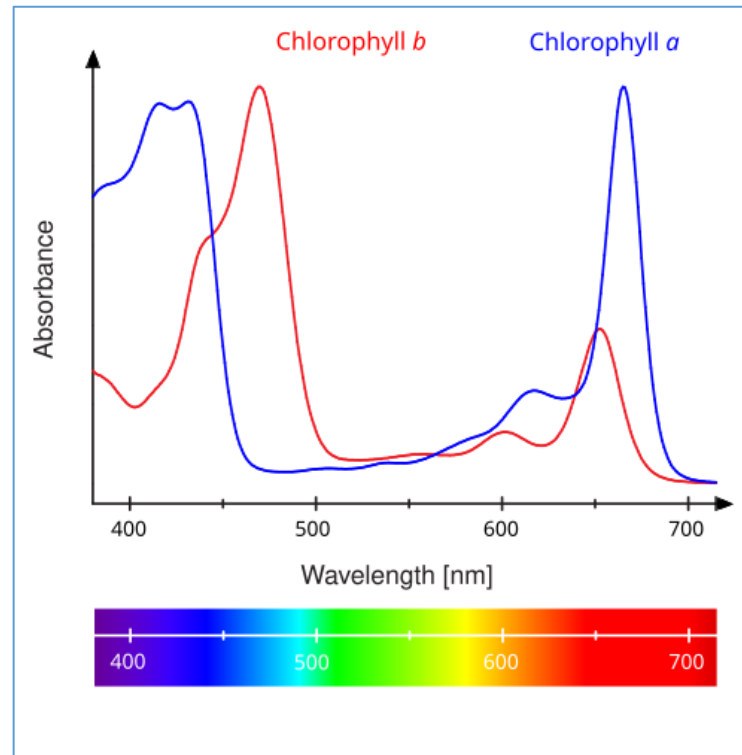
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# Resources

## Program/Academic/Pre-Professional Advising

Academic advising (about programs and majors, and about pre-professional programs) is available to both U of R and federated college (First Nations University, Champion College and Luther College) students. For Luther and Champion students, advising appointments are made via the appropriate Registrar's Office and/or Academic Advising Office. For U of R and FNUniv students, book an appointment via Science Academic Hub in LB ([science@uregina.ca](mailto:science@uregina.ca)).

*Absorbance spectra of chlorophyll a and chlorophyll b in solvent. These two pigments are the most important photosynthetic pigments in vascular plants.*



RadekLitvin  
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