DEPARTMENT OF SCIENCE

COURSE OUTLINE –WINTER 2021

BT2050 (A3): FUNDAMENTALS OF PLANT BIOLOGY – 3 (3-0-3) 90 Hours for 15 Weeks

INSTRUCTOR:	Dr. Jessie Zgurski	**PHONE:**	780-903-6313
OFFICE:	J221	**E-MAIL:**	JZgurski@gprc.ab.ca

OFFICE HOURS: Due to the COVID-19 pandemic, I cannot hold in-person office hours. However, please feel free to contact me via E-mail or phone if you have questions or concerns. If you would like to arrange a meeting through Zoom, please contact me to set up an appointment.

WINTER 2021 DELIVERY: Mixed Delivery – Remote and Onsite. This course is delivered remotely with some face-to-face/onsite components at the GPRC Grande Prairie campus.

- For the remote delivery components: students must have a computer with a webcam and reliable internet connection. Technological support is available through helpdesk@gprc.ab.ca.
- For the onsite components: students must supply their own mask [and/or face shield] and follow GPRC Campus Access Guidelines and Expectations.

Note: GPRC reserves the right to change the course delivery.

CALENDAR DESCRIPTION: An overview of the diversity and biology of organisms traditionally included in the plant kingdom (algae, fungi, lichens, mosses, ferns, gymnosperms and flowering plants). Emphasis throughout the course is on the relationship between structural and functional innovations in plants and how these have influenced their reproduction and evolution in various ecosystems. Symbioses and co-evolutionary relationships between or among different kinds of plants, and with other groups of organisms, are also considered.

PREREQUISITE(S)/COREQUISITE: BI1080 (Prerequisite)

REQUIRED TEXT/RESOURCE MATERIALS:

"Botany: An Introduction to Plant Biology" by James D. Mauseth, 2017, 6th edition, Jones and Bartlett Learning. **(Recommended Text Book)**

Botany 2050 Laboratory Manual 2021. **(Required, Will be Provided in Lab)**

DELIVERY MODE(S): Lecture (Zoom, Tues/Thurs 8:30 – 9:50 AM), Lab (Wed, J126, 2:45 – 5:35 PM).

COURSE OBJECTIVES: The major objective of this course is to provide students with a foundational understanding of the morphology, physiology, and evolution of plants and other photosynthetic organisms. Throughout the course, students will also be introduced to various human interactions with plants so they may better appreciate our dependence on these organisms. Practical applications of many of the concepts introduced in the course will also be discussed. After completing the course, students should have improved their communication skills, especially in the use of botanical terminology that will allow them to articulately discuss the morphology, ecology, and evolution of plants. In the laboratory, students will also learn practical techniques used to study plants and algae.

LEARNING OUTCOMES:

Upon completion of this course, students should be able to:

● Describe the internal and external organization of plants, and explain the function of the different tissue types found in plants.
● Describe the structures involved in plant reproduction, and compare the reproductive structures found among the major plant groups and algae, including green algae, nonvascular plants, seedless vascular plants, gymnosperms, and angiosperms.
● Explain the process of photosynthesis and compare the three major photosynthetic pathways used by plants: C_3 photosynthesis, C_4 photosynthesis and CAM photosynthesis.
● Name the various lineages (phyla) that diverged within the kingdom Plantae, and discuss the evolutionary relationships among them.

NOTE: Additional, detailed learning outcomes will also be provided for each topic included in the course.

TRANSFERABILITY:

Please consult the Alberta Transfer Guide for more information. You may check to ensure the transferability of this course at the Alberta Transfer Guide main page http://www.transferalberta.ca.

** Grades of D or D+ may not be acceptable for transfer to other post-secondary institutions. **Students are cautioned that it is their responsibility to contact the receiving institutions to ensure transferability**

EVALUATIONS: Midterm Exam – 20% (February 23)
Laboratory – 50%
Final exam – 30% (Non-cumulative, Exam week)

The 50% for the laboratory mark will be broken down as follows:

Research Proposal – 6%
Algae Lab Report – 11%
Plant Nutrition Assignment – 6%
Quizzes – 15% (5 at 3% each).
Poster Assignment – 12%

GRADING CRITERIA:

Please note that most universities will not accept your course for transfer credit **IF** your grade is **less than C-**.

Alpha Grade	4-point Equivalent	Percentage Guidelines		Alpha Grade	4-point Equivalent	Percentage Guidelines
A+	4.0	90-100		C+	2.3	67-69
A	4.0	85-89		C	2.0	63-66
A-	3.7	80-84		C-	1.7	60-62
B+	3.3	77-79		D+	1.3	55-59
B	3.0	73-76		D	1.0	50-54
B-	2.7	70-72		F	0.0	00-49

COURSE SCHEDULE/TENTATIVE TIMELINE:

Lecture Schedule		
Topic	**Dates (Tentative)**	**Recommended Text Reading**
Introduction to BT2050 and Overview of Plant Life	January 5 & 7	Chapter Two
Plant Tissues and the Primary Growth of Stems	January 7 & 12	Chapter Five
Leaves	January 14 & 19	Chapter Six
Roots	January 19 & 21	Chapter Seven
Secondary Growth and Woody Plants	January 26 & 28	Chapter Eight
Flowers and Reproduction	February 2 & 4	Chapter Nine
Photosynthesis (and Respiration)	February 9 & 11	Chapters Ten (and Eleven)
Midterm (20%)	**February 23**	**Includes all material covered to date.**
Transport Processes	February 25 & March 2	Chapter Twelve
Soils and Mineral Nutrition	March 2 & 4	Chapter Thirteen
Plant Development	March 9 & 11	Chapter Fourteen
Algae	March 16 & 18	Chapter Nineteen
Nonvascular Plants	March 23	Chapter Twenty
Seedless Vascular Plants	March 25	Chapter Twenty-One
Gymnosperms	March 30 & April 1	Chapter Twenty-Two
Angiosperms	April 6 & 8	Chapter Twenty-Three
Final Exam (30%)	**Exam Week**	**Includes all material covered after the midterm.**

Laboratory Schedule		
Date	**Lab**	**Assignment or Quiz?**
January 6	No lab first week of classes	No
January 13	Lab 1 – Set up Algae Experiment and Plant Seeds (Online lab – please meet via Zoom).	No
January 20	Lab 2 – Seeds, Seedlings, and Roots	No, but bring ideas for independent experiment.
January 27	Lab 3 – Vegetative Morphology and the Anatomy of the Shoot.	Quiz on Lab 2 (3%), Hand in Research Proposal (6%).
February 3	Lab 4 – Leaves, & Set up Plant Nutrition Experiment	Quiz on Lab 3 (3%), Receive feedback on research proposal.
February 10	Lab 5 – Set up Independent Experiment	Quiz on Lab 4 (3%).
February 17	Winter Break – No Labs!	No
February 24	Lab 6 – Algal Community Structure	No
March 3	Lab 7 – The Seedless Embryophytes	No
March 10	Lab 8 – Gymnosperms	Algae Lab Report Due (11%)
March 17	Lab 9 – Plant Nutrition Data Collection	Quiz – Labs 7 & 8 (3%)
March 24	Lab 10 - Data collection for independent experiment	Plant Nutrition Assignment Due (6%)
March 31	Lab 11 – Angiosperms	No
April 7	No Labs this week.	Online Lab 11 Quiz (3%), Poster Assignment Due (12%)

STUDENT RESPONSIBILITIES: Students are expected to attend classes, and laboratory sessions. All assignments must be completed in full and handed in by the date specified. Refer to the College Policy on Student Rights and Responsibilities at https://www.gprc.ab.ca/about/administration/policies/#academic_policies

Please inform the instructor if you cannot make it to a lab due to having or being exposed to COVID-19 or another illness. Missed lab quizzes can be made up at a later date.

Late assignments will be docked 10%. However, if you have a compelling reason for requiring an extension (such as an illness), please contact the instructor. Failure to write the midterm or final exam will result in a grade of zero unless the exam was missed for a compelling reason (such as illness). In such a case, the exam will be deferred.

STATEMENT ON PLAGIARISM AND CHEATING:

Cheating and plagiarism will not be tolerated and there will be penalties. For a more precise definition of plagiarism and its consequences, refer to the Student Conduct section of the College Calendar at

http://www.gprc.ab.ca/programs/calendar/ or the College Policy on Student Misconduct: Plagiarism and Cheating at https://www.gprc.ab.ca/about/administration/policies

**Note: all Academic and Administrative policies are available on the same page.

ADDITIONAL INFORMATION: Copies of the lecture Powerpoint presentations will be made available on the course website. I recommend printing out copies of the Powerpoint files prior to class and writing additional notes on them during lecture. Other learning resources, including practice exam questions, diagrams, and videos, will be added to the page during the semester.

ACCESSIBILTY SUPPORTS AND DISABILITY SERVICES: If you require disability-related accommodations and support, please contact the Accessibility Supports and Disability Services office. Their Email address is asds@gprc.ab.ca and their website is https://libguides.gprc.ab.ca/learningcommons/AccessibilityServices .

MENTAL HEALTH SUPPORTS: GPRC students have access to mental health counselling services. Please do not hesitate to seek help if you are suffering from issues such as anxiety, depression, trauma, grief, or any coping-related concerns. Go to http://www.mystudentsupport.com/ or call 1-855-849-8641 to speak to a counsellor. The GPRC website also has mental health supports available. Please visit https://www.gprc.ab.ca/services/mental_health/ for more information.