

Department of Natural Sciences
 School of Science, Technology and Mathematics
 Dalton State College



Scheduled Meeting Times			
	Time	Days	Where
Class	8:00-9:15 am	MW	PEEPLS HALL 0111
Lab	1:40-4:30 pm	W	PEEPLS HALL 0116

Prof. Hussein Mohamed

Associate Professor of Plant Biology

Office: Sequoia Hall 141-D **Office Phone:** 706-272-2196 **Cell Phone:** 510-255-1393

Email: hmohamed@daltonstate.edu

TANTATIVE IMPORTANT DATES

Should any changes occur, students will have adequate notice to adjust their schedules

Unit I: Introduction to Plants and Botany	Jan9 – Jan 18
MLK Holiday	No Class
Unit II: The Structure of Plants	Jan 23 – Feb 15
Unit III: Plant Physiology and Development	Feb 20 – Mar 1
Unit IV: Evolution and Diversity	Mar 6 – Mar 29
Unit V: Genetic, Plant Breeding, and Biotechnology	Apr 3 – Apr 12
Unit VI Plant Ecology	Apr 17 – Apr 29

Lectures' Exams Schedule

Lecture Exam I (Unit I) -Online	Jan 28-Jan 29
Lecture Exam II (Units I & II) - Online	Feb 18-Feb 19
Lecture Exam III (Units II & III) - Online	Mar 25-Mar 26

Lab's Quizzes & Exams Schedule

Lab Quiz 1	Jan 02
Lab Quiz 2	Feb 08
Lab Quiz 3	Feb 22
Lab Quiz 4	Mar 01
Midterm Lab Exam	Mar 08
Lab Quiz 5	Mar 29
Final Lab Exam	Apr 26

Final Exam (Units IV, V, and VI) In Class **Friday May 5th 8:00 – 10:00 AM**

COURSE INSTRUCTOR'S OFFICE HOURS

Monday/ Wednesday	10:30 AM – 12:30 PM
Thursday	08:30 AM – 10:30 AM

Other times may be arranged by appointment, although you are welcome to stop by my office or lab at any time. Questions submitted via email will be responded to as promptly as possible.

COURSE CONTENTS

This course provides a deepening of the subject in areas of plant cell biology and provides a basic knowledge of plant molecular biology and plant biotechnology.

The course deals with life processes of plants: those include, among others, germination, growth, anatomy and differentiation, metabolism, photosynthesis, stress physiology, flowering, fruiting and plant natural products. The course provides also an introduction to molecular techniques used in plant biotechnology, and in vitro plant culture and multiplication. The course integrates different levels of organization from molecular to ecosystem function such as biotic interactions, herbivory and plant chemistry and the balance between growth and defense, up to the level of how to use plants as detectors.

Textbook: *Botany: An Introduction to Plant Biology*. Sixth Edition. James. D. Mauseth. Jones & Bartlett Learning. 2016. ISBN: 9781284077537

Lab No lab manual is required. Handouts will be provided.

EXPECTED LEARNING OUTCOMES

1. To provide students with an opportunity to understand and appreciate the complexity and relationships of living systems.
2. To help students become better informed regarding the role of plants in the environment and the use of plants by humans.
3. To introduce students to the world of plants and to the fundamental concepts and processes that underlies their forms and functions.
4. To develop concepts regarding the factors leading to the great diversity among plants and the need to maintain this diversity.
5. To make students aware of changing technologies in science and the responsibilities and ethical decisions that comes with the use of various technologies.
6. To enhance understanding of the complex role of plants in the environment and our society in order to make informed decisions as global citizens.

AFTER COMPLETING THE COURSE, STUDENTS SHOULD BE ABLE TO:

1. Explain the plant growth and adaptation enabling a plant to handle a variety of habitats.
2. Understand plants life cycle from seed germination, growth, assimilation of mineral nutrition, transport mechanisms to blooming.
3. Describe photosynthesis, cellular respiration and other cellular mechanisms and how they are regulated by biotic and abiotic factors.
4. Describe how molecular techniques can be used to study how plants work.
5. Describe the risks and opportunities with transgenic plants (GMO).
6. Perform good laboratory practices in plant biology and sterile in vitro plant culture.
7. Be able to evaluate the general information on plant physiology and molecular biology.

SUBJECT MATTER***Unit I: Introduction to Plants and Botany***

1. Concepts to understand plants.
2. Origin and evolution of plants.
3. Diversity of plant adaptation.
4. Overview of plant structure.
5. Plant and people.

Unit II: The Structure of Plants

1. Plant body and its hierarchy of organs, tissues, and cells
2. Meristems and development of new organs
3. Vegetative organs of plants (root; stem; and leaf).
4. Primary growth in roots and shoots
5. Secondary growth in woody plants.
6. Plant reproduction and reproductive organs.

Unit III: Plant Physiology and Development

1. Energy Metabolism: *Photosynthesis*.
2. Energy Metabolism: *Respiration*.
3. Transport Processes.
4. Soil and mineral nutrition.
5. Development and morphogenesis.

Unit IV: Evolution and Diversity

1. Elements of evolution
2. Classification and systematic.
3. Algae and the origin of Eukaryotic cells.
4. Nonvascular plants (Mosses, Liverworts, and Hornworts).
5. Vascular plants without seeds.
6. Vascular plants with seeds: Non flowering plants (Gymnosperms).
7. Vascular plants with seeds: flowering plants (Angiosperms).
8. Ethnobotany

Unit V: Genetic, Plant Breeding, and Biotechnology

1. Mendel's selection of peas for genetic experiments.
2. Define allele, dominance, phenotype, genotype, homozygous, heterozygous, monohybrid cross, dihybrid cross, backcross, linkage, chromosomal mapping, and the Hardy-Weinberg law.
3. Different types of gene interactions.
4. Replication, transcription, translation.
5. Describe several applications of genetic engineering.
6. Hybridization, polyploidy and mutations in traditional plant breeding.
7. Developments in plant biotechnology.

Unit VI Plant Ecology

1. Plants and the dynamics of communities and ecosystems.
2. Human Impacts and conservation biology.
3. Flowering Plants and Civilization.

Tentative Laboratory Schedule

While changes to the syllabus after the start of the course are uncommon, the Professor reserves the right to adjust the course schedule including modifying dates associated with topics, readings, and assignments. If any changes are made to your syllabus, you will have adequate notice to adjust your schedule. Should any changes occur, they will be dictated by student needs and professional determination that you will benefit from the change.

Date	Lab	Activity	Lab Report Due
01/18/17	Lab 1	Morphology of plants: examine morphological features of different plant types	01/25/17
01/25/17	Lab 2	Plant cells: Onion leaf epidermis; Elodea leaf; potato tuber cells; tomato epidermis; and Asparagus tuber cells Lab Quiz 1: Morphology of Plants	02/08/17
02/08/17	Lab 3	Anatomy of stems: Fundamental tissues; ground tissues; vascular tissues; and woody stems vs. herbaceous stem tissues in Cross and longitudinal sections. Lab Quiz 2: Plant Cells	02/15/17
02/15/17	Lab 4	Anatomy of stems: Eudicot and Monocot stems	02/22/17
02/22/17	Lab 5	Anatomy of leaves: External and internal features of monocot and eudicot leaves; and leaves adaptations to extreme environments. Lab Quiz 3: Anatomy of stems	03/01/17
03/01/17	Lab 6	Anatomy of roots: Regions of growth in a root; Eudicot vs. monocot roots Lab Quiz 4: Anatomy of leaves	03/08/17
03/08/17	Lab Exam: Compare and contrast the morphological and anatomical features in eudicot and monocot plants		
03/15/17	No Lab	Spring Break	
03/22/17	Lab 8	Photosynthesis: Pigment Chromatography. Measuring photosynthesis	03/29/17
03/29/17	Lab 9	Classification and Systematics: Nonvascular plants (mosses gametophyte and sporophyte). Seedless vascular plants (lycophyte and pteridophyta). Lab Quiz 5: Photosynthesis	04/05/17
04/05/17	Lab 10	Classification and Systematics: Seed-nonflowering plants (Gymnosperms).	04/12/17
04/12/17	Lab 11	Classification and Systematics: Seed-flowering plants (Angiosperms)	04/19/17
04/19/17	Lab 12	Angiosperms Fruit types: Fleshy fruits; dry dehiscent fruits; dry indehiscent fruits	04/29/17
04/26/17	Final Lab Exam (Classification and Systematics)		

INSTRUCTIONAL METHODS (INCLUDING EXAMINATION POLICIES)**ATTENDANCE POLICY**

Attendance is required. You are expected to be in class on time and stay until class is dismissed. *Not all of the information given in a chapter of the book will be covered. Details of pertinent information will be given in the lectures. Therefore, it is important to attend class and take notes.* Attendance will be taken every class period. Absence from class, even for legitimate reasons, has an impact on your overall learning and sharing of information in class. *If you are absent for any reason, it is expected that you get notes and handouts from a classmate.* Class absences will negatively impact overall grade in the course.

COURSE EVALUATION

Course evaluation will be based on homework assignments, short writing assignments, and exams. Final grades will be based on the total points obtained at the end of the semester out of the total available points. A grading curve will be applied if **absolutely** necessary and only at the end of the semester.

GRADING SYSTEM:

A	B	C	D	F
90 -100%	80-89%	70 – 79%	60 – 69%	<60%

GRADE BREAKDOWN

Component	%
Lecture Exams (3x10% each)	30
Final Exam	20
Lecture Assignments	15
Lab Quizzes/reports	20
Lab Final Exam	15
Total	100

EXAMS AND QUIZZES:

Exams and quizzes will consist of multiple choice and short answer questions. Exams and quizzes dates will be announced at least one class period in advance.

EXTRA CREDIT

No extra credit will be available.

MAKE-UPS:

The student shall be allowed to make up any work missed during the time he/she is off campus representing DSC in an official capacity. He/she shall discuss what will be missed with the instructor and make arrangements to make up any assignments, tests, presentations, etc. that were scheduled on that date.

Make-ups for exams will be allowed for reasonable and verifiable excuses. Examples of reasonable excuses are: medical emergency, family death, illness that requires doctor's care. I will not allow a make-up for any unreasonable excuse.

DROP/WITHDRAWAL POLICY:

Students wishing to withdraw from the course may do so without penalty until the mid-point of the semester, and a grade of **W** will be assigned. After that point, withdrawal without penalty is permitted only in cases of extreme hardship as determined by the Vice President for Academic Affairs; otherwise a grade of **WF** will be issued. (At Dalton State College, the Hardship Withdrawal process requires students to withdraw from all classes at the college.) The proper form for dropping a course is the **Schedule Adjustment Form**, which can be obtained at the Enrollment Services Office in Westcott Hall. The Schedule Adjustment Form must be submitted to the Enrollment Services Office. Students who disappear, completing neither the official withdrawal procedure nor the course work, will receive the grade of **F**.

This instructor will not withdraw students from the class. Withdrawal from any Dalton State College classes is a student responsibility.

COMPLETE WITHDRAWAL STATEMENT:

The proper form for withdrawing from all classes at the college after the official drop/add period but before the published withdrawal date is the **Schedule Adjustment Form**. *All students must meet with a staff member at the Office of Academic Resources in the Pope Student Center to initiate the withdrawal process. After meeting with the staff member, students will then finalize the withdrawal process in the Enrollment Services Office.*

ETHICAL CONDUCT

Academic Dishonesty: Cheating and plagiarism are a part of the Dalton State Code of Student Conduct, which can be found in its most updated form at <http://daltoncampuslife.com/student-conduct/>. ANY assistance provided or given in any way toward work in a class constitutes cheating, unless such behavior is authorized by your instructor. Additionally, any use of the ideas or words of others should be noted, or this will constitute plagiarism. For more details on what Dalton State considers to be Academic Dishonesty, please review the Code of Student Conduct. Instructors will assign grades based on classroom performance. Additional sanctions may be provided as a learning experience from the Student Conduct process. Borrowing another students' work or collaborating on an assignment not designated as collaborative is unacceptable. Furthermore, presenting work that was completed for another class, while not plagiarism technically, is not the same as presenting original work, and is therefore unacceptable.

Classroom Behavior: Dalton State is committed to respect via the Roadrunner Respect pledge. To learn more, please visit <http://daltoncampuslife.com/roadrunner-respect/>.

“I pledge to show my fellow Roadrunner students, faculty, staff, and administration respect by treating others the way they want to be treated and by thinking about others first before making decisions that might affect them”.

OFFICIALLY APPROVED DSC GROUPS AND ACTIVITIES

When students are engaged in officially approved Dalton State groups or activities that require them to participate in events off campus during school days, they shall be treated similarly to any faculty or staff member acting in that same capacity. Thus, just as faculty and staff have excused absences from their regular work schedules, students shall be excused from class without penalty if they are off campus representing Dalton State College in an approved, official capacity during their regular class time. Examples include presenting a paper or otherwise participating in a conference, attending a University System student affairs event, participating in intercollegiate competition (athletic or academic), participating in an approved field trip, etc.

The student needs to provide the following information to the instructor *prior to the date when he/she will be absent from class*:

- Notification of the event (in the case of athletics, students should provide each instructor a schedule of away events at the beginning of the semester or as soon as possible after the schedule is available);
- estimated time of departure from and return to campus (for example, if a student has an away game in the evening and will not be leaving campus until 3:00, he/she will not be excused from classes prior to that time on that day; similarly if the event is in the morning and the student will be returning to campus during the day, he/she is expected to attend any class scheduled after the return trip); and
- contact information for the person or organization sponsoring/authorizing the student's participation in the event.

DISABILITY SUPPORT SERVICES

Students with disabilities or special needs are encouraged to contact **Disability Support Services**. In order to make an appointment or to obtain information on the process for qualifying for accommodations, the **student** should visit the Disability Support Services Library Guide at <http://www.libguides.daltonstate.edu/Disability> or contact the Coordinator of Disability Support Services:

Andrea Roberson, Coordinator Pope Student Center, lower level 706/272-2524
aroberson@daltonstate.edu <http://libguides.daltonstate.edu/c.php?g=24716&p=149667>

Workforce Innovations Opportunity Act: Questions regarding students receiving financial assistance through the Workforce Innovations Opportunity Act should be directed to 706-295-6840.

TITLE IX INFORMATION:***Sex Discrimination, Harassment, & Assault***

Sexual harassment is unwelcome, gender-based verbal or physical conduct that is sufficiently severe, persistent or pervasive that it has the effect of interfering with, denying or limiting someone's ability to participate in or benefit from the college's educational program and/or activities, and is based on power differential (quid pro quo), the creation of a hostile environment, or retaliation.

Sexual misconduct is a form of sexual harassment prohibited by Title IX. Sexual misconduct refers to "physical sexual acts perpetrated against a person's will or where a person is incapable of giving consent due to the victim's use of drugs or alcohol. An individual also may be unable to give consent due to an intellectual or other disability." Sexual misconduct includes dating violence, domestic violence, rape, sexual assault, sexual battery, stalking, and sexual coercion.

Reporting Options**Call 911 if you are in an emergency situation****Dalton State Public Safety (this report is not confidential)**

Tech Building- Upper Level - 706-272-4461

Online Sexual Assault Report -

<https://dynamicforms.ngwebsolutions.com/ShowForm.aspx?RequestedDynamicFormTemplate=3fe5724c-a8bd-4a31-9c25-1a3d35110a51>

If you would like to report to Dalton State Administration: (this report is not confidential)

Report Title IX complaint online -

http://daltonstate.edu/campus_life/student-conduct-about.cms

Report Student-on-Student Title IX complaint in person:

Brittnie Lee, Office of Student Life

Coordinator for Student Responsibility & Service/ Deputy Title IX Coordinator

Pope 113

balee@daltonstate.edu, 706-272-2999

Report Title IX complaint involving Faculty or Staff in person:

Faith Miller, Human Resources

Director of Human Resource/ Title IX Coordinator

Memorial 122

fmiller@daltonstate.edu 706-272-2034

If you would like to talk with someone confidentially:

Dalton State Counseling & Career Services

Academic Resources

Lower Pope

counseling@daltonstate.edu 706-272-4429

<http://libguides.daltonstate.edu/Counseling>