

Imperial Valley College Syllabus AG 140 - Principles of Plant Science

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Basic Course Information

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|--------------------|-------------------------------------|---|--|
| Semester: | Fall 2021 Online | Instructor Name: | Dr. Michael Kanyi |
| Course No. & Title | AG 140: Principles of Plant Science | Email: | michael.kanyi@imperial.edu |
| CRN #: | 10558 | Webpage (optional): | |
| Classroom: | | Office | 3114 |
| Semester Dates: | August 16, 2021 – Dec 10, 2021 | Office hours (email, text canvas, pronto) | MTWR 1:00 p.m. -2:00 p.m. |
| Class Days: | Online | Office Phone #: | (760)355-5717 |
| Class Times: | Online | Emergency Contact: | Tisha Nelson Economic & Workforce Development (760) 355-6361/ (760) 355-6161 |
| Units: | 4 | | |

Course Description

An introduction to plant science that examines agricultural, forest, landscape, and other significant uses of plants. Included are structure, growth processes, propagation, physiology, genetic improvement and biotechnology, ecology, soil environment, biological competitors, and symbionts of plants. The production, harvest, and utilization of the principal crops grown in California and the Imperial Valley will be included. Laboratory work is required. (C-ID AG-PS 106 L) CSU, UC, & UA)

Course Prerequisite(s) --

Although there is no prerequisite requirement for this course, adequate knowledge of general high school biology is expected.

Student Learning Outcomes

Upon course completion, the successful student will have acquired new skills, knowledge, and or attitudes as demonstrated by being able to:

1. Identify and discuss basic needs of plant crops found in Imperial County, California & major crop producing states in the US (ILO1, ILO2, ILO4).
2. Accurately discuss and explain a crop rotation program as well as the benefits that are derived from that production system (ILO1, ILO2, ILO4).
3. Identify and discuss major crop commodities grown in Imperial County as well as the season that those crops are planted and harvested (ILO1, ILO2, ILO4).
4. Identify and discuss basic pest avoidance procedures for commonly grown crops in the Imperial County (ILO1, ILO2, ILO4).

Course Objectives

Upon satisfactory completion of the course, students will be able to:

1. Understand human relationship with plants. Recognize the economic importance of agriculture and forestry; the development of cultivated species; agroecology, and the role of the production of crop plants in feeding the world's population.
2. Understand fundamentals of botany and plant physiology as they pertain to plant classification, structure, growth, economic botany and post-harvest physiology.

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3. Understand the environmental and economic factors involved in plant production systems. Relate to plant production the environmental parameters of light, temperature, soil, water, pests and disease, as well as socioeconomic factors as markets and transportation, and ecological factors such as local-scale biodiversity and invasions by exotics.
4. Understand plant improvement, including plant breeding, seed production, and basic processes in plant biotechnology.
5. Understand the issues involved in plant transgenics including food safety and genetic integrity of ecological systems and non-transgenic crops.
6. Describe the important plant and crop systems such as large-scale industrialized crop production, timber production, organic farming, hothouse production, tropical agriculture and forestry, gardening and landscaping, plants as art and for decoration.
7. Understand the basic principles of soil management as they relate to soil properties, plant nutrition, fertilization, crop rotation, multiple and relay cropping, tillage, and soil degradation.
8. Understand the basic principles of the management of weeds, arthropods, and pathogens.
9. Understand the basic principles of irrigation as they pertain to crop including types of irrigation, crop water use, and drainage.
10. Recognize areas of harvest and post-harvest handling as they pertain to the different types of agricultural crops; value added strategies for plants.
11. Describe the scientific method and explain its application in solving problems in plant and soil science.

Textbooks & Other Resources or Links

Reference Textbook

- McMahon, Margaret J., Rubatzky, Vincent E. (2020). *Hartman's Plant Science: Growth, Development, and Utilization of Cultivated Plants* (6th ed.): Pearson/Prentice Hall
- Note: This course will use various open/online educational resources (OERs). Reference textbook(s) is optional.

Course Requirements and Instructional Methods

Learning activities for this class will include, but not limited to, instructor's guided discussions in canvas, lecture notes posted in canvas, instructional YouTube videos, simulated laboratory activities, outside/field practical experience, assignments, quizzes and tests. **Effective participation in all course activities (discussion in canvas) is highly encouraged and will impact the final grade.** Critical thinking approach to solving agricultural economic issues at the regional, state, national and global level will be emphasized.

Out of Class Assignments (mainly f2f): The Department of Education policy states that one (1) credit hour is the amount of student work that reasonably approximates not less than one hour of class time and two (2) hours of out-of-class time per week over the span of a semester. WASC has adopted a similar requirement.

This is an online course, and the mode of instruction is asynchronous. You are therefore advised to dedicate ample time for the daily instructional activities and assignments.

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- You will conduct virtual lab simulations that will require a computer (not mobile phone) and reliable internet.

Course Grading Based on Course Objectives

Students are advised to acquaint themselves with all rules and regulations of Standards of Student Conduct outlined in the [Imperial Valley College General Catalog](#). For writing assignments, it is expected that each student will demonstrate proficiency in the use of the English Language. Grammatical errors and writing that do not express ideas clearly will affect your grade.

Tests

There will be a **mid-term test (or cumulative quizzes)** and a **final comprehensive test covering all the modules**. The date for mid-term test will be announced. Test questions may include true/false, multiple choice, matching, and short answer questions. All students are advised to strictly adhere to the dates and times for the tests which will be communicated. Late submission of assignments must be communicated to the professor before the due date to avoid loss of points. **There will be no make-up tests.**

Distribution of grading points towards the final grade will be as follows

| | |
|------------------------|-------------|
| • Discussion | 15% |
| • Lab/assignments/test | 25% |
| • Quizzes | 20% |
| • <u>Final test</u> | <u>40%</u> |
| Total | 100% |

Grading Legend

- A = 100-90%
- B = 89-80%
- C = 79-70%
- D = 69-60%
- F = <59%

Course Policies

Attendance

- A student who fails to attend the first meeting of this class will be dropped by the instructor as of the first official meeting. Should readmission be desired, the student's status will be the same as that of any other student who desires to add a class. It is the student's responsibility to drop or officially withdraw from the class. See [General Catalog](#) for details.
- Regular attendance in all classes is expected of all students. A student whose continuous, unexcused absence exceed the number of hours the class is scheduled to meet per week may be dropped. **For online courses, students who fail to complete required activities for two consecutive weeks may be considered to have excessive absences and may be dropped.**
- Absences attributed to the representation of the college at officially approved events

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(conferences, contests, and field trips) will be counted as 'excused' absences.

What does it mean to "attend" an online class?

Attendance is critical to student success and for IVC to use federal aid funds. Acceptable indications of attendance are:

- Student submission of an academic assignment
- Student submission of an exam
- Student participation in an instructor-led Zoom conference
- Documented student interaction with class postings, such as an interactive tutorial or computer-assisted instruction via modules
- A posting by the student showing the student's participation in an assignment created by the instructor
- A posting by the student in a discussion forum showing the student's participation in an online discussion about academic matters
- An email from the student or other documentation showing that the student has initiated contact with a faculty member to ask a question about an academic subject studied in the course.

Logging onto Canvas alone is NOT adequate to demonstrate academic attendance by the student.

Classroom Etiquette

- **Electronic Devices:** Cell phones and electronic devices must be turned off and put away during class, unless otherwise directed by the instructor.
- **Food and Drink** are prohibited in all classrooms. Water bottles with lids/caps are the only exception. Additional restrictions will apply in labs. Please comply as directed by the instructor.
- **Disruptive Students:** Students who disrupt or interfere with a class may be sent out of the room and told to meet with the Campus Disciplinary Officer before returning to continue with coursework. Disciplinary procedures will be followed as outlined in the [General Catalog](#).
- **Children in the classroom:** Due to college rules and state laws, no one who is not enrolled in the class may attend; children are not allowed.

Online Netiquette

- **What is netiquette?** Netiquette is internet manners, online etiquette, and digital etiquette all rolled into one word. Basically, netiquette is a set of rules for behaving properly online.
- Students are to comply with the following rules of netiquette: (1) identify yourself, (2) include a subject line, (3) avoid sarcasm, (4) respect others' opinions and privacy, (5) acknowledge and return messages promptly, (6) copy with caution, (7) do not spam or junk mail, (8) be concise, (9) use appropriate language, (10) use appropriate emoticons (emotional icons) to help convey meaning, and (11) use appropriate intensifiers to help convey meaning [do not use ALL CAPS or multiple exclamation marks (!!!!)].

Academic Honesty

Academic honesty in the advancement of knowledge requires that all students and instructors respect the integrity of one another's work and recognize the importance of acknowledging and safeguarding intellectual property.

There are many different forms of academic dishonesty. The following kinds of honesty violations and their definitions are not meant to be exhaustive. Rather, they are intended to serve as examples

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of unacceptable academic conduct.

- Plagiarism is taking and presenting as one's own the writings or ideas of others, without citing the source. You should understand the concept of plagiarism and keep it in mind when taking exams and preparing written materials. If you do not understand how to "cite a source" correctly, you must ask for help
- Cheating is defined as fraud, deceit, or dishonesty in an academic assignment, or using or attempting to use materials, or assisting others in using materials that are prohibited or inappropriate in the context of the academic assignment in question.

Anyone caught cheating or plagiarizing will receive a zero (0) on the exam or assignment, and the instructor may report the incident to the Campus Disciplinary Officer, who may place related documentation in a file. Repeated acts of cheating may result in an F in the course and/or disciplinary action. Please refer to the General Catalog for more information on academic dishonesty or other misconduct. Acts of cheating include, but are not limited to, the following: (a) plagiarism; (b) copying or attempting to copy from others during an examination or on an assignment; (c) communicating test information with another person during an examination; (d) allowing others to do an assignment or portion of an assignment; (e) using a commercial term paper service.

Taking and using the words, work, or ideas of others and presenting any of these as your own work is plagiarism. This applies to all work generated by another, whether it be oral, written, or artistic work. Plagiarism may either be deliberate or unintentional.

IVC Student Resources

IVC wants you to be successful in all aspects of your education. CANVAS LMS. Canvas is Imperial Valley College's Learning Management System. To log onto Canvas, use this link: [Canvas Student Login](#). The [Canvas Student Guides Site](#) provides a variety of support available to students 24 hours per day. Additionally, a 24/7 Canvas Support Hotline is available for students to use: 877-893-9853.

[For help, resources, services, and an explanation of policies, click this link](#) or click the heart icon in Canvas.

Student Rights and Responsibilities

Students have the right to experience a positive learning environment and to due process of law. For more information regarding student rights and responsibilities, please refer to the IVC [General Catalog](#).

Information Literacy

Imperial Valley College is dedicated to helping students skillfully discover, evaluate, and use information from all sources. The IVC [Library Department](#) provides numerous [Information Literacy Tutorials](#) to assist students in this endeavor.

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| Anticipated Class Schedule/Calendar | | |
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| Module | Topic, Activities | Week |
| Orientation | Orientation Module <ul style="list-style-type: none"> • Orientation to the course and online learning • Meet and greet discussion posts | 8/16 |
| Module 1 | Plants and Humans - History, Trends, and Challenges(chapter 1) <ul style="list-style-type: none"> • Human relationship with plants • The art and science of plants for human benefit • Forestry Scientific Method | 8/16 8/23 |
| Module 2 | Plants, Ecology and Ecosystems (chapter 2) <ul style="list-style-type: none"> • Ecology -biotic abiotic factors • Ecosystems, and their Relationship to Crop Production • Essential plant nutrients -macro, micro • Ecological succession • Trophic levels • Biomes | 8/30 |
| Module 3 | Uses of Plants- Glowing Plants for Human Use (chapter 3) <ul style="list-style-type: none"> • Growing plants for human use <ul style="list-style-type: none"> ○ Irrigation: farrow/flood, sprinkler, micro -drip ○ Physical-Chemical Properties of soil and soil health (organic farming, permaculture, regenerative agriculture, soillessmedia, and greenhouse) • Uses of plants – Nutritional and non-nutritional uses. <ul style="list-style-type: none"> ○ food, medicine, research, fiber, construction,recreation | 9/9 |
| Module 4 | Climate effect on Plant Growth and Development (chapter4) <ul style="list-style-type: none"> • Climatic factors (temperature, light, precipitation,wind) • Solar radiation • Hydrologic cycle • Solarization | 9/13 |
| Module 5 | Plant Morphology: Cell, Structure of Higher Plants(chapter 6) <ul style="list-style-type: none"> • Angiosperms, gymnosperms • Monocots, dicots • Prokaryotic, Eukaryotic cells • Seed germination • Plant morphology | 9/20 |
| Module 6 | Plant morphology... contn (chapter 6) Reproductive Structures: Flowers and Fruits <ul style="list-style-type: none"> • Flower morphology • Types and classes of fruits | 9/27 |
| Module 7 | Plant Growth and Development (chapter 7) <ul style="list-style-type: none"> • Factors Affecting Plant Growth and Development • Environmental Factors • Pollination, fertilization, fruit setting, senescence • Plant Growth Regulators (hormones) • Transport in plants -vascular tissues; xylem, phloem | 10/4 |

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| Module 8 | Vegetative Propagation <ul style="list-style-type: none"> • Asexual reproduction • Organs of vegetative propagation • Methods/technics of vegetative propagation • Genetic similarity in asexual reproduction | 10/11 |
| Module 9 | Genetics and Plant Propagation (chapter 9) <ul style="list-style-type: none"> • Genetics • DNA and DNA bases • DNA and mRNA • DNA replication, transcription, and translation • Genes, chromosomes, cell | 10/18 |
| Module 10 | Plant Taxonomy, Improvement and Preservation (chapter 10) <ul style="list-style-type: none"> • Plant taxonomy(classification). • Germplasm preservation | 10/25 |
| Mid-term Test | Mid-term Test | Test |
| Module 11 | Mendelian Genetics <ul style="list-style-type: none"> • Monohybrid Crosses • Dihybrid Crosses • Codominance • Incomplete dominance Genetic engineering <ul style="list-style-type: none"> • Transgenic crops • Ethics and food safety | 11/1 |
| Module 12 | Integrated Plant Health Management -IPHM (chapter 15) <ul style="list-style-type: none"> • Integrated Plant Health Management (IPHM) • Integrated pest management (IPM) | 11/8 |
| Module 13 | Crop Production and Post-Harvest Handling (chapter 16) <ul style="list-style-type: none"> • General Considerations for Production • Harvesting • Postharvest Handling & Marketing | 11/15 |
| Thanksgiving | Thanksgiving (campus closed) | 11/22 |
| | Lab report writing | 11/29 |
| | Lab simulation | 12/6 |
| Final | The final test will cover all the modules, and it will account for 40% of the final grade. | Final Test |

McMahon, Margaret J., Rubatzky, Vincent E. (2020). *Hartman's Plant Science: Growth, Development, and Utilization of Cultivated Plants* (6th ed.): Pearson/Prentice Hall.

This schedule is very tentative and can change without notice. You are therefore advised to follow the instructions provided at the start of each module or week. Any changes to the schedule, including tests and due dates will be communicated.