

Course Prefix/Number/Title: HORT249 Greenhouse Operations

Number of Credits: 3

Course Description: This course allows the student to gain knowledge and understanding of the principles and practices involved in commercial greenhouse operations.

This course will explore and examine the areas of commercial greenhouse operations and management with a focus on greenhouse structures, heating, lighting, growing media, irrigation, nutrition, growth regulators, integrated pest management (IPM) and environmental monitoring and control among others.

Pre-/Co-requisites: None

Course Objectives: The aim of this course is to help you to understand the dynamics and complexities of operating a commercial growing operation so that you will complete this course feeling confident and competent and have the necessary skills to take your horticultural studies/career to the next level. As this area has a broad subject matter we will examine the main areas that have the most significance when it comes to organized and efficient production methods and systems.

Instructor: Peter Keane MCIHort

Office: Online (Blackboard Ultra)

Office Hours: By Appointment

Phone:

Email: peter.keane@dakotacollege.edu

Lecture/Lab Schedule: Wednesday 1100-1150

Textbook(s): Greenhouse Management: A Guide to Operations and Technology by Ted Goldammer

Course Requirements: Online courses require the following to build and engage a classroom community of learners:

- ✓ Log in to the course a minimum of three times per week to check for new announcements and course information.
- ✓ Read the assigned texts and papers. It is essential to success in this course.
- ✓ Complete and submit coursework on time.
- ✓ Pace yourself, and make sure that all assignments are completed by the end of the semester.
- ✓ Be an active participant in discussion boards.
- ✓ Communicate with the instructor.
  
- ✓ *Participation/Discussion Boards*: Students are expected to participate in discussion board on topics related to the class throughout the semester. The purpose will be to discuss and learn from each other. It is important that students be respectful of each other's opinions.

The requirements for each discussion will be outlined when the discussion begins. In order to be effective, we all must participate and respond to each other in a timely manner. Discussions will be available for one to two weeks and students must complete them during that time frame.

✓ *Grading and Evaluation:*

Total Point Percentage	Letter Grade
90% and ↑	A
80% - 89.99%	B
70% - 79.99%	C
60% - 69.99%	D
59.99% and ↓	F

Tentative Course Outline:

**Here is the general layout of the program:**

**Weeks 1-2** will cover greenhouse structures and mechanization

**Weeks 3-6** will cover environmental control and monitoring

**Weeks 7-8** will cover growing media, soil pest and disease control and planting containers

**Week 9** will cover production systems

**Weeks 10-12** will cover irrigation, plant nutrition and fertilizers

**Weeks 13-14** will cover growth regulators, IPM, seed and vegetative production

**Weeks 15-16** will cover pest and disease control/management and pesticide application

**Week 1 Chapter 1** Greenhouse Structures and Design + Lab

**Week 2 Chapters 2 & 3** Greenhouse Glazing / Greenhouse Mechanization and Material Handling +Lab and Assignment

**Week 3 Chapter 4** Greenhouse Heating + Lab and Assignment

**Week 4 Chapter 5** Greenhouse Ventilation and Cooling + Lab and Assignment

**Week 5 Chapter 6 & 7** Greenhouse Environmental Monitoring and Control / Light and Lighting Control in Greenhouses +Lab and Assignment

**Week 6 Chapters 8,9 & 10** Carbon Dioxide in Greenhouses / Effects of Temperature in Greenhouse Crops / Managing Vapor Pressure Deficit in Greenhouse Crops + Lab and Assignment

**Week 7 Chapters 11 & 12** Growing Media / Soil Pasteurization, Fumigation and Solarization +Lab and Assignment

**Week 8 Chapter 13** Greenhouse Plant Containers + Lab and Mid-Term

**Week 9 Chapter 14** Greenhouse Production Systems + Lab and Assignment

**Week 10 Chapters 15 & 16** Irrigating Greenhouse Crops / Irrigation Water for Greenhouses + Lab

**Week 11 Chapter 17 & 18** Micro-Irrigation for Greenhouse Crops / Plant Nutrition for Greenhouse Crops + Lab and Assignment

**Week 12 Chapters 19 & 20** Fertilizers for Greenhouse Crops / Fertigation in Greenhouse Crops + Lab

**Week 13 Chapters 21 & 22** Plant Growth Regulators for Greenhouse Crops / Plant Propagation from Seed + Lab and Assignment

**Week 14 Chapters 23 & 24** Vegetative Plant Propagation / Integrated Pest Management in Greenhouses + Lab

**Week 15 Chapters 25 & 26** Greenhouse Insect and Mite Pest Management / Greenhouse Disease Management + Lab and Assignment

**Week 16 Chapters 27 & 28** Greenhouse Pesticides / Pesticide Application and Equipment in Greenhouses + Lab

General Education Competency/Learning Outcome(s) OR CTE Competency/Department Learning Outcome(s): This course meets the CTE department learning outcome of employing industry-specific skills in preparation for workplace readiness by:

1. Expanding critical thinking competence.
  - a. Students will develop an understanding of commercial greenhouse operations and practices.
  - b. Students will develop and demonstrate how to effectively apply the gained knowledge in today's industry.
  - c. Students will understand the dynamics and complexities of operating a commercial growing operation so that they will complete this course feeling confident and competent and have the necessary skills to take their horticultural studies/career to the next level.

Students will apply their understanding of plant diseases and how they can be managed to different scenarios

Relationship to Campus Focus: This course supports the campus theme of "Nature, Technology and Beyond" by fostering the skills and knowledge necessary to utilize natural, human and technological resources successfully and confidently

Classroom Policies: This academic environment is open and harassment free. Always be respectful of other students and the instructor.

Student Email Policy:

Dakota College at Bottineau is increasingly dependent upon email as an official form of communication. A student's campus-assigned email address will be the only one recognized by the Campus for official mailings. The liability for missing or not acting upon important information conveyed via campus email rests with the student.

Academic Integrity:

According to the DCB Student Handbook, students are responsible for submitting their own work. Students who cooperate on oral or written examinations or work without authorization share the responsibility for violation of academic principles, and the students are subject to disciplinary action even when one of the students is not enrolled in the course where the violation occurred. The Code detailed in the Academic Honesty/Dishonesty section of the Student Handbook will serve as the guideline for cases where cheating, plagiarism or other academic improprieties have occurred.

Disabilities or Special Needs:

Students with disabilities or special needs (academic or otherwise) are encouraged to contact the instructor and Disability Support Services.

## Title IX:

Dakota College at Bottineau (DCB) faculty are committed to helping create a safe learning environment for all students and for the College as a whole. Please be aware that all DCB employees (other than those designated as confidential resources such as advocates, counselors, clergy and healthcare providers) are required to report information about such discrimination and harassment to the College Title IX Coordinator. This means that if a student tells a faculty member about a situation of sexual harassment or sexual violence, or other related misconduct, the faculty member must share that information with the College's Title IX Coordinator. Students wishing to speak to a confidential employee who does not have this reporting responsibility can find a list of resources on the DCB Title IX webpage.