



**Course Prefix/Number/Title:** HORT 249-1 (32941)

GREENHOUSE OPERATIONS

**Number of Credits:** 4

**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:**

Give students the knowledge and skills required to work in a modern commercial greenhouse.

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:** Todd Kihle

**Office:** DCB Greenhouse

**Office Hours:** Wednesday 10:00 a.m.-10:50 a.m.

**Phone:** 701-263-7169

**Email:** todd.kihle@dakotacollege.edu

**Lecture/Lab Schedule:**

Lecture Wednesday 11:00 a.m.-11:50 a.m.

Lab- To be arranged

**Textbook(s):**

Greenhouse Management:

A Guide to Operations and Technology

## Course Requirements:

none

## Tentative Course Outline:

✓ Read the assigned texts and papers prior to class/labs

✓ Complete and submit coursework on time.

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

Textbook Chapters:

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 + La

**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 expanding critical thinking competence.

-Students will:

- >develop an understanding of commercial greenhouse operations and practices
- >learn and demonstrate how to effectively apply the gained knowledge in today's industry.
- >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.
- >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.