



Course Prefix/Number/Title: PLSC 251 – Introduction to Industrial Hemp Production

Number of credits: Two Credits

Course Description: This course will provide history and serves as introduction to the botany, agronomy, and end-use potential of industrial hemp. Agricultural production of industrial hemp for food, fiber, and CBD (cannabidiol) production will be the main focus of the course.

Pre-/Co-requisites: None

Objectives:

1. Describe the historical importance of hemp in the world and U.S. and include prominent events that led to regulation of hemp in the U.S.
2. Introduce best practices for growing hemp and summarize harvest practices that lead to high yield and quality grain, fiber, and CBD.
3. Examine current uses for hemp products and be able to compare and contrast to products currently produced from other agricultural products

Instructor: Keith Knudson

Office: Room 28, Molberg Center; 105 Simrall Blvd., Bottineau, ND 58318;

Office Hours: By appointment

Phone: 701-228-5489

Email: Keith.a.knudson@ndus.edu

Lecture/Lab Schedule: TU/TH 10:00 AM to 10:50 AM

Textbook(s): This course is an Open Education Resources program. Resource materials will be provided by the course instructor.

Course Requirements: Grading will be based on the following to obtain points. There will be three quizzes each worth 40 points, a student lead discussion topic worth 120 points, assignments worth 150 points, and a final exam worth 100 points. Points for quizzes and final exam may be adjusted using a curve method. Total possible points for the course are 490. The final grade is based on the following criteria:

- A = 89.5% to 100% of the total points (439 points to 490 points)
- B = 79.5% to < 89.5% of the total points (439 points to 438 points)
- C = 68.5% to < 79.5% of the total points (336 points to 437 points)
- D = 59.6% to < 69.5% of the total points (292 points to 335 points)
- F = < 59.5% of the total points (< 292 points)

Tentative Course Outline:

- Week One History and General overview of industrial hemp.
- Week Two Current state of hemp regulations (federal, North Dakota and surrounding states)  
<https://www.youtube.com/watch?v=QPcytx1eIHQ> Assignment
- Week Three Anatomy and botany of the hemp plant.
- Week Four Production of industrial hemp will require an understanding of this crop's water, temperature, soil and nutrient requirements
- Week Five Production of industrial hemp will require an understanding of this crop's water, temperature, soil and nutrient requirements
- Week Six Producing hemp as a grain crop
- Week Seven Producing hemp for CBD harvest has special requirements that differ from grain or fiber production.
- Week Eight Producing hemp for CBD harvest has special requirements that differ from grain or fiber production.
- Week Nine Growing hemp for fiber requires specific production practices that will maximize yield and quality of the end crop
- Week Ten Hemp grain processing and use
- Week Eleven Hemp CBD processing and use
- Week Twelve Hemp CBD processing and use
- Week Thirteen Hemp fiber
- Soils and nutrient needs
  - Temperature, pests and crop rotation
  - Hemp grain agronomics
  - Equipment needs
  - Harvesting and storage
  - Hemp CBD agronomics
  - Equipment needs
  - Harvesting, curing and storage
  - Packaging and shipping
  - Hemp fiber agronomics
  - Equipment needs
  - Harvesting, baling and storage
  - Processing hempseed: Food and feed production and product manufacturing.
  - Hemp oil characteristics.
  - Hemp grain uses and products- Food and Forage: oil, seed, and meal.
  - Preparations for processing
  - Pharmacological properties of Cannabis
  - Equipment used for extracting Cannabinoids
  - Sampling and analysis
  - Retting
  - Fiber processing
  - Fiber processed based on use
  - Byproducts of plant material after fiber processing

- Week Fourteen      Agricultural economics will be an important consideration for the farms and businesses that choose to pursue this crop
- Hemp as an alternative crop
  - Cost of production. Hemp grain vs CBD vs fiber
  - Marketing outlets and strategies
  - Hemp products as an alternative to other current food crops
- Week Fifteen      Student lead discussions
- Fifteen-minute discussion per student as assigned by instructor
  - Discussion may also include a demonstration.
- Week Sixteen      Field Tours (spring planting)
- This week may vary during the semester depending on weather.
  - Plan to attend two different locations (for grain and CBD)

General Education Competency/Learning Outcome(s) OR CTE Competency/Department Learning Outcome(s): Attain level of technical skills and practices used in Horticulture Industry in preparation for workplace readiness.

Relationship to Campus Theme: This course will address the campus theme of Nature, Technology and Beyond through learning about our natural resources and how best to utilize each resource.

Classroom Policies:

1. Cell phones, iPods and related technologies use are prohibited in the classroom unless otherwise instructed. It is recommended that you shut off or put your internet/cellular device in “airplane mode” while in the classroom.
2. Be respectful of other students, instructor and guests.

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.