



ILLINOIS VALLEY COMMUNITY COLLEGE

COURSE OUTLINE

DIVISION: Natural Sciences and Business

COURSE: AGR 1221 Advanced Cannabis Production

Date: Spring 2021

Credit Hours: 4

Prerequisite(s): AGR 1220 or Instructor Approval

Delivery Method: **Lecture** **3 Contact Hours** (1 contact = 1 credit hour)
 Seminar **0 Contact Hours** (1 contact = 1 credit hour)
 Lab **2 Contact Hours** (2-3 contact = 1 credit hour)
 Clinical **0 Contact Hours** (3 contact = 1 credit hour)
 Online
 Blended

Offered: **Fall** **Spring** **Summer**

IAI Equivalent –**Only for Transfer Courses**-go to <http://www.itransfer.org>:

CATALOG DESCRIPTION:

This course covers advanced strategies in cannabis production, cultivation, and processing. Topics covered include genetics and breeding, agronomics of indoor and outdoor hemp and marijuana production, and product testing and processing practices. The course will also explore various economic aspects of hemp and marijuana production and the cannabis industry.

GENERAL EDUCATION GOALS ADDRESSED

[See last page for Course Competency/Assessment Methods Matrix.]

Upon completion of the course, the student will be able:

[Choose up to three goals that will be formally assessed in this course.]

- To apply analytical and problem solving skills to personal, social, and professional issues and situations.
- To communicate successfully, both orally and in writing, to a variety of audiences.
- To construct a critical awareness of and appreciation for diversity.
- To understand and use technology effectively and to understand its impact on the individual and society.
- To develop interpersonal capacity.
- To recognize what it means to act ethically and responsibly as an individual and as a member of society.
- To recognize what it means to develop and maintain a healthy lifestyle in terms of mind, body, and spirit.
- To connect learning to life.

EXPECTED LEARNING OUTCOMES AND RELATED COMPETENCIES:

[Outcomes related to course specific goals. See last page for more information.]

Upon completion of the course, the student will be able to:

1. Differentiate between the various cannabis breeding targets and methods
2. Explain the role that genetic diversity plays in cannabis breeding practices
3. Identify and discuss the agricultural production practices associated with outdoor cannabis production
4. Identify and discuss the horticultural production practices associated with indoor cannabis production
5. Describe the testing methods used to analyze cannabis product quality
6. Describe the extraction and processing methods used to produce cannabis products
7. Evaluate the economic principles of the cannabis industry as they relate to production decisions

MAPPING LEARNING OUTCOMES TO GENERAL EDUCATION GOALS

[For each of the goals selected above, indicate which outcomes align with the goal.]

Goals	Outcomes
First Goal	
To apply analytical and problem solving skills to personal, social, and professional issues and situations.	<ol style="list-style-type: none"> 1. Differentiate between the various cannabis breeding targets and methods 2. Explain the role that genetic diversity plays in cannabis breeding practices 3. Identify and discuss the agricultural production practices associated with outdoor cannabis production 4. Identify and discuss the horticultural production practices associated with indoor cannabis production

	<ol style="list-style-type: none"> 5. Describe the testing methods used to analyze cannabis product quality 6. Describe the extraction and processing methods used to produce cannabis products 7. Evaluate the economic principles of the cannabis industry as they relate to production decisions
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COURSE TOPICS AND CONTENT REQUIREMENTS:

1. Genetics and breeding
 - a. Breeding targets
 - b. Breeding methods
 - c. Genetics and genomic diversity
 - d. Germplasm resources
 - e. Seed feminization
 - f. Tissue culture
 - g. Cloning

2. Outdoor hemp production – fiber, flower, oilseed
 - a. Seeding and planting
 - b. Fertility
 - c. Pest control
 - i. Weeds
 - ii. Disease
 - iii. Insects
 - iv. Mammals and birds
 - d. Harvest and drying
 - e. Storage
 - f. Compliance testing

3. Indoor marijuana production
 - a. Growth media
 - b. Lighting
 - c. Fertility
 - d. Pest control
 - i. Insects
 - ii. Disease
 - e. Irrigation
 - f. Cultivation techniques
 - g. Harvest and drying
 - h. Storage

4. Testing
 - a. Potency
 - b. Heavy metals
 - c. Pesticides
 - d. Residual solvents
 - e. Terpene profile

- f. Bacteria, fungi, mycotoxins
5. Extraction and processing
 - a. Fiber extraction technologies
 - i. Primary fibers
 - ii. Secondary fibers
 - iii. Hurds
 - b. Cannabinoid extraction technologies
 - i. Crude
 - ii. Distillate
 - iii. Isolate
 - c. Product types
6. Economics
 - a. Product market
 - b. Product pricing
 - c. Streams of commerce
 - d. Distribution options
 - e. Federal policy

INSTRUCTIONAL METHODS:

- Lecture
- Discussion
- Laboratory
- Guest speakers
- Field Trips

INSTRUCTIONAL MATERIALS:

Small, Ernest. *Cannabis: A Complete Guide*. CRC Press, 2017. ISBN: 978-1-4987-6163-5

Williams, D.W. *Industrial Hemp as a Modern Commodity Crop*. American Society of Agronomy, 2019. ISBN: 978-0-89118-632-8

STUDENT REQUIREMENTS AND METHODS OF EVALUATION:

A= 90-100

B= 80-89

C= 70-79

D= 60-69

F= 0-59

Exams: 40%

Quizzes: 30%

Homework: 20%

Lab assignments: 10%

OTHER REFERENCES

Industrial Hemp Production. University of Illinois Extension.

<https://extension.illinois.edu/jsw/industrial-hemp-production>

UK Industrial Hemp Agronomic Research. University of Kentucky.

<https://hemp.ca.uky.edu>

Agricultural and Resource Economics. University of Tennessee Institute of Agriculture.

<https://ag.tennessee.edu/arec/Pages/budgets.aspx>

Herer, Jack. *The Emperor Wears No Clothes*. 12th ed., AH HA Publishing, 2010.

Course Competency/Assessment Methods Matrix

ALH 1221		Assessment Options																														
For each competency/outcome place an "X" below the method of assessment to be used.	Assessment of Student Learning	Article Review	Case Studies	Group Projects	Lab Work	Oral Presentations	Pre-Post Tests	Quizzes	Written Exams	Artifact Self Reflection of Growth	Capstone Projects	Comprehensive Written Exit Exam	Course Embedded Questions	Multi-Media Projects	Observation	Writing Samples	Portfolio Evaluation	Real World Projects	Reflective Journals	Applied Application (skills) Test	Oral Exit Interviews	Accreditation Reviews/Reports	Advisory Council Feedback	Employer Surveys	Graduate Surveys	Internship/Practicum /Site Supervisor Evaluation	Licensing Exam	In Class Feedback	Simulation	Interview	Written Report	Assignment
	Direct/ Indirect	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	I	I	I	I	D	D						
Assessment Measures – Are direct or indirect as indicated. List competencies/outcomes below.																																
Differentiate between the various cannabis breeding targets and methods					X			X	X				X																			X
Explain the role that genetic diversity plays in cannabis breeding practices					X			X	X				X																			X
Identify and discuss the agricultural production practices associated with outdoor cannabis production					X			X	X				X																			X
Identify and discuss the horticultural production practices associated with indoor cannabis production					X			X	X				X																			X

