# Syllabus

## HRT 235 Cannabis: Biology to Industrial Application

## General Information

**Date** April 24th, 2019

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**Department** Conservation

**Course Prefix** HRT

**Course Number** 235

**Course Title** Cannabis: Biology to Industrial Application

## Course Information

**Catalog Description** This course will survey the history of cannabis (Cannabis sativa) as well as its biology, breeding, chemistry, pharmacology, and downstream uses from biofuel and pulp feedstocks to medicinal application. Upon completion of the course, students will have developed in-depth knowledge of cannabis and, to either a scientist or layperson, be able to articulate present perspectives on its production and utility in human society and agriculture.

**Credit Hours** 3

**Lecture Contact Hours** 3

**Lab Contact Hours** 0

**Other Contact Hours** 0

**Grading Scheme** Letter

## Prerequisites

HRT 110

## Co-requisites

BIO 251

## First Year Experience/Capstone Designation

**This course DOES NOT satisfy the outcomes applicable for status as a FYE or Capstone.**

## SUNY General Education

**This course is designated as satisfying a requirement in the following SUNY Gen Ed category**
None

## FLCC Values

**Institutional Learning Outcomes Addressed by the Course**
Vitality, Inquiry, and Perseverance

## Course Learning Outcomes

**Course Learning Outcomes**

1. Explain the history and cultivation of different forms of cannabis spanning 10,000 years across western and eastern cultures.

2. Examine the complex phyto-biochemical pathways involved in cannabinoid synthesis and the interactions of these compounds with animal physiology (e.g. neuromodulation).

3. Integrate broad themes across plant physiology and chemistry as well as animal cell biology and neurology.

4. Assess and critique contemporary research into the benefits and/or penalties of the chemical constituents of cannabis, including non-cannabinoid compounds such as essential oils and hemp oil.

5. Describe the physiological properties and cultivation practices of hemp.

## Outline of Topics Covered

I. **Introduction to cannabis, *Cannabis sativa***
   a. **Ethnobotany and history of cultivation: ancient times to present**
   b. **Anatomy**
   c. **Evolutionary/phylogenetic relationships and biogeography**
   d. **Plant breeding**
   e. **Basic chemistry**

II. **Cannabinoids**
   a. **Definition**
   b. **Biosynthetic pathways**

i. **Acidic cannabinoids**
ii. **Short-chain cannabinoids**

c. **Classification system**
d. **Methods of Analysis**

III. **Cannabinoids and animal biology**
a. **The central nervous system**
b. **Cannabinoid receptor systems**
c. **Cell metabolism**
d. **Pharmacology**
e. **Toxicology**

IV. **Non-cannabinoid constituents of cannabis**
a. **Chemistry**
b. **Uses and market places**

V. **Medicinal cannabis: cannabinoid and non-cannabinoid products**
a. **Therapeutic potential**
b. **Current state of knowledge**
c. **Frontiers in medicine – future developments**

VI. **Cannabis (hemp) for fuel and fiber**
a. **Chemical and physiological differences between marijuana and hemp**
b. **Hemp in agriculture systems including: low input sustainable agriculture, plant quality requirements for end-use markets and feedstock crop**
c. **Life cycle analyses of hemp production systems**

VII. **Introduction to pests and disease**
a. **Fungal pathogens**
b. **Arthropods**
c. **Environmental considerations**
d. **Integrated pest management**

## Program Affiliation

**This course is not required as a core course in any programs.**