

CANNABIS BIOLOGY & CHEMISTRY, POST-BACCALAUREATE CERTIFICATE

The Cannabis Biology and Chemistry Certificate Program is a 9-credit hour certificate program offered at the undergraduate and graduate levels that is housed in the Chemistry Department. The Program is designed for students with a strong biology or chemistry background or students with an undergraduate degree in biology or chemistry to gain advanced coursework relevant to cannabis sciences.

Entering students are expected to have completed relevant courses from the following list which are prerequisites for the CBC courses included in the certificate program. The specific required prerequisite courses will vary depending on the student's selection of CBC courses.

| Course | Title | Credits |
|-----------|---|---------|
| BIOL 181 | College Biology I/Organismal Bio (GT-SC2) | 3 |
| BIOL 181L | College Biology I/Organismal Bio Lab (GT-SC1) | 1 |
| BIOL 182 | College Biology II/Cellular Biology (GT-SC2) | 3 |
| BIOL 182L | College Biology II/Cellular Bio Lab (GT-SC1) | 1 |
| BIOL 201 | Botany (GT-SC2) | 2 |
| BIOL 201L | Botany Laboratory (GT-SC1) | 2 |
| BIOL 350 | Mendelian and Population Genetics | 2 |
| BIOL 351 | Molecular Biology & Genetics | 3 |
| CHEM 121 | General Chemistry I (GT-SC2) | 4 |
| CHEM 122 | General Chemistry II (GT-SC2) | 4 |
| CHEM 301 | Organic Chemistry I | 3 |
| CHEM 317 | Quantitative Analysis | 3 |
| CHEM 317L | Quantitative Analysis Lab | 2 |
| CHEM 322 | Physical Chemistry II | 3 |
| CHEM 419 | Instrumental Analysis | 3 |
| CHEM 419L | Instrumental Analysis Lab | 2 |
| MATH 126 | Calculus & Analytic Geometry I (GT-MA1) | 5 |

Specific Admission Requirements

An applicant for the graduate certificate must be admitted as a graduate student and can then complete the certificate in non-degree status. Colorado residents can complete the certificate as guest (for credit) students. If a student decides to later pursue the MS in Cannabis Biology and Chemistry, the student must apply and be accepted to that degree program; credits completed toward the certificate can be applied toward the degree.

Student Learning Outcomes

1. Students will understand advanced chemical and biological principles applied in these fields and how those principles can be applied to the emerging field of cannabis science.
2. Students will understand cannabis physiology and growth, the pharmacological implications, and the practical applications for the industry.

3. Students will use contemporary instruments and techniques for studying plant biological and chemical processes.

Outcomes Assessment Activities

- Within the Department's existing assessment structures, the performance of Certificate students in the specific courses will be evaluated separately from other students.

Specific Program Requirements

A student must complete a minimum of 9 credit hours of CBC coursework at the graduate level for the Certificate. Students may select from the listed courses. A student will receive a Cannabis Biology and Chemistry Certificate after completing 9 credits of the following courses with a grade of C or better.

| Course | Title | Credits |
|----------|--|---------|
| CBC 501 | Medicinal Plant Biochemistry | 3 |
| CBC 513 | Cannabis Physiology & Growth | 3 |
| CBC 513L | Cannabis Physiology & Growth Lab | 1 |
| CBC 522 | Natural Products Extraction & Analysis | 3 |
| CBC 522L | Natural Products Extraction & Analysis Lab | 1 |
| CBC 563 | Medicinal Chemistry & Pharmacology | 3 |
| CBC 593 | Seminar | 1 |