

# CANNABIS BIOLOGY & CHEMISTRY, 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 322	Physical Chemistry II	3
CHEM 419	Instrumental Analysis	3
or CHEM 519	Instrumental Analysis	
CHEM 419L	Instrumental Analysis Lab	2
or CHEM 519L	Instrumental Analysis Lab	
MATH 126	Calculus & Analytic Geometry I (GT-MA1)	5

## Specific Admission Requirements

Current non-Cannabis Biology and Chemistry degree program students at CSU Pueblo can complete the certificate program as part of their academic course work. Students interested in the certificate program who are not current CSU Pueblo students may complete the certificate as a Guest Student.

## 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 undergraduate 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 401	Medicinal Plant Biochemistry	3
CBC 413	Cannabis Physiology & Growth	3
CBC 413L	Cannabis Physiology & Growth Lab	1
CBC 422	Natural Products Extraction & Analysis	3
CBC 422L	Natural Products Extraction & Analysis Lab	1
CBC 463	Medicinal Chemistry & Pharmacology	3
CBC 493	Seminar	1