

# Agripharmatech

## Type

Certificate of Achievement

The Certificate of Achievement in Agripharmatech is organized in two tracks: Plant Biotechnology and Ethnopharmacognosy. Each track consists of 30–32 credits, and requires a unique capstone class (see below).

The Plant Biotechnology track deals with developing and improving plant production in order to supply the world's need for healthier (decreased use of pesticides) and more nutritious food crops, novel ornamentals, and plant-derived pharmaceuticals. Ethnopharmacognosy is the study of traditional medicines derived from natural sources (medicinal/nutritious plants).

Students will be able to complete the certificate in two to three semesters with coursework flexible enough to prepare them for employment in agricultural biotechnology or pharmacognosy, for entrepreneurship in agribusiness or plant-based product manufacturing, and for seamless credit transfer to higher degree institutions for the study of agriculture, pharmacy, and related disciplines.

After completing the program, students will be able to:

- Apply knowledge gained in plant sciences: identify plants, propagate/cultivate/maintain plants in vivo and in vitro
- Apply knowledge gained in microbial sciences: prepare/maintain bacterial cultures for genetic transformation and bioassay tests
- Conduct plant biotech and/or pharmacognosy research

In addition, students opting for the biotechnological track will focus on plant molecular genetics, and will:

- Operate specialized lab equipment such as autoclave, gel electrophoresis, PCR machine, Particle Deliver/1000 Helium System, spectrophotometer, fluorescent microscope, Gel Doc System
- Perform DNA/RNA extraction, electrophoresis, PCR reaction, DNA sequencing, gene transformation via bacteria, and particle bombardment, alignment and analyzing DA sequence results using Sequencher, PAUP, Finch TV software systems

Students opting for the ethnopharmacognosy track will focus on plant pharmacognostical study, and will:

- Operate laboratory equipment: autoclave, spectrophotometer, stereo microscope, anaerobic transfer chamber, rotary evaporator, distiller, Biacore Q system
- Conduct pharmaceutical and nutraceutical research

## NOTES

\* Math 100 is recommended for those who seek certificates to enter the workforce or become agribusiness entrepreneurs. Otherwise, Math 103 is recommended.

\* BOT 199/299 in Ethnopharmacognosy involves pharmaceutical/nutraceutical research.

\* BOT 199/200 in Plant Biotechnology involves plant biotechnology research.

## Required Courses (17-18 credits)

Item #	Title	Credits
AG 152	Orchid Culture	3
	AG 120 or BIOL 172/L or BOT 101/L or BOT 160	3-4
	ENG 100 or SP 151	3
MATH 100	Survey of Mathematics	3
MICR 130	General Microbiology	3
MICR 140L	General Microbiology Lab	2

## Ethnopharmacognosy Track: Capstone (4-5 credits)

Item #	Title	Credits
	BOT 205 or SCI 295EP	4-5

## Ethnopharmacognosy Track: Electives (8-9 credits)

Choose eight to nine (8-9) credits from the following

Item #	Title	Credits
AG 149	Plant Propagation	3
BOT 105	Ethnobotany	3
	BOT 130 & 130L	4
BOT 192V	Special Topics in Plant Science	1-4
	BOT 199/299	1-4
BUS 122	Introduction to Entrepreneurship	3
	CHEM 161 & 161L	4
FSHN 185	Human Nutrition	3

## Plant Biotechnology Track: Capstone (4-5 credits)

Item #	Title	Credits
	BIOL 275/L or BOT 210 or SCI 295PB	4-5

## Plant Biotechnology Track: Electives (8-9 credits)

Item #	Title	Credits
	BIOL 171 & 171L	4
BOT 192V	Special Topics in Plant Science	1-4
	BOT 199/299	1-4
BUS 122	Introduction to Entrepreneurship	3
	CHEM 161 & 161L	4
	CHEM 162 & 162L	4
	<b>Total Credits</b>	<b>30-32</b>