

Certificates College of Science

INFORMATION

The College of Science administers several certificate programs. In addition to the programs listed below, College of Science students may be interested in the Bioethics Certificate, offered through the Philosophy Department in the College of Liberal Arts and Social Sciences.

PROGRAMS

BIOTECHNOLOGY

The biotechnology industry is one of the fastest growing industries in northeastern Ohio. The Certificate in Biotechnology — Laboratory Track, which is administered through the **Department of Biological, Geological, and Environmental Sciences**, is an interdisciplinary program that builds on majors in biology or chemistry and exposes students to areas of knowledge that are not part of the typical major, but are underpinnings for the biotechnology industry. The certificate program provides students with the appropriate qualifications to enter the segment of the workforce that is responsible for the development and quality-control aspects of the biotechnology industry. Students in the Biotechnology Certificate Program are eligible to participate in the Cooperative Education Program through the Career Services Center even if they are not seeking a degree at Cleveland State University.

CULTURE, COMMUNICATION AND HEALTH (JOINT CERTIFICATE)

The Culture, Communication, and Health Certificate is an interdisciplinary program in which students examine the rich interplay among culture, communication, and the health care context. A comprehensive understanding of contemporary health care requires an appreciation of the multiple ways that culture and societal institutions influence the communication (and miscommunication) of health information within an administrative or service

delivery context. The complex intersections among culture, communication and health cannot be understood in isolation; rather they are most effectively appreciated when studied in a multi-disciplinary context. In this program, students can gain a fundamental understanding of the subtle, dynamic role that culture plays in the practice and communication of health information. A critical component of contemporary health care is cultural competence, and completing the requirements of this certificate offers students the academic and practical skills needed to implement a culturally competent approach to health care.

Students who complete this certificate are expected to understand the value of diversity; to have the capacity for cultural self-reflection, including diverse health beliefs, values, and practices; to be aware of the dynamics inherent when cultures interact, with an emphasis on health communication and health issues and contexts; to recognize the importance of effective health communication in a diverse community; and to develop the skills necessary to make adaptations to health communication within an administrative or service delivery context reflecting an understanding of diversity between and within cultures. The academic units participating in this certificate program are the Departments of Anthropology, Health Sciences, Psychology, and Sociology, and the School of Communication.

Students interested in pursuing the Certificate in Culture, Communication, and Health should seek advising from the **Department of Health Sciences** and complete the required Intent to Complete the Certificate in Culture, Communication, and Health Form. Contact the Health Sciences Department at 216-687-3567 for an appointment.

FORENSIC CHEMISTRY

The certificate program is designed for students who are interested in the application of scientific principles to solve problems that are related to the legal and regulatory systems. The program is interdisciplinary in nature and any person with the appropriate prerequisites for the necessary courses can earn the certificate.

GERONTOLOGICAL STUDIES

The Gerontological Studies certificate is an interdisciplinary program designed primarily for students planning for a career in the field of aging. The emphasis is upon learning about aging as a basic human experience and as an important aspect of contemporary society. The departments of Health Sciences and Psychology and the schools of Nursing and Social Work developed the certificate program and will offer the courses regularly to allow students to complete the certificate in a timely manner.

Students interested in pursuing the Certificate in Gerontology Studies should seek advising from the **Department of Health Sciences** and complete the required Intent to Complete the Gerontology Studies Certificate Form. Contact the Health Sciences Department at 216-687-3567 for an appointment.

For more information, contact:

College of Science
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2121 Euclid Avenue SR 353
Cleveland, OH 44115-2214
Phone: (216) 687-5580
E-mail: cos@csuohio.edu
http://www.csuohio.edu/sciences/department_list.html

Certificates

College of Science

Biotechnology Certificate (16 credit hours)

Prerequisites: Either currently majoring in biology or chemistry, and completion of two semesters of Introductory Biology, and one semester each of Biochemistry, Cell Biology and Laboratory, Microbiology and Laboratory, and Calculus; or a baccalaureate degree that includes the following courses: two semesters each of Introductory Biology and General Chemistry, and one semester each of Biochemistry, Cell Biology and Laboratory, Microbiology and Laboratory, Organic Chemistry, and Calculus.

Required Courses:

MTH 147 Statistical Concepts with Applications (4)	CHE 366 Bioprocess Engineering Principles (4)
ESC 120 Introduction to Engineering Design (1)	IME 465 Manufacturing Systems Engineering (3)
BIO 435 Techniques in Molecular Biology (4)	

Culture, Communication and Health Certificate (20-21 credit hours)

A minimum GPA of 2.8 must be achieved for the coursework completed for the certificate.

Prerequisite: (not counted toward total credits, grade of B- or higher required):

ANT 100 Human Diversity (4) **OR**
SOC 201 Race, Class, Gender (3)

Required Courses (7 credit hours):

COM 362 Health Communication (4)
HSC 305 Cultures and Health Care (3)

Elective Courses (11-12 credit hours) (must be in at least two different disciplines):

ANT 260 Language, Culture, and Society (4)	COM 350 Persuasive Communication (4)	SOC 211 American Culture & Society (3)
ANT 270 African American Culture (4)	COM 449 Adv Issues in Health Comm (4)	SOC 215 Black/White Interaction (3)
ANT 311 Medical Anthropology (4)	HED 450 Theories in Health Education (4)	SOC 312 Sociology of Mental Illness (4)
ANT 321 Psychological Anthropology (4)	HSC 346 Women's Health (3)	SOC 343 Medical Sociology (4)
COM 332 Interracial Communication (4)	PSY 353 Health Psychology (4)	SOC 380 Racial and Ethnic Inequality (4)
COM 348 Intercultural Communication (4)	PSY 356 Multicultural Psychology (4)	

Capstone Project (2-3 credit hours):

Internship/Cooperative Education experience coordinated through the Departments of Anthropology, Health Sciences, Psychology, and Sociology, and the School of Communication.

Forensic Chemistry Certificate (17 credit hours)

Required Courses:

CHM 411 Instrumental Analysis* (4)	SOC 250 Introduction to Criminology (3)
CHM 417 Forensic Chemistry (3)	CHM 496 Forensics Internship (3)
CHM 455 Biotechnology Techniques (4)	<i>*requires CHM 261, CHM 262, CHM 311 as prerequisites</i>

Gerontological Studies (minimum 15 credit hours)

Required Course:

HSC/NUR/PSY/SWK 180 Introduction to Gerontology (3) (rotated between Health Sciences, Nursing, Psychology, and Social Work)

AND Choose THREE from the following approved courses (may have prerequisites which are not part of the certificate):

ANT 280 Anthropology of Aging (4)	NUR 498 Health of Older Persons (4)	REL 251 Persp on Death and Dying (4)
BIO 168 Biology of Aging (3)	PED 472 Physiology of Aging (3)	SOC 316 Sociology of Aging (4)
BIO 468 Theories of Aging (3)	PSY 223 Lifespan Development (4)	SWK 465 Aging and Social Work (3)
COM 362 Health Communication (4)	PSY 429 Psychology of Aging (4)	USA/UST 380/SWK 493 Urban Family Development (4)
HSC 426 Funct Perf of Older Adults (3)	REL 250 Stages of Life (3)	

Capstone Project (3-6 credits):

Internship/Research/Project coordinated through the Departments of Health Sciences or Psychology, or the Schools of Nursing or Social Work.

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