### BESC - BIOENVIRONMENTAL SCI (BESC)

**BESC 201 Introduction to Bioenvironmental Sciences**  
Credits 3. 3 Lecture Hours.  
A broad survey of environmental science with an emphasis on scientific literacy, current events, global and international issues and historic context.

**BESC 204 Molds and Mushrooms: The Impact of Fungi on Society and the Environment**  
Credits 3. 3 Lecture Hours.  
Introduction to the fungi and the impact these organisms have on society and the environment; includes life cycles of fungi; classification schemes, pathogens of plants, animals and humans, fungi in food production; toxic fungi and the law, and others.

**BESC 285 Directed Studies**  
Credits 1 to 4. 1 to 4 Other Hours.  
Individually supervised research or advanced studies for lower-division undergraduate students to independently investigate special problems not available in existing courses.  
**Prerequisite:** Approval of instructor in consultation with departmental advisor.

**BESC 291 Research**  
Credits 1 to 4. 1 to 4 Other Hours.  
Research conducted under the direction of faculty member in bioenvironmental sciences. May be repeated 3 times for credit.  
**Prerequisites:** Freshman or sophomore classification and approval of instructor.

**BESC 311 International Perspectives on Environmental Issues**  
Credits 3. 3 Lecture Hours.  
The role of the United Nations and other institutions that promote international cooperation toward sustainable development goals; influence of cultural views on critical thinking about environmental issues, including population, water and agriculture, biodiversity and energy.  
**Prerequisite:** Junior classification or approval of instructor; must attend two mandatory pre-departure meetings.

**BESC 314 Pathogens, the Environment and Society**  
Credits 3. 3 Lecture Hours.  
The impact of microorganisms (bacteria, fungi and viruses) on the development of modern culture and society; the role pathogens played in the history of mankind and the influence of the changing environment on emerging diseases.  
**Prerequisite:** Junior or senior classification.

**BESC 320 Water and the Bioenvironmental Sciences**  
Credits 3. 3 Lecture Hours.  
Critical understanding of salient issues relating to fresh water as a limited and important bioenvironmental resource.  
**Prerequisite:** Junior or senior classification.

**BESC 357 Biotechnology for Biofuels and Bioproducts**  
Credits 3. 3 Lecture Hours.  
Biotechnology issues in developing bioenergy as a renewable energy source; emphasis on the three generations of bioenergy and enabling technologies; special topics include recent advances in bioenergy research, government policy, and industrial development.  
**Prerequisite:** BESC 201 and junior or senior classification.

**BESC 367 U.S. Environmental Regulations**  
Credits 3. 3 Lecture Hours.  
Investigation of the legal infrastructure of the U.S. associated with regulating environmental impacts; examination of major U.S. environmental statutes associated with air and water quality, toxic substances, waste and hazardous substance release, energy and natural resources; review the relationship between U.S. policy and international environmental regulations.  
**Prerequisites:** BESC 201 and junior or senior classification.

**BESC 401 Bioenvironmental Microbiology**  
Credits 3. 3 Lecture Hours.  
The interactions of microorganisms in diverse environments; applied aspects of microbial interactions in the environment, their effects on the environment, and potential use to solve environmental problems.  
**Prerequisites:** SCSC 405 and 3 hours of organic chemistry, or equivalents; or approval of instructor.

**BESC 402 Microbial Processes in Bioremediation**  
Credits 3. 3 Lecture Hours.  
Metabolic pathways of microbes involved in the biodegradation of hazardous materials will be presented; ecological requirements for biotreatability of contaminated sites will be discussed emphasizing factors affecting microbial growth; strategies for in situ bioaugmentation will be presented.  
**Prerequisite:** One semester of organic chemistry.

**BESC 403 Sampling and Environmental Monitoring**  
Credits 3. 2 Lecture Hours. 3 Lab Hours.  
Introduction to environmental sampling and methodology; strategies and analyses of sampling data; overview of current applications of sampling and monitoring in the environmental sciences; emphasis on practical aspects of sampling from air, soil and water; detection and quantification of microbial and chemical unknowns in environmental media.  
**Prerequisite:** Junior or senior classification or approval of instructor.

**BESC 411 Environmental Health and Safety Compliance**  
Credits 3. 3 Lecture Hours. 1 Lab Hour.  
Investigation of the legal infrastructure of the U.S. associated with regulating environmental impacts; examination of major U.S. environmental statutes associated with air and water quality, toxic substances, waste and hazardous substance release, energy and natural resources; review the relationship between U.S. policy and international environmental regulations.  
**Prerequisites:** BESC 201 and senior classification in BESC major.

**BESC 481 Seminar**  
Credit 1. 1 Lecture Hour.  
Capstone course for topics in bioenvironmental sciences; critical analysis of environmental issues through written themes and presentations. May be taken three times for credit.  
**Prerequisites:** BESC 201 and senior classification in BESC major.

**BESC 484 Field Experience**  
Credits 1 to 4. 1 to 4 Other Hours.  
An on-the-job supervised experience program conducted in the area of the student’s specialization.  
**Prerequisite:** Junior or senior classification or approval of department head.

**BESC 485 Directed Studies**  
Credits 1 to 4. 1 to 4 Other Hours.  
Special problems for advanced undergraduates to permit study of subject matter not available in existing courses.  
**Prerequisite:** BESC 201 or approval of instructor.
BESC 489 Special Topics in...
Credits 1 to 4. 1 to 4 Lecture Hours. 1 to 4 Lab Hours.
Selected topics in an identified area of bioenvironmental sciences. May be repeated for credit.
Prerequisite: BESC 201 or approval of instructor.

BESC 491 Research
Credits 1 to 4. 1 to 4 Other Hours.
Research conducted under the direction of faculty member in bioenvironmental sciences. May be repeated 3 times for credit.
Registration in multiple sections of this course are possible within a given semester provided that the per semester credit hour limit is not exceeded.
Prerequisites: Junior or senior classification and approval of instructor.