

## GUIDELINES FOR BIOTECHNOLOGY INTERDISCIPLINARY STUDIES PROGRAM

Students in the BISP must complete 21 credits in core and elective courses. Core courses include biochemistry, microbiology, bioprocess engineering, and biotechnology. Electives are tailored to the individual student's interests and may be selected from the list below. Completion of the program is certified on the student's academic record.

Students with a BISP certification are well-qualified to continue graduate studies in a biotechnology discipline or to directly enter a career in research, production, marketing, or administration.

For more information contact: Susan Deines, Assistant Professor, B126 Microbiology Building, (970) 491-2913; or Dr. Kenneth Blehm, Associate Dean for Undergraduate Education, College of Veterinary Medicine and Biomedical Sciences, W102 Anatomy/Zoology Building, (970) 491-7051.

### 1) Biochemistry Core (select 4-6 credits)

BC 351 F,S,SS	(4) Principles of Biochemistry
BC 401 F	(3) Comprehensive Biochemistry I
BC 403 S	(3) Comprehensive Biochemistry II
BC 404 F,S	(2) Comprehensive Biochemistry Laboratory

### 2) Microbiology Core (7 credits)

MIP 300 F,S,SS	(3) General Microbiology
MIP 301 F	(1) Fundamental Microbiology Laboratory Technique
MIP 302 F,S	(2) General Microbiology Laboratory
*MIP 432 (only S of even years)	(3) Microbial Ecology
*MIP 433 (only S of even years)	(1) Microbial Ecology Laboratory
*MIP 436 (only F of even years)	(4) Industrial Microbiology

### 3) Process Engineering Core (select 4-6 credits)

BTEC 306/BIOM306 S	(4) Bioprocess Engineering
CBE 331 F	(3) Momentum Transfer & Mechanical Separations
CBE 333 S	(2) Momentum & Heat Transfer Laboratory
CBE 442 F	(3) Rate-Controlled Separations
CBE 443 F	(2) Mass Transfer & Separation Laboratory

### 4) Biotechnology (2 credits)

MIP 400B F	(2) Capstone in Biotechnology
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### 5) Electives

- These must be chosen from *courses not required for graduation in the major* and must be approved by the Advisory Board
- Bring total credits in BISP to at least 21 credit hours

## ELECTIVE LIST

ANEQ 310 F,S	(4) Animal Reproduction
ANEQ 330 F,S	(3) Principles of Animal Breeding
ANEQ 460 S	(3) Meat Processing
BC352 F,S	(2) Principles of Biochemistry lab (discontinued SP04)
BC 406 A-C,F,S	(2) Special Topics in Biochemistry
BC 463 F	(3) Molecular Genetics
BIOM 470	(3) Biomedical Engineering
BTEC 499	(1-3) Biotechnology Thesis
BMS 300 F,S,SS	(4) Principles of Human Anatomy and Physiology
BMS 310/BZ 310 S	(3) Fundamentals of Physiology
BIO 310 F,S	(4) Cell Biology
BIO 311 S,SS	(4) Developmental Biology
BZ 333 F	(4) Introductory Mycology
BZ 346 F	(3) Population & Evolutionary Genetics
BZ 350 F	(4) Molecular and General Genetics
BZ 401 F	(3) Comparative Animal Physiology
BZ 440 F,S	(3) Plant Physiology
BZ 441 F,S	(2) Plant Physiology Laboratory
BZ 445 S	(3) Physiology of Plant Growth and Development
CHEM 331 F	(3) Quantitative Analysis
CHEM 431 F	(4) Instrumental Analysis
CHEM 471 F	(4) Fundamentals of Physical Chemistry
CHEM 472 F	(4) Physical Chemistry for Engineers
CBE 420 S	(3) Chemical Reactor Design
CBE 451 F	(3) Chemical Engineering Design I
ERHS 220 F,S	(3) Environmental Health
ERHS 307/STAT 307 F,S,SS	(3) Introduction to Biostatistics
ERHS 446 F	(3) Environmental Toxicology
F 311 F,S	(3) Forest Ecology
°FTEC 572 (only S of odd years)	(2) Food Biotechnology
LIFE 201A or B F,S	(3) Introductory Genetics
LIFE 210 F,S	(3) Introductory Eukaryotic Cell Biology
MIP 334 F	(3) Food Microbiology
°MIP 335 (only F of odd years)	(2) Food Microbiology Laboratory
MIP 342 F, S	(4) Immunology
MIP 343 S	(2) Immunology Laboratory
MIP 350 F	(3) Microbial Diversity
MIP 420 F	(4) Medical and Molecular Virology
MIP 425 F	(2) Virology and Cell Culture Laboratory
MIP 443 S	(4) Microbial Physiology
MIP 450 F	(3) Microbial Genetics
MIP 480 F	(2) Lab Basics for the Biotech/Pharmaceutical Industry
ERHS 400 F	(3) Radioisotope Techniques
SOCR 330 F,S,SS	(3) Principles of Genetics
SOCR 430 S	(3) Applications in Plant Biotechnology
SOCR 455 F	(3) Soil Microbiology