

COURSE CHECKLIST FOR THE MAJOR IN BIOTECHNOLOGY FOR THOSE ENTERING UNDER THE 2011-12 CATALOG

Foundation courses

Biology core courses

- BIO 114. Organisms
- BIO 124. Ecology and Evolution
- BIO 214. Cell and Molecular Biology
- BIO 224. Genetics and Development

Check when met:

Chemistry - complete all of the following courses

- CHEM 131/CHEM 131L + CHEM 132/CHEM 132L
- CHEM 241 + CHEM 242 + CHEM 242L

Physics - complete one of the following sequences

- PHYS 125/126 OR PHYS 140/140L + PHYS 150/150L

Calculus - complete one course (or courses sequence)

- MATH 231 + MATH 232 OR MATH 235

Statistics - complete one course

- MATH 220 OR MATH 285 OR MATH 318

Transition courses

- BIOT 260. Biotechnology Seminar
- ISAT 305. Instrumentation and Measurement in Biotechnology
- CHEM 361. Biochemistry I
- CHEM 366L. Biochemistry Laboratory
- BIO 480. Advanced Molecular Biology
- ISAT 451. Biotechnology in Industry and Agriculture
- ISAT 456. Ethical, Legal and Social Implications of Biotechnology

Elective courses

Fifteen credit hours of 300- and 400-level courses (see over)

Course / credit hours

Course / credit hours

Note: The JMU Undergraduate Catalog is the official listing of requirements and takes precedence over this guide, in case of conflicts.

Biotechnology majors are required to take 15 credits of electives at the 300- and 400-level. Courses from the list below are recommended by the Biotechnology faculty to meet this requirement. Courses from beyond this list may meet the requirement but permission must be sought from the student's major advisor. Up to eight credits of independent research with a faculty mentor may also be used to meet this requirement.

BIO 316. Principles of Animal Development
BIO/MATH 342. Mathematical Models in Biology
BIO 364. Human Uses of Plants
BIO 365. Laboratory in Human Uses of Plants
BIO 370. Animal Physiology
BIO 380. General Microbiology
BIO 416. Human Embryology
BIO 420. Medical Parasitology
BIO 430. Human Genetics
BIO 442. Immunology
BIO 443. Immunology Laboratory
BIO 444. Virology
BIO 445. Neurobiology
BIO 448. Medical Microbiology
BIO 450. Evolutionary and Societal Impacts of Developmental Biology
BIO 454. Introduction to Biometrics
BIO 455. Plant Physiology
BIO 465. Environmental Toxicology
BIO 466. Ecotoxicology Seminar
BIO 472. Human Metabolism
BIO 475. Advanced Cell Biology
BIO 481. Genomics
BIO 482. Human Histology
BIO 490. Biomechanics

CHEM 331. Physical Chemistry I
CHEM 336L. Applied Physical Chemistry Laboratory
CHEM 351. Analytical Chemistry
CHEM 352. Instrumental Analysis
CHEM 352L. Instrumental Analysis Laboratory
CHEM 362. Biochemistry II
CHEM 370. Inorganic Chemistry I
CHEM 440. Intermediate Organic Chemistry
CHEM 445. Polymer Chemistry

ISAT 450. Biotechnology and the Environment
ISAT 452. Medical Biotechnology
ISAT 454. Computer Applications in Biotechnology
ISAT 455. Regulatory Issues in Biotechnology
ISAT 457. Business of Biotechnology
ISAT 459. Awareness and Understanding of Chemical, Biological and Radiological Weapons of Mass Destruction

MATH 318. Introduction to Probability and Statistics
MATH 321. Analysis of Variance and Experimental Design
MATH 322. Applied Linear Regression
MATH 421. Applied Multivariate Statistical Analysis

Course that will not count toward the Biotechnology degree include:

ISAT 350. Biotechnology for the New Millennium I
ISAT 351. Biotechnology for the New Millennium II