COURSE CHECKLIST FOR THE MAJOR IN BIOTECHNOLOGY

FOR THOSE ENTERING UNDER THE 2009-10 CATALOG

http://www.jmu.edu/catalog/09/programs/biology.html

Foundation courses

Biology core courses — Check when met:

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

Chemistry - complete all of the following courses

- CHEM 131/CHEM 131L + CHEM 132/CHEM 132L _____
- CHEM 341 + CHEM 342 + CHEM 346L _____

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 /BIO 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.

Elective courses (continued)

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. Other 300- and 400-lvel courses may meet the requirement but permission must be sought from the Biotechnology Program Director. Up to eight credits of independent research with a faculty mentor may also be used to meet this requirement.

	Credit hours
BIO 316. Principles of Animal Development	4
BIO/MATH 342. Mathematical Models in Biology	3
BIO 364. Human Uses of Plants	3
BIO 365. Laboratory in Human Uses of Plants	1
BIO 370. Animal Physiology	4
BIO 380. General Microbiology	4
BIO 416. Human Embryology	4
BIO 420. Medical Parasitology	3
BIO 421. Medical Parasitology Lab	1
BIO 430. Human Genetics	3
BIO 442. Immunology	3
BIO 443. Immunology Laboratory	1
BIO 444. Virology	3
BIO 445. Neurobiology	4
BIO 448. Medical Microbiology	4
BIO 450. Evolutionary and Societal Impacts of Developmental Biol	3
BIO 454. Introduction to Biometrics	4
BIO 455. Plant Physiology	4
BIO 465. Environmental Toxicology	4
BIO 466. Toxicology Seminar	3
BIO 472. Human Metabolism	3
BIO 475. Advanced Cell Biology	3
BIO 481. Genomics	4
BIO 482. Human Histology	4
BIO 490. Biomechanics	4
CHEM 331. Physical Chemistry I	3
CHEM 336L. Applied Physical Chemistry Laboratory	1
CHEM 351. Analytical Chemistry	4
CHEM 352. Instrumental Analysis	3
CHEM 352L. Instrumental Analysis Laboratory	2
CHEM 370. Inorganic Chemistry I	3
CHEM 440. Intermediate Organic Chemistry	3
CHEM 445. Polymer Chemistry	4
ISAT 450. Biotechnology and the Environment	3
ISAT 452. Medical Biotechnology	3
ISAT 454. Computer Applications in Biotechnology	3
ISAT 455. Regulatory Issues in Biotechnology	3
ISAT 457. Business of Biotechnology	3
ISAT 459. Awareness and Understanding of Chemical, Biological and Radiological Weapons of Mass Destruction	3
MATH 318. Introduction to Probability and Statistics	4
MATH 321. Analysis of Variance and Experimental Design	3
MATH 322. Applied Linear Regression	3
MATH 421. Applied Multivariate Statistical Analysis	3