

**COURSE CHECKLIST FOR THE MAJOR IN BIOLOGY with a
CONCENTRATION IN ECOLOGY AND
ENVIRONMENTAL BIOLOGY
FOR THOSE ENTERING UNDER THE 2008-09 CATALOG**
<http://www.jmu.edu/catalog/08/programs/biology.html>

A minimum of 40 credit hours, with a minimum of 24 credit hours at the 300 level or above.

BIOLOGY CORE	Credit Hours	
BIO 114 Organisms	4	_____
BIO 124 Ecology and Evolution	4	_____
BIO 214 Cell and Molecular Biology	4	_____
BIO 224 Genetics and Development	4	_____

COGNATES

Check when Met:

Chemistry- complete all of the following course

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

Physics- choose one of the following sequences

- PHYS 125/126 OR _____
- PHYS 140/140L and 150/150L _____

*Math-*complete one course (or courses sequence) from each of the three areas:

Calculus

- MATH 231 + 232 OR 235 _____

Statistics

- MATH 220 OR 285 OR 318 _____

Experimental Design

- Math 321 OR BIO 454 _____

Geographic Information Systems- choose one of the following courses

- GEOG 366 or BIO 457 _____

UPPER DIVISION- For those interested in pursuing a concentration in Ecology & Environmental Biology, please contact Dr. Bruce Wiggins (wigginba@jmu.edu)

- Students must complete at least 24 credit hours from the following list. At least one of these must be an organismal diversity course. And at least three must be laboratory/field courses
- Individual courses may satisfy more than one requirement
- With prior approval from the concentration coordinator, BIO 426 and/or BIO 427 may be substituted.
- Students are strongly encouraged to discuss their career interests with an advisor who can help select courses best suited to their needs
- Students are encouraged to participate in independent research with a faculty mentor. In addition to the courses listed below, a maximum of eight credits of BIO 495, 496, 497, 499 and ISCI 450 can be counted toward the Biology/EEB concentration

- BIO 305. Ornithology^{1,2}
- BIO 310. General Entomology^{1,2}
- BIO 320. Comparative Anatomy of Vertebrates^{1,2}
- BIO 340. Morphology and Anatomy of Vascular Plants^{1,2}
- BIO 370. Animal Physiology²
- BIO 380. General Microbiology^{1,2}
- BIO 386. Field Botany^{1,2}
- BIO/PSYC 395. Comparative Animal Behavior
- BIO 404. Evolutionary Analysis
- BIO 409. Marine and Freshwater Invertebrates¹
- BIO 451. Ecological Systems²
- BIO 452. Population Ecology²
- BIO 453. Microbial Ecology
- BIO 454. Introduction to Biometrics
- BIO 455. Plant Physiology²
- BIO 456. Landscape Ecology
- BIO 457. Biological Applications of Geographic Information Systems²
- BIO 458. Comparative Animal Physiology²
- BIO 459. Freshwater Ecology²
- BIO 465. Environmental Toxicology
- BIO 466. Ecotoxicology Seminar
- BIO 470. Morphology of Nonvascular Plants^{1,2}
- BIO 486. Systematics of Vascular Plants^{1,2}

Note: It is highly recommended that students take additional upper-level degree elective courses in geography/GIS (such as GEOG 466, GIS & Geographic Databases, or GEOG 467, GIS Project Management) and in statistics (such as MATH 322, Applied Linear Regression, or MATH 324, Applied Nonparametric Statistics). Students should consult with their adviser about which courses are appropriate.

List Biology courses as you take them:

100-200 level	credit hours	300-400 level (≥ 20 hrs)	credit hours
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

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