

# CHECK LIST FOR THE B.S. DEGREE IN BIOLOGY EMPHASIS IN EVOLUTION AND SYSTEMATICS

**Emphasis Adviser: Dr. Tod Reeder (LS-264), 2008-09 Catalog**  
(Use this as a worksheet. Refer to your catalog for official requirements.)

Systematicists and evolutionary biologists study patterns of evolutionary relationships among species and evolutionary processes underlying these patterns. Systematics involves detailed study of a group of organisms to determine its evolutionary relationships (phylogeny), clarify its classification, and assess trends in ecology, biogeography, and evolutionary processes. Evolutionary biology explores mechanisms of evolutionary change, including studies of natural selection, migration, mating systems, and genetic drift. Specific studies in systematics or evolutionary biology may encompass anatomy, behavior, biogeography, development, ecology, genetics, and molecular biology of both living and fossil organisms.

Graduates can work in universities, museums, botanical gardens, and zoos or with federal, state, and private agencies. Positions may include basic or applied research, such as assessment of biodiversity or environmental quality. Acquisition of laboratory skills, such as electron microscopy or nucleotide sequencing, are required for careers in evolutionary biology. Students should make a particular effort to gain research experience through Undergraduate Research or Special Studies.

### PREPARATION FOR THE MAJOR (39 units of lower division courses)

Biol 201A	Principles of Cell & Molecular Biol.	4	_____	Math 121	Calculus for the Life Sciences I	3	_____
Biol 201B	Principles of Organismal Biology	4	_____	Math 122	Calculus for the Life Sciences II	3	_____
Biol 215	Biostatistics	3	_____	Phys 180A	Fundamentals of Physics	3	_____
Chem 200	General Chemistry	5	_____	Phys 182A	Physical Measurements	1	_____
Chem 201	General Chemistry	5	_____	Phys 180B	Fundamentals of Physics	3	_____
Chem 231	Organic Chemistry (or 232 and 232L)	4	_____	Phys 182B	Physical Measurements	1	_____

The Biology and Microbiology majors are designated as **impacted majors**. All students who are admitted to SDSU and want to declare a biology major are placed in the Biology or Microbiology premajor. All premajors must meet department-specific criteria to declare a major, such as a specified minimum grade point average, completion of preparation for the major course requirements with qualifying grades, and satisfaction of the lower-division writing competency requirement. Students may not elect credit/no credit grading for course work needed to satisfy preparation for the major requirements. Students should refer to the year in which they declared a major for official requirements. Visit [www.sdsu.edu/impactedmajors](http://www.sdsu.edu/impactedmajors) for more information. Note that admission to SDSU is a separate process and may require similar or additional requirements beyond the impacted major requirements.

### EMPHASIS IN EVOLUTION AND SYSTEMATICS (Minimum of 36 upper division units)

#### Required courses (18 units):

Biol 350	General Microbiology	4	_____	Chem 365	Biochem., Cell and Mol Biol. I	3	_____
Biol 352	General Genetics and Evolution	3	_____	Biol 366	Biochem., Cell and Mol Biol. II	4	_____
Biol 354	Ecology and the Environment	3	_____	Biol 366L	Biochem., Cell and Mol Biol. Lab. I	2	_____
				Biol 509	Evolutionary Biology	3	_____

**Elective courses (18 units): At least 12 of the required 18 units of upper division electives must be selected from the following courses. Two or more of those electives must be laboratory courses, one of which must be an organismal biology course\*.**

The remaining 6 units can come from those below or can be selected from biology and chemistry courses numbered 350 and above (except Biology 452, and Chemistry 497, 499, 560A/B), and Oceanography 541. **Prior** approval of a Biology adviser is required for credit in Biology 496, 497, 499, and 596 and other courses not listed, and papers must be filed with the Office of Advising and Evaluations/Academic Advising.

<u>Plant and Microbial Courses:</u>				<u>Animal Courses:</u>			
Biol 460	Economic Botany*	3	_____	Biol 512	Evol. & Ecol. of Marine Mammals*	3	_____
Biol 496	Intro to Plant Biology <sup>2</sup>	3	_____	Biol 515	Marine Invertebrate Biology*	4	_____
Biol 528	Microbial Ecology*	3	_____	Biol 523	Herpetology*	4	_____
Biol 530	Plant Systematics* <sup>1</sup>	4	_____	Biol 524	Ornithology*	4	_____
Biol 531	Taxonomy of California Plants*	4	_____	Biol 525	Mammalogy*	4	_____
				Biol 526	Terrestrial Arthropod Biology*	4	_____
				Biol 596	General Parasitology*	3	_____
<u>General Evol./Systematics Courses:</u>				Biol 510/596	Molecular Evolution	3-4	_____
Biol 496/596	Exper/Special Topics (max. 3 units) <sup>2</sup>	1-3	_____	Biol 511	Evolution of Development	3	_____
Biol 497/9	Special Study & Research (max. 3 u) <sup>2</sup>	1-3	_____	Biol 568	Bioinformatics	3	_____
Biol 508	Coevolution	3	_____	Biol 576	Developmental Biology <sup>2</sup>	3	_____

Select any other biology major electives (to complete the 21 unit upper division elective requirement):

Biol - \_\_\_\_\_ u      Biol - \_\_\_\_\_ u

<sup>1</sup> Not all courses are taught each year; these courses may not be taught AY08-09.

<sup>2</sup> **Prior** approval of the Biology adviser (in LS-135) is needed and papers must be filed with the Office of Advising and Evaluations. 6/15/08