

## CHECK LIST FOR THE B.S. DEGREE IN BIOLOGY EMPHASIS IN CELL AND MOLECULAR BIOLOGY

**Adviser: Dr. Rick Bizzoco (LS-360)**

Cell and molecular biology is the study of the macromolecules and mechanisms involved in basic biological processes. This discipline crosses traditional boundaries between genetics, biochemistry, cell biology, physics and chemistry. Graduates will have training appropriate for entry-level positions in the biotechnology industry. For students who wish to continue their studies, this emphasis provides the prerequisites for cell and molecular biology graduate programs. Cell and Molecular Biology Emphasis students should make a particular effort to gain research experience in the field through Biology 497/499 Special Studies (current projects may be discussed with professors). The Biology Department also offers a Certificate in Biotechnology (see General Catalog).

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

Biol 203	Principles of Cell & Molecular Biol.	3	_____	Chem 232	Organic Chemistry	3	_____
Biol 203L	Princ. of Cell & Molecular Biol. Lab	1	_____	Chem 232L	Organic Chemistry Lab	1	_____
Biol 204	Principles of Organismal Biology	3	_____	Math 121	Calculus for the Life Sciences I	3	_____
Biol 204L	Principles of Organismal Biology Lab	1	_____	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	_____
				Phys 182B	Physical Measurements	1	_____

Biology is an **impacted major**. Students who wish to declare a Biology major are initially placed into the Biology **premajor**. Premajors must meet department-specific criteria in order to be admitted to the major. (Note that admission to SDSU is a separate process from admission to the major, and is reviewed by a separate administrative unit.)

For this catalog year, admission to the Biology major requires:

- completion of the Preparation for the Major courses
- a GPA of 2.7 or higher in Preparation courses
- a minimum grade of C in each Preparation course
- an overall GPA of at least 2.6
- satisfaction of the lower-division writing competency requirement
- no coursework for the premajor or the major may be graded Cr/NC

Students who have completed these requirements must meet with the Biology undergraduate advisors to be admitted to the major.

Students who do not meet one or more minimum grade or minimum GPA requirements should meet with the Biology undergraduate advisors to determine the appropriate course of action.

### EMPHASIS IN CELL AND MOLECULAR BIOLOGY (Minimum of 36 upper division units)

#### Required courses (25 units):

Biol 350	General Microbiology	4	_____	Biol 366	Biochem., Cell and Mol Biol. II	4	_____
Biol 352	General Genetics and Evolution	3	_____	Biol 366L	Biochem., Cell and Mol Biol. Lab. I	2	_____
Biol 354	Ecology and the Environment	3	_____	Biol 567	Biochem., Cell and Mol Biol. III	4	_____
Chem 365	Biochem., Cell and Mol Biol. I	3	_____	Biol 567L	Biochem., Cell and Mol Biol. Lab II	2	_____

#### The remaining minimum of 11 units must be selected from the following courses:

Biol 496	Clinical Hematology	3	_____	Biol 584	Medical Microbiology	3	_____
Biol 510	Molecular Evolution	3	_____	Biol 485	Principles of Immunology		
Biol 511	Evolution of Development	3	_____		or Biol 585 Cellular & Molecular Immunology <sup>2</sup>	3	_____
Biol 528	Microbial Ecology	3	_____	†Biol 588	General Parasitology	3	_____
Biol 549	Microbial Genetics and Physiology	3	_____	Biol 589	Stem Cell and Regenerative Biology	3	_____
Biol 554	Molecular Virology	3	_____	Biol 590	Physiology of Human Systems	4	_____
†Biol 555	Principles of Electron Microscopy	2	_____	Biol 596	Ecological Metagenomics	3	_____
Biol 556	Scanning Electron Microscopy Lab.	2	_____				
Biol 557	Transmission Electron Micro. Lab.	3	_____	Chem 432	Organic Chemistry	3	_____
Biol 568	Bioinformatics	3	_____	Chem 432L	Organic Chemistry Lab	1	_____
Biol 570	Neurobiology	3	_____				
†Biol 575	Molec. Basis of Heart Disease	3	_____	Biol 497/499, Chem 498 Sp. Study/Res. (max 3 un) <sup>1</sup>		1-3	_____
Biol 576	Developmental Biology	3	_____	Biol 490	Undergraduate Honors Research <sup>1</sup>	3	_____

† Not taught in AY 11-12.

<sup>1</sup> Prior approval of the Biology adviser (in LS-135) is needed and papers must be filed with the Office of Advising and Evaluations.

<sup>2</sup> Biol 585 is not open to students w/ credit in Biol 485.

## **Department of Biology**

<http://www.bio.sdsu.edu/>

San Diego State University  
5500 Campanile Drive  
San Diego, CA 92182-4614

## **Undergraduate Advising Office**

<http://www.sci.sdsu.edu/bioadvise/>

Life Sciences North, Room 135  
Phone (619) 594-6442 Fax (619) 594-5676  
bioundergrad@sunstroke.sdsu.edu

Dr. Andrew J. Bohonak, Vice Chair of Biology, and  
Director of Undergraduate Advising and Curriculum

Mr. Eddie Lopez, M.S., Associate Director of Advising

Ms. Arlene Castillo, M.S., Administrative Coordinator

### **Degree opportunities**

The Department of Biology offers the following degrees:

B.S. in Biology, with optional emphases in Bioengineering, Cellular & Molecular Biol., Ecology, Evolution & Systematics, Marine Biology, or Zoology	B.A. in Biology
B.S. in Microbiology, with an optional emphasis in Clinical Laboratory Science or Public Health Microbiology	B.A. in Microbiology
Minor in Biology, with optional emphases in five areas	Biotechnology Certificate

Coursework to demonstrate subject matter competency for the  
Single Subject Teaching Credential in Biology/Life Sciences

### **For the most current information, see the bioadvising web page**

<http://www.sci.sdsu.edu/bioadvise/>

- Answers to 25 Frequently Asked Questions
- Calendar of important dates
- Checklists of courses required for each of our degrees
- Course offerings we are planning for the entire academic year
- Information on new 496 and 596 "Special Topics" courses
- Course syllabi

### **Additional information**

Explanation of graduation requirements: <http://arweb.sdsu.edu/es/advising/9gradreqs.html>

Preprofessional Health Advising Office (GMCS-323): <http://www.sci.sdsu.edu/preprof/>

Articulation of transferable courses from CA community colleges: [www.assist.org](http://www.assist.org)

Articulation of science courses not listed on [www.assist.org](http://www.assist.org): meet with Biology advisors

Career Services (register with them by your sophomore year): SSE 1200, <http://career.sdsu.edu/>

Chemistry 200 placement exam: [http://www.chemistry.sdsu.edu/courses/CHEM200/200\\_Placement\\_exam.php](http://www.chemistry.sdsu.edu/courses/CHEM200/200_Placement_exam.php)

Prospective students: <http://www.sdsu.edu/prospective.html>