

# MS BIOLOGICAL SCIENCES, SPECIALIZATION IN REGENERATIVE MEDICINE

## Program Learning Objectives

1. Perform fundamental laboratory skills involved in regenerative medicine research & development.
2. Discuss and critically evaluate biomedical primary literature.
3. Effectively communicate technical topics to both peer and lay audiences.
4. Explain the process of biotechnology development & commercialization.
5. Describe how research & development efforts are motivated by and impact physician & patient experiences.
6. Design and execute independent research projects.

### Required Courses

BIO 501	Molecular & Cellular Biology	4
BIO 509	Communicating Biology to General Audiences	1
BIO 534	Principles of Stem Cell Biology	2
BIO/ASCI/BMED 583	Research Experience for Regenerative Medicine Students	2
BIO/ASCI/BMED 593	Regenerative Medicine Internship <sup>1</sup>	9
BMED 510	Principles of Tissue Engineering	4
BMED 515	Introduction to Biomedical Imaging	4
BMED 560	Cell Transplantation and Biotherapeutics	2
BMED 561	Cell Transplantation and Biotherapeutics Laboratory	2
STAT 513	Applied Experimental Design and Regression Models	4
or STAT 523	Design and Analysis of Experiments I	
or STAT 524	Applied Regression Analysis	

### Seminars <sup>2</sup>

Select from the following:		6
ASCI 581	Graduate Seminar in Animal Science	
BIO 574	Teaching Strategies for College Biology Laboratories	
BIO 590	Seminar in Biology	
BIO 591	Biology Colloquium	
BMED 563	Biomedical Engineering Graduate Seminar	

### Approved Electives

Select from the following:		5
ASCI 406	Applied Animal Embryology and Assisted Reproduction	
ASCI 407	Assisted Reproduction Technologies of Gametes and Embryos Laboratory	
BIO 405	Developmental Biology	
BIO 406	Advanced Anatomy and Physiology: Neuroscience	

BIO 410	Functional Histology
BIO 426	Immunology
BIO 441	Bioinformatics Applications
BIO 475	Molecular Biology Laboratory <sup>3</sup>
BIO 476	Gene Expression Laboratory
BIO 500	Individual Study
BIO 502	Biology of Organisms
BIO 524	Developmental Biology Seminar
CHEM 418	Neurochemistry
CHEM 474	Protein Techniques Laboratory

**Total units** **45**

- <sup>1</sup> Students will complete their internship at one of our partner institutions. An updated list of our current partners can be found on our program website: [regenmed.calpoly.edu](https://regenmed.calpoly.edu) (<https://regenmed.calpoly.edu>).
- <sup>2</sup> Take at least one offering of ASCI 581, BIO 590, and BMED 563; the remaining units up to 6 may be from any combination of seminar courses, chosen in consultation with a faculty advisor.
- <sup>3</sup> Strongly recommended if not already taken an equivalent course.