

## **BACHELOR OF SCIENCE IN BIOLOGICAL SCIENCES (Effective Fall 2018)**

### **Sample Integrative Elective Course Themes**

The themes serve as a guide. Restricted electives may be chosen from within these themes or restricted electives may be chosen from multiple theme groups.

#### **Forensics:**

CHE 104 Forensic Applications of Analytical Chemistry (3)  
ENT 158 Forensic Entomology (3)  
ETX 102B Quantitative Analysis of Environmental Toxicants (5)  
MCB 120L Molecular Biology and Biochemistry Laboratory (6)  
MCB 162 Human Genetics and Genomics (3)

#### **Health Professions:**

CHE 130A/130B Pharmaceutical Chemistry (3,3)  
ENT 153 Medical Entomology (3)  
ETX 104 Environmental and Nutritional Factors in Cellular Regulation and Nutritional Toxicants (4)  
EVE 131 Human Genetic Variation and Evolution (3)  
EXB 106/106L Human Gross Anatomy/Human Gross Anatomy Laboratory (4,3)  
MCB 150 Developmental Biology (4)  
MCB 162 Human Genetics and Genomics (3)  
MIC 102 General Microbiology (3)  
MIC 103L Introductory Microbiology Lab (2)  
MIC 104L General Microbiology Laboratory (3)  
MIC 150 Genomes of Pathogenic Bacteria (3)  
MIC 162 General Virology (4)  
NPB 101/101L Systemic Physiology/Systemic Physiology Laboratory (5,3)  
NPB 107 Cell Signaling in Health and Disease (3)  
PMI 126/126L Fundamentals of Immunology/Immunology Laboratory (3,2)  
PMI 128 Biology of Animal Viruses (3)

#### **Marine Biology:**

(can incorporate Spring quarter in residence or summer sessions at Bodega Marine Laboratory)

ANS 119 Invertebrate Aquaculture (4)  
ANS 131 Reproduction and Early Development in Aquatic Animals (4)  
BIS 122/122P Population Biology and Ecology // Population Biology and Ecology/Advanced Laboratory Topics (3,5)  
BIS 123 Undergraduate Colloquium in Marine Science (1)  
BIS 124 Coastal Marine Research (3)  
ESP 116N Oceanography (3)  
ESP 124 Marine and Coastal Field Ecology (3)  
ESP 150C Biological Oceanography (4)  
EVE 112 Biology of Invertebrates (3)  
EVE 114 Experimental Invertebrate Biology (3)  
EVE 115 Marine Ecology (4)  
NPB 141 Physiological Adaptation of Marine Organisms (3)  
WFC 120 Biology and Conservation of Fishes (3)  
WFC 121 Physiology of Fishes (4)  
WFC 157 Coastal Ecosystems (4)

#### **Bioethics/Philosophy of Science:**

BIT 171 Professionalism and Ethics in Genomics and Biotechnology (3)  
PHI 108 Philosophy of the Biological Sciences (4)  
STS 131 Darwin (4)

#### **Science Teaching:**

BIS 195A/B Science Teaching Internship Program (2/2)  
EDU 100 Introduction to Schools (4)  
EDU 181 Teaching in Science and Math (Middle School) (2)  
EDU 183 Teaching in Science and Math (High School) (2)

**Science Writing and Publishing:**

UWP 111C Specialized topics in Journalism: Science Journalism (4)  
UWP 112A Introduction to Professional Editing (4)  
UWP 120 Rhetorical Approaches to Scientific and Teaching Issues (4)  
UWP 121 History of Scientific Writing (4)

**Developmental Biology:**

EVE 150 Evolution of Animal Development (3)  
MCB 150 Developmental Biology (4)  
MCB 163 Developmental Genetics (3)  
NPB 121 Physiology of Reproduction (4)  
NPB 122 Developmental Endocrinology (3)  
NPB 161 Developmental Neurobiology (3)  
PLB 112 Plant Growth and Development (3)

**Quantitative Biology and Modeling:**

BIM 117 Analysis of Molecular and Cellular Networks (4)  
BIS 132 Introduction to Dynamic Models in Modern Biology (4)  
BIS 133 Collaborative Studies in Mathematical Biology (3)  
EVE 175 Computational Genetics (3)  
MAT 124 Mathematical Biology (4)  
MCB 143 Cell Biophysics (3)  
NPB 105 Introduction to Computer Models (4)  
NPB 163 Systems Neuroscience (4)

**Quantitative and Evolutionary Genetics:**

ANG 107 Genetics and Animal Breeding (5)  
EVE 102 Population and Quantitative Genetics (4)  
EVE 103 Phylogeny, Speciation and Macroevolution (4)  
EVE 131 Human Genetic Variation and Evolution (3)  
EVE 150 Evolution of Animal Development (3)  
EVE 175 Computational Genetics (3)  
GEL 107/107L Earth History: Paleobiology/Earth History: Paleobiology Laboratory (3,2)  
GEL 141/141L Evolutionary History of Vertebrates/Evolutionary History of Vertebrates Laboratory (3,1)

**Agricultural Biology:**

ANG 105 Horse Genetics (2)  
ANG 107 Genetics and Animal Breeding (5)  
ANS 123 Animal Growth and Development (4)  
BIT 160 Principles of Plant Biotechnology (3)  
BIT 161A/B Genetics/Plant Genetics and Biotechnology Lab (6,6)  
MCB 126/PLB 126 Plant Biochemistry (3)  
PLB 111 Plant Physiology (3)  
PLB 112 Plant Growth and Development (3)  
PLB 113 Molecular and Cellular Biology of Plants (3)  
PLB 123 Plant-Virus-Vector interaction (3)  
PLB 143 Evolution of Crop Plants (4)  
PLS 154 Introduction to Plant Breeding (4)

**Bioinformatics and Genomics:**

BIS 134 Systems Biology: From Biological Circuits to Biological Systems (2)  
BIS 180L Genomics Laboratory (5)  
BIS 181 Comparative Genomics (3)  
BIS 183 Functional Genomics (3)  
BIT 150 Applied Bioinformatics (4)  
BIT 171 Professionalism and Ethics in Genomics and Biotechnology (3)  
ECS 124 Theory and Practice of Bioinformatics (4)  
MCB 162 Human Genetics and Genomics (3)  
MCB 182 Principles of Genomics (3)

**Human Genetics/Genetic Counseling/Public Health:**

ANT 152 Human Evolution (5)  
ANT 153 Human Biological Variation (5)  
BIT 171 Professionalism and Ethics in Genomics and Biotechnology (3)  
EVE 131 Human Genetic Variation and Evolution (3)  
MCB 162 Human Genetics and Genomics (3)  
NPB 132 Nature vs Nurture: Physiological Interactions among Genes, Nutrients and Health (3)

**Environmental and Conservation Biology:**

ETX 101 Principles of Environmental Toxicology (4)  
ETX 104 Environmental and Nutritional Factors in Cellular Regulation and Nutritional Toxicants (4)  
EVE 101Q Introduction to Computer Models in Ecology (1)  
EVE 104 Community Ecology (4)  
EVE 115 Marine Ecology (4)  
EVE 117 Plant Ecology (4)  
EVE 120 Global Change Ecology (3)  
EVE 138 Ecology of Tropical Latitudes (5)  
EVE 147 Biogeography (4)  
MIC 105 Microbial Diversity (3)  
MIC 120 Microbial Ecology (3)  
WFC 154 Conservation Biology (4)  
WFC 157 Coastal Ecosystems (4)

**Animal Behavior and Communication:**

ANS 104 Principles and Applications of Domestic Animal Behavior (4)  
ANS 142 Companion Animal Care and Management (4)  
ENT 104 Behavioral Ecology of Insects (3)  
EVE 107 Animal Communication (4)  
NPB 100 Neurobiology (4)  
NPB 102 Animal Behavior (3)  
NPB 102Q Quantitative Topics in Animal Behavior (1)  
NPB 150/PSC 122 Advanced Animal Behavior (4)  
NPB 152 Hormones and Behavior (3)  
NPB 162 Neural Mechanisms of Behavior (3)  
NPB 165 Neurobiology of Speech Perception (3)  
WFC 141 Behavioral Ecology (4)

**Biomechanics:**

EVE 106 Mechanical Design in Organisms (3)  
EVE 110 Running, Swimming and Flying (3)  
EXB 103 Analysis and Control of Human Movement (4)

**Human/Microbe Interactions:**

MIC 105 Microbial Diversity (3)  
MIC 150 Genomes of Pathogenic Bacteria (3)  
MIC 162 General Virology (4)  
PMI 126/126L Fundamentals of Immunology/Immunology Laboratory (3,2)  
PMI 128 Biology of Animal Viruses (3)