

**Regenerative Bioscience, B.S.**  
Course of Study

**I. Foundation Courses (9 hours)**

Preferred Course(s):

ENGL 1101, English Composition I (3 hours)

ENGL 1102, English Composition II (3 hours)

MATH 1113, Precalculus (3 hours)

**II. Sciences (7-8 hours)**

**Physical Sciences (3-4 hours)**

Preferred Course(s):

\*(CHEM 1211, CHEM 1211L), Freshman Chemistry I, or (CHEM 1311H, CHEM 1311L),  
Advanced Freshman Chemistry I (Honors) (4 hours)

\*In addition to meeting upper-level course prerequisites, this course can be used to satisfy College of Agricultural and Environmental Sciences graduation requirements.

**Life Sciences (3-4 hours)**

Preferred Course(s):

\*(BIOL 1107, BIOL 1107L), Principles of Biology I, or (BIOL 2107H, BIOL 2107L), Principles  
of Biology I (Honors) (4 hours)

\*In addition to meeting upper-level course prerequisites, this course can be used to satisfy College of Agricultural and Environmental Sciences graduation requirements.

**III. Quantitative Reasoning (3-4 hours)**

Preferred Course(s):

MATH 2200, Analytical Geometry and Calculus (4 hours)

OR

MATH 2250, Calculus I for Science and Engineering (4 hours)

OR

MATH 2300H, Differential Calculus (Honors) (4 hours)

OR

(PHYS 1111, PHYS 1111L), Introductory Physics-Mechanics, Waves, Thermodynamics (4  
hours)

**IV. World Languages and Global Culture, Humanities and the Arts (12 hours)**

Choose 12 hours from World Languages and Culture, Humanities and the Arts

Preferred Course(s):

\*COMM 1110, Introduction to Public Speaking (3 hours)

OR

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\*COMM 2150H, Perspective on Public Communication (Honors) (3hours)

\*In addition to meeting upper-level course prerequisites, this course can be used to satisfy College of Agricultural and Environmental Sciences graduation requirements.

### **V. Social Sciences (9 hours)**

Choose 3 courses from Social Sciences

Preferred Course(s):

POLS 1101, American Government (3 hours)

HIST 2111, American History to 1865 (3 hours)

OR

HIST 2112, American History Since 1865 (3 hours)

### **VI. Related to Major**

ADSC 2400\*, Introductory Regenerative Bioscience (3 hours)

BIOL 1108/BIOL 1108L, Principles of Biology II, or BIOL 2108H/BIOL 2108L, Principles of Biology II (Honors) (4 hours)

CHEM 1212/CHEM 1212L, Freshman Chemistry II, or CHEM 1312H/CHEM 1312L, Freshman Chemistry II (Honors) (4 hours)

CHEM 2211/CHEM 2211L, Modern Organic Chemistry I, or CHEM 2311H/CHEM 2311L, Advanced Organic Chemistry I (Honors) (4 hours)

STAT 3110, Introduction to Statistics for Life Sciences (3 hours) OR STAT 3110E, Introduction to Statistics for Life Sciences (3 hours) OR BIOS 2010, Elementary Biostatistics (4 hours)

*\* A course change to RBIO will be submitted upon approval of the major and prefix*

### **Required Courses (40-43 hours)**

#### **Anatomy and Physiology (7-8 hours)**

##### **Select one of the following (4 hours):**

CBIO 2200-2200L, Anatomy and Physiology I (4 hours)

CBIO 3010-3010L, Functional Human Anatomy (4 hours)

ADSC 3410/ADSC 3410L, Comparative Anatomy and Physiology of Domestic Animals (4 hours)

##### **Select one of the following (3-4 hours):**

CBIO 2210-2210L, Anatomy and Physiology II (4 hours)

VPHY 3100, Elements of Physiology (3 hours)

PMCY 3000, Human Physiology (4 hours)

#### **Biochemistry and Genetics (8 hours)**

BCMB 3100 or BCMB 3100E or BCMB 3100H, Introductory Biochemistry and Molecular Biology (4 hours)

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GENE 3200-3200D, Genetics, or GENE 3200H, Genetics (Honors) (4 hours)

#### **Developmental and Cell Biology (7 hours)**

CBIO 3400, Cell Biology (4 hours)

ADSC 4380/6380, Animal Growth and Development (3 hours)

#### **Disease and Pathology (3-4 hours)**

##### **Select one of the following:**

ADSC 4250/6250, Microbiology and Immunology of Domestic Animals (3 hours)

BCMB 4120/6120, Human Biochemistry and Disease (4 hours)

ECOL(BIOL) 4150/6150-4150L/6150L, Population Biology of Infectious Diseases (4 hours)

CBIO(MIBO)(IDIS) 4100/6100-4100D/6100D, Immunology (4 hours)

VPAT 4000/6000, On the Origins of Disease (3 hours)

#### **Regenerative Bioscience (12 hours)**

ADSC 3130, Animal Biotechnology (3 hours)

ADSC 3330, Therapies for Tissue Repair and Regeneration (3 hours)

ADSC 4420, Engineering Living Organisms (3 hours)

ADSC 4950, Senior Capstone in Regenerative Bioscience (3 hours)

#### **Laboratory (3-4 hours)**

3-4 hours undergraduate research with the following prefixes: ADSC, BCMB, BIOL, BTEC, CBIO, GENE, IDIS, MBIO, POUL, VPAT, VPHY

OR

##### **Select one of the following:**

BTEC(BCMB)(PBIO) 4000L, Methods in Biotechnology (4 hours)

BCMB 4030/6030L, Bioprocess Technology (4 hours)

BCMB 4030H, Bioprocess Technology (Honors) (4 hours)

BIOL 3110L, Basic Skills in the Laboratory (4 hours)

CBIO 3410L, Laboratory in Cellular and Developmental Biology (4 hours)

GENE 3210L, Experimental Genetics (3 hours)

GENE 3220L, Genetics Problem Solving Laboratory (3 hours)

GENE 4210L, Experimental Molecular Genetics Laboratory (3 hours)

GENE 4220L, Laboratory in Genetic Modeling (3 hours)

GENE 4240L, Experimental Microbiome Genetics Laboratory (3 hours)

MBIO 3510L, Introductory Microbiology Laboratory (3 hours)

MIBO 4600L/6600L, Experimental Microbiology Laboratory (4 hours)

#### **Major Electives (9-12 hours)**

*Select three or more courses from the following list. Other courses may satisfy the requirement but may be selected only upon the approval of the RBIO academic advisor.*

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*Note: 4 hours can come from laboratory, special problems, directed readings, internships, undergraduate research, or undergraduate teaching courses with the following prefixes: ADSC, BCMB, BIOL, BTEC, CBIO, GENE, IDIS, MBIO, POUL, RBIO\*\*, VPAT, VPHY*

ADSC 3110, Introduction to Genetics of Livestock Improvement (3 hours)  
ADSC 3300, Animal Nutrition and Metabolism (3 hours)  
ADSC 3400, Physiology of Reproduction in Domestic Animals (3 hours)  
ADSC 3670, Companion Animal Biology and Management (3 hours)  
ADSC 4150/6150, Microbial Ecology of the Rumen (3 hours)  
ADSC 4400/6400-4400L/6400L, Applied Reproduction in the Horse (3 hours)  
ADSC 4410/6410-6410L/6410, Applied Reproductive Management in Cattle and Swine (3 hours)  
ADSC 4520/6520, Animal Cognition and Behavior (3 hours)  
ARTI(PSYC)(PHIL) 3550, Introduction to Cognitive Science (3 hours)  
BCMB 3433, Biology for Medicine (4 hours)  
BCMB 3600, Genomics and Bioinformatics (3 hours)  
BCMB 4010/6010, Biochemistry and Molecular Biology I (4 hour)  
BCMB 4020/6020, Biochemistry and Molecular Biology II (3 hours)  
BCMB 4030L/6030L, Bioprocess Technology (4 hours)  
BCMB 4030H, Bioprocess Technology (Honors) (4 hours)  
BCMB(CHEM) 4110/6110, Physical Biochemistry (3 hours)  
BCMB 4120/6120, Human Biochemistry and Disease (4 hours)  
BCMB 4130, Human Biochemistry II (3 hours)  
BCMB(ENTO)(BTEC) 4200/6200, Biotechnology (3 hours)  
BINF(BCMB) 4005/6005, Essential Computing Skills for Biologists (2 hours)  
BINF(PBIO) 4550/6550, Concepts in Bioinformatics and Omics (3 hours)  
BIOL 3110L, Basic Skills in the Laboratory (4 hours)  
BIOL (WILD) 3700W, Animal Behavior (3 hours)  
BIOL (CBIO)(VPAT) 5040/7040, Election Microscopy (3 hours)  
BTEC 3000, Ethics and Communication in Biotechnology (2 hours)  
BTEC (BCMB) (PBIO) 4000L, Methods in Biotechnology (4 hours)  
CBIO 3000-3000L, Comparative Vertebrate Anatomy (4 hours)  
CBIO 3010-3010L, Functional Human Anatomy (4 hours)  
CBIO 3050, Medical Histology (3 hours)  
CBIO 3400, Cell Biology (4 hours)  
CBIO 3410L, Laboratory in Cellular and Developmental Biology (4 hours)  
CBIO 3600, Developmental Biology (4 hours)  
CBIO 3710, Principles of Physiology (3 hours)  
CBIO 3800, Neurobiology (4 hours)  
CBIO 3800L, Neurobiology Laboratory (2 hours)  
CBIO(MBIO)(IDIS) 4100/6100-4100D/6100D, Immunology (4 hours)  
CBIO 4200, Biomedical Research in Health and Disease (3 hours)  
CBIO 4200H, Honors Biomedical Research in Health and Disease (Honors) (3 hours)  
CBIO 4340/6340, Biology of Aging (3 hours)  
CBIO 4500/6500, Medical Parasitology (3 hours)  
CBIO (PBIO) 4600/6600, Biology of Protists (3 hours)  
CBIO 4730/6730, Endocrinology (3 hours)  
CBIO(CSCI) 4835/6835, Introduction to Computational Biology (3 hours)  
CHEM(BCMB) 4190/6190, Introduction to NMR Spectroscopy (3 hours)  
ECOL 3820, Evolutionary Medicine (3 hours)

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ECOL(BIOL) 4150/6150-4150L/6150L: Population Biology of Infectious Diseases (4 hours)  
GENE 3210L, Experimental Genetics (3 hours)  
GENE 3220L, Genetics Problem Solving Laboratory (3 hours)  
GENE 3800, Hard Science and Society (3 hours)  
GENE 4200/6200, Advanced Genetics (3 hours)  
GENE 4210L, Experimental Molecular Genetics Laboratory (3 hours)  
GENE 4220L, Laboratory in Genetic Modeling (3 hours)  
GENE 4240L, Experimental Microbiome Genetics Laboratory (3 hours)  
GENE(CBIO) 4310/6310, Genetic Approaches to Developmental Neuroscience (3 hours)  
GENE 4400/6400, Epigenetics (3 hours)  
GENE 4500/6500, Human Genetics (3 hours)  
GENE 4520/6520, Genetics of Industrial Micro-Organisms (3 hours)  
GENE 4540/6540, Cancer Genetics (3 hours)  
IDIS 3100, People, Parasites, and Plagues (3 hours)  
IDIS 3100H, People, Parasites, and Plagues (Honors) (3 hours)  
IDIS(POPH) 3110, Food Animal Infectious Diseases (3 hours)  
IDIS(FDNS) 4200/6200, We are What We Eat! How Your Gut Influences Your Overall Health (3 hours)  
KINS 4630, Exercise Physiology (3 hours)  
KINS 4680/6680, Integrative Cardiovascular Physiology (3 hours)  
KINS 4690/6690-4690LL/6690L, Neuromuscular Physiology (4 hours)  
KINS 5690/7690, Skeletal Muscle and Mitochondrial Physiology (3 hours)  
MATH(BINF) 4780/6780, Mathematical Biology (3 hours)  
MBIO 3000-3000L, Introductory Applied Microbiology (4 hours)  
MBIO 3500/3500E, Introductory Microbiology (3 hours)  
MBIO 3500L, Introductory Microbiology Laboratory I (1 hour)  
MBIO 3510L, Introductory Microbiology Laboratory (3 hours)  
MBIO(POPH) 4220/6220, Pathogenic Bacteriology (3 hours)  
MBIO(POPH) 4220S/6220S, Pathogenic Bacteriology (3 hours)  
MBIO 4300/6300, Genome Editing in Mammals, Plants, Insects, and Microbes (3 hours)  
MIBO 4600L/6600L, Experimental Microbiology Laboratory (4 hours)  
MBIO 4680/6680, Industrial Microbiology and Biotechnology (4 hours)  
MBIO 4700/6700, Medical Mycology (3 hours)  
MBIO 4710L/6710L, Medical Mycology Laboratory (3 hours)  
PATH 3020E, Viruses: Biology and Impact (3 hours)  
PBIO(CRSS) 4500/6500, Introduction to Gene Technology (3 hours)  
PHAR(PMCY) 4010E, Introduction to Drugs, Biologics, and Devices Regulated by the Food and Drug Administration (3 hours)  
PHRM (PMCY) 4000, The War on Cancer (3 hours)  
PHYS 4510/6510, Introduction to Magnetic Resonance Imaging (3 hours)  
PMCY 3000, Human Physiology (4 hours)  
POPH(MBIO)(IDIS) 4650/6650, Introduction to Virology (3 hours)  
POUL 3000-3000L, Avian Surgical Techniques (4 hours)  
POUL 3050, Molecular Diagnostic and Research Tools in Avian Biology (3 hours)  
POUL(BIOL) 4060/6060, Reproductive Endocrinology (3 hours)  
POUL 4175, Avian Anatomy and Physiology (3 hours)  
POUL 4300/6300, Nutritional Immunology in Health and Production (3 hours)  
PSYC 3230/3230E, Psychopathology (3 hours)  
PSYC 3230H, Psychopathology (Honors) (3 hours)

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PSYC 3810, Psychology of Health (3 hours)

STAT 3120, Introduction to Probability for Life Sciences (3 hours)

VPAT 3100H, Introduction to Disease (Honors) (3 hours)

VPAT 3101, Basic Veterinary Medical Terminology (3 hours)

VPAT 4000/6000, On the Origins of Disease (3 hours)

VPAT 4100, Common Diseases of Production Animals (3 hours)

VPHY 3100, Elements of Physiology (3 hours)

WILD(ECOL)(POPH) 4575/6575, Conservation Medicine (6 hours)

General Electives (4-13 hours)