

### Bachelor of Science in Biology Pre-Med Track Four Year Curriculum Plan

The following is a suggested four year plan of study for freshmen entering LMU during the 2017 academic year. Transfer students should contact the department chair to determine how their credits will apply. This plan is to be used in conjunction with the university catalog & advice of the faculty advisor. Courses on the plan may be taken in semesters other than those listed based upon availability & course placement. This plan meets LMU's Liberal Art Common Core requirements, major requirements & 300/400 level course requirements.

#### First Year

##### Fall

ENGL 101 - Composition 1	3
BIOL 194 Pre-Med Seminar	1
PSYC 100 Intro to Psychology	3
CHEM 111 General Chemistry I & Lab	4
BIOL 111 General Biology I & Lab	4
UACT 100 Strategies for College Success	2
<b>TOTAL</b>	<b>17</b>

##### Spring

LNCN 100 Lincoln's Life & Legacy	1
COSC 160 Computer Program. for Math & Sci	3
CHEM 112 General Chemistry II & Lab	4
ENGL 102 - Composition 2	3
BIOL 112 General Biology II & Lab	4
<b>TOTAL</b>	<b>15</b>

#### Second Year

##### Fall

CHEM 221 Organic Chemistry I & Lab	4
History Requirement	3
PHYS 211 General Physics I & Lab	4
MATH 150 Differential Calculus	4
ISYS 100 Computer Literacy	2
<b>TOTAL</b>	<b>17</b>

##### Spring

CHEM 222 Organic Chemistry II & Lab	4
BIOL 315 Molecular Genetics	4
PHYS 212 General Physics II & Lab	4
History Requirement	3
<b>TOTAL</b>	<b>15</b>

#### Third Year

##### Fall

BIOL 441 Biochemistry I	4
MATH 270 Probability & Statistics	3
BIOL 311 Int. Vertebrate A&P I & Lab	4
Fine Arts Requirement	3
ENGL 240, 250, or 260	3
<b>TOTAL</b>	<b>17</b>

##### Spring

BIOL 442 Biochemistry II & Lab	4
BIOL 336 General Microbiology	4
SOCI 100 Intro to Sociology	3
BIOL 312 Int. Vertebrate A&P II & Lab	4
BIOL 387X Junior Pre-Med Science Seminar	1
LNCN 300 American Citizenship	1
<b>TOTAL</b>	<b>17</b>

#### Fourth Year

##### Fall

AHSC 300 Medical Terminology	3
PHIL 430 Medical Ethics	3
Elective	3
BIOL 360 Immunology	3
BIOL 487Z Senior Pre-Med Science Seminar	1
Elective	3
<b>TOTAL</b>	<b>16</b>

##### Spring

Elective	3
PSYC 315 OR PSYC 340*	3
BIOL 334L General Histology Lab	1
BIOL 380 Research Design & Analysis	3
BIOL 450 Molecular Cell Biology	4
COMM 200 Fund. of Speech Communication	3
<b>TOTAL</b>	<b>17</b>

\*PSYC 315 Theories of Personality or PSYC 340 Abnormal Psychology

**r years (eight regular semesters) the student must average passing 16/17 hours per semester.**

**BIOL 194 Pre-Med Seminar (1 cr hr)**

This course offers the student interested in the medical professions exposure to topics and speakers relevant to a career pathway in human medicine and dentistry. Practicing clinicians, upper-level students, and medical students will share about the profession. A reflective mid-term and final exam are required. Fall.

**BIOL 315 Molecular Genetics (3 cr hrs)**

This focuses on molecular principles and processes of heredity. Topics include gene structure, expression, and regulation; chromosome organization and replication; mutations and DNA repair; and relevant advances in genetic biotechnology. Mendelian and non-Mendelian heredity are studied in depth and put in a molecular context. Lab reinforces molecular and Mendelian heredity concepts with inquiry-based experiments.

**BIOL 311 Int. Vertebrate A&P I & Lab (4 cr. Hrs)**

This course is the first course in a two-semester sequence of courses that emphasizes the variations and similarities in the structures and physiological functions used by vertebrates to cope with their environments. Discussions of vertebrate form and function will include the topics of vertebrate evolution, functional morphology, and development. Specifically, the course will focus on living vertebrates and will cover taxonomy, biological design, and metabolism. The topics of digestion and energetics; developmental anatomy and physiology and function of the integumentary system will be included. Skeletal and structural systems including, bones, joints, and connective tissues as well as the muscular system and muscle physiology will be presented. Lab sessions will involve detailed dissections of representative vertebrate specimens and inquiry-based physiological experimentation. Pre-requisites: BIOL 311 lecture and lab. Co-requisite: BIOL 312 Lab. Spring.

**BIOL 387X Junior Pre-Med Science Seminar (1 cr hr)**

In this course, the junior pre-medical track student investigates a biomedical science relevant topic through primary literature in the field. The student will write a critique of a current study, referencing historical and recent publications. A faculty mentor with expertise in the field chosen will be assigned. The critique will be summarized and presented to an audience of peers and faculty. Pre-requisites: Successful completion of ENGL 210 or equivalent. FALL and SPRING.

**BIOL 312 Int. Vertebrate A&P II & Lab (4 cr hrs)**

The course is the second course in a two-semester sequence. Specifically, this course will cover the nervous and endocrine systems and their interactions with other systems including influences on behavior and reproduction. The physiology and anatomy of reproduction will be presented along with oxygen and carbon dioxide metabolism in respiratory and circulatory systems and ion regulation and urinary systems. Laboratory sessions will involve detailed dissections of representative vertebrate specimens and inquiry-based physiological experimentation. Pre-Requisites: BIOL 311 lecture and lab. Co-requisite: BIOL 315 lab 1 cr hr. FALL

**BIOL 334L General Histology Lab (1 cr hr)**

This course will expose the student to example techniques for typical tissue fixation and staining as well as require identification of general and specific types of tissue. Pre-requisite: Successful completion of BIOL 311 with a grade of "C-" or better. SPRING

**BIOL 441 Biochemistry I (4 cr hrs)**

The first part of a two-course sequence covering topics of thermodynamics, in-depth structure and function of proteins, catalysis, and metabolism of carbohydrates. This includes in-depth treatments of oxidative- and photo-phosphorylation. Prerequisites: BIOL 111 and 112 and CHEM 221 and 222. FALL.

**BIOL 442 Biochemistry II & Lab (3 cr hrs)**

The second part of the two-course sequence covering metabolism of lipids, metabolism of nitrogen-containing compounds, and nucleic acid structure, metabolism, and function. The laboratory will focus on purification and detection techniques for biomolecules as well as enzyme kinetics. Prerequisites: BIOL 441 Biochemistry 1. Co-requisite: B442 Lab 1 credit. SPRING.