



## Program of Study:

# Bachelor of Science in Biology: Pre-Physical Therapy

### Program Description

The Bachelor of Science in Biology: Pre-Physical Therapy tract is designed for students preparing for graduate level physical therapy education. It includes courses required or recommended by graduate professional schools, preparation for the GRE, and specialized coursework focused on preparing students for success in their graduate studies. These students will also have a Pre-PT faculty mentor to ensure that all physical therapy graduate program questions are answered and that proper progress is being made toward completion of the Pre-PT designated curriculum. The Pre-PT advisor will also assist students in choosing a physical therapy graduate program and advocating on behalf of students for a selection of physical therapy graduate programs.

Course Number	Course Title	Course Description	Credits
UNV 101	University Success	This course provides positive re-enforcement of successful learning strategies and assistance with adaptation to the academic environment.	3
COM 101	Intro to Human Communication <sup>^</sup>	This course focuses on how people use messages to generate meanings within and across various contexts, cultures, channels, and media. The course readings and discussions seek to increase understanding of relevant communication theories and their application in the practice of effective and ethical human communication in both personal and professional life.	3
ENG 101	Academic Writing	A course in writing academic prose, including various types of essays, arguments, and constructions. A writing intensive course. Prerequisite: UNV 105.	3
PSY 101	General Psychology <sup>^</sup>	A foundation course in the science of behavior. Includes a study of the origin and development of behavior patterns, motivation, emotional behavior sensory functions, perception, intelligent behavior, and adjustment. Simple experiments constitute a basic part of the course.	3
HIS 107	World Civilization Before 1500 <sup>^</sup>	A survey of the major events, personalities, movements, and ideas in world civilization from the prehistoric era to 1500 CE. This course focuses on the key political, intellectual, scientific, social, economic, and cultural changes that occurred in world civilization. Students will gain an understanding of the social forces and trends in social, religious, political, and philosophic thought that laid the foundations of the modern world.	3
ENG 102	Research Writing	A course exploring various types of research writing, with a focus on constructing essays, arguments, and research reports based on primary and secondary sources. A writing-intensive course. Prerequisite: ENG 101.	3
BIO 201	Human Anatomy and Physiology I*	A study of the structure and function of cells and the following human systems: skeletal, muscular, and nervous. No credit for Biology (general) or Environmental Biology majors. Co-requisite: BIO 201L.	3
BIO 201L	Human Anatomy and Physiology I Lab*	A study of the gross anatomy and functions of the skeletal, muscular, and nervous systems. Laboratory involves the integrated use of human cadavers, animal demonstrations, and computer-assisted instruction. No credit for Biology (general) or Environmental Biology majors. Co-requisite: BIO 201.	1

MAT 121	College Algebra	A precalculus course on algebraic topics and the properties of basic functions. Prerequisite: MAT 120.	3
HLT 310	Spirituality in Healthcare†	This course explores the concept of spirituality as it relates to the person who is involved in the health-care system. Since illness and stress can amplify spiritual concerns and needs, health-care professionals are in a unique position to assist the patient/client in meeting those needs. This course explores the relationship between health-care professionals and those they serve. Topics include performing spiritual assessment, identifying those experiencing spiritual well-being as well as those experiencing a threat to spiritual well-being, and planning and evaluating care related to spiritual wellness. A spiritual care framework is used to apply these concepts to a variety of populations in diverse clinical settings.	3
UNV 200	Western Ideas and Aesthetics	An examination of ideas that shaped Western thought, and aesthetics. Students will have opportunities to identify and analyze instances of these ideas literature, film, and art.	4
BIO 202	Human Anatomy and Physiology II	A study of the structure and function of the following human systems: endocrine, cardiovascular, respiratory, digestive, renal, and reproductive. No credit for Biology (general) or Environmental Biology majors. Prerequisite: BIO 201 and BIO 201L, or instructor's approval. Co-requisite: BIO 202L.	3
BIO 202L	Human Anatomy and Physiology II Lab	A study of the gross anatomy and functions of the endocrine, cardiovascular, respiratory, digestive, renal, and reproductive systems. Laboratory involves the integrated use of human cadavers, animal demonstrations, and computer-assisted instruction.. No credit for Biology (general) or Environmental Biology majors. Prerequisite: BIO 201 and BIO 201L or instructor's approval. Co-requisite: BIO 202.	1
HLT 322	Medical Ethics†	An introduction to medical ethics which examines several approaches to ethics within the interrelated contexts of medicine, health care and the law. Topics investigated may include: professional patient relationships; institutional and social settings of care delivery; informed consent, confidentiality, and truth-telling; abortion; critically ill neonates; death and dying; mental illness; human experimentation; resource allocation; and justice and health care.	3

^ Campus students may choose an alternative course from the Grand Experience. See the current Academic Catalog for details.

\*Pre-licensure students without a recent and strong biology background must complete BIO 181, General Biology, or pass the Biology pre-assessment prior to registering for BIO 201.

† Fulfills Grand Experience Christian Studies requirement.

*Total General Education Credits: 39*

#### Pre-Physical Therapy Core:

HLT 110	Introduction to the Health Professions	Introduction to the roles and responsibilities of medical and allied healthcare professionals. Focus is also placed on the teamwork necessary to effectively provide the highest quality patient care.	2
CHM 113	General Chemistry I	An exploration of the principles and practice of modern chemistry. Topics include the chemical and physical properties of elements and compounds, reaction stoichiometry, energetics, and atomic and molecular structure. Prerequisites: MAT 121 or equivalent. Co-requisites: CHM 113L.	3
CHM 113L	General Chemistry I Lab	A laboratory course designed to complement and support the principles being learned in CHM 113 lecture. Prerequisite: MAT 121 or equivalent. Co-requisites: CHM 113.	1
CHM 115	General Chemistry II	Continuation of CHM 113. Topics include thermodynamics, kinetics, descriptive chemistry, analytical chemistry, electrochemistry, and nuclear chemistry. Prerequisites: CHM 113, CHM 113L. Co-requisites: CHM 115L.	3
CHM 115L	General Chemistry II Lab	A laboratory course designed to complement and support the principles being learned in CHM 115 lecture. Prerequisites: CHM 113 and CHM 113L. Co-requisites: CHM 115.	1
PHY 111	General Physics I	Survey of physical principles and concepts using mathematical descriptions based on algebra and trigonometry. Topics covered include force and motion, physical properties of materials, and thermodynamics. Prerequisites: PHY 101, PHY 101L, and MAT 121, or instructor's approval. Co-requisites: PHY 111L.	3

PHY 111L	General Physics I Lab	Laboratory experiments demonstrating the physical principles in the PHY 111 lecture. Prerequisites: PHY 101, PHY 101L, and MAT 121, or instructor's approval. Co-requisites: PHY 111.	1
PHY 112	General Physics II	Continuation of PHY 111. Topics covered include wave motion, electrostatics, optics, and magnetism. Prerequisite: PHY 111 and PHY 111L. Co-requisites: PHY 112L.	3
PHY 112L	General Physics II Lab	Laboratory experiments demonstrating the physical principles in the PHY 112 lecture. Prerequisites: PHY 111 and PHY 111L. Co-requisites: PHY 112.	1
HLT 201	Medical Terminology	This course covers the language of medicine that will be used as a foundation for understanding the courses to follow. It will include pronunciation, definition, usage and origins of medical terms. Pathology and medical terms in other languages are also presented. With these skills the student will be able to interpret and communicate in medical terms.	2
BIO 317	Science Communication	Also PHY 317 and CHM 317. A study of how to gather, analyze, and communicate scientific information. Topics covered include various forms of written communication, publishing research results, and oral presentation techniques. A Writing-Intensive course. Prerequisite: BIO 182 and BIO 182L.	3
BIO 340	Genetics	A comprehensive examination of the principles of heredity and variation, including Mendelian genetics, molecular genetics, and population genetics. Prerequisites: BIO 182 and BIO 182L.	3
HLT 315	Interview/ Admission needs/ professionalism	Development of interviewing and professional presentation skills through the study of various principles and practice within the class. Students will also investigate the admission requirements related to graduate level studies and prepare a quality resume or CV.	1
BIO 363	Biostatistics	Introduction to experimental design, and basic concepts of descriptive and inferential statistics including descriptive methods and graphing, binomial and Gaussian probability theory, estimation, confidence intervals, hypothesis testing, correlation, and regression. One-, two- and multi-group parametric and nonparametric methods will be introduced. Sampling distributions covered include the Z, t, F, and Chi-squared distributions. Prerequisite: MAT 121 or higher.	3
HLT 270	First Aid and Safety	Designed to develop the ability to administer emergency treatment for first responders. Upon successful completion of this course, students will receive American Red Cross Standard First Aid and CPR certification. Also a study of safety and its importance in home, work, and recreational settings.	3
EXS 314	Care and Prevention of Athletic Injuries	A course designed to provide the student with a basic knowledge and understanding of the principles of sports medicine, the care and treatment of athletic trauma, and the use of proper conditioning principles of the prevention of injury. Co-requisite: EXS 314L	3
EXS 314L	Care and Prevention of Athletic Injuries Lab	A laboratory course designed to complement and support the principles taught in EXS 314. Co-requisite: EXS 314	1
EXS 335	Kinesiology	Analysis of human movement, integrating knowledge of the skeletal, muscular, and neurological systems with the effects of gravity, friction, internal and external forces, and the effects of motion on function, including the application of these factors to various types of physical skills. Two-and-one-half credits lecture, one-half credit lab. A Writing-Intensive course. Prerequisites: HLT 253 or BIO 201 and BIO 201L. Co-requisite: EXS 335L. Recommended: PHY 101 and PHY 101L or PHY 111 and PHY 111L (may be taken concurrently).	3
EXS 335L	Kinesiology Lab	A laboratory course designed to complement and support the principles taught in EXS 335. Prerequisites: HLT 253 or BIO 201 and BIO 201L. Co-requisite: EXS 335.	1
EXS 340	Physiology of Exercise	A study of the effects of exercise on the body. It includes the study of responses and adaptations to exercise at the systemic as well as the subcellular level. Prerequisites: BIO 160 or BIO 201 and BIO 202. Co-requisite: EXS 340L	3

EXS 340L	Physiology of Exercise Lab	A lab course designed to complement and support the principles taught in EXS 340. Co-requisite: EXS 340	1
EXS 365	General Medicine	Covers the competencies related to recognition, detection and referral and understanding treatment approaches for medical condition and disabilities associated with the physically active. These competencies covered are related to the derma, head, face, thorax, abdomen, eyes, ears, nose and throat. The student will also learn pharmacologic applications and governing pharmacy regulations relevant to treatment of injuries, illnesses and diseases. Prerequisites: EXS 314	3
BIO 372	Biomechanics	This course introduces students to concepts of mechanics as they apply to human movement, The student should gain an understanding of the mechanical and anatomical principles that govern human motion and develop the ability to link the structure of the human body with its function from a mechanical perspective. At the completion of this course it is desired that each student be able to: 1) describe motion with precise, well-defined mechanical and anatomical terminology; 2) understand and quantify linear and angular characteristics of motion; 3) understand the quantitative relationships between angular and linear motion characteristics of a rotating body; and 4) understand and quantify the cause and effect relationship between force and linear and angular motion. Prerequisites: BIO 202 and BIO 202L or BIO 360 and BIO 360L.	3
BIO 462	Neuroscience for Rehabilitative Therapies	This course expands on previous science courses to provide a more in-depth understanding of the structure and function of the human nervous system. Changes in the structure of the nervous system that occur with development, responses of the nervous system to injury, blood supply of the central nervous system, the ventricular system, and regional anatomy of the brain and spinal cord are examined. Basic function of the nervous system is examined at the molecular, cellular, and systems level. In addition, the course introduces the basis for complex human functions and introductory material on the medical, surgical and physical therapeutic management of neurological disorders. Prerequisites: BIO 202 and BIO 202L or BIO 360 and BIO 360L.	3
EXS 426	Theory of Prescribing Exercise	The specific and applied use of exercise in prevention of injury, improvement of performance, and recovery from disability and dysfunction. Included are specific exercise routines, muscle testing, kinesiological principles, history and scope of rehabilitating exercise, abnormal clinical kinesiology, examination procedures, and reconditioning of specific disorders. Prerequisites: BIO 160 or BIO 201; and EXS 330 or EXS 340. Co-requisite: EXS 426L	3
EXS 426L	Theory of Prescribing Exercise Lab	Practical application of exercise prescription and rehabilitation. Designed to complement and support principles being taught in EXS 426 lecture. Prerequisites: BIO 160 or BIO 201; and EXS 330 or EXS 340. Co-requisite: EXS 426	1
BIO 497A	Internship-A in Biology	The first portion of a full semester internship. The internship provides an opportunity for students to practice principles learned in their major area of study by working in an outside organization under the supervision of a professional. Periodic conferences and evaluations are scheduled with the supervising instructor.	1
BIO 497B	Internship-B in Biology	The second portion of a full semester internship. The internship provides an opportunity for students to practice principles learned in their major area of study by working in an outside organization under the supervision of a professional.. Periodic conferences and evaluations are scheduled with the supervising instructor.	2

*Total Pre-Physical Therapy Core Credits: 61*

*Total General Education Credits: 39*

*Total Elective Credits: 20*

*Total Bachelor of Science in Biology: Pre-Physical Therapy Credits: 120*