Prerequisite Coursework

Required Prerequisite Coursework

The following are brief descriptions or guidelines for the required prerequisites for the UCSF/SFSU Graduate Program in Physical Therapy. Students should use these descriptions to guide their selection of the appropriate coursework. In most cases, the best choice for courses are those designed for science majors or those designed for pre-medical students. In addition, students should work closely with their advisor at their college to select the appropriate courses.
General Inorganic Chemistry, with lab - 1 year (2 semesters/10 semester units or 3 quarters/12-15 quarter units)
Lower division general chemistry with laboratory for chemistry majors, science majors or pre-medical students. Prerequisites usually include high school chemistry and/or placement examination. Topics may include: Periodic table, stoichiometry, chemical equations, physical properties and kinetic theory of gases, atomic and molecular structure, chemical bonding, condensed phases and intermolecular forces, chemical thermodynamics, chemical equilibria, acids and bases, solubility, energetics, kinetics, electrochemistry, spectroscopy, structure and bonding in transition metal compounds, application of principles to chemical reactions. Laboratory experiments in stoichiometric relations, properties and collection of gases, atomic spectroscopy, quantitative analysis, analytical methods and syntheses. In-person lab required. Online courses are NOT accepted for the lab portion of this prerequisite.

General Physics, with lab - 1 year (2 semesters/8 semester units or 3 quarters/12-15 quarter units)
Lower division physics with laboratory for majors, science majors or pre-medical students. Prerequisites usually include trigonometry and/or calculus and may also include high school physics or a placement examination. Topics include: Newton's Laws of motion, kinematics, energetics, momentum, two-dimensional collisions, torque, rotational dynamics, electricity, magnetism, induced currents, and optics. In-person lab required. Online courses are NOT accepted for the lab portion of this prerequisite. There is no preference between algebra/trigonometry based physics and calculus based physics. Both types of courses are acceptable.

Human or Comparative Anatomy, with lab (3 semester or 4 quarter units)
Human anatomy with dissection or prosection laboratory. Topics include: the gross structure of the human body. Laboratory courses utilizing human cadaver specimens are recommended. Courses should include bones of axial and appendicular skeletons, major bony landmarks, major joints, skeletal muscles and general attachments, major nerves, and vascular system. Comparative Mammalian Anatomy or a combined Anatomy/Physiology course is acceptable only if Human Anatomy is not available. The combined Anatomy/Physiology course must be a full year of study.

Human Physiology with lab (4 semester or 5 quarter units)
Human physiology with laboratory. Topics include: circulation, respiration, digestion, metabolism, immune system, urinary system, endocrine system, and nervous system. Laboratory activities may include: measures of blood pressure, heart rate, electrocardiograms, and measures of ventilation. A combined Anatomy/Physiology course is acceptable, and must be a full year of study.

General Microbiology or Upper Division Biology Course, as described below (3 semester or 4 quarter units)
General microbiology with basic concepts of microbiology or one of the following upper division biology courses: Genetics, Cell Biology, Vertebrate Histology, Biochemistry, Cell Physiology, Histology, Immunology, Medical Microbiology, Molecular Biology, Neurobiology, Neuroscience, Pathogenic Bacteriology, Stem Cell Biology, Virology. Prerequisites: General or Introductory Biology. Please note that in PTCAS two biology courses will be required. Applicants should list their introductory biology course and their General Microbiology or upper division Biology course.

Abnormal Psychology (3 semester or 4 quarter units)
Contemporary theories of and approaches to psychological dysfunction and disabilities. Topics may include, but are not limited to, anxiety disorders, mood disorders, somatoform and dissociative disorders, personality disorders, and schizophrenia. Prerequisites: General Psychology. Please note that in PTCAS two psychology courses will be required. Applicants should list their General Psychology course and their Abnormal Psychology course.

**Introduction to Statistics (3 semester or 4 quarter units)**
Introductory statistics may be offered by a variety of departments including (but not limited to) Mathematics, Psychology, Education, Sociology, etc. This course should include descriptive statistics and an introduction to inferential statistics (e.g., correlations, Chi square, t test and ANOVA).

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**Highly Recommended Prerequisite Coursework**

The following courses are highly recommended in preparation for admission to the professional program. These courses provide the applicant a broader background and enhanced understanding of professional studies. Semester and quarter units are approximate, based on courses that applicants normally take.

**Organic Chemistry (3 semester or 4 quarter units)**
Organic chemistry for chemistry majors, science majors or pre-medical students. Topics should include basic principles, reaction mechanisms, and multi-step synthesis of the major classes of organic compounds. Prerequisites usually include one year of inorganic chemistry.

**Neurosciences/Neuroanatomy - 1 year recommended (3-6 semester or 4-8 quarter units)**
Emphasis on cellular neurophysiology, synaptic mechanisms, sensory neurophysiology, brain structure and function in the control of motor systems, homeostasis, neural development, learning, thought, and affect.

**Kinesiology (3 semester or 4 quarter units)**
Upper division course, usually offered by a Kinesiology or Physical Education Department. Sometimes called ?Kinesiology and Body Mechanics? or ?Functional Anatomy?. Topics include: physical structure, muscular movements and biomechanics in various physical activities. Anatomical concepts and physical laws related to joint and muscle action are included. A course in Biomechanics alone will generally not include the dynamics of movement.

**Exercise Physiology (3 semester or 4 quarter units)**
Upper division course, usually offered by a Physical Education or Kinesiology Department, which is the physiology of human performance and muscular work. Topics should include skeletal muscle fiber types, energy conversion, cardiovascular and cardiopulmonary function, and calorimetry. Basic physiology or biology is usually a prerequisite.
Motor Learning or Motor Control (3 semester or 4 quarter units)
Upper division course, usually offered by a Kinesiology or Physical Education Department. Topics should cover the concepts and theories of motor learning and the acquisition of motor skills, preferably throughout the life span. Some prerequisites coursework may be required.

Biomedical Ethics (3 semester or 4 quarter units)
Explores ethical issues in medicine and nursing—treating dying patients, right to health care, nurse/physician conflicts, health and basic values, freedom under new technology and medical bureaucracy. Uses philosophical approaches to understand and to help resolve problems.

Developmental Psychology or Motor Development (3 semester or 4 quarter units)
Upper division course, usually offered by a Psychology Department. Survey of developmental psychology and behavior throughout the life span. Prerequisites: General Psychology.