

SCIENCE AREA PROGRAMS

Natural science departments aim to provide the background and experience necessary for professional work in the natural sciences, for continuation of the study of natural science in graduate school, and to stimulate and interrelate scientific thinking with other disciplines. A belief in the God of the Bible as the Creator and Sustainer of the universe is a basic presupposition.

Courses of study are offered in applied health science, biology, chemistry, computer science, environmental science, geology, mathematics, and physics, with cooperative programs in engineering and nursing. Assistance is provided for all students to help them make appropriate educational plans and career choices. This aid is given by the student's faculty advisor, by department chairs, and by the Director of Health Professions, who provides advising and resource materials to students interested in various health professions.

Preparation for Health Professions

www.wheaton.edu/academics/programs/healthprofessions/ (<https://www.wheaton.edu/academics/programs/healthprofessions/>)

The Health Professions Program provides a comprehensive program of profession-driven opportunities and support services that prepare students for diverse fields in the health professions and for service in helping build the church and benefit society worldwide. The program aims to promote student development through excellence in acquainting students with the wide array of health professions careers, guiding their pre-professional formation and development, providing strategies and perspective to shape their pathway to the health profession of choice, and encouraging them in thinking holistically and with a Christ-centered worldview about how they may serve in the chosen health professions field.

Students planning on a career in medicine or one of the related health fields may major in any subject area but must meet the specific admission requirements of the professional schools to which they expect to apply. The Director of the Health Professions works closely with students who are interested in any of the health fields. Career information and advising are provided to help students in selecting courses, preparing for required admissions tests, and understanding the application process to professional schools in their chosen fields. These activities are coordinated through the Health Professions Office. Students can make use of the resources through one-on-one advising appointments, open office hours and various workshops. Additionally, healthcare professionals visit campus to meet with students interested in various career paths throughout the year.

Medicine and Dentistry

Specific training in medicine and dentistry is given in professional schools and is based on a broad and strong preparation in the liberal arts. This is true for chiropractic, optometry, podiatry and veterinary medicine as well. Critical analysis and reasoning skills, clarity of speech and writing are necessary skills in these professions. Experiences such as observing healthcare professionals, volunteer service, and research are important practices that help a student gain a greater understanding of healthcare and develop various relational and technical skills. Both interpersonal and intrapersonal attributes are valued. Personal attributes such as integrity, concern for the well-being of others, humility, professionalism, compassion, personal maturity, and a deep commitment to a life of service are highly sought by leaders in the health professions.

The new competency-based MCAT 2015 was first administered in April 2015. Some changes occurred in the DAT in 2015 as well. School-specific changes in medical school admissions requirements may align with courses required for the MCAT 2015. In addition to course pre-requisites, school-specific admissions requirements may include competencies (both academic and personal, interpersonal and intrapersonal) and foundational concepts in science and social and behavioral science. The four sections of MCAT 2015 are:

1. Chemical and Physical Foundations of Biological Systems,
2. Critical Analysis and Reasoning Skills,
3. Biological and Biochemical Foundations of Living Systems, and
4. Psychological, Social, and Biological Foundations of Behavior.

Therefore to prepare for MCAT 2015 students should take:

Code	Title	Credits
BIOL 241	Organization of Life: Genetics and Cell Biology	4
BIOL 242	Diversity of Life: An Introduction to Zoology and Botany	4
CHEM 231	General Chemistry I	4
CHEM 232	General Chemistry II	4
CHEM 341	Organic Chemistry I	4
CHEM 342	Organic Chemistry II	4
CHEM 461	General Biochemistry	4
PHYS 221	General Physics I	4
PHYS 222	General Physics II	4

The subjects of psychology, sociology and statistics are also covered on the exam. Students may discern whether or not they would benefit from formal study in these areas. If so, the appropriate courses would be:

Code	Title	Credits
HS 382	Biostatistics	4
MATH 263	Introduction to Statistics	4
PSYC 101	Introduction to Psychology	4
PSYC 268	Statistics	4
SOC 115	Introduction to Sociology	4

Regardless of the major selected at Wheaton, students planning on these careers must take courses to prepare for the national admissions exams and the pre-professional courses which meet the minimal entrance requirements for most medical and dental schools. Beyond the courses listed as preparation for MCAT 2015, school-specific admissions may require other courses such as:

Code	Title	Credits
BIOL 326	Advanced Cellular and Molecular Biology	4
BIOL 327	Developmental Biology	2
BIOL 356	Genetics	4
MATH 235	Calculus I	4

Additional courses, such as the following, may be helpful toward the student's preparation for professional training:

Code	Title	Credits
ANTH 116	Cultural Anthropology	4
ANTH 353	Culture and Difference	4
ANTH 361	Medical Anthropology	2

BIOL 304	Bioethics	4
BIOL 318	Global Health	4
BIOL 323	Introduction to Pharmacology	4
BIOL 324	Microbiology	4
BIOL 325	Immunology and Microbial Pathogenesis	4
BIOL 326	Advanced Cellular and Molecular Biology	4
BIOL 327	Developmental Biology	2
BIOL 331	Human Anatomy and Physiology I	4
BIOL 332	Human Anatomy & Physiology II	4
BIOL 336	Neurobiology of Health	4
BIOL 342	Introduction to Bioinformatics	2
BIOL 356	Genetics	4
COMM 221	Interpersonal Communication	4
COMM 362	Group Dynamics	2
HS 368	Concepts in Nutrition	4
HS 381	Concepts in Epidemiology	4
HS 452	Applied Physiology	4
PHIL 241	Suffering	4
PHYS 363	Introduction to Medical Physics	2
PSYC 268	Statistics	4
PSYC 317	Developmental Psychology	4
PSYC 348	Abnormal Psychology	4
SOC 228	Sociology of Sexuality	2
SOC 238	Social Problems	2
SOC 364	Urban Sociology	4

Health Professions Colloquium (SCI 291) is *highly recommended* and provides an opportunity for students to prepare for an upcoming application to a professional health graduate program. Students engage in a variety of topical discussions on issues relevant to work in healthcare today. Discussion and assignments will prepare students for application to health profession programs.

Because competition for entry into medical schools is significant, strong performance in academic course work and national admissions tests (MCAT) is important.

In 2020, there were over 51,000 applicants to allopathic medical schools nationwide. Of these applicants, about 40% attended medical school the following year. Applicants who matriculated in 2020 nationally had an average GPA of 3.74 and MCAT score of 511.6. To gain admittance, students must be able to demonstrate not only intellectual and academic abilities but also maturity, integrity and personal characteristics that exhibit their ability to handle challenging circumstances and engage individuals from different backgrounds and cultures than themselves.

Allied Health Professions

Students can receive basic preparation for many allied health careers such as nutrition and dietetics, health systems management, pharmacy, audiology, speech-language pathology, physical therapy, occupational therapy, health information management, physician assistant, and public health. Students generally pursue a major, receive a B.S. degree, and continue their studies in clinical or graduate programs. The Health Professions Office maintains catalogs and information concerning health careers, and is available for advice and counsel concerning course selection, types of programs, and the application process. Additional

information about requirements for the specific programs is available online and by making an appointment.

Liberal Arts/Nursing

See Liberal Arts/Nursing (<https://catalog.wheaton.edu/undergraduate/arts-sciences/liberal-arts-nursing/>) in catalog.

Pre-Health Professions Certificate

See Pre-Health Professions Certificate (<https://catalog.wheaton.edu/undergraduate/arts-sciences/science-area-programs/pre-health-professions-certificate/>) in catalog.

Programs

- Liberal Arts/Nursing (<https://catalog.wheaton.edu/undergraduate/arts-sciences/liberal-arts-nursing/>)
- Pre-Health Professions Certificate (<https://catalog.wheaton.edu/undergraduate/arts-sciences/science-area-programs/pre-health-professions-certificate/>)

Courses

Summer Courses at Science Stations

The Science Division offers students the opportunity to take courses at affiliated science stations during the summer. Information on Wheaton's own Black Hills Science Station in South Dakota and information about the Au Sable Institute in Michigan can be found in the Special Programs (<https://catalog.wheaton.edu/undergraduate/special-programs/>) section of this catalog.

Science Area Courses

SCI 201. Health Professions & Society. (1 Credit)

Introductory course discussing the variety of professions influencing the healthcare environment today, specifically in US society. Students explore health care history, health disparities, healthcare delivery, and culture as it relates to healthcare practice, inter-professional collaboration and professionalism. Attention and reflection is placed upon the role of a Christian professional within healthcare today. Linear Quad. Prerequisite: Freshman standing only, sophomore with instructor permission.

SCI 221. Health Professions Integrated Learning. (2 Credits)

Health Professions Integrated Learning engages students with opportunities to observe the clinical and administrative responsibilities of various health careers. The course focuses on essential healthcare topics, fosters self-reflection on the observational or health volunteer experience and facilitates assessment of work-related skills. Students engage a summative assignment considering the links between healthcare issues, personal and professional skills and Christian faith in their future healthcare practice. The student will observe and interact with health care professionals in a clinical settings during the semester. Sophomore only standing or consent of the instructor (2 credit, linear quad).

SCI 291. Health Professions Colloquium. (1 Credit)

This course provides a variety of topical discussions on issues relevant to work in the healthcare profession today. Dialogue and reflection upon the impact of the Christian faith and issues of medical ethics and care of various patient populations included. Discussion and assignments will prepare students for application to health profession programs. Prerequisites: Junior or Senior Standing.

SCI 292. Health Professions Practicum. (0 to 2 Credits)

The practicum allows students practice at integrating the scientific and social principles learned in the classroom with situations in a healthcare setting. Students observe and/or volunteer in a specific healthcare context approved by the Director of Health Professions. The practicum includes an introductory and summative assignment in which students consider their motivations and goals along with the connections between healthcare practices, personal spiritual formation, and practical skills. Prerequisite: Instructor approval required for registration.

SCI 299. Pre-Field Camp Preparation. (0 Credits)

Students are introduced to relevant practical issues and challenges, particularly related to the cultural and historic context of studying at the Wheaton College Science Station. Students will be provided resources that will help them prepare for and get the most out of the experiential education in the Black Hills. The course equips students to thoughtfully engage in their field camp experience, work through the practical steps of field camp preparation, and be a positive member of the Science Station community.

SCI 301. Natural Science: Foundations, Methods, Challenges. (4 Credits)

A historical and philosophical study of methodological and foundational issues in the natural sciences focusing principally on physics, astronomy, biology, and challenges the natural sciences present to culture. Completion of a SP course is highly recommended prior to taking this course.

Tags: PI, SIP

SCI 302. Origins of Scientific Thought. (4 Credits)

An introduction to the history of science, helping students understand its value for making sense of our contemporary cultural context. This is accomplished through studying the development of natural philosophy and the emergence of scientific methods and modes of thought. Particular emphasis is placed on the philosophical, religious, and institutional contexts, continuity and change over time, causality, contingency, and complexity of the emergence of scientific thought. This course engages in an in-depth exploration of a period, issue, concept, key figures, or a set of over-arching questions.

Tags: HP, SIP

SCI 303. Making Modern Science. (4 Credits)

Investigates the historical development of modern sciences from the Early Modern period to the present helping students explore the value of the sciences for understanding our contemporary cultural context. Particular emphasis is placed on the philosophical, religious and institutional contexts, continuity and change over time, causality, contingency, and complexity of the emergence of scientific thought and practice. This course engages in an in-depth exploration of a period, issue, concept, or over-arching questions.

Tags: HP, SIP

SCI 311. Theories of Origins. (4 Credits)

Examination of scientific theories of origins and development, such as Big Bang cosmology, Earth's formation and early history, origin of life, origin of species, history of life, and human origins. Relationships between biblical and scientific explanations are explored for each topic. Prerequisite: any SP course. Field trip fee.

Tags: SIP

SCI 321. Methods of Teaching High School Science. (2 Credits)

Required for science majors who plan to teach high school. Survey of science curricula, computer applications in science teaching, laboratory theory and evaluation processes, management of laboratories, and field trips. Prerequisite: Ten hours of education courses and ten hours of courses in teaching area major. Additional course fee required: \$15.

SCI 322. Elementary Grade Education Science Curriculum. (2 Credits)

Required for elementary education majors. Survey of elementary science curricula and resources; consideration of perspective, process, content, and application of science in teaching. Concurrent with EDUC 305L, 311L, 312, 315, 317, SSCI 321 or consent of instructor. Prerequisite: EDUC 135, 136, 136L, 225, 225L, 305, 305L, and MATH 125.

SCI 325. Methods of Teaching Middle Grade Science. (2 Credits)

Required for those seeking an endorsement for teaching middle grade science. Includes theories and methods for teaching science at the middle grade level (grades 5-8). Topics include effective teaching strategies, planning, and assessment of science content, particularly with science processes and inquiry. Based on the Next Generation Science Standards and the Illinois Professional Teaching Standards. Prerequisites: Ten hours of education courses and ten hours of courses in teaching area major.

SCI 393. Interdisciplinary Studies in Science. (2 to 4 Credits)

Interdisciplinary study of topics in the natural sciences. Prerequisite: a CATC SP lab course.

SCI 494. Nursing Capstone. (2 Credits)

The capstone seminar evaluates the historical foundation and contemporary issues within nursing and healthcare with special attention to biblical responses to these issues. The course provides opportunity to discuss and observe the field of nursing through experiential learning experiences and study Christian perspectives on nursing practice.

Prerequisites: junior standing, registration with the Health Professions Program or consent of instructor. (lin)

General Education: SHAR