HEALTH SCIENCES

Program Overview

The Health Sciences major educates the next generation of health professionals by providing students with a foundation in the life sciences and other coursework, preparing them to join the workforce or to attend professional or graduate schools in health-related fields. Rider achieves this through small class and laboratory sizes allowing direct, hands-on instruction, and faculty accessibility. Students also have opportunities to do research with faculty via work study or independent study. Each student is assigned a faculty advisor who provides academic advice and career guidance tailored to the student's needs. The program is designed to provide a strong foundation in its curriculum while allowing flexibility for subsequent studies in allied health programs such as physical therapy, athletic training, occupational therapy, nursing, radiological science, optometry, podiatry, epidemiology and public health. It prepares students for graduate studies leading to advanced degrees in the life sciences; and for entry-level positions in hospitals, health insurance, pharmaceutical sales, community health agencies and other related areas.

Graduates of the health sciences program have pursued their professional or graduate studies at prestigious institutions such as Rutgers University, Moravian University, Emory University, University of Utah, NY College of Medicine, Thomas Jefferson University, Widener University, among others.

Curriculum Overview

The curriculum for Health Sciences majors is structured to prepare students for a life of learning in the sciences. Students are expected to master content, develop technical skills, analytical skills and competency in oral and written communication. Foundational courses in biology, chemistry, mathematics and psychology prepare students for the rigor of upper-level science and math courses, complemented by a broad base of health-related coursework in other disciplines. Capstone experiences allow students to explore one area of the life sciences in depth through internships and seminars, as well as opportunities to engage in independent research with Rider's science faculty. Students also have the opportunity to take part in a three-week internship course through the Capital Health System Hospitals.

Student Learning Outcomes

Graduates of the Health Sciences major will be able to:

1. Explain foundational concepts in biological sciences.
2. Apply scientific methods of inquiry through testing of newly formed hypotheses with observation and experimentation.
3. Apply concepts from other disciplines in the analysis and interpretation of biological information.
4. Demonstrate the ability to locate, critically analyze, and communicate relevant scientific information.
5. Explain the ethical practice of scientific research and its societal applications.

Honors Programs

Honors in Health Sciences

The objective of the honors program in health sciences is to introduce talented undergraduate majors to the methods of basic research in the biological sciences. For consideration a student must have a 3.25 average at the end of their junior year. In the senior year, participating students must complete an independent research project and present a written honors thesis. At graduation, a student who has a 3.25 cumulative average, a 3.5 average in health sciences coursework, and who has completed an acceptable honors thesis will be awarded Honors in Health Sciences.

Beta Beta Beta Biological Honor Society

"Tri-Beta" is a national honor society affiliated with the American Association for Advancement of Science and the American Institute of Biological Sciences. Invitations for membership are extended to majors in the life sciences who have demonstrated superior academic achievement. Students are usually invited to join in their sophomore year when they have accumulated 12 credits in the sciences. Active membership is available to those with an overall grade point average of at least 2.8, and at least 3.0 in their science courses. The benefits of membership include academic recognition; a subscription to the journal *Bios*, to which members may submit research articles; opportunities to present papers at conventions; and research awards. Biology and behavioral neuroscience majors should make membership in *Tri-Beta* one of their goals.

Degree Offered

- B.S. in Health Science

Contact

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Program Website: Health Science (https://www.rider.edu/academics/colleges-schools/college-arts-sciences/science-technology-math/undergraduate/health-sciences/)

Associated Department: Health Sciences & Nursing (https://www.rider.edu/academics/colleges-schools/college-arts-sciences/science-technology-math/faculty-departments/health-nursing/)

Related Programs

- Behavioral Neuroscience (http://catalog.rider.edu/undergraduate/colleges-schools/arts-sciences/majors-minors-certificates/behavioral-neuroscience/)
- Biochemistry (http://catalog.rider.edu/undergraduate/colleges-schools/arts-sciences/majors-minors-certificates/biochemistry/)
- Biology (http://catalog.rider.edu/undergraduate/colleges-schools/arts-sciences/majors-minors-certificates/biology/)
- Chemistry (http://catalog.rider.edu/undergraduate/colleges-schools/arts-sciences/majors-minors-certificates/chemistry/)
- Environmental Sciences (http://catalog.rider.edu/undergraduate/colleges-schools/arts-sciences/majors-minors-certificates/environmental-sciences/)
- Exercise Science (http://catalog.rider.edu/undergraduate/colleges-schools/arts-sciences/majors-minors-certificates/exercise-sciences/)
- Mathematics (http://catalog.rider.edu/undergraduate/colleges-schools/arts-sciences/majors-minors-certificates/mathematics/)

Requirements for the Major

Course Repeat Policy (p. 3)
(64-68 credits)

Code	Title	Credits
Biology		**16**
Complete the following courses:		
BIO 115 & 115L	Principles of Biology I and Principles of Biology I Lab [1]	
BIO 116 & 116L	Principles of Biology II and Principles of Biology II Lab [1]	
BIO 221 & 221L	Human Anatomy & Physiology I and Human Anatomy & Physiology I Lab	
BIO 222 & 222L	Human Anatomy & Physiology II and Human Anatomy & Phys II Lab	
Chemistry		**8**
Complete one of the following course sequences:		
CHE 120 & CHE 121	Principles of Chemistry and Principles of Chemistry Lab	
CHE 122 & CHE 123	Intro to Chemical Systems and Quantitative Methods Lab	
OR		
CHE 110 & 110L	Survey of General Chemistry and Survey of Gen Chemistry Lab	
CHE 225 & 225L	Introduction to Organic and Biochemistry and Introduction to Organic and Biochemistry Lab	
Mathematics		**8-10**
Complete the following courses:		
MTH 105	Algebra and Trigonometry [2,3]	
BNS 250 & 250L	Biostatistics and Biostatistics Lab	
or PSY 105 & PSY 201	Introduction to Research in Psychology and Statistics and Research Design	
Psychology		**6**
Complete the following courses:		
PSY 100	Introduction to Psychology	
PSY 345	Health Psychology	
Category 1 Electives		**6-8**
Select two or more of the following courses:		
BCH 225 & 225L	Introduction to Organic and Biochemistry and Introduction to Organic & Biochemistry Lab [4]	
PHY 100 & 100L	Principles of Physics I and Principles of Physics I Lab	
or PHY 200 & 200L	General Physics I and General Physics I Lab	
PHY 101 & 101L	Principles of Physics II and Principles of Physics II Lab	
or PHY 201 & 201L	General Physics II and General Physics II Lab	
BIO 206	The Pharmaceutical Industry	
CHE 211 & 211L	Organic Chemistry I and Organic Chemistry I Lab	
CHE 214 & 214L	Organic Chemistry II and Organic Chemistry II Lab	
PSY 220	Psychological Disorders	
PSY 230	Child Development	
PSY 231	Youth and Adolescent Development	
Category 2 Electives		**8**
Select two or more of the following courses:		
BIO 260 & 260L	Principles of Biology: Evolution, Diversity, and Biology of Cells and Principle of Biology: Cells Lab	
BIO 215 & 215L	Medical Microbiology and Microbiology Lab	
BIO 265 & 265L	Genetics and Genetics Lab	
BIO 300 & 300L	Developmental Biology and Developmental Biology Lab	
BIO 305 & 305L	Animal Physiology and Animal Physiology Lab	
BNS 275 & 275L	Behavioral Neuroscience and Behavioral Neuroscience Lab	
BIO 370 & 370L	Immunology and Immunology Lab	
BNS 310 & 310L	Neurobiology and Neurobiology Lab	
BNS 360 & 360L	Neurochemistry and Neurochemistry Lab	
EXS 320 & EXS 321	Exercise Physiology and Exercise Physiology Laboratory	
HSC 302 & HSC 303	Kinesiology and Kinesiology Lab	
Category 3 Electives		**9**
Select three or more of the following courses:		
COM 240	Public Relations	
GLS 325	Global Perspectives on Health and Illness	
or NUR 407	Cultural Diversity in a Global Society	
HSC 110	Introduction to Human Nutrition	
HSC 150	Introduction to Public Health	
HSC 200	Environmental Health & Human Health	
HSC 250	Introduction to Epidemiology	
HTH 205	Introduction to Health Care	
HTH 215	Population Health Care Management	
NUR 402	Scholarship in Evidence-Based Practice	
NUR 403	Information Management and Application of Patient Care Technology	
NUR 404	Healthcare Policy, Finance, and Regulatory Environments	
NUR 405	Interprofessional Collaboration and Communication for Improving Healthcare Outcomes	
PHL 304	Medical Ethics [5]	
SOC 346	Health Care and Society	
Senior Capstone		**3**
Select one of the following:		
HSC 490	Independent Study: Research and Creative Expression	
or HSC 491	Internship in Health Sciences	
Total Credits:		**64-68**

[1] Students must earn a grade of "C" or better in these courses in order to meet the major requirement and before enrolling in upper-level courses for which these courses are prerequisites.
[2] Students must complete MTH 105 or higher.
[3] Students must place into MTH 105 or a higher level mathematics course in order to register for BIO 115/BIO 115L and BIO 116/BIO 116L.
[4] BCH 225/BCH 225L cannot be counted as both a Chemistry requirement and Category 1 Elective.
[5] PHL 304 may also be used to satisfy the CAS Philosophical Perspectives core requirement.

Department of Health Sciences and Nursing Course Repeat Policy

The following guidelines apply to courses offered by the Department of Health Sciences and Nursing. Students may repeat any health sciences (HSC) or exercise science (EXS) course **once** without special permission unless they received an unsatisfactory grade (C-, D, F). With an unsatisfactory grade, students need permission from the dean's office to repeat a class. They can not register on their own on myRider. Students should email casdean@rider.edu and the department chair to request permission to repeat a course. A course will be considered repeated if the student has previously earned a letter grade in the course, or if the student has previously withdrawn from the course after the Friday of the seventh week of classes (previously Withdrawal II or Withdrawal III). To take a health science, or exercise science course for a third time, written permission must be obtained from the dean's office and the department chair before the registrar will allow the student to enroll in that course.

Academic Plan of Study

The following educational plan is provided as a sample only. Rider students who do not declare a major during their freshman year; who are in a Continuing Education Program; who change their major; or who transfer to Rider may follow a different plan to ensure a timely graduation. Each student, with guidance from their academic advisor, will develop a personalized educational plan.

Course	Title	Credits
Year 1		
Fall Semester		
BIO 115 & 115L	Principles of Biology I and Principles of Biology I Lab	4
MTH 105	Algebra and Trigonometry [1]	4
PSY 100	Introduction to Psychology	3
CMP 120	Seminar in Writing and Rhetoric	3
	Semester Credit Hours	**14**
Spring Semester		
HSC 105	Introduction to Health Professions	1
BIO 116 & 116L	Principles of Biology II and Principles of Biology II Lab	4
CMP 125	Seminar in Writing and Research	3
HSC Category 3 Elective #1 of 3		3
Social Perspectives		3
	Semester Credit Hours	**14**
Year 2		
Fall Semester		
BIO 221 & 221L	Human Anatomy & Physiology I and Human Anatomy & Physiology I Lab [2]	4
CHE 120 & 120 or CHE 110 ***and*** CHE 110L	Principles of Chemistry or Survey of General Chemistry ***and*** Survey of Gen Chemistry Lab	4
Foreign Language		3
Social Perspectives		3
	Semester Credit Hours	**14**
Spring Semester		
BIO 222 & 222L	Human Anatomy & Physiology II and Human Anatomy & Phys II Lab	4
CHE 122 & CHE 123 or CHE 225 ***and*** CHE 225L	Intro to Chemical Systems or Introduction to Organic and Biochemistry ***and*** Introduction to Organic and Biochemistry Lab	4
Foreign Language		3
HSC Category 3 elective #2 of 3		3
	Semester Credit Hours	**14**
Year 3		
Fall Semester		
BNS 250 & 250L	Biostatistics and Biostatistics Lab	4
HSC Category 1 Elective #1 of 2		3
HSC Category 2 elective with lab, #1 of 2		4
Social Perspectives		3
HIS 150	Pre-Modern World: Evolution to Revolution	3
	Semester Credit Hours	**17**
Spring Semester		
HSC Category 2 elective with lab, #2 of 2		4
PSY 345	Health Psychology	3
HIS 151 or HIS 152 or HIS 153	World in the Modern Era: Exploration to Globalization or Contemporary World: Historical Perspectives or Cold War: A Global History	3
Aesthetic Perspectives: Literature		3
HSC Category 3 elective #3 of 3		3
	Semester Credit Hours	**16**
Year 4		
Fall Semester		
HSC 491 or HSC 490	Internship in Health Sciences [4] or Independent Study: Research and Creative Expression	3
Three Elective Courses [3]		10
HSC Category 1 Elective #2 of 2		3
	Semester Credit Hours	**16**
Spring Semester		
Aesthetic Perspectives: Fine Arts		3

Four Elective Courses [3]	12
Semester Credit Hours	**15**
Total Credit Hours for Graduation	**120**

1. For course placement information see https://www.rider.edu/student-life/first-year-experience/orientation/placement-testing (https://www.rider.edu/student-life/first-year-experience/orientation/placement-testing/)
2. Scientific Perspectives general education requirements are included in major.
3. Elective credits may be used to complete requirements in a second major or minor.
4. HSC 490/491 (Capstone) can be completed Fall or Spring. Consult academic advisor for planning and requirements.

HSC 102 Medical Terminology 1 Credits
Medical terminology is the study of the principles of medical word building to help the student develop extensive medical vocabulary used in health care occupations. Students will gain an understanding of basic elements, rules of building and analyzing medical words, and medical terms associated with the body as a whole.
Prerequisite(s): Permission of instructor.

HSC 105 Introduction to Health Professions 1 Credits
Course Description: This course will provide a basic overview of the health science professions including but not limited to: athletic training, clinical exercise physiology & cardiac rehabilitation, chiropractic, physician assistant, occupational therapy, nursing, community health education specialist, and physical therapy. The course will also cover the professional activities (i.e. professional organizations, certifications, professional issues, and professional liabilities) that are related to these professional applications.

HSC 110 Introduction to Human Nutrition 3 Credits
This course is designed to offer the student an understanding of fundamental human nutrition concepts including, but not limited to, digestion, absorption, metabolism, functions, and sources of macronutrients and micronutrients. The theme of the course will align with human health and disease states and the important conceptions about the food industry and its relation to healthy dietetic choices.

HSC 150 Introduction to Public Health 3 Credits
Public Health is the science of protecting, promoting, and improving the health of people and the communities where they live, learn, work, and play. Students will gain an understanding of the history and functions of public health, strategies and methods used in public health research, and the determinants of health.

HSC 200 Environmental Health & Human Health 3 Credits
The health of any individual is a function of both our genetics and environmental factors. Environmental factors most broadly defined include the air we breathe, the water we drink and the food we eat. This course will focus on numerous examples of how bacteria, viruses, and exposure to environmental chemicals result in human diseases. Examples range from failures in public health infrastructure (cholera, diphtheria, river blindness, etc), failures to vaccinate (polio, measles, hepatitis, etc) and chemical exposures (birth defects, cancer, etc). There is also much known about how diet and nutrition can prevent diseases.
Prerequisite(s): BIO 10X Life Science course or any biology laboratory course or BIO 115 or 116 or 117.

HSC 210 Nutrition for Exercise and Physical Activity 3 Credits
An introductory exploration of evidence based nutritional theory and applications in sport and exercise.
Prerequisite(s): HSC 110 with a minimum grade of D or BCH 225 with a minimum grade of D.

HSC 250 Introduction to Epidemiology 3 Credits
Epidemiology is the study of distribution and determinants of defects, disease, and injury in human populations and the application of that study to assess the magnitude of health problems and the result of interventions designed to control them. This course is designed to introduce students to the basic principles, methods, and uses of epidemiology to better understand and characterize health and disease at a population level. The role of epidemiological evidence in planning and evaluation will be also be explored.
Prerequisite(s): MTH 102 or higher OR MSD 105 or higher OR permission of instructor.

HSC 302 Kinesiology 3 Credits
The purpose of this course is to explore human movement during performance of activities. This course will explore the relationship between anatomical structures and function in the production of movement. The application and relationships between the fundamental principles of mechanics and musculoskeletal system function will be addressed within the framework of clinical and research perspectives. Both qualitative and quantitative approaches will be applied towards a better understanding of human movement, the analysis of physical activity. Prerequisite(s): BIO 221 & MTH 105 (or equivalent) or POI.
Corequisite: HSC 303.

HSC 303 Kinesiology Lab 1 Credits
This lab is a co-requisite and must be taken with HSC 302.
Corequisites: HSC 302.

HSC 490 Independent Study: Research and Creative Expression 1-4 Credits
Immerses the student in health science-related research. The student learns to organize material, use relevant medical/scientific literature, make precise measurements, and obtain reproducible data. If possible, the student will publish the results or present them at a scientific meeting.

HSC 491 Internship in Health Sciences 1-4 Credits
A supervised work experience in an approved organization where qualified students gain real-world knowledge and utilize their academic training in a professional environment. Placement may be in private, public, non-profit, or governmental organizations. These can include educational or research institutions. The method of evaluation will be formalized prior to the approval of the internship by the sponsoring faculty member and should include keeping a journal of activities, a term paper or project report and an oral or poster presentation.
Prerequisite(s): 2.5 GPA required.