Bachelor of Science in Physics (Medical School Preparation)

About This Program

Bachelor of Science in Physics with Medical School Preparation offers a broad background in fundamental science and strong problem-solving ability of a Physics degree, as well as specific Biology and Chemistry medical school requirements. The combination of skills developed in this program is designed to provide the intellectual foundation necessary for excellence in research and the practice of medicine.

Physics majors are encouraged to participate in research projects under faculty guidance for course credit or financial reward. This way, undergraduate students can gain hands-on experience in various research disciplines, including astrophysics, biophysics, computational physics, high-energy physics, medical physics, optics, space physics, and theoretical and experimental condensed matter physics.

Specifically, the UTA Medical Physics BS curriculum includes foundational courses in physics, mathematics, and biology and specialized courses in medical imaging, radiation therapy, and radiation safety. The curriculum may also include practical experience through laboratories.

Competencies

1. Program graduates will gain a strong understanding of fundamental physics and biology concepts and in-depth knowledge in chosen areas of specialization.
2. Program graduates will be able to contribute to advancing medical physics by conducting research, developing new techniques, and evaluating existing technologies.
3. Program graduates can analyze complex data, solve problems, and make evidence-based decisions to optimize patient care.
4. Program graduates will develop communication and collaborative teamwork skills.
5. Program graduates will develop foundational knowledge and skills to provide expert advice on the safe and effective use of physical principles in medical applications.

Admissions Criteria

Students considering a Physics major should schedule an appointment with the undergraduate advisor in Physics to discuss admissions criteria and degree options.

Curriculum

Foundations		
General Core Requirements (https://catalog.uta.edu/academicregulations/degreerequirements/generalcorerequirements/)		42
Students must complete specific courses in certain core areas.		
For Communication select:		
ENGL 1301 & ENGL 1302	RHETORIC AND COMPOSITION I and RHETORIC AND COMPOSITION II	
For Life & Physical Science select:		
PHYS 1443 & PHYS 1444	GENERAL TECHNICAL PHYSICS I and GENERAL TECHNICAL PHYSICS II	
For Mathematics select:		
MATH 1426 & MATH 2425	CALCULUS I and CALCULUS II	
For US History select:		
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	
Physics Foundations		
Additional hours required in core.		4
Communication Competence - satisfied by PHYS 4117		
Select one of the following for Computer Science:		3
DATA 3401	PYTHON FOR DATA SCIENCE 1	
PHYS 2321	COMPUTATIONAL PHYSICS	
MATH 3345	NUMERICAL ANALYSIS AND COMPUTER APPLICATIONS	
Any CSE course numbered 3401 or higher.		

Another suitable course approved by undergraduate advisor or chair of the Department of Physics.		
CHEM 1441 & CHEM 1442	GENERAL CHEMISTRY I and GENERAL CHEMISTRY II	8
CHEM 2321	ORGANIC CHEMISTRY I	3
CHEM 2181	ORGANIC CHEMISTRY I LABORATORY	1
CHEM 2322	ORGANIC CHEMISTRY II	3
CHEM 2182	ORGANIC CHEMISTRY II LABORATORY	1
MATH 2326	CALCULUS III	3
MATH 3319	DIFFERENTIAL EQUATIONS & LINEAR ALGEBRA	3
or MATH 3318	DIFFERENTIAL EQUATIONS	
Physics Specialization		
PHYS 2311	MATHEMATICAL METHODS OF PHYSICS	3
PHYS 3313	INTRODUCTION TO MODERN PHYSICS	3
PHYS 3183	MODERN PHYSICS LABORATORY	1
PHYS 3321	INTERMEDIATE ELECTRICITY AND MAGNETISM	3
PHYS 4117	INDIVIDUAL LEARNING BY SEMINAR	1
PHYS 4315	THERMODYNAMICS AND STATISTICAL MECHANICS	3
or PHYS 4319	ADVANCED MECHANICS	
PHYS 4326	INTRODUCTION TO QUANTUM MECHANICS	3
Select 3-4 PHYS electives approved by an undergraduate advisor or the Department of Physics chair.		11
Minor and Electives		
Biology Minor		18
BIOL 1441 & BIOL 1442	BIOLOGY I FOR SCIENCE MAJORS: CELL AND MOLECULAR BIOLOGY and BIOLOGY II FOR SCIENCE MAJORS: ECOLOGY AND EVOLUTION	
Select BIOL electives sufficient to total 18 minor hours, 6 hours of which must be at the 3000/4000-level.		
Select electives sufficient to bring total hours to 120, with 36 hours at the 3000/4000-level.		3
Total Hours		**120**

SUGGESTED COURSE SEQUENCE

Details of a personal course sequence should be made with the guidance of the Physics undergraduate advisor, particularly since many courses in Physics are not offered every semester. Consultation with the Health Professions advisor is also encouraged. For all entering freshmen, it is important to begin the mathematics sequence, starting with MATH 1426 CALCULUS I, in the first semester.

First Year

First Semester	Hours	Second Semester	Hours
PHYS 1443	4	PHYS 1444	4
MATH 1426	4	MATH 2425	4
CHEM 1441	4	CHEM 1442	4
ENGL 1301	3	ENGL 1302	3
	15		**15**

Second Year

First Semester	Hours	Second Semester	Hours
MATH 2326	3	PHYS 2311	3
MATH 3319 or 3318	3	BIOL 1441	4
CHEM 2321	3	CHEM 2322	3
CHEM 2181	1	CHEM 2182	1
HIST 1301	3	HIST 1302	3
	13		**14**

Third Year

First Semester	Hours	Second Semester	Hours
PHYS 3313	3	approved PHYS elective	4
PHYS 3183	1	approved PHYS elective	3
PHYS 3321	3	BIOL minor course**	3
BIOL 1442	4	Data Science Course (DATA 3401 or CSE 1311 or higher-numbered CSE course, PHYS 2321, or MATH 3345)	3-4

BIOL minor course**	3	Social/Behavioral Science*	3
	14		**16-17**

Fourth Year

First Semester	**Hours**	**Second Semester**	**Hours**
PHYS 4315	3	PHYS 4117	1
PHYS 4326	3	approved PHYS elective	4
BIOL minor course**	4	POLS 2312	3
POLS 2311	3	Creative Arts*	3
Language, Philosophy and Culture*	3	Foundational Component Area*	3
		General Elective	3
	16		**17**

Total Hours: 120-121

* See General Core Requirements (https://catalog.uta.edu/academicregulations/degreerequirements/generalcorerequirements/) for approved courses.

** Coursework for Biology minor should be chosen in consultation with a Biology undergraduate advisor.

Advising Resources

Location:

Science Hall 328 C

Email:

kaycee.nikses@uta.edu

Phone:

817-272-9686

Web:

Schedule an Appointment (https://www.uta.edu/academics/schools-colleges/science/departments/physics/advising/)