Bachelor of Science in Physics (Science Teaching Certification)

About This Program

Bachelor of Science in Physics provides students with a rigorous training in Physics, which is designed to prepare students for a career in science, technology, and/or engineering research. When combined with the required UTeach education courses, the Bachelor of Science program is also appropriate for students who are interested in becoming schoolteachers.

Physics majors are encouraged to participate in research projects under faculty guidance for course credit or financial reward. In this way, undergraduate students have the choice of gaining hands-on experience from a variety of research disciplines, including astrophysics, biophysics, computational physics, high-energy physics, medical physics, optics, space physics, and theoretical and experimental condensed matter physics.

Competencies

1. Program graduates will gain in-depth knowledge and a strong foundation in physics principles and concepts, which is essential.
2. Program graduates will be able to guide students through the scientific investigation process.
3. Program graduates will acquire skills to clearly explain complex physics concepts to students of varying learning styles.
4. Program graduates will demonstrate familiarity with various teaching methods, including lectures, problem-based and hands-on activities.
5. Program graduates will be able to develop engaging, well-structured lesson plans that cater to diverse student needs.
6. Program graduates will acquire skills and knowledge to evaluate student learning through various methods and provide constructive feedback.
7. Program graduates will acquire skills and knowledge to adjust teaching methods and strategies to address unexpected challenges.
8. Program graduates will acquire skills and knowledge to foster a collaborative learning environment among students.
9. Program graduates will be able to articulate the skills and knowledge they have gained and apply them to future career, employment, or educational goals.

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
CSE 1311	INTRODUCTION TO PROGRAMMING FOR ENGINEERS	
PHYS 2321	COMPUTATIONAL PHYSICS	
MATH 3345	NUMERICAL ANALYSIS AND COMPUTER APPLICATIONS	
Any CSE course numbered 3401 or higher.		

Another suitable course approved by UTeach advisor or chair of the Department of Physics.		
MATH 2326	CALCULUS III	3
MATH 3319	DIFFERENTIAL EQUATIONS & LINEAR ALGEBRA	3
Teacher Certification		
SCIE 1201	STEP 1: INQUIRY APPROACHES TO TEACHING	2
SCIE 1202	STEP 2: INQUIRY-BASED LESSON DESIGN	2
SCIE 4107	CAPSTONE TEACHING EXPERIENCE SEMINAR	1
SCIE 4607	CAPSTONE TEACHING EXPERIENCE FOR STEM SECONDARY GRADES	6
EDUC 4331	KNOWING AND LEARNING IN MATH AND SCIENCE	3
EDUC 4332	CLASSROOM INTERACTIONS	3
EDUC 4333	MULTIPLE TEACHING PRACTICES IN MATH AND SCIENCE	3
PHIL 2314	PERSPECTIVES ON SCIENCE AND MATHEMATICS	3
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
PHYS 4319	ADVANCED MECHANICS	3
PHYS 4326	INTRODUCTION TO QUANTUM MECHANICS	3
PHYS 4391	SPECIAL TOPICS	3
Select 6 hours of PHYS electives approved by a UTeach advisor or the Department of Physics chair.		6
Minor and Electives		
Chemistry Minor		20
CHEM 1441	GENERAL CHEMISTRY I	
CHEM 1442	GENERAL CHEMISTRY II	
CHEM 2335	QUANTITATIVE CHEMISTRY	
CHEM 2285	QUANTITATIVE CHEMISTRY LABORATORY	
CHEM 3315	INTRODUCTION TO BIOPHYSICAL CHEMISTRY	
CHEM 3321	PHYSICAL CHEMISTRY I	
CHEM 3181	PHYSICAL CHEMISTRY I LABORATORY	
Select electives sufficient to bring total hours to 120, with 36 hours at the 3000/4000-level.		
Total Hours		**127**

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
MATH 1426	4	PHYS 1444	4
CHEM 1441	4	MATH 2425	4
ENGL 1301	3	ENGL 1302	3
HIST 1301	3	HIST 1302	3
SCIE 1201	2	SCIE 1202	2
	16		**16**

Second Year

First Semester	Hours	Second Semester	Hours
PHYS 1444	4	PHYS 2311	3
MATH 2326	3	PHYS 3313	3
MATH 3319 or 3318	3	PHYS 3183	1
CHEM 1442	4	CHEM 2335	3
EDUC 4331	3	CHEM 2285	2

		EDUC 4332	3
	17		**15**

Third Year

First Semester	**Hours**	**Second Semester**	**Hours**
PHYS 3321	3	PHYS 4391	3
CHEM 3315	3	Approved PHYS elective	3
Computer Science course	3-4	POLS 2312	3
POLS 2311	3	Creative Arts core course	3
PHIL 2314	3	Social & Behavioral Science core course	3
	15-16		**15**

Fourth Year

First Semester	**Hours**	**Second Semester**	**Hours**
PHYS 4315	3	PHYS 4117	1
PHYS 4326	3	PHYS 4319	3
Approved PHYS course	3	Foundational Component Area core course	3
CHEM 3321	3	Language, Philosophy & Culture core course.	3
CHEM 3181	1	SCIE 4107	1
EDUC 4333	3	SCIE 4607	6
	16		**17**

Total Hours: 127-128

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/)