

PHYSICS, PROFESSIONAL, BACHELOR OF SCIENCE (BS)

The Bachelor of Science–Physics, Professional program is designed primarily for students preparing for graduate studies in physics or students planning for a professional career in physics.

A Senior Capstone/Senior Thesis class is a university requirement for graduation. Contact your Physics advisor or Department Chair for course options.

Required Mathematics Courses

MATH/HONS 161	CALCULUS I	5
MATH 162	CALCULUS II	5
MATH 163	CALCULUS III	5
MATH 231	LINEAR ALGEBRA	5
MATH 241	CALCULUS IV	5
MATH 347	INTRODUCTORY DIFFERENTIAL EQUATIONS	4

Required Physics Courses

PHYS 151	GENERAL PHYSICS I	4
PHYS 152	GENERAL PHYSICS II	4
PHYS 153	GENERAL PHYSICS III	4
PHYS 221	GENERAL PHYSICS IV	4
PHYS 361	CLASSICAL MECHANICS I	4
PHYS 362	CLASSICAL MECHANICS II	4
PHYS 371	QUANTUM PHYSICS I: INTRODUCTION	4
PHYS 372	QUANTUM PHYSICS II: ATOMIC	4
PHYS 401	ELECTROMAGNETISM I	4
PHYS 402	ELECTROMAGNETISM II	4
PHYS 411	CLASSICAL THERMODYNAMICS	4
PHYS 421	COMPUTATIONAL PHYSICS	4

Required Physics Laboratory Courses

PHYS 161	MECHANICS LABORATORY	1
PHYS 162	HEAT AND OPTICS LABORATORY	1
PHYS 163	ELECTRONICS LABORATORY I	1
PHYS 263	ELECTRONICS LABORATORY II	1
PHYS 321	ADVANCED PHYSICS LABORATORY I	3
PHYS 322	ADVANCED PHYSICS LABORATORY II	3

Required Electives—choose from the following 14

Note: any 300- or 400-level PHYS course—except PHYS 497—may be chosen as electives.

Note: a maximum of 7 credits can count from courses outside PHYS.

Note: some of these courses may require completion of additional prerequisites.

CHEM 421	PHYSICAL CHEMISTRY
CHEM 422	PHYSICAL CHEMISTRY
CHEM 423	PHYSICAL CHEMISTRY
EENG 350	ENERGY SYSTEMS
EENG 450	POWER SYSTEMS ANALYSIS
MATH 342	TOPICS IN APPLIED ANALYSIS II
or MATH 481	COMPLEX ANALYSIS
MATH 385	PROBABILITY AND STATISTICAL INFERENCE I
MATH 485	PROBABILITY AND STATISTICAL INFERENCE II
MATH 431	APPLIED GROUP THEORY
MATH 447	DIFFERENTIAL EQUATIONS
MATH 448	PARTIAL DIFFERENTIAL EQUATIONS
MENG 444	HEAT TRANSFER

MENG 482	ADVANCED FLUID DYNAMICS		
Total Credits			101

Plan of Study

The following plan of study is for a student with zero credits. Individual students may have different factors such as: credit through transfer work, Advanced Placement, Running Start, or any other type of college-level coursework that requires an individual plan.

Courses may be offered in different terms and not all courses are offered every term, checking the academic schedule is paramount in keeping an individual plan current. There may be some courses that have required prerequisites not listed in the plan, review the course descriptions for information. **Students should connect with an advisor to ensure they are on track to graduate.**

All Undergraduate students are required to meet the Undergraduate Degree Requirements (<http://catalog.ewu.edu/undergraduate-degree/>).

First Year			
Fall Quarter	Credits Winter Quarter	Credits Spring Quarter	Credits
ENGL 101	5 ENGL 201	5 MATH 163	5
MATH 161	5 MATH 162	5 PHYS 153 & PHYS 163	5
PHYS 151 & PHYS 161 (Natural Science BACR 1)	5 PHYS 152 & PHYS 162 (Natural Science BACR 2)	5 Humanities & Arts BACR 1 ¹	5
	15	15	15
Second Year			
Fall Quarter	Credits Winter Quarter	Credits Spring Quarter	Credits
MATH 241	5 MATH 231	5 MATH 347	4
PHYS 221	4 PHYS 321 or 371 ²	3-4 PHYS 322 or 372 ²	3-4
PHYS 263	1 PHYS 362 or 401 ²	4 PHYS 411 or 402 ²	4
PHYS 361 or 421 ²	4 Social Science BACR 1 ¹	5 Social Science BACR 2 ¹	5
	14	17-18	16-17
Third Year			
Fall Quarter	Credits Winter Quarter	Credits Spring Quarter	Credits
PHYS 361 or 421 ²	4 PHYS 321 or 371 ²	3-4 PHYS 322 or 372 ²	3-4
Humanities & Arts BACR 1 ¹	5 PHYS 362 or 401 ²	4 PHYS 411 or 402 ²	4
Elective - certificate, minor, or general elective	5 Physics Elective ³	4 Physics Elective ³	4
	Elective - certificate, minor, or general elective	5 Diversity - graduation requirement ¹	5
	14	16-17	16-17
Fourth Year			
Fall Quarter	Credits Winter Quarter	Credits Spring Quarter	Credits
Physics Elective ³	4 PHYS 491 or ITDS 490 (Senior Capstone - graduation requirement)	4 Physics Elective ³	4
Global Studies - graduation requirement ¹	5 Elective - certificate, minor, or general elective	5 Elective - certificate, minor, or general elective	5
Elective - certificate, minor, or general elective	5 Elective - certificate, minor, or general elective	5 Elective - certificate, minor, or general elective	5
	14	14	14
Total Credits 180-184			

¹ University Graduation Requirements (UGR) and Breadth Area Course Requirements (BACR) courses may be less than 5 credits and additional credits may be required to reach the required 180 total credits needed to graduate. Students should connect with an advisor to ensure they are on track to graduate.

² Take the first course listed if fall of the academic year is an even year, and the second course if it's an odd year

³ Required Electives—choose 14 credits from the approved list. Any 300- or 400-level PHYS course—except PHYS 497—may be chosen as electives. A maximum of 7 credits can count from courses outside PHYS.

University Competencies and Proficiencies

English (<http://catalog.ewu.edu/undergraduate-degree/#newitemtext>)

Quantitative and Symbolic Reasoning (<http://catalog.ewu.edu/undergraduate-degree/#mathcompproficienciestext>)

Placement and Clearance (<http://catalog.ewu.edu/placement/>)

Prior Learning/Sources of Credit AP, CLEP, IB (<http://catalog.ewu.edu/prior-learning/>)

General Education Requirements (<http://catalog.ewu.edu/undergraduate-degree/#generaleducationrequirementstext>) (GER)

- Minimum Credits—180 cumulative credit hours
 - 60 upper-division credits (300 level or above)
 - 45 credits in residence (attendance) at Eastern, with at least 15 upper-division credits in major in residence at Eastern
- Minimum Cumulative GPA ≥ 2.0

Breadth Area Core Requirements (BACR)Humanities and Arts (<http://catalog.ewu.edu/undergraduate-degree/#humanitiesandfineartsgcrttext>)Natural Sciences (<http://catalog.ewu.edu/undergraduate-degree/#naturalsciencesgcrttext>)Social Sciences (<http://catalog.ewu.edu/undergraduate-degree/#socialsciencesgcrttext>)

University Graduation Requirements (<http://catalog.ewu.edu/undergraduate-degree/#universitygraduationrequirementstext>) (UGR)Diversity Course List (<http://catalog.ewu.edu/undergraduate-degree/#cultureandgenderdiversityintheuslisttext>)World Language (<http://catalog.ewu.edu/undergraduate-degree/#worldlanguagetext>) (for Bachelor of Arts)Global Studies Course List (<http://catalog.ewu.edu/undergraduate-degree/#internationalstudiesrequirementtext>)Minor or Certificate (<http://catalog.ewu.edu/undergraduate-degree/#majorminororcertificateugrttext>)Senior Capstone Course List (<http://catalog.ewu.edu/undergraduate-degree/#capstonecourselisttext>)

Application for Graduation (use EagleNET (<https://inside.ewu.edu/eaglenet/>)) must be made at least two terms in advance of the term you expect to graduate (undergraduate and post-baccalaureate).Use the Catalog Archives (<http://catalog.ewu.edu/archives/>) to determine *two important catalog years*.Requirements in Degree Works (<https://inside.ewu.edu/records-and-registration/degree-works/>) are based on these two catalog years:

- a. The catalog *in effect at the student's first term* of current matriculation is used to determine **BACR** (Breadth Area Credit Requirements) and **UGR** (Undergraduate Graduation Requirements).
- b. The catalog *in effect at the time the student declares a major or minor* is used to determine the program requirements.

Students who earn a BS in Physics, Professional from EWU should be able to:

- demonstrate knowledge of the basic concepts of physics (such as mechanics, thermodynamics and electricity and magnetism);
- make and interpret laboratory measurements in physics;
- write effectively using the language of physics.