

# Physics

## Physics

The Physics department is in the [College of Science](#). To find the most up-to-date information from the Physics department, visit their website.

[Physics department](#)

### DEPARTMENT CHAIR

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### FACULTY

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**DRAPER, Christian** *Assistant Professor*

**DURFEE, Dallin S.** *Assistant Professor*

**HAISCH, Karl Jr.** *Professor*

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**WASSERBAECH, Steven R.** *Professor*

**WEBER, Paul** *Associate Professor*

**YOUNG, York E.** *Assistant Professor*

## Degrees & Programs

### Physics, Minor

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#### Requirements

Must be admitted to a bachelor degree program at UVU. A minor in physics represents a substantial investment in mastering the basics of physics and gaining suitable problem solving skills that may then be applied to other disciplines. The minor requires 20 credit hours of physics credit.

#### Total Program Credits: 20

Matriculation Requirements:		
1. Admitted to a bachelor degree program at UVU.		
Discipline Core Requirements:		20 Credits
<a href="#">PHYS 2210</a>	Physics for Scientists and Engineers I	4
<a href="#">PHYS 2215</a>	Physics for Scientists and Engineers I Lab	1
<a href="#">PHYS 2220</a>	Physics for Scientists and Engineers II	4
<a href="#">PHYS 2225</a>	Physics for Scientists and Engineers II Lab	1
<a href="#">PHYS 3110</a>	Modern Physics I	3

<a href="#">PHYS 3115</a>	Introduction to Experimental Physics I WE	2
Complete a minimum of 5 credits from the following courses:		5
<a href="#">ASTR 3050</a>	Astrophysics I (3)	
<a href="#">ASTR 3060</a>	Astrophysics I(3)	
<a href="#">PHYS 2500</a>	Elementary Fluids and Thermal Physics (3)	
<a href="#">PHYS 2800</a>	Introduction to Materials Physics (3)	
<a href="#">PHYS 3120</a>	Modern Physics II (3)	
<a href="#">PHYS 3125</a>	Introduction to Experimental Physics II WE (2)	
<a href="#">PHYS 3230</a>	Principles of Electronics for the Physical Sciences (3)	
<a href="#">PHYS 3300</a>	Mathematical Physics (3)	
<a href="#">PHYS 3310</a>	Advanced Mathematical Physics (3)	
<a href="#">PHYS 3400</a>	Classical Mechanics (3)	
<a href="#">PHYS 3500</a>	Thermodynamics (3)	
<a href="#">PHYS 3800</a>	Energy use on Earth (3)	
<a href="#">PHYS 4210</a>	Advanced Experimental Techniques (3)	
<a href="#">PHYS 4250</a>	Nuclear Physics (3)	
<a href="#">PHYS 4300</a>	Computational Physics (3)	
<a href="#">PHYS 4410</a>	Electrostatics and Magnetism (3)	
<a href="#">PHYS 4420</a>	Electrodynamics (3)	
<a href="#">PHYS 4510</a>	Quantum Mechanics I (3)	
<a href="#">PHYS 4520</a>	Quantum Mechanics II (3)	
<a href="#">PHYS 4600</a>	Optics (3)	
<a href="#">PHYS 4700</a>	Acoustics (3)	
<a href="#">PHYS 4800</a>	Solid State Physics (3)	
<a href="#">PHYS 490R</a>	Seminar (0.5)	
<a href="#">METO 3100</a>	Climate and the Earth System (3)	

#### Graduation Requirements:

1. A minimum grade of "C" must be earned in all minor courses.

### Physics Education, B.S.

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#### Requirements

Prepares the student to teach high school physics and AP physics. The program allows for those interested to supplement their studies with extra courses in physics or other science through elective upper division credit. A seminar course provides the student with exposure to careers in physics.

#### Total Program Credits: 120

#### Matriculation Requirements:

1. Students are admitted directly to the Baccalaureate degree program in Physics Education upon acceptance to the Secondary Education Program.

# Physics

- Students must obtain the departmental Advisor's signature on an approved program plan prior to enrollment in their second semester of study.

## Secondary Education Requirements:

- ACT exam minimums: Composite 21, English 20, Math 19; or SAT exam minimums: Critical Read /Math 1000, with Math and Reading scores of 450; or If student has a bachelor degree or higher, he/she does not need to meet this testing requirement.
- GPA of 3.0 or higher with no grade lower than a C in content area courses.
- Completion of all General Education requirements and the majority of content area courses.
- Pass LiveScan Criminal Background Check.

General Education Requirements:		39 Credits
	<a href="#">ENGL 1010</a> Introduction to Academic Writing	3
or	<a href="#">ENGL 1005</a> Literacies and Composition Across Contexts (5)	
	<a href="#">ENGL 2010</a> Intermediate Writing/Academic Writing and Research	3
	<a href="#">MATH 1210</a> Calculus I	5
Complete one of the following:		3
	<a href="#">HIST 1700</a> American Civilization (3)	
	<a href="#">HIST 2700</a> US History to 1877 (3)	
and	<a href="#">HIST 2710</a> US History since 1877 (3)	
	<a href="#">HIST 1740</a> US Economic History (3)	
	<a href="#">POLS 1000</a> American Heritage (3)	
	<a href="#">POLS 1100</a> American National Government (3)	
Complete the following:		
	<a href="#">PHIL 2050</a> Ethics and Values	3
	<a href="#">HLTH 1100</a> Personal Health and Wellness (2)	
or	<a href="#">PES 1097</a> Fitness for Life	2
Distribution Courses:		
	Biology	3
	<a href="#">CHEM 1210</a> Principles of Chemistry I (To be taken with CHEM 1215)	4
	<a href="#">CHEM 1220</a> Principles of Chemistry II (To be taken with CHEM 1225)	4
	Humanities	3
	Fine Arts	3
	Social/Behavioral Science	3
Discipline Core Requirements:		73 Credits
Must be completed with a grade B- or higher.		
	<a href="#">CHEM 1215</a> Principles of Chemistry I Laboratory (To be taken with CHEM 1210)	1
	<a href="#">CHEM 1225</a> Principles of Chemistry II Laboratory (To be taken with CHEM 1220)	1
	<a href="#">HIST 4320</a> History of Scientific Thought	3
	<a href="#">MATH 1220</a> Calculus II	5
	<a href="#">MATH 2210</a> Calculus III	3
	<a href="#">PHYS 2210</a> Physics for Scientists and Engineers I	4
	<a href="#">PHYS 2215</a> Physics for Scientists and Engineers I Lab	1

<a href="#">PHYS 2220</a>	Physics for Scientists and Engineers II	4
<a href="#">PHYS 2225</a>	Physics for Scientists and Engineers II Lab	1
<a href="#">PHYS 3010</a>	Physics Experiments for Secondary Education	1
<a href="#">PHYS 3110</a>	Modern Physics I	3
<a href="#">PHYS 3115</a>	Introduction to Experimental Physics I WE	2
<a href="#">PHYS 4200</a>	Teaching Methods in Science	3
Education Courses:		
<a href="#">EDEL 1010</a>	Introduction to Education	2
<a href="#">EDSC 3000</a>	Educational Psychology	3
<a href="#">EDSC 3250</a>	Instructional Media	2
<a href="#">EDSC 4200</a>	Classroom Management I	2
<a href="#">EDSC 4250</a>	Classroom Management II	2
<a href="#">EDSC 4440</a>	Content Area Literacies	3
<a href="#">EDSC 445G</a>	Multicultural Instruction ESL	3
<a href="#">EDSC 455G</a>	Secondary Curriculum Instruction and Assessment	3
<a href="#">EDSC 4850</a>	Student Teaching--Secondary	8
<a href="#">EDSC 4990</a>	Teacher Performance Assessment Project WE	2
<a href="#">EDSP 340G</a>	Exceptional Students	2
Complete the following set:		
<a href="#">PHYS 490R</a>	Seminar (Must be repeated two times.) (0.5)	1
Complete 8 credits from the following:		8
<a href="#">ASTR 3050</a>	Astrophysics I (3)	
<a href="#">ASTR 3060</a>	Astrophysics II (3)	
<a href="#">PHYS 1100</a>	Introductory Math Techniques for Physics and Engineering (3)	
<a href="#">PHYS 2500</a>	Elementary Fluids and Thermal Physics (3)	
<a href="#">PHYS 3120</a>	Modern Physics II (3)	
<a href="#">PHYS 3125</a>	Introduction to Experimental Physics II WE (2)	
<a href="#">PHYS 3230</a>	Principles of Electronics for the Physical Sciences (3)	
<a href="#">PHYS 3300</a>	Mathematical Physics (3)	
<a href="#">PHYS 3400</a>	Classical Mechanics (3)	
<a href="#">PHYS 3500</a>	Thermodynamics (3)	
<a href="#">PHYS 3800</a>	Energy use on Earth (3)	
<a href="#">PHYS 4700</a>	Acoustics (3)	
Elective Requirements:		8 Credits
Complete 8 credits of upper division electives.		8

## Graduation Requirements:

- Completion of a minimum of 120 semester credits with a minimum of 40 upper-division credits.
- Overall Grade of 3.0 (B) or above with no grade lower than a C or better in major required content courses and no grade lower than a B- in Licensure and Methods courses.

- Residency hours -- minimum of 30 credit hours through course attendance at UVU, with at least 10 hours earned in the last 45 hours.
- Completion of GE and specified departmental requirements.
- A minimum of 52 credit hours must be in the major with a minimum of 20 credits taken at UVU. A minimum of 24 chemistry and physics credits must be upper-division.
- Successful completion of at least one Global/Intercultural course.

## Physics, B.S.

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### Requirements

A Bachelor's degree in physics provides the student with an understanding of the laws of nature and with the experimental and analytical techniques necessary to describe and solve problems in physical systems. The degree is most useful in preparing students for further graduate study in physics, astronomy, engineering or other science. However physics BS degree recipients have also entered graduate programs in law and medicine and other diverse programs. Those not intending to pursue advanced degrees find successful employment in a variety of careers, including education, computer science, electronics and related industries and more.

### Total Program Credits: 120

Matriculation Requirements:			
1. Approval of department chair.			
General Education Requirements:			37 Credits
	ENGL 1010	Introduction to Academic Writing	3
or	ENGL 1005	Literacies and Composition Across Contexts	
	ENGL 2010	Intermediate Writing/Academic Writing and Research	3
	MATH 1210	Calculus I	5
Complete one of the following:			3
	HIST 2700	US History to 1877 (3)	
and	HIST 2710	US History since 1877 (3)	
	HIST 1700	American Civilization (3)	
	HIST 1740	US Economic History (3)	
	POLS 1000	American Heritage (3)	
	POLS 1100	American National Government (3)	
Complete the following:			
	PHIL 2050	Ethics and Values	3
	HLTH 1100	Personal Health and Wellness (2)	
or	PES 1097	Fitness for Life	2
Distribution Courses:			
	Biology		3
	Physical Science		3
	Additional Biology or Physical Science		3
	Humanities Distribution		3
	Fine Arts Distribution		3
	Social/Behavioral Science		3

Discipline Core Requirements:			63 Credits
	PHYS 2210	Physics for Scientists and Engineers I	4
	PHYS 2215	Physics for Scientists and Engineers I Lab	1
	PHYS 2220	Physics for Scientists and Engineers II	4
	PHYS 2225	Physics for Scientists and Engineers II Lab	1
	PHYS 3110	Modern Physics I	3
	PHYS 3115	Introduction to Experimental Physics I WE	2
	PHYS 3120	Modern Physics II	3
	PHYS 3125	Introduction to Experimental Physics II WE	2
	PHYS 3230	Principles of Electronics for the Physical Sciences	3
	PHYS 3300	Mathematical Physics	3
	PHYS 3330	Computational Physics	3
	PHYS 3400	Classical Mechanics	3
	PHYS 3500	Thermodynamics	3
	PHYS 3600	Optics	3
	PHYS 4210	Advanced Experimental Techniques	3
	PHYS 4410	Electrostatics and Magnetism	3
	PHYS 4420	Electrodynamics	3
	PHYS 4510	Quantum Mechanics I	3
	PHYS 490R	Seminar (0.5 credits, taken 4 times)	2
	MATH 1220	Calculus II	5
	MATH 2210	Calculus III	3
	MATH 2280	Ordinary Differential Equations	3
Elective Requirements:			20 Credits
Complete 20 credits from the following courses. The selection of elective coursework should present a coherent theme such as engineering physics, medical physics, nuclear physics, geophysics, computational physics, etc. (Consult Advisor or Department Chair for assistance or to consider possible course substitutions.)			20
	ASTR 2040	Intermediate Astronomy (3)	
	ASTR 3050	Astrophysics I (3)	
	ASTR 3060	Astrophysics II (3)	
	ASTR 4100	Brown Dwarfs and Exoplanets (3)	
	ASTR 4350	Research Methods in Astronomy (3)	
	PHYS 1100	Introductory Math Techniques for Physics and Engineering (3)	
	PHYS 2500	Elementary Fluids and Thermal Physics (3)	
	PHYS 2800	Introduction to Materials Physics (3)	
	PHYS 3310	Advanced Mathematical Physics (3)	
	PHYS 3350	Applications of LabVIEW in Physics (3)	
	PHYS 3700	Particle Physics (3)	
	PHYS 3800	Energy use on Earth (3)	
	PHYS 4100	Biophysics (3)	
	PHYS 4150	Medical Physics (3)	

# Physics

PHYS 4250	Nuclear Physics (3)	
PHYS 4350	Research Methods in Physics (3)	
PHYS 4520	Quantum Mechanics II (3)	
PHYS 4700	Acoustics <sup>1</sup> (3)	
PHYS 4800	Solid State Physics <sup>1</sup> (3)	
PHYS 481R	Physics Internship (1) (no more than 4 hours counted toward degree)	
PHYS 489R	Undergraduate Research in Physics (1) (no more than 9 hours counted toward degree)	
PHYS 492R	Topics in Physics (3) (may only be taken once toward degree credit)	
PHYS 495R	Independent Readings (1) (no more than 3 hours counted toward degree)	
PHYS 499A	Senior Project (2) <sup>1</sup>	
PHYS 499B	Senior Thesis (1) <sup>1</sup>	
See Physics Department academic advisor for possibly more complete and up to date list.		
CHEM 1210	Principles of Chemistry I (4) <sup>2</sup>	
CHEM 1215	Principles of Chemistry I Laboratory (1)	
CHEM 1220	Principles of Chemistry II PP (4) <sup>2</sup>	
CHEM 1225	Principles of Chemistry II Laboratory (1)	
Any CHEM course 2310 or higher except internship and independent study type courses.		
Any EENG course 2700 or higher except internship and independent study type courses.		
Any ENGR course 2010 or higher except internship and independent study type courses.		
MATH 2270	Linear Algebra (3)	
Any MATH course 3200 or higher except intership and independent study type courses.		
Any GEO course 3080 or higher, except internship and independent study-type courses.		
METO 3100	Climate and the Earth System (3)	

## Graduation Requirements:

1. Completion of a minimum of 120 semester credits.
2. Overall grade point average of 2.0 (C) or above with no grade lower than a "C" in core and elective requirement courses.
3. Residency hours--minimum of 30 credit hours through course attendance at UVU, with at least 10 hours earned in the last 45 hours.
4. Completion of GE and specified departmental requirements.
5. Successful completion of at least one Global/Intercultural course.

Footnotes:
1-Suggested elective option for the student intent on continuing physics studies in graduate school.
2-Strongly recommended for inclusion in any elective option.