Bachelor of Science in Physics AY25/26

Note - this document is intended as a guide, not a substitute for meeting with your academic advisor. Please see your academic advisor for more information about your major.

University of Arizona Graduation Requirements

Grade Point Average (GPA) Requirements: 2.0 cumulative GPA (all UA courses), 2.0 major GPA, and 2.0 minor GPA
Minimum units required: 120 total units [1]
Minimum upper-division units required: 42 upper-division units [1]
Minimum UA units: 30 units of University Credit completed at the University of Arizona
Minimum Major coursework: 18 units of major coursework must be University Credit from the University of Arizona
Residency Requirement: 18 of the final 30 units must be University Credit from the University of Arizona
Mid-Career Writing Assessment (*"B" or higher in ENGL 102, 108, or 109H, or approved Writing Emphasis course*) [2]

1 - students majoring in only Applied Physics may need to take additional "electives" or pursue a minor to meet the minimum 120 total units or the 42 upper-division units requirement.
2 - the approved "Writing Emphasis" course for Physics is PHYS 381 or 382.

General Education Curriculum

✔	Course Number & Title	Units	Semester
	First-Year Composition ENGL 101/102, ENGL (106)107/108, or ENGL 109H	3-9	
	Second Language [3] Second Semester Level or Higher (ex: SPAN 102)	0-10	
	UNIV 101 - Introduction to General Education [4]	1	
	Exploring Perspectives: Artist	3	
	Exploring Perspectives: Humanist	3	
	Exploring Perspectives: Social Scientist	3	
	Exploring Perspectives: Natural Scientist [5]	3	
	Building Connections #1	3	
	Building Connections #2	3	
	Building Connections #3	3	
	UNIV 301 [4]	1	

3 - Students can also satisfy their second language requirement through proficiency tests or AP/IB/Transfer credit. International students may have their second language satisfied by TOEFL or IELTS tests.
4 - Transfer students do not need to complete either UNIV 101 or 301
5 - Students majoring in Physics will have the "Natural Scientist" requirement satisfied by PHYS 161H.

Mathematics Requirements

✔	Course Number & Title	Units	Semester
	MATH 122B or MATH 125 - Calculus I	3-5	
	MATH 129 - Calculus II	3	
	MATH 223 - Vector Calculus	4	
	MATH 254 - Introduction to Differential Equations MATH 355 - Analysis of Differential Equations [6]	3	

6 - Students interested in a double major in Mathematics should consider taking MATH 355; talk to your math advisor for more information/advice.

Introduction to Physics

✔	Course Number & Title	Units	Semester
	PHYS 120 - Careers and Skills in Physics	1	

Programming Requirement (*select one from below*)

✔	Course Number & Title	Units	Semester
	ECE 101 - Programming I CSC 110 - Introduction to Computer Programming I PHYS 105A - Introduction to Scientific Computing	1-4	

Introductory Physics Requirements

✔	Course Number & Title	Units	Semester
	PHYS 161H - Accelerated Introductory Mechanics [7]	4	
	PHYS 162H - Accelerated Introductory Optics & Thermodynamics	4	
	PHYS 261H - Accelerated Introductory Electricity & Magnetism [7]	4	
	PHYS 263H - Accelerated Introductory Relativity & Quantum Physics	3	

7 - Ideally, students would take PHYS 161H and 261H, but if students have transfer credit or take PHYS 141 or 241 in Summer, we will accept them instead of PHYS 161H and 261H.

Physics Core Requirements

✔	Course Number & Title	Units	Semester
	PHYS 204 - Mathematical Techniques in Physics	3	
	PHYS 305 - Computational Physics	3	
	PHYS 321 - Theoretical Mechanics	3	
	PHYS 331 - Electricity & Magnetism I	3	
	PHYS 332 - Electricity & Magnetism II	3	
	PHYS 371 - Quantum Theory I	3	
	PHYS 381 - Methods of Mathematical Physics I	2	
	PHYS 382 - Methods of Mathematical Physics II	2	
	PHYS 426 - Thermal Physics	3	
	PHYS 472 - Quantum Theory II	3	

Physics Elective Requirements (*select two from below*)

✔	Course Number & Title	Units	Semester
	ATMO 436A - Introduction to Atmospheric Sciences PHYS 320 - Optics PHYS 405 - Digital Electronic Techniques PHYS 422 - Continuum Mechanics PHYS 431 - Molecular Biophysics PHYS 450 - Nuclear & Particle Physics	3	
	PHYS 460 - Solid State Physics PHYS 468 - Classical & Quantum Relativity PHYS 469 - Introduction to General Relativity PHYS 473 - Atomic & Molecular Spectroscopy PHYS 476 - Methods of Mathematical Physics	3	

Physics Research Requirement

✔	Course Number & Title	Units	Semester
	PHYS 492 - Directed Research PHYS 498H - Honors Thesis	3	

Physics 4-Year Plan (Calculus II Start)

Note - this document is intended as a guide, not a substitute for meeting with your academic advisor. Please see your academic advisor for more information about your major.
Note - this four-year plan is not a “one-size fits all”, this is a listing of all the required courses to meet graduation requirements; students may need to adjust their plan

First Year					
First Semester			Second Semester		
Course #	Course Title	Units	Course #	Course Title	Units
PHYS 161H	Accelerated Introductory Mechanics/(GE1)	4	PHYS 162H	Accelerated Introductory Optics & Thermodynamics	4
MATH 129	Calculus II	3	MATH 223	Vector Calculus	4
ENGL 101	English Composition I	3	ENGL 102	English Composition II	3
Language	1st Semester Second Language	4-5	Language	2nd Semester Second Language	4-5
PHYS 120	Careers and Skills in Physics	1	UNIV 101	Introduction to General Education	1
	Total Units	15-16		Total Units	16-17
Second Year					
Third Semester			Fourth Semester		
Course #	Course Title	Units	Course #	Course Title	Units
PHYS 261H	Accelerated Introductory Electricity & Magnetism	4	PHYS 204	Mathematical Techniques in Physics	3
PHYS 263H	Accelerated Introductory Relativity & Quantum Physics	3	**PHYS 305**	**Computational Physics**	**3**
MATH 254	Introduction to Differential Equations	3	**PHYS 321**	**Theoretical Mechanics**	**3**
CSC 110	Introduction to Programming I	4	Gen Ed	General Education Course (GE3)	3
Gen Ed	General Education Course (GE2)	3	Gen Ed	General Education Course (GE4)	3
	Total Units	17		Total Units	13
Third Year					
Fifth Semester			Sixth Semester		
Course #	Course Title	Units	Course #	Course Title	Units
PHYS 331	**Electricity & Magnetism I**	**3**	**PHYS 332**	**Electricity & Magnetism II**	**3**
PHYS 371	**Quantum Theory I**	**3**	**PHYS 472**	**Quantum Theory II**	**3**
PHYS Elec	**Physics Elective #1**	**3**	**PHYS Elec**	**Physics Elective #2**	**3**
Gen Ed	General Education Course (GE5)	3	Gen Ed	General Education Course (GE7)	3
Gen Ed	General Education Course (GE6)	3	Elective	Elective Course	3
	Total Units	15		Total Units	15
Fourth Year					
Seventh Semester			Eighth Semester		
Course #	Course Title	Units	Course #	Course Title	Units
PHYS 426	**Thermal Physics**	**3**	**PHYS 382**	**Methods of Experimental Physics II**	**2**
PHYS 381	**Methods of Experimental Physics I**	**2**	**Research**	**Physics Research**	**3**
Research	**Physics Research**	**3**	**Elective**	**Upper-Division Elective**	**3**
UNIV 301	**General Education Portfolio**	**1**	**Elective**	**Upper-Division Elective**	**3**
Elective	**Upper-Division Elective**	**3**	Elective	Elective Course	3
Elective	Elective Course	3			
	Total Units	15		Total Units	14

Physics 4-Year Plan (Calculus I Start)

Note - this document is intended as a guide, not a substitute for meeting with your academic advisor. Please see your academic advisor for more information about your major.
Note - this four-year plan is not a “one-size fits all”, this is a listing of all the required courses to meet graduation requirements; students may need to adjust their plan

First Year					
First Semester			Second Semester		
Course #	Course Title	Units	Course #	Course Title	Units
MATH 122A	Functions for Calculus	1	PHYS 161H	Accelerated Introductory Mechanics (GE2)	4
MATH 122B	First-Semester Calculus	4	MATH 129	Calculus II	3
ENGL 101	English Composition I	3	ENGL 102	English Composition II	3
Language	1st Semester Second Language	4-5	Language	2nd Semester Second Language	4-5
PHYS 120	Careers and Skills in Physics	1	UNIV 101	Introduction to General Education	1
Gen Ed	General Education Course (GE1)	3			
	Total Units	16-17		Total Units	15-16
Second Year					
Third Semester			Fourth Semester		
Course #	Course Title	Units	Course #	Course Title	Units
PHYS 162H	Accelerated Introductory Optics & Thermodynamics	4	PHYS 261H	Accelerated Introductory Electricity & Magnetism	4
CSC 110	Introduction to Programming I	4	PHYS 263H	Accelerated Introductory Relativity & Quantum Physics	3
MATH 223	Vector Calculus	4	MATH 254	Introduction to Differential Equations	3
Gen Ed	General Education Course (GE3)	3	Gen Ed	General Education Course (GE5)	3
Gen Ed	General Education Course (GE4)	3	Gen Ed	General Education Course (GE6)	3
			PHYS 105A	Introduction to Scientific Computing	1
	Total Units	18		Total Units	15
Third Year					
Fifth Semester			Sixth Semester		
Course #	Course Title	Units	Course #	Course Title	Units
PHYS 204	Mathematical Techniques in Physics	3	**PHYS 331**	**Electricity & Magnetism I**	**3**
PHYS 321	**Theoretical Mechanics**	**3**	**PHYS 371**	**Quantum Theory I**	**3**
PHYS 305	**Computational Physics**	**3**	**PHYS Elect**	**Physics Elective #1**	**3**
Gen Ed	General Education Course (GE7)	3	**Elective**	**Upper-Division Elective**	**3**
Elective	Elective Course	3	**Elective**	**Upper-Division Elective**	**3**
	Total Units	15		Total Units	16
Fourth Year					
Seventh Semester			Eighth Semester		
Course #	Course Title	Units	Course #	Course Title	Units
PHYS 332	**Electricity & Magnetism II**	**3**	**PHYS 426**	**Thermal Physics**	**3**
PHYS Elect	**Physics Elective #2**	**3**	**PHYS 472**	**Quantum Theory II**	**3**
PHYS 381	**Methods of Experimental Physics I**	**2**	**PHYS 382**	**Methods of Experimental Physics II**	**2**
Research	**Physics Research**	**3**	**Research**	**Physics Research**	**3**
UNIV 301	**General Education Portfolio**	**1**	Elective	Elective Course	3
	Total Units	12		Total Units	14

Physics Prerequisites

Course #	Course Title	Units	Prerequisites	Semesters
ECE 101	Programming I	3	MATH 112, 120R, 122B, 125	Fall, Spring
PHYS 105A	Introduction to Scientific Computing	1	© MATh 122B or 125	Fall, Spring
CSC 110	Introduction to Programming I	4	“C” or higher in MATH 112 or CSC 101	Fall, Spring, Summer
PHYS 120	Careers and Skills in Physics	1	None	Fall
PHYS 161H	Accelerated Introductory Mechanics	4	MATH 122B or 125	Fall, Spring
PHYS 162H	Accelerated Introductory Optics & Thermodynamics	4	PHYS 141, 140, 161H MATH 129	Fall, Spring
PHYS 204	Mathematical Techniques in Physics	3	PHYS 162H, 261H, 143, 240, 241 MATH 223 © MATH 254, 355	Fall, Spring
PHYS 261H	Accelerated Introductory Electricity & Magnetism	4	PHYS 141, 140, 161H MATH 129	Fall, Spring
PHYS 263H	Accelerated Relativity & Quantum Physics	3	PHYS 142, 162H © PHYS 241 or 261H © MATH 254	Fall, Spring
PHYS 305	Computational Physics	3	PHYS 105A, ECE 101, ECE 175, CSC 110 PHYS 162H, 142 PHYS 261H, 241 © MATH 254, 355	Fall, Spring
PHYS 320	Optics (Elective)	3	PHYS 142, 143, 162H PHYS 240, 241, 261H MATH 223 © MATH 254	Fall (odd)
PHYS 321	Theoretical Mechanics	3	PHYS 142, 143, 162H PHYS 240, 241, 261H MATH 223 © PHYS 204 © MATH 254, 355	Fall, Spring
PHYS 331	Electricity & Magnetism I	3	PHYS 240, 241, 261H PHYS 204 MATH 223 © MATH 254, 355	Fall, Spring
PHYS 332	Electricity & Magnetism II	3	PHYS 305 PHYS 331	Fall, Spring
PHYS 371	Quantum Theory I	3	PHYS 321 PHYS 263H PHYS 204	Fall, Spring
PHYS 381	Methods of Experimental Physics I	2	© PHYS 321 © PHYS 305, 320, 331, 371	Fall, Spring
PHYS 382	Methods of Experimental Physics II	2	PHYS 381	Fall, Spring
PHYS 405	Digital Electronic Techniques (Elective)	3	PHYS 105A, ECE 101, ECE 175, CSC 110	Fall (odd)
PHYS 422	Continuum Mechanics (Elective)	3	PHYS 321 PHYS 331 or 371	Spring (even)
PHYS 426	Thermal Physics	3	PHYS 305 PHYS 331 PHYS 371	Fall, Spring
PHYS 431	Molecular Biophysics (Elective)	3	PHYS 103, 111, 240, 241, 261H	Spring (odd)
ATMO 436A	Introduction to Atmospheric Sciences (Elective)	3	MATH 223 PHYS 140, 141, 161H	Spring
PHYS 450	Nuclear & Particle Physics (Elective)	3	PHYS 371	Fall
PHYS 460	Solid State Physics (Elective)	3	PHYS 371	Fall

Course #	Course Title	Units	Prerequisites	Semesters
PHYS 468	Classical & Quantum Relativity (Elective)	3	PHYS 331 PHYS 371 © PHYS 472	Fall (even)
PHYS 469	Introduction to General Relativity (Elective)	3	PHYS 263H PHYS 321 PHYS 331 PHYS 332	Spring (odd)
PHYS 472	Quantum Theory II	3	PHYS 305 PHYS 371	Spring
PHYS 473	Atomic & Molecular Spectroscopy	3	PHYS 263H	Spring (even)
PHYS 476	Methods of Mathematical Physics	3	PHYS 204 PHYS 321	Fall (even)

© indicates a corequisite, meaning the course needs to be taken before or concurrently with the course