

**APPLIED PHYSICS MAJOR**  
**Program Tracking Sheet**  
 Effective for students entering AY 2022-2023

Name:	Class Year:
Advisor:	2 <sup>nd</sup> Major:

**NOTES:** Minimum total academic credit = 15 units  
 Residency Req.: Min. of 8 units must be completed at WPI

**HUMANITIES AND ARTS (2 units)**

All 5 HUA courses must be completed before beginning the Inquiry Seminar or Practicum.

**Depth Component**

Students must complete at least three thematically-related courses prior to the culminating Inquiry Seminar or Practicum in the same thematic area. At least one of the three courses should be at the 2000-level or above.

	Course	Term	Grade	Units
1				1/3
2				1/3
3				1/3
4	HU 3900 or HU 3910			1/3

**Breadth Component**

Students must take at least one course outside the grouping in which they complete their depth component. To identify breadth, courses are grouped in the following manner.

- i. art/art history, drama/theatre, and music (AR, EN/TH, MU);
- ii. foreign languages (AB, CN, EN, GN, SP);
- iii. literature and writing rhetoric (EN, WR, RH);
- iv. history and international studies (HI, HU, INTL);
- v. philosophy and religion (PY, RE).

Exception: May take all six courses in a foreign language

5				1/3
<b>Humanities Elective</b>				
6				1/3

**PHYSICAL EDUCATION (4 PE classes = 1/3 unit)**

7				1/12
				1/12
				1/12
				1/12

**SOCIAL SCIENCE (2/3 unit)** ECON, ENV, GOV, PSY, SD, SOC, SS, STS, DEV, and ID2050

8				1/3
9				1/3

**THE INTERACTIVE QUALIFYING PROJECT (1 unit)**

10				1/3
11				1/3
12				1/3

**FREE ELECTIVES (1 unit)**

13				1/3
14				1/3
15				1/3

**MATHEMATICS (3 units)**

**Mathematics must include at least 2/3 unit of mathematics at the level of MA 3000 or higher**

16	MA 1021 (Calc 1)			1/3
17	MA 1022 (Calc 2)			1/3
18	MA 1023 (Calc 3)			1/3
19	MA 1024 (Calc 4)			1/3
20	MA 2051 (Diff Eqs)			1/3
21	MA 2071 (Lin Alg)			1/3
22	MA 2251 (Vector/Tensor Calculus)			1/3
23	MA 4451 (Boundary Value Problems)			1/3
24				1/3

**PHYSICS (5 units, includes MQP)**

ES 3001 and CH 3510 count as physics courses

25	PH 1110/1111 (Mechanics)			1/3
26	PH 1120/1121 (E&M)			1/3
27	PH 1130 (Modern Physics)			1/3
28	PH 1140 (Oscillations and Waves)			1/3
29	Mechanics:			1/3
30	Electromagnetism:			1/3
31	Experimental Physics:			1/3
32	Quantum Mechanics:			1/3
33	Thermals and statistical physics:			1/3
34				1/3
35				1/3
36				1/3

**MAJOR QUALIFYING PROJECT (3/3 unit)**

37				1/3
38				1/3
39				1/3

**APPLIED FOCUS or MINOR (2 units)**

The Applied Focus requirement is satisfied by completing a minor in a department other than physics or by completing a coherent group of at least two units of courses in an applied field. The 2-unit program must be formulated prior to the student's final year of study by the student in consultation with his/her academic advisor and approved by the Physics Department Undergraduate Curriculum Committee.

40				1/3
41				1/3
42				1/3
43				1/3
44				1/3
45				1/3

Physics Courses must include at least 1/3 unit from each of the five principal areas of physics: mechanics, experimental physics, electromagnetism, quantum mechanics, and thermal statistical physics.

This core distribution requirement is satisfied by successfully completing at least one course from each of the following five sets of courses: PH 2201 or 2202 (mechanics); PH 2651 or 2601 (experimental physics); PH 2301 or 3301 (electromagnetism); PH 3401 or 3402 (quantum mechanics); ES 3001, CH 3510, PH 2101 or PH 3206 (thermal and statistical physics); or other courses approved by the department Program Review Committee following petition by the student.

## Physics (PH) Courses Grid - 2022-23

2022-2023 Physics Course offering and other recommendations (check with Workday or the Physics Department with any questions)

PH		CAT	A	B	C	D	E
1000	PH 1110	General Physics - Mechanics	Cat I	A		C	E
	PH 1111	Principles of Mechanics	Cat I	A		C	
	PH 1120	General Physics - Electricity and Magnetism	Cat I		B		E
	PH 1121	Principles of Physics - Electricity and Magnetism	Cat I		B		D
	PH 1130	Modern Physics	Cat I		B		D E
	PH 1140	Oscillations and Waves	Cat I	A		C	
	PH 1150	Introductory Physics of Living Systems	Cat I				D E
2000	PH 2101	Principles of Thermodynamics	Cat I			C	
	PH 2201	Intermediate Mechanics I	Cat I	A		C	
	PH 2202	Intermediate Mechanics II	Cat I		B		
	PH 2301	Electromagnetic Fields	Cat I	A			
	PH 3301	Electromagnetic Theory	Cat I		B		
	PH 2501	Photonics	Cat II		B*		
	PH 2601	Photonics Laboratory	Cat II			C*	
	PH 2502	Lasers	Cat II		#		
	PH 2510	Atomic Force Microscopy	Cat II			#	
	PH 2651	Intermediate Physics Laboratory	Cat I				D
	PH 2520	Introduction to Astrophysics	Cat II			#	E
	PH 2540	Solar Systems	Cat II			C*	
	PH 2550	Atmospheric and Space Environments	Cat I				D E

3000	PH 3206	Statistical Physics	Cat I				D
	PH 3401	Quantum Mechanics I	Cat I			C	
	PH 3402	Quantum Mechanics II	Cat I				D
	PH 3501	Relativity	Cat II			C*	
	PH 3502	Solid State Physics	Cat II				D*
	PH 3503	Nuclear Physics	Cat II				#
	PH 3504	Optics	Cat II			#	
	PH 351X	General Relativity	Cat II	#			
	PH 352X	Particle Physics	Cat II	A*			
4000	PH444X	Quantum Optics	Cat II	A*			
	ISU	Topic of interest to be arranged					

*	Indicates course is offered in AY 22-23, but not next year, Cat II course.			
#	Indicates course is offered in AY 23-24, but not this year, Cat II course.			

Here are some Math Courses and other courses. There are many more depending on your interests and career goals!

This schedule is based off of history and may change - check Workday

MA 1021	Calc I		A	B		
MA 1022	Calc II		A	B	C	D
MA 1023	Calc III		A	B	C	D
MA 1024	Calc IV		A	B	C	D
MA 2051	Diff Eqs		A	B	C	D
MA 2071	Linear Algebra		A	B	C	D
MA 2251	Vector/Tensor Calc				C	
MA 3457	Num Meth for Calc & Diff Eqs			B		
MA 4411	Num Analysis of Diff Eqs		A			
MA 4451	Boundry Value Problems		A			
MA 4291	Applied Complex Variables				C	
MA 4473	Partial Diff Eqs			B		

CS 1004	Introduction to Programming for non-majors		A		C	
ECE 2010	Introduction to Electrical and Computer Engineering		A	B	C	D
ECE 2019	Sensors, Circuits, & Systems		A		C	

suggested

concurrent	sug-rec	
MA 1021		Calc I
MA 1023		Calc III
MA 1022		Calc II
MA 1024		Calc IV
MA 1024		Calc IV
MA 1023		Calc III
MA 1023		Calc III
MA 1024		Calc IV
MA 2051		
	MA 2051	Diff Eqs
	MA 2251	Vector/Tensor Calc
	MA 2251	Vector/Tensor Calc
see catalog		
see catalog		
see catalog		
see catalog		
	MA 2071	Linear Algebra
	PH1010, PH 1120, PH 1130	
	PH1010, PH 1120, MA 1022	
	PH1010, PH 1120, MA 2051	

	MA 4451	Boundry Value Problems
	MA 4451	Boundry Value Problems


suggested

MA 1021	
MA 1022	
MA 1023	
MA 1024	
None	
MA 1024	
programming	
MA 2071 and MA 3457/CS 4033	
MA 1024 or and MA 2051	
MA 1024 and MA 2051	
MA 2251 and MA 3832	

HS PH and MA 1022  
ECE 2010, MA 1024 (or equivalent), PH 1120/21 and MA 2051 (concurrent)