

Start to Finish: Pathway for the BS in Physics

Major Requirements (71-75 cr)

Offered: F - Fall, S - Spring, Su - Summer

Prerequisite - (0-7 cr)

(if required by placement assessment)

- ☐ CHEM 106 Principles of Chemistry (F, S, Su)
- ☐ MATH 111 Precalculus (F, S, Su)

Core (36 cr)

- ☐ PHYS 191 University Physics I (F, Su)
- ☐ PHYS 192 University Physics II (S, Su)
- ☐ PHYS 198 Introductory Physics Seminar (S)
- ☐ PHYS 210 Intermediate Mechanics (Alt F*)
- ☐ PHYS 220 Oscillations/Waves/Optics (Alt F**)
- ☐ PHYS 230 Intermediate Physics Lab (Alt F)
- ☐ PHYS 300 Jr./Senior Phys. Seminar (Alt F)
- ☐ PHYS 320 Statistical & Thermal Phys. (Alt S*)
- ☐ PHYS 330 Advanced Physics Lab (Alt S)
- ☐ PHYS 340 Electricity & Magnetism (Alt S*)
- ☐ PHYS 360 Modern Physics (Alt S**)
- ☐ PHYS 464 Quantum Mechanics (Alt F)

*Offered in same academic year.

**Offered in same academic year, after *.

Collaterals (26-27 cr)

- ☐ CHEM 120 General Chemistry I (F, S, Su)
- ☐ CHEM 121 General Chemistry II (F, S, Su)
- ☐ CSIT 104 Computational Concepts (F, S)
- ☐ MATH 122 Calculus I or AMAT 120 Applied Calculus A (F, S, Su)
- ☐ MATH 221 Calculus II or AMAT 220 Applied Calculus B (F, S, Su)
- ☐ MATH 222 Calculus III (F, S)
- ☐ AMAT 350 Applied Math I, or MATH 325 Ordinary Differential Equations, or PHYS 377 Mathematical Physics

Electives (9-12 cr)

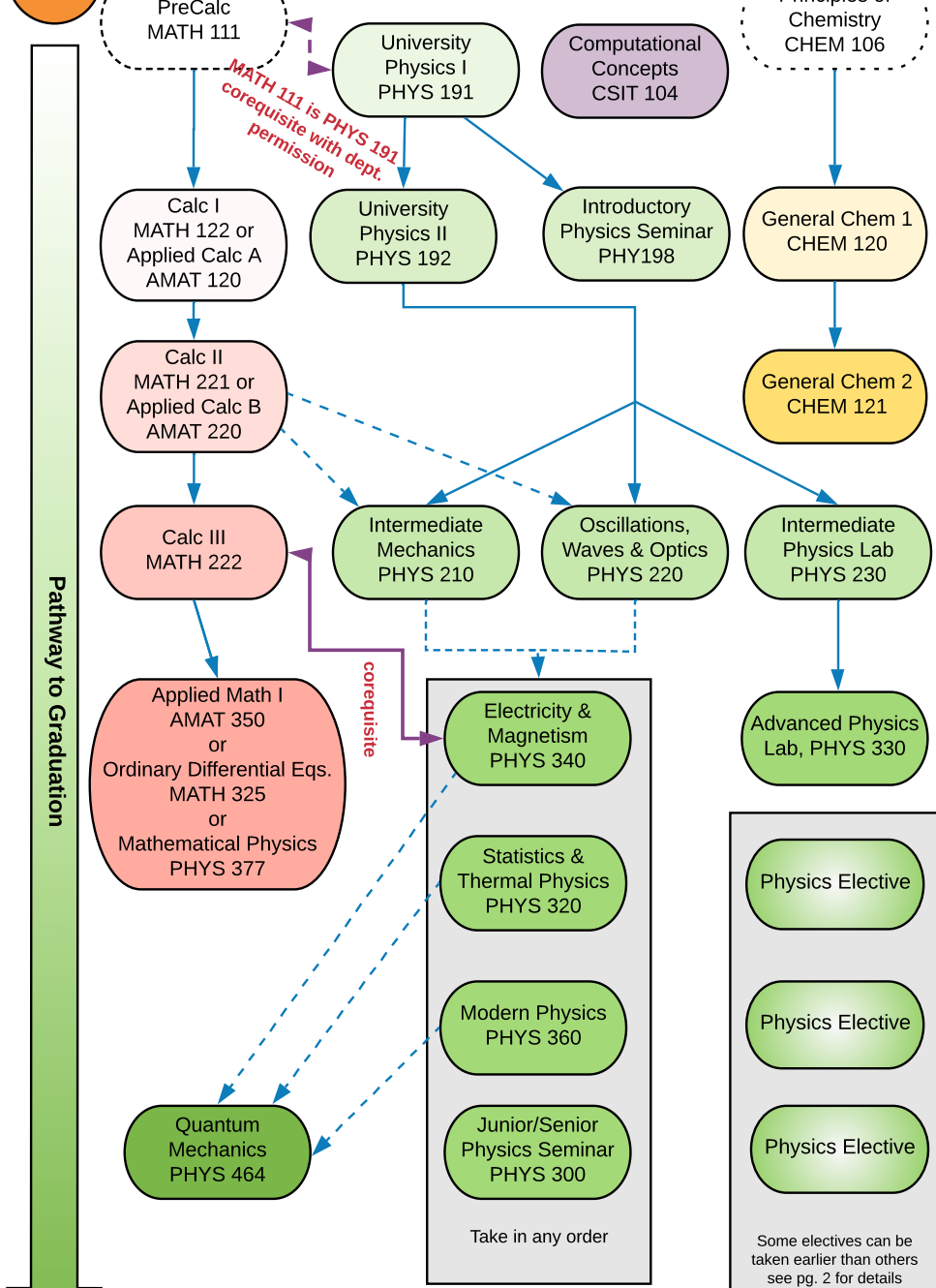
Pick three courses from list on page 2:

- ☐ Physics elective
- ☐ Physics elective
- ☐ Physics elective

7 Tips for Success in PHYSICS

1. Meet regularly with your adviser to make sure you are taking appropriate courses each semester.
2. Prioritize major courses; Gen. Ed. courses can be taken any time to reach 15+ credits per semester.
3. If averaging a C or below in a required course, seek help. Your options include: course instructor, student tutors, your advisor, department chairperson, and CSAM Academic Advising (csamssc@montclair.edu)
4. Use summer session to catch-up or push ahead in the MATH sequence and/or PHYS 191/192. A two course calculus sequence and PHYS 191 and 192 should be completed before PHYS 210/220.
5. Find out when PHYS and MATH courses will be offered. Most courses must be taken in sequence but are not offered yearly. Consult the department website or ask your advisor.
6. Participate in department events, seminars, physics club, and telescope nights.

START
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Major Map last updated 9/15/20.

Physics Electives (with prerequisites)

Select 3

Regularly Offered Electives:

- PHYS 280 Astronomy for Physicists (PHYS 191)
- PHYS 180 Astronomy for Everyone
(no prerequisite, and primarily for non-majors)
- PHYS 350 Modern Optics (PHYS 210 or 220)
- PHYS 368 Fluid Mechanics (MATH 222)
- PHYS 461 Special & General Relativity
(PHYS 340 or PHYS 360 or PHYS 368 or MATH 368)
- PHYS 480 Astrophysics
(PHYS 320 or PHYS 340 or PHYS 360 or PHYS 368)
- PHYS 495 Research/Independent Study in Physics
(departmental permission)

Infrequently Offered Electives:

- PHYS 245 Fundamentals of Electronic (PHYS 192 or 194)
- PHYS 310 Advanced Mechanics (PHYS 210 or PHYS 220)
- PHYS 325 Computational Physics
(MATH 221 or AMAT 220, PHYS 192 & CSIT 104 or 111)
- PHYS 377 Mathematical Physics (MATH 222)
- PHYS 380 Observational Astronomy
(PHYS 230 or PHYS 280)
- PHYS 341 Electronics & Digital Circuits (PHYS 230)
- PHYS 462 Nuclear Physics (PHYS 360)
- PHYS 470 Solid State Physics (PHYS 360)
- PHYS 399 Special Topics in Physics
(with department approval)
- PHYS 451 Radiation and Medical Physics
(PHYS 330 or PHYS 360 are co-requisites)

Suggested Sequence (required courses)

	<u>Fall</u>	<u>Spring</u>
Year 1	PHYS 191 GNED 199 (freshmen)	PHYS 192 PHYS 198
Complete Precalculus plus a two-course Calculus/Applied Calculus sequence before start of Year 2 (including the summer session). Complete CHEM 120, 121, & CSIT 104 before start of Year 3.		
Year 2	PHYS 210 PHYS 230 MATH 222	PHYS 320 (follows 210) PHYS 340 (follows 210) AMAT 350 or MATH 325
Year 3	PHYS 220 PHYS 330	PHYS 360 (follows 220)
<i>(PHYS 210 or 220 can be taken following completion of 192 & Calculus 1, 2.)</i>		
Year 4	PHYS 300 PHYS 464	

Other Requirements

General Education (32 cr)

*Courses in red should be taken as early as possible

GNED199 (1)

C1: WRIT105 (3)

C2: WRIT106 (3)

C3. CMST 101 (3)

D. Fine & Performing Arts (3)

F.1. Great Works & their Influences (3)

F2. Philosophical & Religious Perspectives (3)

G. Computer Science -- CSIT 104 meets requirement.

J. Physical Education (1)

K1 American & European History (3)

K2. Global Cultural Perspectives (3)

(select a K2 course that also satisfies the World Cultures requirement)

K3. Social Science Perspectives (3)

L. Interdisciplinary Studies (3)

University Requirements (3-6 cr)

World Languages (3-6)
determined by placement test

World Cultures (0)*

*select a World Cultures courses that fulfills Gen Ed. K2 above.

Free Electives (7-14 cr)

Note: Prerequisite classes (MATH 111 PreCalc, CHEM 106 Intro Chemistry) will take up free elective credits.

For remaining electives consider:

- taking CSIT/Data Science courses that can help with the first post-graduation job.
- exploring a personal interest.
- 5-year dual-degree options.

Consult the Physics & Astronomy website or your major advisor to clarify course availability.

Other concentrations or dual-degree programs have modified course requirements, including General Education courses. Consult the appropriate curriculum guide at:
montclair.edu/physics-astronomy/degree-programs/