Additional Major in Physics for Students Entering from 2015

Prerequisites
This subset of the MCS Core must be taken as prerequisites for the second-year Physics Core.

- 21-120: Differential and Integral Calculus
- 21-122: Integration, Diff. Eq., and Approx.

Physics Core
All Physics majors take these Physics and Mathematics courses to prepare for individualized tracks of study, including four colloquia courses.

- 33-121: Physics I for Science Students / 33-151: Matter and Interactions I
- 33-142: Physics II for Eng. or Physics / 33-152: Matter and Interactions II
- 33-104: Experimental Physics
- 15-110: Principles of Computing / 15-112: Fund. of Computing & CS
- 33-201: Physics Sophomore Colloquium I
- 33-211: Physics III: Modern Essentials
- 33-231: Physical Analysis
- 33-202: Physics Sophomore Colloquium II
- 33-228: Electronics I
- 33-232: Mathematical Methods of Physics
- 33-234: Quantum Physics
- 21-259: Calculus in Three Dimensions
- 33-301: Physics Upperclass Colloquium I
- 33-331: Physical Mechanics I
- 33-338: Int. Electricity and Magnetism I
- 33-341: Thermal Physics I
- 33-302: Physics Upperclass Colloquium II
- 33-340: Modern Physics Laboratory

Physics and Mathematics Electives
These Physics and Mathematics Electives may be chosen freely, but the tracks on the following pages are designed to support specific careers.

- Physics Breadth Elective
- Qualifying Physics Elective
- Qualifying Physics Elective
- Qualifying Physics Elective
- Mathematics Elective

Key
- : Required Course
- : Select One Course

Additional Major in Physics Tracks, Page 1

Graduate School Preparation
Regardless of track, students planning to undertake graduate studies in Physics are strongly advised to take the following four courses.

- 33-332: Physical Mechanics II
- 33-339: Intermed. Electricity & Magnetism II
- 33-445: Advanced Quantum Physics I
- 33-446: Advanced Quantum Physics II

Note: These courses may be used as Qualifying Physics, Technical, or Free Electives.

No Track
Physics students wanting maximum freedom can opt not to select a track. While there is significant flexibility, there are breadth requirements.

- Physics Breadth Elective
- Qualifying Physics Elective
- Qualifying Physics Elective
- Qualifying Physics Elective
- Mathematics Elective
- Technical Elective
- Technical Elective
- Technical Elective

Applied Physics Track
Students aiming for a career path in industrial or governmental laboratories can take this track to enhance computing and laboratory skills.

- 33-448: Introduction to Solid State Physics
- Computational Science Elective
- Applied Physics or Laboratory Elective
- Applied Physics or Laboratory Elective
- Applied Physics or Laboratory Elective
- Applied Physics or Laboratory Elective
- 33-350: Undergraduate Research 33-451: Senior Research related to applied physics
- Mathematics Elective

Astrophysics Track
Students planning careers or postgraduate work in astronomy or astrophysics can follow this track to gain a strong background in the field.

- 33-224: Stars, Galaxies and the Universe
- 33-466: Extragalactic Astrophysics and Cosmology
- 33-467: Astrophysics of Stars and the Galaxy
- 33-350: Undergraduate Research 33-451: Senior Research related to astrophysics
- Mathematics Elective
- Technical Elective
- Technical Elective
- Technical Elective

Key
: Required Course
: Select One Course
: Recommended Course

Additional Major in Physics Tracks, Page 2

Graduate School Preparation
Regardless of track, students planning to undertake graduate studies in Physics are strongly advised to take the following four courses.

- 33-332: Physical Mechanics II
- 33-339: Intermed. Electricity & Magnetism II
- 33-445: Advanced Quantum Physics I
- 33-446: Advanced Quantum Physics II

Note: These courses may be used as Qualifying Physics, Technical, or Free Electives.

Biological Physics Track
Students preparing for careers in biological or medical physics or graduate work in biophysics can broaden their major with this track.

- 33-441: Introduction to Biophysics
- Qualifying Physics Elective
- Mathematics Elective
- 03-231: Biochemistry I
- 09-217: Organic Chemistry I
- 09-218: Organic Chemistry II
- Biological Sciences Elective
- Biological Sciences Elective

Chemical Physics
Students planning graduate studies with an emphasis on chemical physics or a health profession may be interested in this track.

- Physics Breadth Elective
- Mathematics Elective
- 09-106: Modern Chemistry II
- 09-344: Physical Chemistry (Quantum)
- 09-345: Physical Chemistry (Thermo)
- Chemistry Elective
- Chemistry Elective
- Chemistry Elective

Computational Physics Track
Students can strengthen their grounding in the foundations and practice of computer use as applied to scientific problems with this track.

- 33-241: Introduction to Computational Physics
- 33-456: Advanced Computational Physics
- Physics Breadth Elective
- Qualifying Physics Elective
- 21-127: Concepts of Mathematics
- 21-369: Numerical Methods
- 15-122: Principles of Imperative Computation
- 15-150: Functional Programming

Key
: Required Course
: Select One Course
: Recommended Course