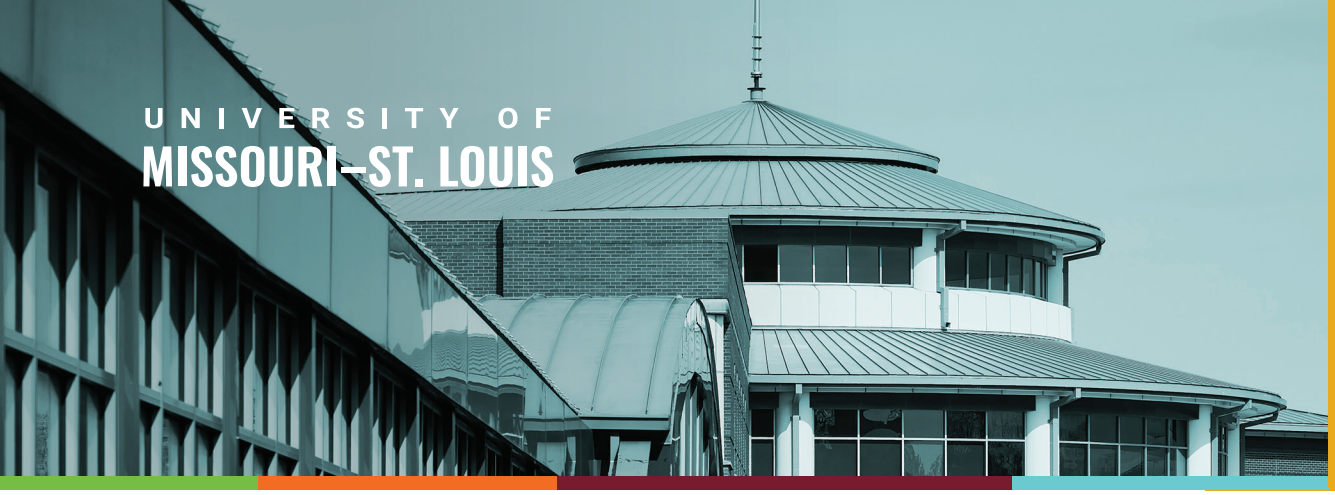

UNIVERSITY OF
MISSOURI–ST. LOUIS

4-YEAR
ACADEMIC
MAP

Physics BS

with an emphasis in Astrophysics

The study of astrophysics aims to understand the universe and everything in it in terms of the fundamental nature of forces and particles. The Department of Physics and Astronomy at UMSL is devoted to providing undergraduates with a broad-based education in astrophysics with the experimental, observational, and theoretical skills essential to practicing astronomers and astrophysicists. Undergraduate education in astrophysics prepares students for both graduate study and professional careers in astronomy, atmospheric science, image processing, cosmology, and instrumentation.

Career Outlook

Many of our students have been successful in subsequent graduate studies in astrophysics and meteorology, as well as physics. Our alumni have pursued graduate studies and earned doctorate degrees at institutions such as Cornell University, MIT, University of Wisconsin, University of Chicago, and Washington University. Students who have elected for careers in industry are now working in a variety of settings for such firms as Emerson Electric, Hewlett Packard, IBM, Boeing, and MEMC Electronic Materials (now SunEdison). Several former students teach physics in high schools around the St. Louis area.

Future Career Options

- Aerospace Engineer
- Astronomer
- Astrophysics Researcher
- Atmospheric Scientist
- Educator at Science Museum
- Geophysicist
- Geospatial Orbit Scientist
- Geospatial Scientist
- High School Physics/Science Teacher
- Meteorologist
- National Geospatial-Intelligence Agency
- Planetarium Technical Artist/Programmer
- Researcher in National Laboratory
- Telescope Operator
- University Professor

Skills Developed By Degree Completion

- Understand classical mechanics, electricity and magnetism, thermal and statistical physics, quantum mechanics, and modern electronics
- Understand principles of astrophysics and observational astronomy
- Perform astronomical observations and interpret their data
- Problem-solving, critical thinking, and analytical reasoning
- Write and orally communicate the results of scientific work
- Conduct original scientific research as part of a problem-solving team
- Identify errors in scientific data, and assess the significance of observed results

Successful alumni have gone on to fulfill many of the opportunities above. Additional possibilities are taken from the Bureau of Labor Statistics. Contact an advisor to discuss additional future career options.

UMSL | Arts and Sciences
University of Missouri–St. Louis

College of Arts and Sciences
Department of Physics and Astronomy
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314-516-5501
artscience@umsl.edu
umsl.edu/cas/advising

2024-2025 4-YEAR ACADEMIC MAP

Bachelor of Science in Physics
with an emphasis in Astrophysics

Check once completed

Year 1

FALL SEMESTER (15 credit hours)
- CHEM 1111: Introductory Chemistry I (5)
- ENGL 1100: First-Year Writing (3)
- INTDSC 1003: University Studies (1)
- MATH 1030: College Algebra (3)
- MATH 1035: Trigonometry (2)
- PHYSICS 1099: Windows on Physics (1)

SPRING SEMESTER (14 credit hours)
- ASTRON 1051: Introduction to Astronomy II (3)
- MATH 1800: Analytic Geometry and Calculus I (5)
- GEN ED CORE: US History and Government (3)
- GEN ED EXPLORE: Social Sciences (3)

Year 2

FALL SEMESTER (16 credit hours)
- ASTRON 1050: Introduction to Astronomy I (3)
- CMP SCI 1250: Introduction to Computing (3)
- MATH 1900: Analytic Geometry and Calculus II (5)
- PHYSICS 2111: Physics: Mechanics, and Heat (4)
- PHYSICS 2111L: Physics: Mechanics, and Heat Laboratory (3)

SPRING SEMESTER (16 credit hours)
- MATH 2000: Analytic Geometry and Calculus III (5)
- MATH 2450: Elementary Linear Algebra (3)
- PHYSICS 2112: Electricity, Magnetism, and Optics (4)
- PHYSICS 2112L: Electricity, Magnetism, and Optics Laboratory (1)
- GEN ED CORE: Communication Proficiency (3)

Year 3

FALL SEMESTER (15 credit hours)
- MATH 2020: Introduction to Differential Equations (3)
- PHYSICS 3200: Math Methods of Theoretical Physics (3)
- PHYSICS 3231: Introduction to Modern Physics (3)
- GEN ED EXPLORE: Humanities and Fine Arts (3)
- Cultural Diversity (3)

SPRING SEMESTER (15 credit hours)
- PHYSICS 3221: Mechanics (3)
- PHYSICS 3223: Electricity and Magnetism (3)
- PHYSICS 4341: Thermal and Statistical Physics (3)
- PHYSICS or ASTRON 4XXX: Physics or Astronomy Elective (3)
- GEN ED EXPLORE: Humanities and Fine Arts (3)

Year 4

FALL SEMESTER (15 credit hours)
- ENGL 3160: Writing in the Sciences (3)
- PHYSICS 4331: Introduction to Quantum Mechanics (3)
- PHYSICS 4323: Modern Optics (3)
- PHYSICS 4XXX: Physics Elective (3)
- GEN ED EXPLORE: Social Sciences (3)

SPRING SEMESTER (14-15 credit hours)
- PHYSICS 4301: Astrophysics (3) or ASTRON 4322: Observational Astronomy (4)
- PHYSICS 4350: Computational Physics (3)
- GEN ED EXPLORE: Humanities and Fine Arts (3)
- GEN ED EXPLORE: Social Sciences (3)
- Elective (2)

Last updated May 2024

IT STARTS RIGHT NOW

This is a sample academic map for the courses to take each academic semester/session. This map is not a substitute for academic advisement. Contact your advisor when making final selections.

UNIVERSITY STUDIES
University studies is required for all first-year students and those with less than 24 credit hours.

MILESTONE COURSES
Milestone courses should be taken in the order shown to ensure you stay on a timely and accurate path toward graduation.

SUMMER AND INTERSESSION COURSES
Don't forget that summers and winter breaks are a way to fast-track your route to degree completion – and lighten your load during fall and spring!

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