Big ideas.
Real-world thinking.

mnsu.edu

Minnesota State University
Mankato

PHYSICS & ASTRONOMY *College of Science, Engineering & Technology*

WHAT DEGREES AND PROGRAMS DO WE OFFER?

The Department of Physics and Astronomy at Minnesota State University, Mankato offers a BS in physics and a BS in physics teaching. Students interested in astronomy can take a variety of astronomy courses and earn a minor in astronomy.

WHAT CAREER OPPORTUNITIES ARE AVAILABLE FOR STUDENTS COMPLETING THIS PROGRAM?

Physics is the foundation of all sciences and engineering, and with a physics degree, you will have a wide variety of career choices.

What do you do with a physics degree? Unlike other majors that train students for a specific field, physics majors have many options after graduation. After obtaining their BS degree, over half of the physics majors go on to graduate school to continue their education in physics, astronomy, engineering, medicine, or law. Some join the work force in industry as engineers, programmers, data scientists, or technicians. Some become high school Physics teachers or professionals in education. The strength of physics majors is their ability to do critical thinking and problem solving.

These are the skills needed in all professions and are welcomed by all professional schools. Physics graduates are among the highest paid college graduates in the United States.

For those people who go on to graduate school to earn an advanced degree in physics, an even wider range of opportunities becomes available. As academics, the opportunity to teach in higher ed and become a professor is now available. As industry professionals, they are usually engaged in the development and design of state-of-the-art products and processes in their field of specialization. Some physicists will be working in national, industrial, or medical research laboratories. They are engaged in basic or applied research. Their work may involve planning and conducting experiments, analyzing and interpreting data, or developing models and theories to explain data.

We live in an era of fast-developing science and technology. Getting a physics degree will give you an ability to adapt to the fast changing job market and offer you an opportunity to make a difference in the future of our world.

QUALITY

The goal of our physics curriculum is to prepare our students for graduate study or work in the public or private sectors. Training in physics gives one a strong ability in problem solving which is needed in all jobs. We pride ourselves on the quality of our degree.

All faculty in the department have a Ph.D. in either physics or astronomy. They are active in research fields such as materials physics, education, non-linear dynamics, biophysics, applied nuclear sciences, astrophysics and space physics. All courses are taught by faculty members. Laboratory courses are taught by faculty and graduate assistants. Faculty/student ratio is about 1/40 for introductory physics courses, about 1/8 in upper division courses for majors.

ALUMNI SUCCESSES

About one half of our graduates go to graduate school in big research universities to pursue higher degrees in physics, astronomy or related fields; others become high school teachers or work in industry.

RESEARCH OPPORTUNITIES AND SUMMER INTERNSHIP

Every major in our program has the opportunity to work with one or more faculty on research projects ranging across the fields listed above. Nearly all of our graduates have taken this opportunity, and often the work they do on these projects helps direct their goals for after they leave Minnesota State Mankato.

Many students in our physics program participate in the Undergraduate Research Conference at Minnesota State Mankato and Research for Undergraduate Students (REU) programs at big research universities during the summer. These programs give students the opportunity to work in a big research group on the most advanced research in physics with the state of the art facilities. The program pay students a summer stipend in additional to housing and travel expenses.

SCHOLARSHIPS

The department has several scholarships for physics majors. Detailed information is on the department website at cset.mnsu.edu/pa/. Other scholarship are available through the college and the university.

CLUBS

There is an active physics club in the department.

HOW DOES A STUDENT PREPARE FOR THIS PROGRAM?

If you love mathematics and physics and are good at these subjects in high school, if you are curious about why things work the way they do, if you are not sure what field of science or engineering you should go into, then you should choose physics as your major!

If you consider majoring in physics, you should enjoy the challenge of solving problems in mathematics and science. Take all of the mathematics and science courses offered in high school, particularly physics and chemistry. Be sure you have good skills in algebra and trigonometry.

FOR MORE INFORMATION PLEASE CONTACT

Department of Physics and Astronomy

Minnesota State University, Mankato
141 Trafton Science Center N
Mankato, MN 56001

Phone

507-389-5743 (V)
800-627-3529 or 711 (MRS/TTY)

cset.mnsu.edu/pa/

You are encouraged to visit the campus.
To arrange for a visit, please call:
Office of Admissions: 507-389-1822
Toll-free: 800-722-0544

SAMPLE FOUR-YEAR CURRICULUM (PHYSICS, BS)

First Year (Fall)	First Year (Spring)
MATH 121 Calculus I (4) PHYS 221 General Physics I (4) CIS 121 Intro to Programming (4) General Education (3-4)	MATH 122 Calculus II (4) PHYS 222 General Physics II (3) PHYS 232 General Physics II Lab (1) General Education, (6-8)
Second Year (Fall)	**Second Year (Spring)**
MATH 223 Calculus III (4) PHYS 223 General Physics III (3) PHYS 233 General Physics II Lab (1) General Education (6-8)	MATH 321 Ordinary Differential Equation (4) PHYS 335 Modern Physics I (3) General Education (6-8)
Third Year (Fall)	**Third Year (Spring)**
PHYS 336 Modern Physics II (3) PHYS 441 Mechanics (4) PHYS 447 Electricity & Magnetism I (3) CIS 122 Data Structures (4)	MATH 247 Linear Algebra I (4) PHYS 448 Electricity and Magnetism II (3) PHYS 457 Optics (3) OR PHYS 473 Statistical Physics (3) PHYS 475 Advanced Laboratory (2) General Education (3)
Fourth Year (Fall)	**Fourth Year (Spring)**
PHYS 461 Quantum Mechanics (4) PHYS 465 Computer Application in Physics (3) General Education (6-8)	PHYS 457 Optics (3) OR PHYS 473 Statistical Physics (3) PHYS 492 Seminar (1) General Education (6-8)

For additional information about course requirements, please visit http://www.mnsu.edu/supersite/academics/bulletins/

05/21

Minnesota State University Mankato