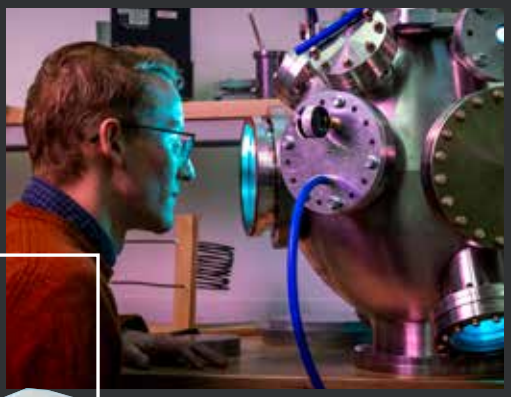
NORM ASBJORNSON COLLEGE of ENGINEERING
MONTANA STATE UNIVERSITY

UNDERGRADUATE ACADEMIC PROGRAMS



think outside™

MONTANA
STATE UNIVERSITY
NORM ASBJORNSON
College of
ENGINEERING

The Norm Asbjornson College of Engineering is at the core of MSU's land-grant mission, providing an inclusive, hands-on learning environment that supports academic excellence, strives for innovation in research and serves the community in Montana and beyond.

I'm thrilled to share with you the exciting opportunities available to our students.
In the pages that follow, you'll get a glimpse of how our engineering and computer science undergraduates are reaching their goals at MSU and in their fields. With a variety of student support services, hands-on research opportunities, and courses designed to meet the need for capable and creative professionals, we set our students up for success. I invite you to learn what awaits you at the Norm Asbjornson College of Engineering and how you can be part of our legacy of excellence.

Brett Gunnink, Ph.D., P.E.
Dean, Norm Asbjornson College of Engineering

MSU social media:

facebook.com/montanastate

instagram.com/montanastateuniversity

Engineering college social media:

facebook.com/MontanaStateNACOE

instagram.com/msu_nacoe/

UNDERGRADUATE AREAS OF STUDY

- **Biological Engineering**
- **Biomedical Engineering**
- **Chemical Engineering**
- **Civil Engineering**
  - Land Surveying
- **Computer Engineering**
- **Computer Science (STEM interest)**
  - Interdisciplinary Option
  - Professional Option
- **Computer Science (Arts, Humanities or Business interest)**
- **Data Science**
- **Construction Engineering Technology**
- **Electrical Engineering**
  - Optics & Photonics
- **Environmental Engineering**
- **Financial Engineering**
- **Industrial & Mgmt. Systems Engineering[1]**
  - Engineering Management
- **Mechanical Engineering**
  - Aerospace
  - Building Energy Systems
  - Materials
  - Mechatronics
- **Mechanical Engineering Technology**
- **Military Aerospace Studies–Air Force ROTC**
- **Military Science–Army ROTC**
- **Military Studies**

[1] Master of Science in Industrial & Management Engineering —one additional year

● **Major** ○ **Option within a major**
■ **Minor** ▲ **Special program**

GRADUATE DEGREES

M.Eng.	Bioengineering
M.Eng.	Chemical Engineering
M.Eng.	Civil Engineering
M.Eng.	Electrical Engineering
M.Eng.	Environmental Engineering
M.Eng.	Mechanical Engineering
M.S.	Bioengineering
M.S.	Chemical Engineering
M.S.	Civil Engineering
M.S.	Cybersecurity
M.S.	Computer Science
M.S.	Electrical Engineering, Plan A *(thesis)*
M.S.	Electrical Engineering, Plan B *(professional paper)*
M.S.	Environmental Engineering
M.S.	Industrial and Management Engineering
M.S.	Mechanical Engineering
M.S.	Optics and Photonics Plan A *(thesis)*
M.S.	Optics and Photonics, Plan B *(professional paper)*
Ph.D.	Chemical Engineering
Ph.D.	Computer Science
Ph.D.	Ecology and Environmental Sciences *(Interdisciplinary)*
Ph.D.	Electrical Engineering
Ph.D.	Engineering Options in Applied Mechanics, Civil, Environmental, Industrial and Management Systems
Ph.D.	Materials Science
Ph.D.	Mechanical Engineering

FACTS & STATS

Number of Facuty

TENURE TRACK	NON-TENURE TRACK
88	67

2023

Named for a generous donor and 1959 MSU electrical engineering alumnus, the **Bill Wurst Makerspace** includes specialty tools such as 3-D printers for students and faculty to build, test and prototype their big ideas.

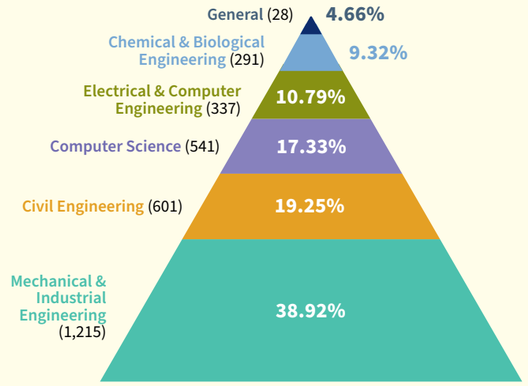
Research Expeditures

$23.2 million

2023

Top producer of Goldwater Scholars:
The Goldwater Scholarship is a competitive national award given to math, science and engineering students. MSU has produced a total of 90 Goldwater Scholars. – 2024

UNDERGRADUATE ENROLLMENT BY DEPARTMENT



2023

A graduate student in civil engineering surveys a fish bypass on the Yellowstone River.

A biochemistry PhD student and a biomedical engineering undergraduate student are developing new panels of biomarkers for earlier detction of osteoarthritis.

New home for Gianforte School of Computing to open in 2026

In 2026, the Gianforte School of Computing will open the doors on its new home: Gianforte Hall, which will provide space for computing-related fields, including cybersecurity, film, photography and music technologies. The building, which is currently under construction adjacent to Norm Asbjornson Hall, will be three stories and offer 57,759 square feet of interior space.

Gianforte Hall will feature two large classrooms and laboratories dedicated to robotics, cybersecurity, augmented and virtual reality, data science, artificial intelligence and machine learning. A video production studio will be available, as will an audio recording facility. Some of the spaces will be designed to highlight the contributions of computing pioneers Grace Hopper and Alan Turing.

The building will also incorporate multiple sustainability features designed to target a Leadership in Energy and Environmental Design, or LEED, silver certification. The building will be part of MSU's South Campus Energy District, a system that helps reduce energy use by allowing buildings to help heat and cool each other. Additionally, Gianforte Hall will be MSU's first mass timber structure, a sustainable choice of materials that will help minimize carbon emissions from concrete and steel used elsewhere in construction.

Gianforte Hall
is the next step in our journey in expanding access and increasing excellence in computing education at MSU.

"Gianforte Hall is the next step in our journey in expanding access and increasing excellence in computing education at MSU," said Brett Gunnink, dean of MSU's Norm Asbjornson College of Engineering. "The Gianforte Family Foundation has been our partner on this journey for the past two decades. We are greatly appreciative of their steadfast support for advancing computing education for Montanans."

The forthcoming building is made possible by a $50 million donation from the Gianforte Family Foundation. Hennebery Eddy Architects Inc. designed the building. Swank Enterprises is the contractor.

Cutting-edge building technologies are expected to help the forthcoming Gianforte Hall earn **U.S. Green Building Council's LEED Silver certification.**

Gianforte School of Computing

- Three stories
- 57,759 square feet of interior space.
- Two large classrooms and laboratories dedicated to robotics, cybersecurity, augmented and virtual reality, data science, artificial intelligence and machine learning.
- A video and audio recording production studio will be available

Student support

ePALS
The student mentoring program pairs freshmen and sophomores with juniors and seniors who provide guidance about classes, activities, internships and more.

Empower
The Empower program supports historically underrepresented students in STEM fields. The Empower Student Center provides a study space and services that support inclusive community and academic success.

Women in Engineering
Offering professional development and networking opportunities, the Women in Engineering program works to build a community of successful women engineers and computer scientists.

Walk-in help centers
The engineering college offers walk-in help centers where students can get one-on-one help with challenging core courses.

Global horizons
The International Engineering Certificate is a step towards becoming a global computer scientist or engineer—someone who can live, work and perform anywhere. Students work closely with their advisers to turn their engineering study abroad experience or service trip into credit toward the certificate.

Dedicated faculty
One-on-one faculty advising is available to all students for discussing course load, degree planning and career preparation.

Online Advising Center
We provide easy access for current and prospective students to connect with academic pathways, support resources and engagement opportunities.

Visit
coe.montana.edu/advising
to learn more.

ENGINEERING EXCELLENCE

Engagement opportunitites

Community and connections
Engineering and computer science students can join any of 38 clubs and organizations within the college, including the Bridger Solar Team and Association for Women in Computing.

Engineers Without Borders
MSU students have completed more than 30 projects in the Khwisero region of Kenya, including water well projects, sanitation projects, a water pipeline and rainwater catchment systems.

Construction competition
MSU civil engineering students regularly place among the top teams at a regional competition where they create mock construction bids on real-world projects such as bridges.

MSU students have completed more than 30 projects in the Khwisero region of Kenya.

Opposite, top: *Researchers use a flourescent microscope to image calcium signals.* **Opposite, bottom left:** *The Montana Micro-fabrication Facility makes small biosensors.* **Opposite, bottom right:** *Students in the Gianforte School of Computing collaborate on a coding challenge.*

Women students

600

There are 600 women students enrolled in the Norm Asbjornson College of Engineering.

Spring 2024

Women faculty on tenure track

30% of total

2024: 25 tenure-track female faculty

AN INCLUSIVE COLLEGE

We remain committed to providing a place for all to realize their potential in engineering and computer science.

The Empower program aims to advance our population of students from diverse backgrounds by fostering a supportive learning environment that encourages their academic, professional and leadership development.

EMPOWERING STUDENTS

The Empower Student Center offers a study area, as well as access to resources, staff, and community. The center aims to support students academically and personally by fostering a supportive learning environment.

Opposite, top: *Civil engineering and ecology graduate students team up to improve native fish habitat on the Big Hole River in southwest Montana.*

Opposite, bottom left: *Electrical engineering graduate and undergraduate students prepare silicone wafers to be fabricated for various research projects.*

Opposite, bottom right: *An electrical engineering doctoral student won a prestigious NSF Graduate Research Fellowship for a project to advance an optics technology for measuring the composition of clouds.*

Ge GENERAL ENGINEERING

GENERAL ENGINEERING

General Engineering is not a degree plan, but it is an opportunity to connect with resources in the Norm Asbjornson College of Engineering to explore these disciplines and careers. Students take courses aligning with any engineering or computing major. An academic adviser will help identify programs that meet career interests and connect students with experiences and people to guide major selection.

INTRODUCTORY ALGEBRA FIRST YEAR

FRESHMAN YEAR	FALL	SPRING	SUMMER*
M 063 + M 090 COMBO - *College Algebra*	6		
Choose a Univ Core Electives (IA, IH, IS or D)	3		
Choose a Univ Core Electives (IA, IH, IS or D)	3		
Choose US or W Core course	3		
Total for Fall	**15**		
M 021 + M 121Q - *College Algebra*		5	
Choose a Univ Core Electives (IA, IH, IS or D)		3	
Choose a Univ Core Electives (IA, IH, IS or D)		3	
Choose US or W Core course		3	
EGEN 105 - *Intro to General Engineering*		2	
Total for Spring		**16**	
M 151Q - *Pre-Calculus*			4
M 171Q - *Calculus I*			4
Total for Summer*			**8**

PRE-CALCULUS MATH START

FRESHMAN YEAR	FALL	SPRING	SUMMER*
EGEN 105 - *Intro to General Engineering*	2		
M 151Q - *Pre-Calculus*	4		
CHMY 141 + CHMY 142 - *College Chemistry I*	4		
Choose a Univ Core Electives (IA, IH, IS or D)	3		
Choose US or W Core course	3		
TOTAL FOR FALL	**16**		
M 171Q - *Calculus I*		4	
PHSX 220 - *Physics I (w/ calculus)*		4	
Choose a Univ Core Electives (IA, IH, IS or D)		3	
Choose US or W Core course		3	
Course from Selected Engineering curriculum		3	
TOTAL FOR SPRING		**17**	
M 172Q - *Calculus II*			4
TOTAL FOR SUMMER*			**4**

COLLEGE ALGEBRA MATH START

FRESHMAN YEAR	FALL	SPRING	SUMMER*
EGEN 105 - *Intro to General Engineering*	2		
M 121Q - *College Algebra*	3		
Choose a Univ Core Electives (IA, IH, IS or D)	4		
Choose a Univ Core Electives (IA, IH, IS or D)	3		
Choose US or W Core course	3		
TOTAL FOR FALL	**15**		
M 151Q - *Pre-Calculus*		4	
Choose a Univ Core Electives (IA, IH, IS or D)		3	
CHMY 141 + CHMY 142 - *College Chemistry I*		3	
Choose US or W Core course		3	
Course from Selected Engineering curriculum		2-3	
TOTAL FOR SPRING		**15-16**	
M 171Q - *Calculus I*			4
TOTAL FOR SUMMER*			**4**

CALCULUS MATH START

FRESHMAN YEAR	FALL	SPRING
EGEN 105 - *Intro to General Engineering*	2	
M 171Q - *Calculus I*	4	
CHMY 141 + CHMY 142 - *College Chemistry I*	4	
Choose a Univ Core Electives (IA, IH, IS or D)	3	
Choose US or W Core course	3	
TOTAL FOR FALL 16		
M 172Q - *Calculus II*		4
PHSX 220 - *Physics I (w/ calculus)*		4
Choose a Univ Core Electives (IA, IH, IS or D)		3
Choose US or W Core course		3
Course from Selected Engineering curriculum		3
TOTAL FOR SPRING		**17**

*** OPTIONAL TERM IF FOUR-YEAR TIME TO DEGREE IS NECESSARY**

Use QRcode for more **general engineering** course information

Be BIOMEDICAL ENGINEERING

BIOMEDICAL ENGINEERING

The Biomedical Engineering major and minor at Montana State combine engineering with courses like anatomy, physiology and cell biology to prepare students to create new diagnostic devices, prosthetics, pharmaceuticals and more. The programs can overlap with pre-med curricula, enabling students to look ahead to medical school while also opening opportunities in the rapidly growing field of biomedical engineering.

Gain interdisciplinary skills spanning engineering and medicine to prepare for in-demand jobs in the biomedical industry, medical school or graduate school.

YOUR FIRST-YEAR COURSES:

BIOMEDICAL ENGINEERING

Combines engineering with courses like anatomy and cell biology opening doors to careers in biomedical research and technology.

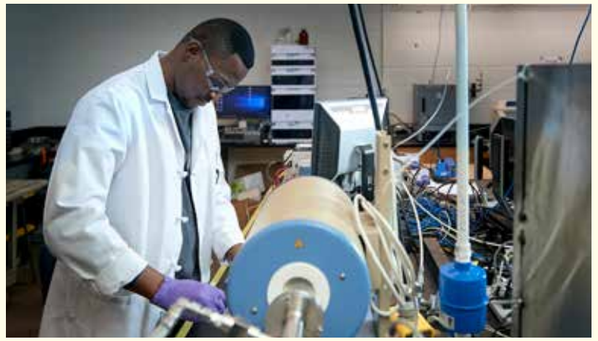
EBME 100	*Intro to Biomedical Engineering*	2
CHMY 141-142	*College Chemistry I & Chem I Lab*	4
University Core Electives or W Core		6
BIOB 160 or BIOB 260	*Principles of Living Systems* or *Cellular & Molecular Biology*	4 or 4
M 171Q	*Calculus I*	4
CHMY 143 & 144	*College Chemistry II & Chem II Lab*	4
EGEN 102	*Intro to Engineer Computer Apps*	3
BIOH 185	*Integrated Physiology I*	4
M 172Q	*Calculus II*	4

Use QRcode for more **biomedical engineering** course information

CBe DEPARTMENT OF CHEMICAL & BIOLOGICAL ENGINEERING

CENTER FOR BIOFILM ENGINEERING

Chemical and biological engineering students find research opportunities within the Center for Biofilm Engineering. They study biofilm from human, industrial and natural environments such as Yellowstone National Park, solving problems related to human health, drinking water and degradation of environmental contaminants.



Montana State University materials science PhD student prepares biomimetic catalysts for thermal reduction in a tube furnace.

Research Highlight

Projects funded by the NSF and Department of Energy are leading to the development of methods to convert agricultural biomass that might otherwise sit in farmers' fields into plastic beverage bottles and food containers.

Career Opportunities

Health and medicine
Environmental remediation
Renewable energy
Chemical processing
Consumer product manufacturing
Food and beverage manufacture
Oil and gas refining
Petrochemicals
Pharmaceuticals

Top Employers

3M
Lonza
BP
Micron
Intel
Pfizer

YOUR FIRST-YEAR COURSES:

BIOLOGICAL ENGINEERING

Biological engineers integrate life sciences with engineering to transform natural materials into products such as medicines, biofuels and foods.

EBIO 100	*Intro to Biological Engineering*	**2**
BIOB 160	*Principles of Living Systems*	**4**
CHMY 141-142	*College Chemistry I*	**4**
CHMY 143-144	*College Chemistry II*	**4**
M 171Q	*Calculus I*	**4**
M 172	*Calculus II*	**4**
University Core Electives		**12**

CHEMICAL ENGINEERING

Chemical engineering graduates create valuable products using chemical processes that are cost-effective, energy efficient and sustainable.

ECHM 100	*Intro to Chemical Engineering*	**2**
CHMY 141-142	*College Chemistry I*	**4**
CHMY 143-144	*College Chemistry II*	**4**
M 171Q	*Calculus I*	**4**
M 172	*Calculus II*	**4**
University Core Electives		**15**

3-D printing creates new ways of studying the interactions of microbes.

MINOR Biomedical Engineering

Get Involved

- American Institute of Chemical Engineers
- Electrochemical Society
- Society for Biological Engineers

BUILDING A SUSTAINABLE FUTURE

Chemical and biological engineering faculty and students are working to convert greenhouse gases, such as carbon dioxide, into chemical building blocks which can be used to create a myriad of other useful materials. Using enzymes found in nature as inspiration, they are developing unique catalysis which can withstand harsh industrial conditions.

The Magnetic Resonance Laboratory is used to explore the unique fluid properties of liquids and gels.

Use QRcode for more **chemical and biological engineering** course information

STRUCTURAL ENGINEERING CLASS

Civil engineering students tour a construction site on campus during a structural engineering class to gain an understanding of real-world applications structural elements and systems.

Students in the structures laboratory perform concrete strength testing.

Research Highlight

In partnership with the Montana Department of Transportation, MSU undergraduates have helped develop an exceptionally strong and durable concrete that's now being used for bridge decks in the state.

EDUCATION FOR THE REAL WORLD

With a $1 million grant from the National Science Foundation, MSU is transforming its Environmental Engineering degree to better position graduates to excel in professional practice and serve communities. Courses are structured around real-world, multifaceted projects that incorporate technical subjects as well as community engagement, economics and writing for general audiences.

YOUR FIRST-YEAR COURSES:

CIVIL ENGINEERING

Civil engineers provide society with vital infrastructure including roads, buildings, bridges, transit systems and water treatment systems while tackling challenges such as pollution and community planning.

CHMY 141	*College Chemistry I*	**4**
M 171Q	*Calculus I*	**4**
WRIT 101W	*College Writing I*	**3**
University Seminar		**3**
University Core		**3**
CHMY 143	*College Chemistry II*	**4**
M 172Q	*Calculus II*	**4**
PHSX 220	*Physics I (with Calculus)*	**4**
ECIV 101	*Introduction to Civil Engineering*	**1**
ECIV 202	*Applied Analysis*	**1**

ENVIRONMENTAL ENGINEERING

Environmental engineers provide society with solutions that protect public health and natural systems.

CHMY 141	*College Chemistry I*	**4**
M 171Q	*Calculus I*	**4**
WRIT 101W	*College Writing I*	**3**
US 101US or	*First Year Seminar*	**3**
CLS 101US or	*Knowledge and Community*	**3**
CLS 111US or	*Introduction to Public Speaking*	**3**
HONR 201US	*Texts and Critics: Knowledge & Imagination I*	**3**
University Core		**6**
CHMY 143	*College Chemistry II*	**4**
M 172Q	*Calculus II*	**4**
PHSX 220	*Physics I (with Calculus)*	**4**
ECIV 202	*Applied Analysis*	**1**
EENV 102	*Introduction to Environmental Design and Sustainability*	**3**

CONSTRUCTION ENGINEERING TECHNOLOGY

Construction engineering technology graduates plan and supervise construction for major projects such as highways, buildings and industrial plants.

CHMY 121N	*Introduction to General Chemistry*	**4**
DDSN 131	*Introduction to Drafting and Design*	**3**
ECNS 101IS	*Economic Way of Thinking*	**3**
M 165Q	*Calculus for Technology I*	**3**
University Seminar		**3**
MECNS 202	*Principles of Macroeconomics*	**3**
EMAT 251	*Materials Structures & Properties*	**3**
PHSX 205	*College Physics I*	**4**
M 166Q	*Calculus for Technology II*	**3**
WRIT 101W	*College Writing I*	**3**
ECIV 101	*Introduction to Civil Engineering*	**1**

MINORS

Land surveying

Business administration

Career Opportunities

- Construction
- Project management
- Transportation
- Water resources
- Geotechnical
- Structural
- Environmental

Get Involved

- American Society of Civil Engineers
- Associated General Contractors of America
- MSU Institute of Transportation Engineers

Civil engineering students attend a demonstration in the structures laboratory to perform concrete beam dynamics testing in the College of Engineering.

Use QRcode for more **civil engineering** course information

DEPARTMENT OF ELECTRICAL & COMPUTER ENGINEERING

RESEARCH EXPERIENCE

Students who study sky polarization and a variety of other optical phenomena go on to work at NASA and local high-tech companies.

Students working on research projects have the opportunity to use the state-of-the-art cleanrooms in MSU's Montana Microfabrication Facility.

Research Highlight

More than 70 undergraduates have been involved in developing RadPC, a spacecraft computing technology that can recover from radiation interference in outer space. A prototype is scheduled to journey to the moon for testing aboard a NASA mission in 2024.

INFORM AND INSPIRE

Service learning is key to the MSU experience. That's why you'll find computer and electrical engineering students and faculty active with local, regional and international activities including FIRST Robotics, outreach to K-12 education, engineering competitions and summer research programs for underrepresented groups in engineering.

YOUR FIRST-YEAR COURSES:

COMPUTER ENGINEERING

Computer engineers use their understanding of software, electronic circuits, innovation and design to work with modern embedded computer processors that provide the electronic brains for phones, autonomous vehicles, biomedical devices, computer networks and more.

M 171Q	*Calculus I*	**4**
EELE 101	*Intro to Electrical Fundamentals*	**3**
CLS 101US or **COMX 111US**	*Knowledge and Community* or *Introduction to Public Speaking*	**3**
CSCI 127	*Joy and Beauty of Data*	**4**
M 172Q	*Calculus II*	**4**
PHSX 220	*Physics I (with Calculus)*	**4**
EELE 261	*Digital Logic*	**4**
CSCI 132	*Basic Data Structures and Algorithms*	**4**

ELECTRICAL ENGINEERING

Electrical engineers are key contributors at the frontier of science and engineering, using physics, electronics and electromagnetism to work with everything from nanotechnology to smart grids, inside human bodies to deep outer space.

EELE 101	*Intro to Electrical Fundamentals*	**3**
M 171Q	*Calculus I*	**4**
CLS 101US or **COMX 111US**	*Knowledge and Community* or *Introduction to Public Speaking*	**3**
PHSX 220	*Physics I (with Calculus)*	**4**
WRIT 101W	*College Writing I*	**3**
M 172Q	*Calculus II*	**4**
PHSX 222	*Physics II (with Calculus)*	**4**
CSCI 112	*Programming with C I*	**3**

MINORS Electrical Engineering · Computer Engineering · Optics · Mechatronics

Career Opportunities

- Aerospace
- Optics
- Robotics
- Digital design
- Audio engineering
- Power systems

Top Employers

- Hewlett-Packard
- Micron
- Fluke

Get Involved

- Bridger Solar Team
- Institute of Electrical & Electronics Engineers — MSU student section
- Robocats
- RoboSub Club
- Space Science and Engineering Lab

MSU engineering students designed a system used by 55 teams across the country to livestream the 2017 total solar eclipse from specialized balloons that reached the edge of outer space.

Use QRcode for more **electrical and computer engineering** course information

DEPARTMENT OF MECHANICAL & INDUSTRIAL ENGINEERING

OUTSIDE THE CLASSROOM

A mechanical engineering student helps run crash tests of small drone aircraft near Bozeman as part of a research project that could help shape new safety regulations.

Career Opportunities

- Aerospace
- Automation and robotics
- Automotive
- Biomedical
- Building systems
- Energy
- Finance
- Manufacturing
- Material science
- National laboratories

Get Involved

- American Society of Engineering Management
- American Society of Mechanical Engineers
- Bobcat Motorsports
- Bridger Solar Team
- Institute of Industrial and Systems Engineering
- Robocats
- RoboSub Club

Research Highlight

For their senior capstone project, a team of MSU undergraduates designed and built a device that simulates how water lines on the International Space Station experience the microgravity of low Earth orbit. MSU researchers are working with NASA to fine-tune the tool for studying how to prevent bacterial biofilm from clogging the pipes.

HANDS-ON LEARNING

As a requirement of graduation, every engineering college senior completes and presents a hands-on project to the public during the biannual Design Fair. In many cases, students design and build practical solutions for businesses, MSU researchers or government labs.

YOUR FIRST-YEAR COURSES:

FINANCIAL ENGINEERING

Financial engineers work at the intersection of business, economics and engineering to manage market risk, create strategic business opportunities and lower costs for goods and services.

CSCI 127		*Joy and Beauty of Data*	4
CLS 101US	or	*Knowledge and Community*	3
COMX 111US		*Introduction to Public Speaking*	3
M 171Q		*Calculus I*	4
ECNS 251IS		*Honors Economics*	4
EFIN 101		*Introduction to Financial Engineering*	1
M 172Q		*Calculus II*	4
PHSX 220		*Physics I (with Calculus)*	4
WRIT 101W		*College Writing I*	3
CHMY 141 + 142		*College Chemistry I with Lab*	4

INDUSTRIAL & MANAGEMENT SYSTEMS ENGINEERING

IMSEs optimize the ways in which organizations deliver goods and services across a number of fields, including health care, manufacturing, energy and transportation.

EIND 101	*Introduction to Industrial & Management Systems Engineering*	1
CHMY 141 & 142	*College Chemistry I with Lab*	4
M 171Q	*Calculus I*	4
WRIT 101W	*College Writing I*	3
University Core Electives		6
COMX 111US	*Introduction to Public Speaking*	3
EIND 142	*Introduction to Systems Engineering*	2
M 172Q	*Calculus II*	4
PHSX 220	*Physics I (with Calculus)*	4

MECHANICAL ENGINEERING

Mechanical engineers transform materials into products that you use every day, creating the machines that we use, developing the energy sources we rely on, and designing environmentally-friendly buildings where we live and work.

COMX 111US	or	*Introduction to Public Speaking*	3
COMX 101US		*Knowledge and Community*	3
M 171Q		*Calculus I*	4
EMEC 100		*Intro to Mechanical Engineering*	1
EMEC 103		*Engineering Graphics Communications*	2
PHSX 220		*Physics I (with Calculus)*	4
University Core Electives			6
CHMY 141 & 142		*College Chemistry I with Lab*	4
WRIT 101W		*College Writing I*	3
M 172Q		*Calculus II*	4
PHSX 222		*Physics II (with Calculus)*	4

MECHANICAL ENGINEERING TECHNOLOGY

Mechanical engineering technology graduates solve design problems big and small in order to improve the operation and performance of mechanical systems.

COMX 111US	or	*Introduction to Public Speaking*	3
CLS 101US	or	*Knowledge and Community*	3
US 101US		*First Year Seminar*	3
M 165Q		*Calculus for Technology I*	3
ETME 100		*Intro to Mechanical Engineering Technology*	1
EMEC 103		*Engineering Graphics Communications*	2
PHSX 205		*College Physics I*	4
University Core Electives			6
CHMY 121/122		*Intro to General Chemistry with Lab*	4
WRIT 101W		*College Writing I*	3
M 166		*Calculus for Technology II*	3
PHSX 207		*College Physics II*	4

MINORS

Aerospace · Building Energy Systems · Financial Engineering
Materials · Engineering Management · Mechatronics

Use QRcode for more **mechanical and industrial engineering** course information

GIANFORTE SCHOOL OF COMPUTING

COMPUTER SCIENCE

The Gianforte School of Computing provides a community atmosphere where students interact in classes and student clubs and on trips to conferences like the Grace Hopper Celebration of Women in Computing.

Career Opportunities

- Artificial intelligence
- Mobile app development
- Robotics
- Special effects artist
- Web design

Top Employers

- SoFi
- Oracle
- Google
- Microsoft
- Boeing

Get Involved

- Association for Computing Machinery
- Association for Women in Computing
- Robocats
- Hackercats
- Undergraduate Course Assistants

Research Highlight

MSU researcher Brittany Terese Fasy recently won a $600,000 CAREER grant from the National Science Foundation to advance topological data analysis, a powerful computing technique that can be used to map and compare road networks from GPS data, diagnose prostate cancer from medical imaging, and classify galaxies based on telescope images.

INVEST IN YOUR FUTURE

Computer science students are encouraged to take advantage of professional development opportunities such as all expenses-paid trips to the oSTEM or Grace Hopper conferences or taking part in the annual Spring Break Tech Road Trip.

YOUR FIRST-YEAR COURSES:

COMPUTER SCIENCE

Students can choose from several degree options. The Computer Science B.A. empowers students to pair knowledge of computer science with social sciences, the humanities or business. The Computer Science B.S. allows students to master the fundamentals of computing while diving into topics such as artificial intelligence, multimedia and computational biology. A student who earns a Data Science B.S. will use knowledge from computer science, statistics and math to extract knowledge and insights from diverse data.

PROFESSIONAL OPTION—B.S.

M 171Q	*Calculus I*	**4**
CSCI 127	*Joy and Beauty of Data*	**3**
WRIT 101W	*College Writing I*	**3**
University Core and Electives		**7**
University Seminar Core		**3**
M 172Q	*Calculus II*	**4**
CSCI 132	*Basic Data Structures and Algorithms*	**4**

INTERDISCIPLINARY OPTION—B.S.

M 171Q	*Calculus I*	**4**
CSCI 127	*Joy and Beauty of Data*	**4**
WRIT 101W	*College Writing I*	**3**
University Core and Electives		**7**
CSCI 132	*Basic Data Structures and Algorithms*	**4**
M 172Q	*Calculus II*	**4**
University Seminar Core		**3**

B.A. IN COMPUTER SCIENCE

CSCI 107	*Joy and Beauty of Computing*	**3**
STAT 216Q	*Introduction to Statistics*	**3**
WRIT 101W	*College Writing I*	**3**
University Core		**6**
Broadening Coursework		**6**
CSCI 127	*Joy and Beauty of Data*	**3**
STAT 217Q	*Intermediate Statistical Concepts*	**3**
University Seminar Core		**3**

DATA SCIENCE

CSCI 127	*Joy and Beauty of Data*	**4**
M 171Q	*Calculus I*	**4**
WRIT 101W	*College Writing I*	**3**
University Core (IS or RS)		**3**
CSCI 132	*Basic Data Structures and Algorithms*	**4**
M 172	*Calculus II*	**4**
University Core (IN or RN)		**3**
University Core (US)		**3**

MINORS

Computer Science
Data Science

Ann Marie Reinhold and Clem Izurieta are co-directors of MSU's Software Engineering and Cybersecurity Laboratory.

Use QRcode for more **gianforte school of computing** course information

A few of the labs and centers where our undergraduates contribute to meaningful research:

- Center for Biofilm Engineering
- Integrated Design Lab
- Magnetic Resonance Laboratory
- Montana Engineering Education Research Center
- Montana Microfabrication Facility
- Optical Technology Center
- Subzero Research Laboratory
- Thermal Biology Center
- Western Transportation Institute

Students and faculty bring the outdoors inside at the Subzero Lab, where they study how weather-induced changes in snowpack can trigger avalanches.

SUBZERO RESEARCH LAB

NEXT STEPS

Apply to MSU and get started at the Norm Asbjornson College of Engineering with these next steps.

To apply to Montana State University, go to **montana.edu/apply.**

1 Apply for housing

MSU's housing application opens Oct. 1, priority deadline is March 1. Apply as early as you can so we can accommodate your request. Learn more or apply online at: **montana.edu/reslife**.

2 Register for Orientation

You can register for a summer orientation session/class registration beginning early spring. Sign up at **montana.edu/orientation.**

3 Send your transcripts

Your final high school transcripts, and graduation date, should be sent directly from your high school electronically or to:

MSU Office of Admissions
201 Strand Union P.O. Box 172190
Bozeman, MT 59717-2190

Engineering scholarships

MSU's Norm Asbjornson College of Engineering is lucky to have very supportive donors, which allows for the awarding of substantial amounts of scholarship money to students seeking an engineering or computer science degree. In 2024-25, the college awarded $1.3 million in academic scholarships.

Eligibility for need-based scholarships is determined by the MSU Office of Financial Aid. Students who wish to be considered for need-based scholarships must complete the FAFSA student aid application. MSU's priority deadline to file a FAFSA is December 1.

Financial aid questions

Financial Aid Questions?
Contact the MSU Office of Financial Aid Services:
406-994-2845
finaid@montana.edu
montana.edu/financialaid

Important date for financial aid
The priority date for filing your FAFSA is December 1 (for the following fall semester) to be considered for the widest range of financial aid. Apply as early as possible for both financial aid and admission. Fill out the Free Application for Federal Student Aid available at: **fafsa.ed.gov**. MSU's school code is 002532.

Schedule a campus visit

We invite you and your family to experience MSU firsthand and have conversations with students, staff and faculty while you explore the campus. Come see all that Montana State University has to offer by scheduling a personalized visit or attending one of our MSU Friday programs. The Office of Admissions offers campus tours and meetings with admissions counselors any weekday (except holidays) year-round.

For the best experience, we recommend you schedule your visit two weeks in advance. This will allow us time to schedule requested appointments and send you a confirmation with details about your visit. Register for a campus visit by calling 888-MSU-CATS or online at **montana.edu/visit**.

MSU Friday

At these day long MSU preview events, you can meet with faculty, hear from current students, explore the campus and learn more about financial aid and scholarships. Find dates, lodging options and registration information at **montana.edu/msufriday.**

MSU social media:

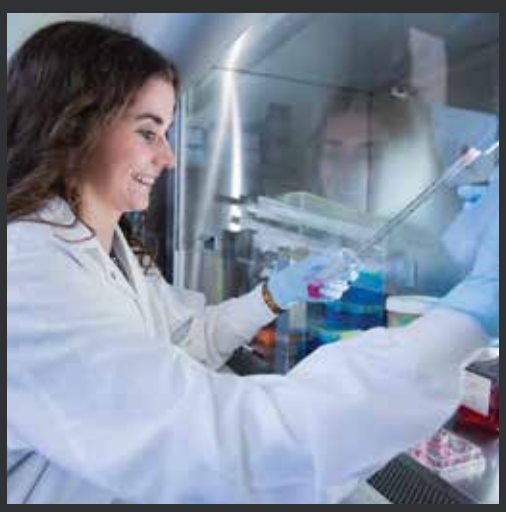
facebook.com/montanastate

instagram.com/montanastateuniversity

Engineering college social media:

facebook.com/MontanaStateNACOE

instagram.com/msu_nacoe/



MONTANA
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