

ENQUIRE ABOUT CHANCELLORS DISTINGUISHED,
MATHEWS, AND KAISER FELLOWSHIPS FOR PhD STUDENTS



Aerospace Engineering Graduate Programs

The Aerospace Engineering program at Missouri S&T offers PhD degrees, including direct PhD degrees for students holding a bachelor's degree, MS degrees, both thesis and non-thesis, and a wide variety of certificates.



Our graduate students engage in challenging fundamental and applied research projects under the guidance of world-class faculty (<http://mae.mst.edu/facultyandstaff/directoryfaculty/>) in our newly renovated facilities. Over 97% of our PhD students and over 83% of our MS students conducting research are financially supported by a combination of research assistantships, teaching assistantships, tuition and fee waivers, and fellowships. More information about our research can be found at <http://mae.mst.edu/research/> and more information about our graduate programs can be found at <http://mae.mst.edu/aerospaceengineering/aerospaceengineeringgraduate/>.

Graduate Coordinator and Staff

Dr. Xiaodong Yang
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573-341-6273

Karen Walberg
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573-341-4602

Admissions Requirements

1. MS degree with a grade point average of 3.5/4.0 (regular PhD), BS grade point average of 3.5/4.0 (direct PhD), or BS degree with a grade point average of 3.0/4.0 (masters and certificate).
2. Minimum GRE Q score of 155, GRE V + Q score of 302 and GRE AW score of 3.5.
3. International students for whom English is not their native language must submit a TOEFL score of at least 570 (PBT), 88 (IBT), or 230 (CBT), IELTS overall score of at least 6.5, or satisfactorily complete an approved English Language Institute program.

Program Requirements

REGULAR PHD IN AEROSPACE ENGINEERING

A student wishing to earn a regular PhD in Aerospace Engineering must complete at least 60 total credit hours, at least 24 credit hours of lecture courses, at least 36 credit hours of AE 6099, at least 12 credit hours of course work in the MAE department, at least 3 credit hours of mathematics, statistics, or computer science (AE/ME: 5830 Applied Computational Methods may be used to satisfy this requirement), and at least 9 credit hours of 6xxx courses. The student must also pass the qualifying examination, pass his/her comprehensive examination, meet residency requirements, publish at least 3 journal articles, complete a dissertation, pass his/her final examination, and meet the department's seminar requirements.

DIRECT PHD IN AEROSPACE ENGINEERING

A student wishing to earn a direct PhD in Aerospace Engineering must complete at least 90 total credit hours, at least 45 credit hours of lecture courses, at least 45 credit hours of AE 6099, at least 21 credit hours of course work in the MAE department (at least 3 credit hours of which is at the 6xxx level), at least 6 credit hours of mathematics, statistics, or computer science (AE/ME: 5830 Applied Computational Methods may be used to satisfy 3 credit hours of this requirement), and at least 15 credit hours of 6xxx courses. The student must also pass the qualifying examination, pass his/her comprehensive examination, meet residency requirements, publish at least 3 journal articles, complete a dissertation, pass his/her final examination, and meet the department's seminar requirements.

MASTERS OF SCIENCE (THESIS OPTION) IN AEROSPACE ENGINEERING

A student wishing to earn an MS (thesis option) in Aerospace Engineering must complete at least 30 total credit hours, at least 21 credit hours of lecture courses, at least 6 credit hours of AE 6099, at least 9 credit hours of lecture courses in the MAE department (at least 3 credit hours of which is at the 6xxx level), at least 3 credit hours of mathematics, statistics, or computer science (AE/ME: 5830 Applied Computational Methods may be used to satisfy this requirement), and at least 6 credit hours of 6xxx lecture courses. The student must also complete his/her thesis, pass his/her oral examination, and meet the department's seminar requirements.

MASTERS OF SCIENCE (NON-THESIS OPTION) IN AEROSPACE ENGINEERING

A student wishing to earn an MS (non-thesis option) in Aerospace Engineering must complete at least 30 total credit hours of lecture courses, at least 24 credit hours of lecture courses in the MAE department, and at least 9 credit hours of 6xxx lecture courses (at least 6 of which is in the MAE department).

AE GRADUATE CERTIFICATES are specially designed programs consisting of four courses for working professionals to broaden their knowledge in a specific technical area. There are no GRE requirements to enter the graduate certificate programs, and students earning a B or better in all four courses (of either an ME or AE certificate) automatically qualify to enter the AE masters program without meeting the GRE or undergraduate GPA requirements. The graduate certificates include:

Composite Materials & Structures • Control Systems • Energy Conversion & Transport
Engineering Mechanics • Manufacturing Automation

FURTHER INFORMATION

- A 50% appointment currently provides \$2060.63/month. Students with 25% appointments or greater automatically qualify to pay in-state tuition.
- The educational fees for students paying in-state tuition and fees for the 2018 academic year is approximately \$11,000.
- Up to 9 credit hours can be transferred from another university for a graduate degree and up to 3 credit hours can be transferred for a graduate certificate.
- Only 24 credit hours are required for a second Masters of Science degree.
- Rolla is a small town in the heart of America's Midwest with easy access to outdoor activities. The cost of living in Rolla is approximately \$1250/month including room and board, personal needs, health insurance, and books and supplies.

M.S. IN APPLIED ENVIRONMENTAL BIOLOGY

Background Information

The Department of Biological Sciences offers an interdisciplinary MS Degree in Applied and Environmental Biology. The program emphasizes understanding environmental responses and adaptations in biological systems at the cellular and molecular levels.

An understanding of the environment and associated problems requires background knowledge and applications of modern technology derived from many traditional fields of science, mathematics, and engineering. Students who participate in the Applied and Environmental Biology MS Degree program are given opportunities for performing critical research for gaining this understanding.

Curriculum

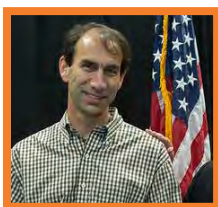
Students who wish to receive their M.S. through the M.S. with Thesis program will conduct original research using state of the art research equipment on campus facilities. They will write a thesis on their conducted research and provide a satisfactory defense of the thesis in a final oral examination.

Students who wish to receive their M.S. through the M.S. without Thesis program will complete at least 27 credit hours of biological sciences course work, and must receive a minimum grade of a B.

Notable Faculty



Dr. Melanie Mormile researches acidophiles, astrobiology, environmental microbiology, halotolerant bacteria, and many other topics. She's received the Faculty Excellence Award 5 times since 2002, and she was named the Missouri University of Science and Technology's Woman of the Year in 2008.



Dr. Dev Niyogi is an associate professor who researches mine drainage, stream health, litter breakdown, fungi, bacterial processes, and many other topics. He has published multiple papers about the environmental impact of mine drainage.

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biosci.mst.edu | biosci@mst.edu | Rolla, MO | 573.341.4831



Research Topics

- Biomaterials
- Cell biology
- Energetics
- Freshwater ecology
- Microbiology
- Plant evolution
- Sleep
- Stem cell biology
- Toxicology

12 ACCOMPLISHED
FACULTY

2 AVERAGE YEARS
TO M.S. DEGREE

30 CREDIT HOURS
NEEDED

CIVIL AND ENVIRONMENTAL ENGINEERING GRADUATE PROGRAMS



About us

Through scientific discovery and engineering invention, our graduates revitalize the nation's built and natural environments. They design and construct bridges, skyscrapers, transportation and water supply systems. Many of them also make remarkable contributions in business.

With a graduate degree in civil or environmental engineering from Missouri S&T, you will gain the knowledge and skills to **Change the World**.

Grants and Funding Awards

Most of the financial support available for graduate students is associated with specific research projects and is dependent upon the availability of grants from individual faculty members.

Go online at <http://care.mst.edu/degreeprograms/civilengineering/graduate/> for a list of faculty members and their areas of emphasis.

Requirements

MASTER'S DEGREE

- B.S. or B.E. degree in engineering with a GPA of at least 3.0 (4.0 scale)
- GRE V+Q score of at least 300
- GRE A(W) score of at least 3.5
- Application
- Official Transcripts
- Statement of Purpose
- Three Letters of Recommendation (*Thesis option only*)
- Curriculum Vitae/Resume

International students must also submit:

- Official TOEFL score of at least 88 (IBT) or 80 for non-thesis students

DOCTORAL DEGREE

- M.S. degree in engineering with a GPA of at least 3.0 (4.0 scale)
- Meet all other requirements for admission to M.S. program
- Secure a Ph.D. advisor from the list of faculty members in the department
- Identify a faculty member with similar research interests and seek confirmation they are willing to serve as your advisor.
- Once you have an agreement, notify the Advising Center by email.



119 Butler-Carlton Hall, 1401 N. Pine St., Rolla, Missouri 65409-0030
Phone: 573-341-4470 • Website: care.mst.edu

AREAS OF STUDY

- Architectural Engineering
- Construction Materials
- Construction Engineering
- Environmental Engineering
- Geotechnical Engineering
- Structural Engineering
- Water Resources Engineering

ALUMNI SPOTLIGHT



Sarah Jemison, CE'18, MS CE'18

While on campus, Sarah was a Greenberg Scholar, a mechanics of materials lab assistant, and a member of the Steel Bridge Design Team and Chi Epsilon.

Since graduation, she has been working at KPFF Consulting Engineers in St. Louis as a structural engineer. She is currently focused on structural renovations of buildings constructed between 1890-1970, as well as steel connection design. In the future, Sarah plans to pursue her structural engineer licensure (SE).

CHEMISTRY M.S. AND PH.D.

Top 5 Things to Know

1. Missouri S&T's chemistry department focuses heavily on interdisciplinary research, often working with biology, metallurgy, and materials science.
2. Missouri S&T's chemistry department is one of the most storied and successful departments on campus. It was founded as the Department of Chemistry and Metallurgy in 1871.
3. The Committee on Professional Training of the American Chemical Society (ACS) has reviewed and accredited the programs of the Missouri S&T Chemistry Department.
4. There are over 20 chemistry research laboratories around the Missouri S&T Campus.
5. There are 19 different professors leading research teams on campus that are pushing the boundaries of knowledge each day.

Grants and Funding Awards

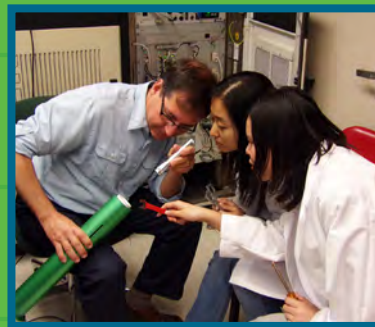
There are multiple opportunities for funding and financial assistance in the chemistry department. Ph.D. students may apply for the Chancellor's Fellowships, which pays for tuition for the entire Ph.D. program.

Graduate level students also have the option to engage in teaching and research assistant opportunities. The salaries for TAs and RAs are competitive, and due to the generosity of industrial sponsors, they can be supplemented with fellowships for students who maintain at least a 3.20 GPA.

Notable Faculty



Dr. Philip D. Whitefield is the senior investigator at the Cloud and Aerosol Sciences Laboratory. His research specializes in physical, analytical, environmental, and atmospheric chemistry with a focus on aerosols. His research has been funded or sponsored by organizations such as NASA, FAA, AFOSR, USAF, US Navy, Boeing, and the United Kingdom Ministry of Defense.



Research areas

- Inorganic chemistry
- Solid state chemistry
- Physical chemistry
- Analytical biochemistry
- NMR spectroscopy
- Environmental chemistry
- Nanoscience
- Organometallics
- Polymers
- Surface chemistry
- Atmospheric chemistry

CHEMICAL ENGINEERING M.S. AND PH.D.

Top 5 Things to Know

1. In 2016 there were 62 graduate-level chemical engineering students at Missouri S&T.
2. The department of chemical and biochemical engineering occupies the 68,000 square foot state-of-the-art Bertelsmeyer Hall.
3. Research is conducted in excellent laboratories and computer facilities equipped to handle cutting edge research and all computational, modeling, and simulation requirements related to chemical engineering.
4. The facilities host necessary equipment to conduct research in computer simulation and modeling, control and optimization, bio-conversion, multiphase reactors engineering, catalysis, and many other topics.
5. The department has access to the Industrial Advisory Council, which strives to provide the department and university with the benefit of the collective experience of its members and the wisdom gained in their professional careers to build closer alliances with industry and influence the image and support of the department.

M.S. and Ph.D. Admission Requirements

- GRE combined quantitative and verbal score of 300 or greater is recommended.
- Minimum GRE quantitative score of 155.
- Minimum TOEFL score of 79 (iBT) for applicants whose native language is not English (or a minimum IELTS score of 6.5).

Notable Faculty



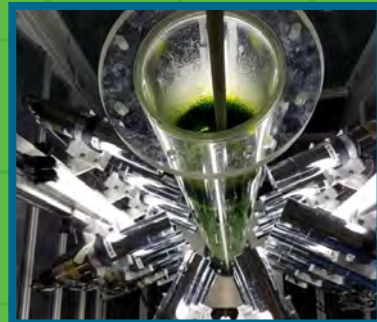
Dr. Daniel Forciniti is a professor of Chemical and Biochemical Engineering who researches molecular simulations of biological molecules at liquid/solid interfaces, light and neutron scattering of biological molecules, the molecular basis of disease, and purification of biomacromolecules.



Dr. Sutapa Barua is an assistant professor of Chemical and Biochemical Engineering and focuses her research on engineering nanoparticles for drug delivery, designing polymers for early diagnosis of cancer, and fabricating microparticles for regenerative therapy.

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chemeng.mst.edu | chemeng@mst.edu | Rolla, MO | 573.341.4416



Research Topics

- Fluid Mechanics
- Supercritical fluid technology
- Reaction engineering
- Biochemical engineering
- Biomedical engineering
- Mass and heat transfer in porous media
- Transport and interfacial phenomena
- Computer-aided design
- Particle Characterization
- Catalysis
- Statistical Mechanics
- Nanotechnology

61

AVERAGE
GRADUATE
ENROLLMENT

16

AVERAGE #
GRADUATIONS
PER YEAR

M.S. AND PH.D. IN COMPUTER ENGINEERING

Top 5 Things to Know

1. The Computer Engineering program in the Department of Electrical & Computer Engineering offers graduate programs of study that lead to the MS degree (thesis and non-thesis options), the PhD degree, and the Doctor of Engineering (DE) degree.
2. Graduate programs in computer engineering will generally include specialization in one or more research areas.
3. Potential research areas include integrated circuits, logic design, networking, security, computer architecture, and other subfields.
4. There are ample opportunities in the department of Electrical & Computer Engineering for graduate students to be involved in faculty members' research.
5. The Computer Engineering Program is designed to prepare an engineer to work in both the abstract software world, where high-level languages and complexity will often provide a solution to a problem, and in the physical world, where designs are often compromises between among opposing factors.

Grants and Funding Awards

There are two financial sources for graduate students: Graduate Research Assistant (GRA), through research participation and Graduate Teaching Assistants (GTA), in which students teach courses. Research assistantships are associated with specific research projects and are dependent upon the availability of research grants from individual faculty members. Teaching assistantships will normally be considered after the completion of the first academic semester on campus.

Notable Faculty



Dr. Daryl Beetner - Dr. Beetner is the Chair of the Electrical and Computer Engineering Department at Missouri S&T. His research is in digital system design with interest in the design of integrated circuits, electromagnetic compatibility, electromagnetic immunity, detection, identification, and neutralization of electronic devices.



Dr. Chang-Soo Kim - Dr. Kim is a Professor in the Electrical and Computer Engineering Department at Missouri S&T. His research area is in electromagnetics, optics, and devices with interests in solid-state devices, micro/nanofabrication, sensor engineering, nanotechnology applications, and biological microdevices and systems.

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ece.mst.edu | ece@mst.edu | 141 Emerson Electric Co. | 573.341.4519



\$79,250

STARTING SALARY FOR
MASTERS STUDENTS

30

CREDIT HOURS
NEEDED FOR
MASTERS

60

MORE CREDIT
HOURS NEEDED
FOR PH.D.

M.S. COMPUTER SCIENCE

Top 5 Things to Know

1. Thesis and Non-Thesis Degree Options

In place of elective classes, students may choose to complete a master's thesis by working closely with a faculty member of their choosing to conduct their own research project.

2. Dedicated Faculty from Various Disciplines

Our program engages in cross-disciplinary research and teaching.

3. Professional Development Opportunities

We have regularly-scheduled, invited speakers and support student internship opportunities.

4. Flexible Scheduling with On-Campus or Online Classes

All of our classes in the computer science M.S. program are offered in both a traditional on-campus environment as well as broadcast live and recorded for later viewing for our distance students.

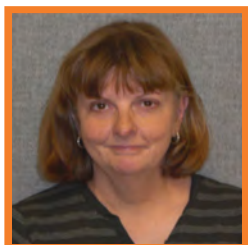
5. Potential Funding is Available for Students

Funding varies, but is offered on a competitive basis for students working with faculty on research projects and may range from paid hourly support to a monthly stipend.

Notable Faculty



Dr. Sajal Das has research interests in cyber-physical systems, security and privacy, smart environments (smart city, energy, healthcare), IoTs, wireless sensor networks, mobile and persuasive computing, big data analytics, parallel and cloud computing, social networks, systems biology, graph theory and game theory. Dr. Das received a Ph.D. from University of Central Florida in 1988.



Dr. Jennifer Leopold has research interests in qualitative spatial reasoning, programming languages, scientific visualization, ontologies, database accessibility, and analysis. Dr. Leopold received a Ph.D in Computer Science from the University of Kansas in 1999.

Alumni Spotlight



Sammie Bush graduated from Missouri S&T in 2018 with a B.S. and M.S. in computer science. During his time at Missouri S&T, he was heavily involved in the local chapter of the Association for Computing Machinery (ACM) where he served as chair of the special interest group for security (SIG-Security) and president of the chapter. In ACM, he brought up the capture the flag (CTF) team M57 and revived the Collegiate Cyber Defense Competition team while also participating in the the Collegiate Pen Testing Competition and giving talks to SIG-Security members. Since graduating, he works as a cyber security engineer at MITRE specializing in cyber effects and teaches a cyber offense course.

STARTING SALARY FOR
M.S. STUDENTS

\$74,472

M.S. STUDENT TO
FACULTY RATIO

3:1

Average TTD (Time
To Degree)

2 years

PH.D. COMPUTER SCIENCE

Top 5 Things to Know

1. Professional Development Opportunities

We encourage and provide financial support for attending both regional and national conferences. We have regularly-scheduled, invited speakers and support student internship opportunities.

2. Flexible Scheduling with On-Campus or Online Classes

All of our classes in the Computer Science PhD program are offered in both a traditional on-campus environment as well as being broadcasted live and recorded for later viewing for our distance students.

3. Dedicated Faculty from Various Disciplines

Our program engages in cross-disciplinary research and teaching.

4. Potential Funding is Available for Students

Funding varies, but it is offered on a competitive basis for students working with faculty on research projects and may range from paid hourly support to a full tuition waiver and stipend.

5. Computer Facilities and Research Labs

Advanced Networking and Cyber-Physical Systems Laboratory, Applied Computational Intelligence Laboratory, Computer Vision and Biomedical Imaging Laboratory, CREWMAN Laboratory, Critical Infrastructure Protection Laboratory, Cybersecurity Laboratory, Data Mining Laboratory, National Computation Laboratory, Web and Wireless Computing (W2C) Laboratory, and NSF Industry-University Research Center Net-Centric Software Systems.

Notable Faculty



Dr. Bruce McMillin's research interests include: cyber-physical systems, cybersecurity and smart grid. Dr. McMillin received a Ph.D in Computer Science from Michigan State University in 1988.



Dr. Venkata Sriram Siddhardh Nadendla's research interests include: cyber-physical-human systems, statistical inference & machine learning, nudge & persuasion, security, fairness, transparency and trust. Dr. Nadendla received a Ph.D in Electrical & Computer Engineering from Syracuse University in 2016.

Alumni Spotlight



Dr. Amartya Sen is an Assistant Professor in the School of Engineering and Computer Science at Oakland University. He received his Ph.D at the Department of Computer Science, Missouri University of Science and Technology in Spring 2018. Amartya does research in the broad areas of cybersecurity pertaining to applications and infrastructure associated with Cloud computing domains. His current research interest is to develop user-centric secure architectures for hosting IoT applications.

STARTING SALARY
FOR PH.D. STUDENTS

\$85,000

PH.D. STUDENT TO
FACULTY RATIO

2:1

AVERAGE TTD (TIME TO
DEGREE)

6 years

M.S. AND PH.D. IN ELECTRICAL ENGINEERING

Top 5 Things To Know

1. The Electrical Engineering program in the Department of Electrical & Computer Engineering offers graduate programs of study that lead to the M.S. degree (thesis and non-thesis options), the Ph.D. degree, and the Doctor of Engineering (D.E.) degree. Both the Rolla campus and the Engineering Education Center in St. Louis offer M.S. programs.
2. Graduate programs in Electrical Engineering will generally include specialization in one or more research areas.
3. Potential research areas include circuits and electronics, communications and signal processing, controls and systems engineering, electromagnetics, devices and optics, and power and energy.
4. There are ample opportunities in the department of Electrical & Computer Engineering for the graduate students to be involved in faculty members' research.
5. The Electrical Engineering program also offers graduate certificate programs designed to provide specialized graduate level education in a specific area.

Grants and Funding Awards

There are two financial support options for graduate students: Graduate Research Assistant (GRA), which supports students through research participation, and Graduate Teaching Assistants (GTA), in which students teach courses. Research assistantships are associated with specific research projects and are dependent upon the availability of research grants from individual faculty members. Teaching assistantships will normally be considered after the completion of the first academic semester on campus.

Notable Faculty



Dr. Levent Acar is an Associate Professor in the Department of Electrical & Computer Engineering. His research interests include intelligent control of functional systems, neural networks applied to control, distributed computational methods of optimal control strategies, and other subfields.



Dr. James L. Drewniak is the Curators' Professor in the Department of Electrical & Computer Engineering. His research interests include power electronics and electric machinery, electromagnetic packaging effects and signal integrity, MEMS, numerical electromagnetic analysis, and other subfields.

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\$80,195

AVG. STARTING SALARY
FOR MASTERS STUDENTS

\$100,000

AVG. STARTING SALARY
FOR PH.D. STUDENTS

30

CREDIT HOURS
NEEDED FOR
MASTERS

60

MORE CREDIT
HOURS NEEDED
FOR PH.D.

M.S. AND PH.D. IN ENGINEERING MANAGEMENT

Top 5 Things To Know

1. The Department of Engineering Management and Systems Engineering offers a Master of Science and Doctor of Philosophy, as well as a number of graduate certificates in engineering management.
2. Engineering management focuses on the convergence of engineering, technology, and business, and our program will prepare you to work in a multidisciplinary arena.
3. Working professionals may pursue the degree of Doctor of Philosophy in Engineering Management at a distance while maintaining employment.
4. Engineering management research areas include operations, logistics, management of technology, financial engineering, industrial engineering, and quality control.
5. Our faculty and students are working with leading high technology companies and government agencies to explore complex problems in these focus areas.

Grants and Funding Awards

There are many forms of financial assistance that students can receive as a graduate student in Engineering Management. Students can apply for positions such as an EMSE Graduate Research Assistant and an EMSE Graduate Teaching Assistant. Students also have the opportunity to apply for the EMSE Graduate Student Leadership Award. The Chancellor's Fellowship awards financial assistance to promising Engineering Management students.

Graduate students may also apply for graduate research funding.

Notable Faculty



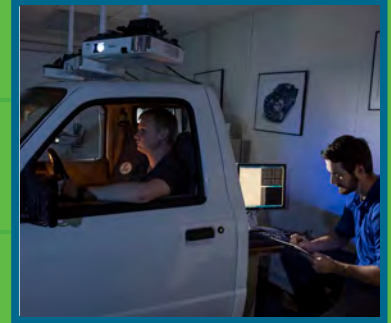
Dr. Suzanna Long is the Department Chair and a Professor in the Department of Engineering Management & Systems Engineering. Her recent projects include electric vehicle supply chains, rare earth elements social life cycle analysis, extreme events supply chain modeling, and many other research-intensive projects.



Dr. David Enke is a Professor in the Department of Engineering Management & Systems Engineering. His research interests include financial engineering, investments, stocks, derivatives, portfolio management, financial risk management, enterprise risk management, and many other subfields.

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emse.mst.edu | emgt@mst.edu | 223 Eng. Mng. | 573.341.4572



\$97,500

STARTING SALARY FOR
MASTERS STUDENTS

30 CREDIT HOURS
NEEDED FOR M.S.

42 ADDITIONAL CREDIT
HOURS FOR PH.D.

EXPLOSIVES ENGINEERING M.S. AND PH.D.

Top 5 Things to Know

1. The use of explosives has been a fundamental cornerstone of the mining and civil excavation industries for the excavation of rock since the invention of dynamite by Alfred Nobel.
2. Explosives education at Missouri S&T goes back to the university's inception as the Missouri School of Mines in 1870.
3. The US is one of the largest consumers of explosives in the world, with civilian sales reaching 1.65 million metric tons in 2016.
4. Of this percentage, approximately 88% is used in the mining industry for the extraction of metals, minerals, fuels, and construction materials.
5. 11% of the explosives is used in the civil construction industry for road cuts, tunnels, trenches, basements, and grading for large structures.

Grants and Funding Awards

Missouri S&T is the only university in the US that offers graduate degrees in explosives engineering. As such, it has a unique research program and receives funding from a variety of agencies. Sponsors include: Alpha Foundation for the Improvement of Mine Safety and Health, US Army Corps of Engineers, US Army Fort Leonard Wood, US Army Research Office, Boeing, Consolidated Nuclear Security, DOD, US Navy, NIOSH, SME & WINCO.

Notable Research Facilities



Experimental Mine The Missouri S&T Experimental Mine is one of only a few such facilities available on a university campus. Since 1914, Missouri S&T students have had the opportunity to gain "hands-on" experience with a variety of equipment and techniques. Students are able to design, drill, blast, and use the research mine for an array of explosives research.



Energetics Research Facility Housed in a purpose-built laboratory building, the Energetics Research Facility contains small, medium (up to 1 kg net explosives weight) and large (up to 4 kg net explosives weight) blast chambers with associated instrumentation for explosives research on a smaller scale.

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explosives.mst.edu | mining@mst.edu | Rolla, MO | 573.341.4753

Alumni Spotlight



Nate Skopak

"As an Explosives Engineer, I love what I do, and MST made it all possible. After receiving an explosives background in the military, MST propelled my career by giving me the analytical and engineering knowledge I needed to be successful in the field."

\$70,000

STARTING SALARY FOR
MASTERS STUDENTS

\$85,000

STARTING SALARY FOR
PH.D. STUDENTS

3:1

 STUDENT TO
FACULTY RATIO

1.5

 AVERAGE M.S. TTD
(TIME TO DEGREE)

4

 AVERAGE PH.D. TTD
(TIME TO DEGREE)

30

 CREDIT HOURS
NEEDED FOR M.S.
ENGINEERING OR
M.S. TECHNOLOGY

72

 CREDIT HOURS
NEEDED FOR PH.D.

M.S. AND PH.D. IN GEOLOGICAL ENGINEERING

Top 5 Things To Know

1. The geological engineering (GE) program at Missouri S&T is ABET accredited and offers degrees at M.S. and Ph.D. levels. The program is an integral part of the Geosciences and Geological and Petroleum Engineering Department. This combination of disciplines offers synergies for collaborative research and provides a broad spectrum of opportunities for nurturing tomorrow's leaders in the earth sciences and engineering.
2. The geological engineering program offers research opportunities in designing excavating tools for geomaterials on earth and in space, studying blasting efficiency for enhancing productivity in the mining industry, global sustainability, geologic membrane processes, and many more subfields.
3. There are well-equipped laboratories for research in physical and hydraulic properties of rock, groundwater hydrology, and remote sensing.
4. The geological engineering program offers an online master of science in geotechnics. This degree program is open to graduates with a bachelor of science in engineering, geology or other "hard science."
5. The program has close ties to the Missouri Department of Natural Resources and the U.S. Geological Survey.

Grants and Funding Awards

It is assumed that all applicants to the department wish to receive financial support to enable them to pursue their graduate studies. Therefore, there are no additional application forms that must be completed. Most of the financial support available for graduate students is associated with specific research projects and is dependent upon the availability of grants from individual faculty members. Please note that international students usually cannot be considered for teaching assistantships the first semester they are on campus.

Notable Faculty



Dr. Ryan Smith is an assistant professor in geological engineering. His research focus is on groundwater resources, remote sensing, airborne and ground-based geophysics, physics-based modeling, and machine learning.



Dr. J. David Rogers is a Professor in geological engineering and is also the Karl F. Hasselmann Chair for the department. His research focuses on geographic information systems, seismic hazards in the Midwest, seismically induced landslides, composite landslides, and other subfields.

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ggpe.mst.edu | rocks@mst.edu | 129 McNutt Hall | 573.341.4616



\$69,250

STARTING SALARY FOR
MASTERS STUDENTS

Questions?

Geological Engineering
129 McNutt Hall
rocks@mst.edu
(573) 341-4616

M.S. AND PH.D. IN GEOLOGY AND GEOPHYSICS

Top Things to Know

1. The geology and geophysics program offers a Masters of Science and a Doctor of Philosophy at the graduate level. The master's degree can be earned with either a thesis option or a non-thesis option.
2. For over a century, the geology and geophysics program at Missouri S&T has provided students with comprehensive educational experiences. This dynamic program includes active participation with hands-on experiences while working on numerous research projects all over the world.
3. Research in geology and geophysics focuses on understanding and characterizing the earth's surface and subsurface. We specialize in research related to earth systems, geophysics and earth deformation processes, petroleum and mining systems and applications, and water resources and sustainability.
4. The program has a wealth of equipment for research and exploration in geology, geochemistry, and geophysics and, in addition to its own facilities, the Missouri Department of Natural Resources and the U.S. Geological Survey's offices are located nearby.



Grants and Funding Awards

It is assumed that all applicants to the department wish to receive financial support to enable them to pursue their graduate studies. Therefore, there are no additional application forms that must be completed. Most of the financial support available for graduate students is associated with specific research projects and is dependent upon the availability of grants from individual faculty members. Please note that international students usually cannot be considered for teaching assistantships the first semester they are on campus.

Notable Faculty



Dr. Francisca Oboh-Ikuenobe is a professor of geology in the Department of Geosciences, Geological Engineering, and Petroleum Engineering. Her research interests include palynology, biostratigraphy, sedimentology, sequence stratigraphy, and paleoclimatology.



Dr. Stephen S. Gao is a professor of geophysics in the Department of Geosciences, Geological Engineering, and Petroleum Engineering. His research interests include pure and applied geophysics with emphasis on earthquake seismology, seismological investigations of the Earth's crust and mantle, and many other subfields.

MISSOURI
S&T | Graduate Studies

gs.mst.edu | rocks@mst.edu | 129 McNutt Hall | 573.341.4616

\$58,947

STARTING SALARY
FOR M.S. STUDENTS IN
GEOTECHNICS

Questions?

Geosciences
129 McNutt Hall
rocks@mst.edu
(573) 341-4616

M.S. IN INFORMATION SCIENCE & TECHNOLOGY

Top 4 Things to Know

1. #2 "Best Value Online Big Data Programs" (Value Colleges, 2016)
2. #8 "Best Online Graduate Computer Information Technology Programs" (U.S. News and World Report, 2016)
3. #22 "Best Online Graduate Business Programs (Excluding MBA)" (U.S. News and World Report, 2016)
4. AACSB Accredited Program (Less than 5% of the world's 13,000 business programs have earned this accreditation)

Grants and Funding Awards

Our faculty support and/or employ research assistants and graders. We encourage you to explore these opportunities with the faculty when you are at Missouri S&T.

About 20% of our graduate students were funded by the department or through the faculty in the previous semesters. We normally only offer scholarship/work opportunities after the first semester, when students get acclimated to the new environment and have the opportunity to demonstrate their capability and potential.

Notable Faculty



Dr. Mike Hilgers has spearheaded the department's focus on business analytics and data science, "Big Data." His primary interest is modeling and simulation as applied to business analytics and data science, and he has mentored student teams who have performed successfully at the international level in Teradata University Network's 2016 Data Challenge.



Dr. Fiona Nah's research inspires her teaching. A noted scholar in the application of virtual worlds and augmented reality in business and human-computer interaction, Dr. Nah teaches courses in strategic management of technological innovation, electronic and mobile commerce, and HCI. She is a senior editor for Journal of the Association for Information Systems (JAIS).

MISSOURI
S&T | Graduate Studies

website address | email address | physical address | phone number

Alumni Spotlight



Kenneth Wolford is currently a programming analyst at Boeing in their Supply Chain Management Transformation Team, which is working on implementing SAP. Before receiving a Master of Science in Information Science and Technology from the Department of Business and Information Technology, he was a long-time campus service officer at Missouri S&T.

\$71,360

STARTING SALARY FOR
MASTERS STUDENTS

16:1 STUDENT TO
FACULTY RATIO

1.5yr AVERAGE TTD
(TIME TO DEGREE)

30 CREDIT HOURS
NEEDED



Manufacturing Engineering Graduate Programs

Among the first in the nation and the only master-degree program of its kind in Missouri, manufacturing engineering was developed in response to the growing demand of manufacturers.



The manufacturing interdisciplinary program provides two degree options:

- **Master of Science degree** - A research-oriented program, requiring a thesis.
- **Master of Engineering degree** - A practice-oriented, non-thesis program.

Both degree programs consist of a total of 30 hours, including core courses in the areas of Materials and Manufacturing Processes; Process, Assembly and Product Engineering; Manufacturing Competitiveness; and Manufacturing Systems Design. The features of this program include:

- Interdisciplinary faculty expertise and facilities. More than 10 academic departments and research centers support this program.
 - Advanced manufacturing curriculum; fully funded master of science program
 - Fully web-based distance education for students working in industry.
- Students can enroll in this degree program to study either on-campus or off-campus.
- Completion of practice-oriented Master of Engineering Degree requirements in one year.

Both degree programs are offered in the traditional format as well as through the Internet, so that students can access the lectures anywhere at any time.

Starting Salary:

Approximately \$62,000 per year

Admissions Requirements

- B.S. degree with a grade point average of 3.00/4.00 or higher for the last 60 hours to be admitted as a regular graduate student.
- B.S. degree with a grade point average less than 3.00/4.00 but at least 2.75 / 4.00 for the last 60 hours to be admitted as a probationary graduate student.
- International Students for whom English is not their native language must submit a TOEFL score of at least 550 or satisfactorily complete an approved English Language Institute.
- A GRE score is required.

Certificate Program Curriculum:

- Manufacturing Systems
- CAD/CAM & Rapid Product Realization

Graduate Coordinator and Staff

Dr. Frank Liou
liou@mst.edu

Debi Willy
ponzerd@mst.edu
573-341-4772

Program Requirements

MASTER OF SCIENCE (THESIS OPTION)

- 30 credit hours with a 6-hour thesis
- 12 credit hours from the Manufacturing Core Curriculum (3 credit-hour core course from each area)
- 6 credit hours of 6000 level courses in manufacturing
- 3 credit hours of any suggested manufacturing courses** OR approved Mathematics/Computer Science*
- 6 credit hours for thesis research
- 3 credit hours of graduate courses in manufacturing.**

MASTERS OF ENGINEERING (NON-THESIS OPTION)

- 30 credit hours
- 12 credit hours from Manufacturing Core Curriculum (3 credit-hour core course from each area)
- 6 credit hours of 6000 level courses in Manufacturing
- 3 credit hours of any suggested Manufacturing courses OR approved Math/Computer Science
- 6 credit hours of graduate courses in Manufacturing

Manufacturing Core Curriculum

Area 1: Materials and Manufacturing Processes:

ME 3653 Manufacturing
ME 5236 Fracture Mechanics
ME 5282 Introduction to Composite Materials & Structures
MET 4420 Metals Casting
MET 5810 Principles of Engineering Material
MSE 5517 Materials Selection in Mechanical Design

Area 2: Process, Assembly and Product Engineering:

EMgt 5515/ME 5757 Integrated Product and Process Design
EMgt 5516 Integrated Product Development
ME 5708 Rapid Product Design and Optimization
ME 5763 Principles and Practice of Computer Aided Design

Area 3: Manufacturing Competitiveness:

AE/ME 5760 Probabilistic Engineering Design
EMgt 5710 Introduction to the Six Sigma Way
EMgt 5613 Value Analysis
EMgt 5714 Statistical Process Control
ERP 5110 ERP System Design and Implementation

Area 4: Manufacturing Systems Design:

ME 5449 Robotic Manipulators and Mechanisms
ME 5653 Computer Numerical Control of Manufacturing Processes
ME 5655 Automation in Manufacturing
ME 5478 Mechatronics

Approved Math/Computer Science Courses:

MA 3108 Linear Algebra I
MA 5603 Mathematical Modeling
MA 5108 Linear Algebra II
Stat 5643 Probability and Statistics
Stat 5346 Regression Analysis
Stat 5353 Statistical Data Analysis
Csci 3200 Introduction to Numerical Methods
Csci 2500 Data Structures II
Csci 5102 Object-Oriented Analysis and Design
Csci 5201 Numerical Approximation and Differential Equations
Csci 5800 Distributed Operating Systems

MFGE Research Facilities

Agile Manufacturing & Automated Inspection Lab
Augmented Reality Lab
Automated PC Board Milling Machine
Composite Manufacturing Lab
CNC Lab
Computer Vision
Digital Image & Signal Processing
Foundry for Ferrous and Non-ferrous Alloys
Laser Aided Manufacturing Processes Lab
High Pressure Waterjet Lab
Intelligent Control of Machining Lab
Sustainable Design Lab
Virtual & Rapid Prototyping Lab
Laser Welding Lab
Integrated Systems Facility
Lab for Industrial Automation & Flexible Manufacturing



MATHEMATICS AND STATISTICS

Degree Options:

The mathematics and statistics department provides an enriching academic environment through a wide variety of course offerings, weekly seminars in several subject areas, and a colloquium series. Degree options are designed to achieve balance between depth of knowledge acquired through specialization and breadth of knowledge gained through exploration.

- **Master of Science in Applied Mathematics**
We offer M.S. degrees with emphasis areas in mathematics or statistics, with or without a thesis.
- **Master of Science for Teachers**
This program is designed for high school teachers in physical sciences and mathematics.
- **Terminal Master's Program**
The requirements for the M.S. degree allow a student to use the M.S. as a terminal degree and to design a program for specific needs such as industrial employment.

- **Doctor of Philosophy**
Our doctoral degree program provides three distinct emphasis areas: mathematics, computational and applied mathematics, and statistics.
- **Graduate Certificates**
We offer graduate certificates in actuarial science and statistics. Certificates are designed for practicing professionals as well as current students. Requirements can be met by completing four graduate-level courses from specified lists.

Flexible Programs

In addition to core mathematics courses, we encourage students to take courses outside the department to shape their education to meet their career objectives. Many of our graduates have taken advantage of this opportunity and enjoy diverse careers including: design engineer (Advanced Micro Electronics), senior software engineer (IBM), project manager (Discover), senior research analyst (KU Medical Center), biostatistician (USDA), and shuttle astronaut (NASA). Our graduates also hold traditional mathematics and statistics faculty positions in colleges and universities or have pursued additional training as post-doctoral fellows.

Why S&T?

1. Active Research Groups
2. Dedicated Teachers
3. Small Classes
4. Friendly, Close-Knit Environments
5. High Percentage of Female Graduate Students Compared to the National Average

Leaders in Their Fields

The department has 18 tenured or tenure-track faculty members, all actively involved in research and teaching. These and one teaching professor, one associate teaching professor, and three assistant teaching professors complete the full-time academic faculty. Our faculty have won state, university system and campus awards for teaching, research, and service. These include a Missouri Governor's Award for excellence in education, a Curators' professorship, a Curators' teaching professorship, numerous faculty excellence, awards and outstanding teaching awards.

Professors

Elvan Akin, Ph.D., Nebraska

— Dynamic equations on time scales, differential equations, difference equations, oscillation, boundary value problems

Martin Bohner, Curators' Distinguished Professor, Ph.D., Ulm, Germany

— Ordinary differential equations, dynamic equations on time scales, difference equations, Hamiltonian systems, variational analysis, boundary value problems, control theory, oscillation

Stephen Clark, Ph.D., Tennessee

— Differential and difference equations, operator theory, direct and inverse spectral theory, inequalities

Robert Paige, Ph.D., Colorado State

— Statistical shape analysis, topological data analysis

Vy K. Le, Ph.D., Utah

— Nonlinear differential equations, bifurcation, and calculus of variations

V.A. Samaranayake, Curators' Distinguished Teaching Professor and Interim Department Chair, Ph.D., Kansas State

— Reliability, time series analysis, statistical applications in biology, economics, and engineering

Associate Professors

Akim Adekpedjou, Ph.D., South Carolina

— Recurrent event data analysis, stochastic processes, survival analysis

David Grow, Ph.D., Nebraska

— Analysis,

Fourier analysis, lacunary series

Xiaoming He, Ph.D., Virginia Tech

— Finite element methods, interface problems, computational fluid dynamics, computational electromagnetism, stochastic PDEs, extrapolations, boundary integral equations, feedback control

Matt Insall, Ph.D., Houston

— Logic, nonstandard methods, algebra, topological algebra, topological model theory

Gayla R. Olbricht, Ph.D., Purdue University

— Statistical genomics and epigenomics, hidden Markov models, modeling dependent data, mixed models

John Singler, Ph.D., Virginia Tech

— computational methods for reduced order modeling, control, and sensitivity analysis of partial differential equations, numerical analysis, applied mathematics, fluid dynamics

Xuerong Wen, Ph.D., Minnesota

— Nonlinear and nonparametric regression, regression graphics, computational statistics and statistical genetics, with an emphasis on sufficient dimension reduction in the context of regression

Yanzhi Zhang, Ph.D., National University of Singapore

— Multiscale modeling and simulations in material science, optimal control problems in superconductivity and

superfluidity, Bose-Einstein condensation, quantized vortex dynamics, numerical algorithms for partial differential equations

Assistant Professors

Daozhi Han, Ph.D., Florida State

— Applied analysis of PDEs, numerical analysis and computation, fluid dynamics

Nan Jiang, Ph.D., Pittsburgh

— Numerical methods for partial differential equations, numerical analysis, computational fluid dynamics, turbulence modeling

Jason Murphy, Ph.D., UCLA

— Harmonic analysis and nonlinear dispersive PDEs.

Wenqing Hu, Ph.D., Maryland

— Stochastic analysis, stochastic differential equations, random dynamical systems, (stochastic) partial differential equations, high-dimensional statistics, statistical machine learning, optimization

Teaching Professors

Stephanie Fitch, M.S., University of Texas

Associate Teaching Professors

Paul N. Runnion, M.S., Missouri S&T

Assistant Teaching Professors

Xiaoqing Chen-Murphy, Ph.D., UCLA

Kimberly Kinder, M.S., University of Central Missouri

Kelly Koob, M.S., Missouri S&T

Our Programs

Active Research Areas

Research interests of the faculty cover a wide spectrum with major concentrations in analysis, computational mathematics, differential equations, and statistics. Faculty members engage in interdisciplinary work with researchers in departments such as biology, computer science, geology, and engineering. Individual areas of faculty research are listed under each faculty member.

Financial Assistance

Most of our graduate students receive financial aid in the form of a teaching assistantship. The stipend for a half-time appointment is expected to be approximately \$18,545 for the nine-month academic year. An additional summer stipend is available on a competitive basis. Doctoral students on half or 3/8 time teaching/research assistantships do not pay educational fees. Masters students on an assistantship pay in-state fees and educational fees beyond the first six credit hours are waived. Outstanding U.S. Citizens or permanent resident students who intend to pursue a Ph.D. also are considered for the Chancellor's Fellowship, which covers all fees plus a \$10,000 stipend a year in addition to a half-time assistantship.

International Students

In addition to other application requirements, students whose native language is not English must demonstrate proficiency in English by achieving a minimum score of 79 on the TOEFL (IBT version), a minimum score of 6.5 on IELTS, or satisfactorily complete the Intensive English Program offered by Missouri S&T's Applied Language Institute. International students who wish to apply for a teaching assistantship must demonstrate proficient English communication skills.

Questions?

Department of Mathematics and Statistics

202 Rolla Building
400 W. 12th Street
Rolla, MO 65409

Dr. John Singler

(573) 341-4641
singlerj@mst.edu
math.mst.edu

MASTERS IN BUSINESS ADMINISTRATION

Top 5 Things to Know

1. #1 Alumni with lowest average debt among all MBA programs (Yahoo Finance, 2016)
2. #2 "Best Value Online Big Data Programs" (Value Colleges, 2016)
3. #10 Top Online Programs in Supply Chain (Online MBA Today, 2016)
4. #72 "Best Online MBA Programs" (U.S. News and World Report, 2016)
5. AACSB Accredited Program (Less than 5% of the world's 13,000 business programs have earned this accreditation)

Grants and Funding Awards

Our faculty support and/or employ research assistants and graders. We encourage you to explore these opportunities with the faculty when you are at S&T.

About 20% of our graduate students were funded by the department or through the faculty in previous semesters. We normally only offer scholarship/work opportunities after the first semester, when students get acclimated to the new environment and have the opportunity to demonstrate their capability and potentials.

Notable faculty



Dr. Keng Siau In addition to being Department Chair, Dr. Siau maintains a productive research and teaching program. He specializes in Business Analytics and Data Science, Human Factors and User Experience, and Electronic, Mobile, and Ubiquitous Commerce. He is Editor-in-Chief for Journal of Database Management, and North America Regional Editor for Requirements Engineering journal.



Dr. Sarah Stanley prompts you to think outside the box in her marketing classes. Recently, as service learning in her Marketing for Non-Profits class, students worked to developing web and print materials for the Rolla Rural Fire District. She also teaches International Marketing, and Digital Marketing and Promotions. Her research focuses on brand quality, advertising, and marketing education.

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S&T Graduate Studies

bit@mst.edu | bit@mst.edu | Rolla, MO | 573.341.7216

Alumni Spotlight



Kasey Rinehart is a 2016 MBA alumna who also pursued a graduate certificate in project management. "I have relied on key faculty members to guide my education and career path. As a working student during my MBA program, I was impressed with the support provided to distance students." Kasey is currently an IT Project Manager at Boeing.

\$61,127

STARTING SALARY FOR
MASTERS STUDENTS

16:1 STUDENT TO
FACULTY RATIO

2 yrs AVERAGE TTD
(TIME TO DEGREE)

36 CREDIT HOURS
NEEDED



ENQUIRE ABOUT CHANCELLORS DISTINGUISHED,
MATHEWS, AND KAISER FELLOWSHIPS FOR PhD STUDENTS

Mechanical Engineering Graduate Programs

The Mechanical Engineering program at Missouri S&T offers PhD degrees, including direct PhD degrees for students holding a bachelor's degree, MS degrees, both thesis and non-thesis, and a wide variety of certificates.



Our graduate students engage in challenging fundamental and applied research projects under the guidance of world-class faculty (<http://mae.mst.edu/facultyandstaff/directoryfaculty/>) in our newly renovated facilities. Over 97% of our PhD students and over 83% of our MS students conducting research are financially supported by a combination of research assistantships, teaching assistantships, tuition and fee waivers, and fellowships. More information about our research can be found at <http://mae.mst.edu/research/> and more information about our graduate programs can be found at <http://mae.mst.edu/mechanicalengineering/mechanicalengineeringgraduate/>.

Admissions Requirements

1. MS degree with a grade point average of 3.5/4.0 (regular PhD), BS grade point average of 3.5/4.0 (direct PhD), or BS degree with a grade point average of 3.0/4.0 (masters and certificate).
2. Minimum GRE Q score of 155, GRE V + Q score of 302 and GRE AW score of 3.5.
3. International students for whom English is not their native language must submit a TOEFL score of at least 570 (PBT), 88 (IBT), or 230 (CBT), IELTS overall score of at least 6.5, or satisfactorily complete an approved English Language Institute program.

Graduate Coordinator and Staff

Dr. Xiaodong Yang
Associate Chair for Graduate Affairs
yangxia@mst.edu
573-341-6273

Karen Walberg
Graduate Affairs Support Assistant
walbergk@mst.edu
573-341-4602

Program Requirements

REGULAR PHD IN MECHANICAL ENGINEERING

A student wishing to earn a regular PhD in Mechanical Engineering must complete at least 60 total credit hours, at least 24 credit hours of lecture courses, at least 36 credit hours of ME 6099, at least 12 credit hours of course work in the MAE department, at least 3 credit hours of mathematics, statistics, or computer science (AE/ME: 5830 Applied Computational Methods may be used to satisfy this requirement), and at least 9 credit hours of 6xxx courses. The student must also pass the qualifying examination, pass his/her comprehensive examination, meet residency requirements, publish at least 3 journal articles, complete a dissertation, pass his/her final examination, and meet the department's seminar requirements.

DIRECT PHD IN MECHANICAL ENGINEERING

A student wishing to earn a direct PhD in Mechanical Engineering must complete at least 90 total credit hours, at least 45 credit hours of lecture courses, at least 45 credit hours of ME 6099, at least 21 credit hours of course work in the MAE department (at least 3 credit hours of which is at the 6xxx level), at least 6 credit hours of mathematics, statistics, or computer science (AE/ME: 5830 Applied Computational Methods may be used to satisfy 3 credit hours of this requirement), and at least 15 credit hours of 6xxx courses. The student must also pass the qualifying examination, pass his/her comprehensive examination, meet residency requirements, publish at least 3 journal articles, complete a dissertation, pass his/her final examination, and meet the department's seminar requirements.

MASTERS OF SCIENCE (THESIS OPTION) IN MECHANICAL ENGINEERING

A student wishing to earn an MS (thesis option) in Mechanical Engineering must complete at least 30 total credit hours, at least 21 credit hours of lecture courses, at least 6 credit hours of ME 6099, at least 9 credit hours of lecture courses in the MAE department (at least 3 credit hours of which is at the 6xxx level), at least 3 credit hours of mathematics, statistics, or computer science (AE/ME: 5830 Applied Computational Methods may be used to satisfy this requirement), and at least 6 credit hours of 6xxx lecture courses. The student must also complete his/her thesis, pass his/her oral examination, and meet the department's seminar requirements.

MASTERS OF SCIENCE (NON-THESIS OPTION) IN MECHANICAL ENGINEERING

A student wishing to earn an MS (non-thesis option) in Mechanical Engineering must complete at least 30 total credit hours of lecture courses, at least 24 credit hours of lecture courses in the MAE department, and at least 9 credit hours of 6xxx lecture courses (at least 6 of which is in the MAE department).

ME GRADUATE CERTIFICATES are specially designed programs consisting of four courses for working professionals to broaden their knowledge in a specific technical area. There are no GRE requirements to enter the graduate certificate programs, and students earning a B or better in all four courses (of either an ME or AE certificate) automatically qualify to enter the ME masters program without meeting the GRE or undergraduate GPA requirements. The graduate certificates include:

Composite Materials & Structures • Control Systems • Energy Conversion & Transport
Engineering Mechanics • Manufacturing Automation

FURTHER INFORMATION

- A 50% appointment currently provides \$2060.63/month. Students with 25% appointments or greater automatically qualify to pay in-state tuition.
- The educational fees for students paying in-state tuition and fees for the 2018 academic year is approximately \$11,000.
- Up to 9 credit hours can be transferred from another university for a graduate degree and up to 3 credit hours can be transferred for a graduate certificate.
- Only 24 credit hours are required for a second Masters of Science degree.
- Rolla is a small town in the heart of America's Midwest with easy access to outdoor activities. The cost of living in Rolla is approximately \$1250/month including room and board, personal needs, health insurance, and books and supplies.

MINING ENGINEERING PH.D.

Top 5 Things to Know

1. The World Bank estimated that the world needs significantly more metal resources, including critical metals, for clean energy technologies to mitigate our climate impact to an increase of 2°C. This will need substantial mining and mineral processing.
2. Missouri S&T is a recognized global leader in mining engineering education, having educated mining engineers since 1870.
3. Mining engineers apply science and engineering principles to design, build, and manage mines that extract minerals and energy materials in a safe, efficient, and sustainable manner.
4. Mining engineering researchers further our understanding of mining processes to develop more sustainable mining operations.
5. Equipment manufacturers, universities, government agencies, public and private research institutes, consulting companies, and software developers employ mining engineers with doctoral degrees.

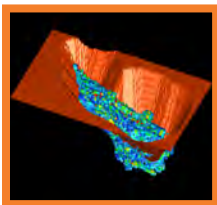
Grants and Funding Sources

Missouri S&T is one of only 13 universities in the United States that offers mining engineering. As a unique program, it is well funded by several funding agencies. Sponsors include DOE, DOD, NIOSH, Dept. of Education, Office of Surface Mining, Reclamation & Enforcement, Caterpillar, Joy Global Mining, Alpha Foundation, Monsanto, and Illinois Clean Coal Institute. Related research centers on campus include the Energetic Materials, Rock Characterization and Geomechanics Research Center (EMRGe) and the Center for Research in Energy and Environment (CREE).

Notable Research Facilities



Experimental Mine. Since 1914, Missouri S&T students have had the opportunity to gain "hands-on" experience with a variety of equipment and techniques and to encounter the actual problems of time limitation and weather. Mining students are able to design, drill, blast drift openings, and use the mine for an array of research topics.



Energetic Materials, Rock Characterization and Geomechanics (EMRGe). The EMRGe provides research leadership in a broad range of fields with current research focused on three areas: rock properties & geomechanics, explosions & material fragmentation, and mining support engineering. A particular emphasis is to create responsive research in all fields of science and engineering that work with rock.

MISSOURI
S&T | Graduate Studies

mining.mst.edu | mining@mst.edu | Rolla, MO | 573.341.4753



Additional Research Facilities

- Energetic Materials Research Center
- Mineral Processing / Strategic Minerals Laboratory
- Rock Mechanics Laboratory
- Virtual Surface Mining Simulator
- High Pressure Waterjet Laboratory
- Mine Ventilation Health and Safety Laboratory

\$64,496

AVERAGE
STARTING SALARY

3.4:1

STUDENT TO
FACULTY RATIO

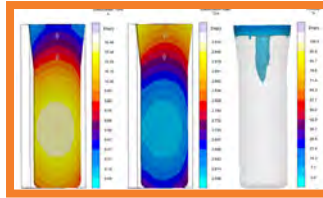
4 years

AVERAGE TTD
(TIME TO DEGREE)

MATERIALS SCIENCE & ENGINEERING

Top 5 Things to Know

1. Students can tailor their experience by working toward Ph.D. and M.S. degrees in Materials Science and Engineering, Ceramic Engineering or Metallurgical Engineering at Missouri S&T.
2. Missouri S&T has 1 of 2 programs in the US that offer ceramic engineering and 1 of 8 that offer metallurgical engineering in the United States.
3. MSE graduates are employed by manufacturers, universities, government agencies, and public and private research institutes who value the unique skills and training received at Missouri S&T.
4. Nearly all graduate students receive stipends from grants.
5. S&T researchers are world experts in steel production and treatments, optical and biomedical glass, materials for extreme environments, metal castings, computational materials science, composites, and extractive metallurgy.



Research Grants and Sources

We conduct ~\$4 million annually in research for industrial and government sponsors, such as Nucor, Honeywell, NSF, Boeing, Caterpillar, Mo Sci, Dept. of Education, DOE, Rolls-Royce, Halliburton, Freeport-McMoRan, Air Force OSR, Office of Naval Research, NIH, DOD, and Corning.

Notable Faculty



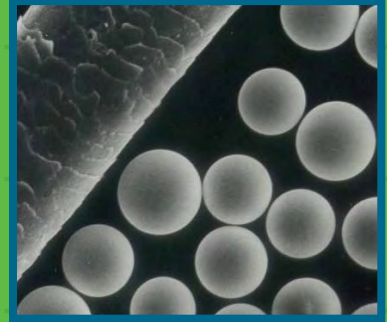
Richard Brow - One of four Curator's Distinguished Professors within the department. Former president of the American Ceramic Society. Research interests include glasses for biomedical applications, glass surfaces and strength, glasses for waste encapsulation, optical glasses, and 3D processing of glass.



Ron O'Malley - Director of the Kent D. Peaslee Steel Manufacturing Research Center. Future president of the Association of Iron & Steel Technology. Research interests include steelmaking, continuous casting, solidification & heat transfer, high temperature physical chemistry, and mold fluxes & slags.

MISSOURI
S&T | Graduate Studies

mse.mst.edu | matlsci@mst.edu | Rolla, MO | 573.341.4711



Radioactive Glass Microspheres for Treating Liver Cancer



Experimental Pour of Gen3 Lightweight Steel

Research Facilities

- Materials Research Center
- Peaslee Steel Manufacturing Research Center
- Robert Wolf Foundry
- Advanced Materials Characterization Laboratory
- Center for Biomedical Research

\$76,632

AVERAGE STARTING SALARY
AFTER GRADUATION

2.8:1

GRADUATE
STUDENT PER
FACULTY

4 yr

AVERAGE TIME
FOR PH.D.

M.S. AND PH.D. IN NUCLEAR ENGINEERING

Top 5 Things to Know

1. The Nuclear Engineering program offers the master of science, the doctor of engineering, and the doctor of philosophy degrees.
2. The master's degree program is designed to provide you with competence in designing nuclear energy systems and learning their operation based upon your scientific and engineering background.
3. Missouri S&T has a 200kW pool-type reactor that has been operating since 1961. It has a beam port, a thermal column and pneumatic transfer tubes.
4. There are a plethora of other laboratories for student use including a radiation measurements lab, a nuclear materials lab, and several computer labs with state-of-the-art software.
5. Research areas include reactor design, reactor safety, probabilistic risk assessment, thermal hydraulics, radiation effects, radiation protection, radiation transport, space nuclear power, materials for nuclear applications, fuel cycle, and other subfields.

Grants and funding awards

There are many opportunities for graduate students to receive funding for education and research. The Department of Nuclear Engineering offers departmental scholarships.

Notable faculty



Dr. Arvind Kumar is the Department Chair and a Professor in the Department of Nuclear Engineering. His research interests include nuclear materials, radiation damage, and mechanical processes.



Dr. Gary E. Mueller is an Associate Professor in the Department of Nuclear Engineering. His research interests include nuclear power safety, particle bed heat transfer, space nuclear power, and radioactive waste minimization.



\$80,892

AVG, STARTING SALARY
FOR MASTERS STUDENTS

30 CREDIT HOURS
NEEDED FOR M.S.

MISSOURI
S&T | Graduate Studies

nuclear.mst.edu | nuclear@mst.edu | 222 Fulton Hall | 573.341.4720

PETROLEUM ENGINEERING

Top Things to Know

1. The petroleum engineering program offers Master of Science, Doctor of Philosophy degrees. The master's degree can be earned with either a thesis option or a non-thesis option.
2. The petroleum engineering program is the only such program in the state of Missouri and only 17 ABET-accredited bachelor programs in the country. Our program was among the first created in the United States and will be 100 years old in 2020.
3. Our state-of-the-art petroleum lab equipment includes rock-strength testing equipment, gas porosimeters and permeameters, liquid permeameters, viscometers, tensiometers, and an HPTP core flooding cell. We also have access to a wide variety of imaging and spectroscopic instrumentation.
4. S&T petroleum faculty specialize in research related to conformance control, enhanced oil recovery, wellbore integrity, data analytics, unconventional resources, hydrofracturing, mechanical earth modeling, and geodynamics.

Grants and Funding Awards

The R. Tim and Kay Bradley Graduate Fellowships in Petroleum Engineering are available to Ph.D. or M.S. students in any area of petroleum engineering (resevoir, drilling, production, and mechanical earth modeling). It includes school fees, a competitive stipend, and travel allowance.

Notable Faculty



Dr. Andreas Eckert is an Associate Professor in the petroleum engineering department. His research interests include numerical simulation of buckle folding, numerical simulation of rock fabric evolution, fracture initiation, salt tectonics, deformation bands, and wellbore and reservoir geomechanics.



Dr. Baojun Bai is a Professor in the petroleum engineering department and is the Lester Birbeck Endowed Chair of the department. His research interests include conformance control to reduce excess water production using gels, carbon dioxide foam flooding, shale gas development, reservoir numerical simulation and other subfields.

PHYSICS M.S. AND PH.D.

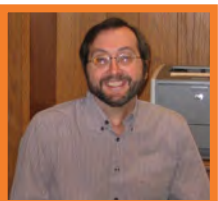
Top 5 things to know

1. Four of the physics faculty members are Fellows of the American Physical Society (APS), and three carry the title of Curators' Professor within the University of Missouri System.
2. Physics faculty members at Missouri S&T conduct leading research in fields such as atomic physics, condensed matter physics, and cloud and atmospheric physics.
3. Missouri S&T and the surrounding area provide a plethora of resources to international and domestic students.
4. There are tracks of study for students to receive a Master of Science with and without a thesis. There is also an option to receive a Master of Science for Teachers.
5. There is a qualification examination to test students on their capabilities to continue on to the Ph.D. program.

Grants and funding awards

All graduate students making normal progress toward their degrees are supported by teaching or research assistantships. Additional scholarships, fellowships and summer appointments are awarded on a regular basis. Each semester the department awards more than two-dozen teaching and research assistantships. We offer a level of financial support that is nationally competitive and the cost of living in Rolla is relatively low.

Notable faculty



Dr. George D. Waddill is a professor and the chairman of the physics department. His specialization is experimental condensed matter physics, and his research interests are atomic scale investigations of surfaces and interfaces, x-ray photoelectron spectroscopy and photoelectron diffraction.



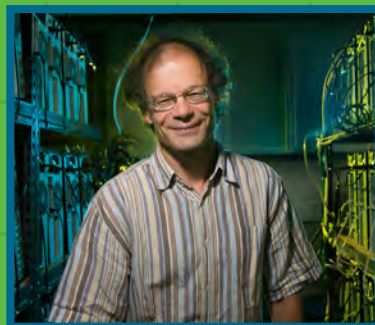
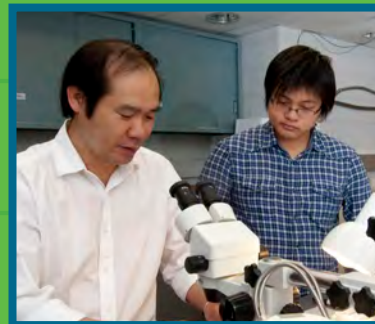
Dr. Barbara Hale is a professor in the physics department. Her research specialization is statistical physics and molecular modeling of nucleation phenomena. She was the recipient of Missouri S&T's Woman of the Year Award in 2013 as well as the Alumni Association Faculty Advisor Award in 2002.



Dr. Yew San Hor is an assistant professor in the physics department. His specialization is experimental condensed matter physics. In 2014, he was called "One of the Most Cited Physicists" in Thomson Reuters, and he received the CAREER Award from the National Science Foundation in 2012.

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Research problems

- Characterization of magnetic materials
- Predicting the properties of quantum and classical phase transitions
- Establishing the structure and properties of atmospheric aerosols
- Investigating electron transport in polymers
- Determining electron-atom scattering events
- Characterizing the particulate in rocket engine exhaust
- Exploring the structural properties of thin magnetic films
- Computing the electronic structure of new materials

30 CREDIT HOURS
NEEDED FOR M.S.

72 CREDIT HOURS
NEEDED FOR PH.D.



INDUSTRIAL-ORGANIZATIONAL PSYCHOLOGY

What is I-O?

Industrial-Organizational (I-O) Psychology is the study of workplace attitudes and behaviors. As I-O psychologists, our mission is to enhance human well-being and performance in organizations by promoting the application of scientifically validated best practices. I-O Psychologists help organizations to maximize the potential of their workforce through a scientific understanding of recruitment, selection, training, motivation, leadership, work-life balance, employee attitudes, and other psychological processes in the workplace. As I-O Psychologists, we belong to the Society for Industrial and Organizational Psychology (SIOP) which is division 14 of the American Psychological Association (APA). More information about the field of I-O psychology is available at www.siop.org.

In 2017, the APA approved a new set of guidelines for Education and Training in Industrial-Organizational Psychology (<http://www.siop.org/educatorsdefault.aspx>). In their guidelines, they identified 26 areas of competency which were important for all I-O Psychologists and Practitioners to possess. We have crafted our I-O MS curriculum to actively address all of these competencies and ensure that our program is meeting the highest standards for excellence in I-O education.

I-O Psychology Curriculum

Our program includes the following core content courses:

- Organizational Development
- Job Analysis & Performance Management
- Small Group Dynamics
- Employee Affect and Behavior
- Leadership, Motivation, and Culture
- Training and Development
- Personnel Selection

Electives Include:

- Advanced Cognition
- Advanced Social
- Human Factors
- Occupational Health & Safety

Top 5 Things to Know

1. Professional Development Opportunities

We encourage and provide financial support for attending both regional and national conferences. We have regularly scheduled invited speakers and support student internship opportunities.

2. Flexible Scheduling with On-Campus or Online Classes

All of our classes in the I-O Psychology MS program are offered in both a traditional, on-campus, environment as well as being broadcasted live and recorded for later viewing for our distance students.

3. Dedicated Faculty from Across Disciplines

Our program engages in cross-disciplinary research and teaching. Relevant courses will be taught by Cognitive, Social, and Human Factors specialists, to give a cross-disciplinary educational experience.

4. Thesis and Non-Thesis Degree Options

In place of elective classes, students may choose to complete a Master's Thesis by working closely with a faculty member of their choosing to conduct their own research project.

5. Potential Funding is Available for Students

Funding as a research assistant or teaching assistant is possible, depending on availability each year. All Funding is based on a competitive basis and may range from paid hourly support to a full tuition waiver and stipend.

Still Not Sure?

Consider one of our two **graduate certificates** as an alternative option. Both certificates consist of 4 courses that can be completed in 1 year. If you pass each of these courses with a B or better, you can count those courses towards the completion of your I-O MS degree. There is no GRE requirement for admission to certificate programs.

Psychology Graduate Certificates

Applied Workplace Psychology

Introduction to I-O Psychology
Advanced Research Methods in I-O
Job Analysis & Performance Mgmt
Small Group Dynamics

Statistical Methods in Psychology

Applied Psychological Data Analysis
Psychometrics
And two of the following:
Statistical Data Analysis
Probability and Statistics
Regression Analysis
Design and Analysis of Experiments

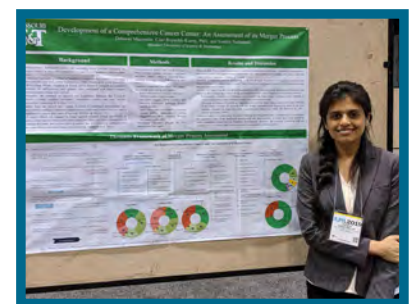


MEDIAN SALARY INCREASE
PER YEAR OF EXPERIENCE

\$67,000 AVG
STARTING
SALARY

ON-CAMPUS AND
DISTANCE CLASSES
AVAILABLE

2 YRS AVERAGE TTD
(TIME TO DEGREE)
CREDIT HOURS
NEEDED 40



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M.S. AND PH.D. IN SYSTEMS ENGINEERING

Top 5 Things To Know

1. Systems engineering is an interdisciplinary approach enabling the realization of successful systems by defining customer needs and required functionality early in the development cycle
2. Systems engineers need to be problem definers, not just problem solvers, and be involved with a system through its life cycle, from development through production, deployment, training support, operation, and disposal.
3. Working professionals may pursue the degree of Doctor of Philosophy in Systems Engineering at a distance while maintaining employment
4. Systems Engineering research areas include model based engineering, systems architecting, modeling, simulation, and other subfields.
5. As one of the leading systems engineering programs in the nation, we are the only university in the world to have four International Council on Systems Engineering Stevens Doctoral Award recipients.

Grants and funding awards

There exist many forms of financial assistance students can receive as a graduate student in Engineering Management. Students can apply for positions such as an EMSE Graduate Research Assistant and an EMSE Graduate Teaching Assistant. There is also the EMSE Graduate Student Leadership Award. The Chancellor's Fellowship awards financial assistance to promising Engineering Management students.

Graduate students may also apply for graduate research funding.

Notable faculty



Dr. Cihan Dagli is the Founder and Director of the Systems Engineering Graduate Program and is a Professor in the Department of Engineering Management & Systems Engineering. His research interests include systems engineering, systems architecting, cyber physical systems, computational intelligence, and other subfields.



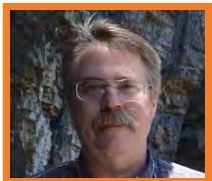
Dr. Katie Grantham is an Associate Professor in the Department of Engineering Management & Systems Engineering. Her research interests include risk analysis, risk mitigation, product design, and engineering education.

M.S. TECHNICAL COMMUNICATION

Top 5 Things to Know

1. Technical communicators create help systems and tutorials for users of new software, design multimedia presentations for special interest groups, write instructions and dialogue boxes for video games, edit print and online documentation for government agencies, and lead project teams in industry.
2. Our graduates are currently employed with organizations such as Cerner, eClinicalWorks, Schneider Electric, Wright-Patterson Air Force Base, University of South Florida, Veterans Affairs (via Booz Allen Hamilton), HealthTrio, MasterCard, and Visa.
3. They have job titles such as (but not limited to) technical editor, content developer, information architect, content strategist, and instructional designer.
4. Students in our programs have held internships and co-ops with organizations such as Fort Leonard Wood, Monsanto, Cummins, Micron Systems, Express Scripts, Diebold, Druva, CCTV America, and Sprint.
5. To pursue a Master of Science in technical communication at S&T, a student must have a bachelor's degree in any discipline and a strong background in writing and technology. We invite qualified individuals to apply for admission through the Missouri S&T Office of Admissions (<http://futurestudents.mst.edu/admissions/>). We offer funding for a limited number of graduate teaching assistants.

Notable Faculty



Dr. Ed Malone's research interests include history of technical communication, history of rhetoric, technical editing, international technical communication. Dr. Malone received a B.S.Ed. and an M.A. from Missouri State University and a Ph.D. from Southern Illinois University-Carbondale.



Dr. Kathryn Northcut's research interests include rhetoric of science, visual theory, pedagogy. Dr. Northcut received a B.A. from Western State College in Gunnison, Colorado; an M.A. from Colorado State University; and a Ph.D. from Texas Tech University.



Dr. David Wright's research interests technology diffusion, communication networks, rhetoric of science. Dr. Wright received a B.S., an M.S., and a Ph.D. from Oklahoma State University.

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website address | email address | physical address | phone number

Alumni Spotlight



Shubhangi Vajpayee

completed our M.S. in technical communication in 2013. Upon graduation, she moved to Boston, where she worked for MathWorks as an Application Deployment Technical Writer. Later, she worked for Hewlett Packard Enterprise as a Senior Information Developer. As part of their Big Data Platform team, she wrote documentation for Vertica (HPE's database product). Now she lives in Seattle and works for Amazon Writing Services.

Our M.S. program requires a minimum of 30 credit hours and takes 2 years to complete. We also offer a 4-course graduate certificate program. Both programs are delivered in online and traditional classroom formats.

\$54,444

AVERAGE STARTING
SALARY FOR M.S.
GRADUATES