Welcome to USF’s College of Engineering

Message from the Dean

Research and innovation at the College of Engineering at the University of South Florida are focused on creating local, national and global solutions to society’s most difficult problems. From developing sources of clean energy and drinking water to enhancing the quality of life for people with disabilities, USF engineering researchers seek to make the world a better place with research awards exceeding $36M in 2014.

USF is a high-impact global university that conducts research and develops innovations that change lives, improve health, and foster sustainable development and positive societal change.

The University of South Florida ranks 15th world-wide for granted U.S. patents among all universities, according to the Intellectual Property Owners Association (2013). USF ranks 10th nationally for patents and is in the top 15 for start-ups and the number of licenses and options among U.S. universities.

The college offers an intellectually challenging environment with a diverse student and faculty population. We accept applications on an ongoing basis and doctoral appointments typically include tuition waiver and full sponsorship for the academic year.

Robert H. Bishop, P.E.
Dean, College of Engineering

This brochure is provided as a guide, the USF Graduate Catalog in the only definitive source of program requirements.
Start your USF Graduate School application online at: http://www.usf.edu/admissions/graduate/index.aspx

Office of Graduate Admissions - University of South Florida
4202 East Fowler Avenue SVC 1036
Tampa, Florida 33620-6900
Telephone: (813) 974-8800
U.S. Toll Free: 1-866-974-8800
Fax: 813-974-7343
Email: admissions@grad.usf.edu
Welcome to the Department of Chemical & Biomedical Engineering at the University of South Florida. Our department consists of a large and diverse student body pursuing BS, MS and PhD degrees in Chemical Engineering and MS and PhD degrees in Biomedical Engineering. We have an accelerated BS/MS program in which you can get your bachelor’s and master’s degrees together. Many of our undergraduate students benefit from Research Experiences for Undergraduates (REU) and co-op programs, which help them in applying for graduate schools and jobs with industry. Our faculty members are dedicated to instruction and our curriculum offers a great set of courses. We have an excellent wireless network, computational facilities, and modern laboratories. Our office staff is always helpful to make your educational experience at USF a great one. Our group of highly accomplished and active faculty members works in an exciting blend of traditional and non-traditional research areas. We actively foster collaborative research opportunities across disciplines within the department and colleges across the USF campus, and also at other universities and research institutions. Our interdisciplinary environment is a significant benefit to students and researchers, and you can get many details of our research activities on our website.

We have teaching and research assistantships available for graduate students which include a stipend and tuition waiver. Our faculty members are caring and renowned for their scholarship. We have fellows of professional organizations (AIChE, ASME, AAAS, etc.), NSF CAREER award winners, and contributors to major journals on our faculty.

Our faculty does outstanding research in nanotechnology, neuroscience and neuroengineering, biomedical instrumentation and sensors, multi-scale modeling, fundamentals of catalysis, sustainable technologies and many aspects of renewable energy.

We are located in the beautiful Tampa Bay area which has a mild sunny climate, several of the best beaches in the world, and many opportunities for recreation and cultural activities. We hope that prospective students will consider joining us, and thanks for your interest in the Department of Chemical & Biomedical Engineering at the University of South Florida.

Sincerely,
Babu Joseph
Professor and Interim Chair
Admission Requirements

Specific Admission Requirements for PhD level Graduate Degrees in both Chemical and Biomedical Engineering Degrees are:

An undergraduate bachelor’s degree or equivalent in engineering or science. For PhD in chemical engineering, the undergraduate degree must be in chemical engineering. It is possible to earn a master’s (thesis and non-thesis options) and PhD degrees in chemical engineering and biomedical engineering in our department.

Undergraduate transcripts demonstrating strong academic performance are preferred. Note that students recommended for admission to our graduate program generally have a grade point average of 3.0 or higher on a 4.0 scale.

GRE is required. Note that students recommended for admission to our program generally have a percentile score of 75% (Q) and 50% (V) and Analytical at 4.0 or greater.

TOEFL (international applicants only) >= 79

Official letters of reference from at least three persons who are familiar with student’s credentials.

Statement of research interests.

Official letters of reference and research interests should be mailed directly to the Department of Chemical & Biomedical Engineering.

For more information or to send a CV please contact:
Terri Ogden
thaag@usf.edu

Student Success

Scholarships and Fellowships

- Ford Foundation Predoctoral Fellowship
- NASA Harriett Jenkins Pre-doctoral Fellowship
- Department of Defense Health Disparity Postdoctoral Fellowship
- NIH Ruth Kirschstein National Fellowship
- GEM Fellowship
- Schlumberger Foundation Faculty for the Future Fellowship

Faculty and Post Doctoral Appointments

- University of Minnesota
- New Mexico Institute of Technology
- Tuskegee University
- Moffitt Cancer Center & Research Institute
- Tuskegee University
- Claflin University
- Medical University of South Carolina
- Texas A&M
- Harvard University
- University of Pennsylvania
- University of Strathclyde
- Universidad del Norte, Baranquilla, Colombia

Industry and Government Positions

- Sandia National Laboratory
- Defense Threat Reduction Agency
- U.S. Air Force Nuclear Weapons Center
- Argonne National Laboratory
- Food and Drug Administration (FDA)
- Cummins, Inc.
- Bausch & Lomb
- Moffitt Cancer Center
- U.S. Veterans Affairs
- Dow Chemical
- Phillips 66
- Coca Cola
- ConMed Linvatec
- Tampa Electric
- Johnson & Johnson
- Cook Biotech
John Kuhn
Heterogeneous Catalysis, Materials Chemistry, Chemical Separations

William E. Lee III, PE
Basic, applied, and forensic biomechanics; psychology of medical procedures, pain management, engineering education

Christopher Passaglia
Neuroengineering, Visual and Computational Neuroscience, Glaucoma

Aydin Sunol, PE
Process and Product Systems Engineering, Green Chemistry and Engineering, Supercritical Fluids

Anna Pyayt
Bio-photonics, Advanced Material and Devices, Nanotechnology, New Biomedical Instruments, Sensors

Alberto Sagüés, PE, FNACE
Interdisciplinary Professor Corrosion of Engineering Materials

Paul Sanberg
Interdisciplinary Professor Medicine Pathology and Cell Biology, Medicine Molecular Pharmacology & Physiology, Medicine Neurology

Ryan Toomey
Biomacromolecule and Polymer Science

Joseph Walton
Interdisciplinary Professor Neural Substrates of Auditory Processing using Multi-electrode Arrays in Normal and Disease States
Welcome to the Department of Civil and Environmental Engineering at the University of South Florida.

Our graduate program offers specialties in seven areas: 1) environmental engineering (ENV); 2) geotechnical (GTL); 3) materials (MTL); 4) structures (STR); 5) transportation (TPT); 6) water resources (WRS); and 7) engineering for international development (EFD).

Faculty, staff and students within each specialty area are involved in interdisciplinary research and scholarship with collaborations across the university, including departments in the College of Engineering, and non-engineering departments of Anthropology, Biology, Computer Science, Geology, Geography, and the College of Public Health. Our faculty also maintains a solid base for research funding from agencies such as the Florida Department of Transportation, Southwest Florida Water Management District, U.S. Department of Education, the National Science Foundation, U.S. Environmental Protection Agency, and the U.S. Department of Energy.

The department also values its close ties with the local industry, consultants and agencies. We are strongly supported by our alumni with whom we maintain an active relationship. We use these ties to continuously improve and strengthen our program, to meet changing technical needs of employers and society, and to progress as a vital unit of a Tier One Research University.

Sincerely,
Manjriker Gunaratne, PE
Professor and Chair

Scholarships and Fellowships
- USF Presidential Doctoral Fellowship
- Fulbright Fellowship
- NSF Graduate Research Fellowship
- U.S. Dept. of Energy Office of Science Graduate Fellowship
- NOAA Ernest F. Hollings Scholarship
- GEM Fellowship
- Eisenhower Fellowship

Faculty and Post Doctoral Appointments
- University of Illinois at Urbana-Champaign
- Lawrence Technical University
- Colorado School of Mines
- Oak Ridge National Laboratory
- Auburn University
- University of Guyana
- Polytechnic University of Puerto Rico, Orlando
- University of Puerto Rico, Mayagüez
- Mercer University

Industry and Government Positions
- Hydro Eco
- U.S. Army Corps of Engineers
- HSA Engineers & Scientists
- Hillsborough County
- City of Tampa
- Florida Dept. of Transportation
- Tampa Electric
- Atkins North America (formerly PBSJ)
- BCI Engineers
- Jacobs Engineering
- Sam Schwartz Engineering
- Doosan Hydro Technology
- U.S. Environmental Protection Agency
**Admission Requirements**

Please see our department website for a wealth of information on graduate degree requirements, admission requirements, application procedures, research thrusts and faculty profiles:

http://www.eng.usf.edu/cee/

**Master’s programs:** Civil & environmental engineering consulting firms, municipal, state and federal agencies are increasingly seeking the master’s degree as the entry level degree for professional practice. USF’s Department of Civil & Environmental Engineering can help you achieve your educational and career goals by offering both thesis and non-thesis degree options at the master’s level.

- **MCE and MEVE degrees** - Non-thesis master’s degrees allow for maximum flexibility – you can complete a MCE or MEVE degree in one year or take one course per semester and complete the degree over four to five years while working full time. Evening and online courses are available to help working students.

- **MSCE and MSEV degrees** – Thesis option master’s degrees allow students to work one-on-one with a professor on a research project, allows students to deepen expertise in a focused area and increase the possibility of obtaining a research assistantship to support their graduate study. The thesis master’s is also the degree of choice for a student who is interested in continuing for a PhD or a career in research.

- **Options for non-engineers** – Students without a first degree in engineering can either complete prerequisite courses and then join our regular thesis or non-thesis Master’s degree options or apply to the College of Engineering Master’s of Science in Engineering Science (MSES) program and be hosted by the CEE department.

- **Master’s International Program** – This program allows students to combine their graduate degree with service and research while serving in the Peace Corps as an engineer. The program has a strong focus on sustainability and humanitarian engineering and students are allowed to explore and innovate at the interface of engineering design and technology with people, society, and health. In addition to traditional engineering coursework, students take classes in sustainable development engineering, global health assessment, and research methods in applied anthropology.

**PhD programs:** Doctoral level study prepares you to qualify for positions in research, academia and working in advanced technical positions in industry. Dissertation research will allow you to make a major contribution to the fields of civil and environmental engineering through research and publication. USF offers doctoral degrees in both civil and environmental engineering. See the research thrusts section of our website for information on recent projects in Environmental, Water Resources, Structures, Materials, Transportation and Geotechnical Engineering:

http://www.eng.usf.edu/cee/researchAndFacilities/researchThrusts.htm

Information about applying to our program, including links to our CEE department admissions intake form and the online application can be found at http://eng.usf.edu/cee/graduate/apply.htm. Fill out the intake form and application, and arrange to have your transcripts, GRE and TOEFL scores (for foreign applicants) sent to the graduate school. The CEE department admissions intake form will ask you to provide:

- Contact information for references (please do not send the letters yourself).
- A one- or two-page resume
- A short statement of purpose describing your background and what you hope to accomplish in graduate school
- Any additional information that will help us in our admission decision.

The graduate admissions committee takes into consideration the applicant’s background, work experiences, academic performance and letters of recommendation. In evaluating your application, the following qualifications can be used for guidance.

**Master’s Programs** (Civil, Environmental)

Overall GPA ≥ 2.75 (3.00 in major)
GRE V ≥ 143 Q ≥ 151 AW ≥ 3.0
TOEFL (international applicants only) ≥ 79

**PhD Programs** (Civil, Environmental, Engineering Science)

Overall GPA ≥ 3.00 (3.30 in major)
V ≥ 150 Q ≥ 155 AW ≥ 4.0
TOEFL (international applicants only) ≥ 79

Please note that meeting these qualifications does not guarantee admission or financial assistance. Availability of departmental resources varies from year-to-year and is an important consideration in all graduate admission decisions.

For more information or to send a CV please contact:
Jeff Cunningham, PhD, Graduate Coordinator
seven areas: 1) environmental engineering (ENV); 2) geotechnical (GTL); 3) materials (MTL); 4) structures (STR); 5) transportation (TPT); 6) water resources (WRS); and 7) engineering for international development (EFD).
Mahmood Nachabe, PE, FASCE
Water Resources

Abdul Pinjari
Transportation

Steven Polzin, PE
Transportation

Mark Ross, PE
Water Resources

Alberto Sagués, PE, FNACE
Structures and Materials

Rajan Sen, PE, FASCE FACI
Structures and Materials

Daniel Simkins
Structures and Materials

Amy Stuart
Environmental

Andrés Tejada-Martinez
Water Resources

Maya Trotz
Environmental

Daniel Yeh, PE, LEED AP
Environmental

Qiong Zhang
Environmental

Abla Zayed (Not pictured)
Structures and Materials

Yu Zhang
Transportation
We look forward to serving excellent graduate students and enabling them to excel in their chosen specialties.

Our students have been successful in getting jobs in software development, hardware design and test, the computer security industry and more. Computer Science, Computer Engineering and Information Technology have consistently been ranked among the highest paying degrees and the most in demand degrees. We have recently integrated Information Technology program into our Department which is offered in online mode enabling you to take it anytime from anywhere.

Our dedicated faculty provides an excellent set of courses combined with individual attention to make the learning experience a great one. We have an excellent wireless network available, modern and useful computer labs and a great staff to help you have a great educational experience. We offer Master’s degrees in Computer Science, Computer Engineering and Information Technology. We offer the Ph.D. degree in Computer Science and Engineering. We have Teaching and Research Assistantships available for Masters and Ph.D. students that include a stipend and tuition waiver. Our caring faculty includes a number of IEEE Fellows, IAPR Fellows, an ACM fellow, many NSF CAREER award recipients, and two Distinguished University Professors.

Our faculty does outstanding research in Computer Vision/Pattern Recognition, Biometrics, Computer Security, Distributed computing, VLSI design including low-power chips, Networks, Computer Graphics, Robotics, Databases, AI/Data Mining, Data Visualization, and more! The research leads to stimulating courses and areas of research for graduate students. Our research is, and has been funded by a variety of federal agencies, such as the National Science Foundation, National Institutes of Health, Department of Defense, Department of Energy, private companies, and more.

We are located in the beautiful Tampa Bay area, which has several of the top ranked beaches in the world, a mild sunny climate, and many opportunities for recreation as well as cultural activities.

Thank you for your interest in the Department of Computer Science and Engineering at the University of South Florida. Please consider joining us.

Sincerely,
Rafael Perez
Professor and Interim Chair
Admission Requirements

Admission to the MS and PhD degree programs is granted by the Dean of the Graduate School upon recommendation by the Department of Computer Science and Engineering and the Dean of the College of Engineering. Requirements for admission to the program with regular status are summarized below.

The majority of our accepted students have a 4-year undergraduate degree in computer science, computer engineering, electrical engineering, or mathematics. A master’s degree in one of these fields will be looked upon favorably. Well-prepared students in other majors are encouraged to apply. The applicant must have mathematical preparation equivalent to courses in calculus through differential equations, demonstrated knowledge of computer science and computer engineering (formal course grades), including logic design, computer architecture, data structures, operating systems, and analysis of algorithms.

Minimum grade point average (GPA) of B average (or equivalent) for all coursework completed during the last two years of undergraduate program.

Test scores for the Graduate Record Exam (GRE) must be within the five years preceding application to the graduate program. The GRE is required for all international applicants and those requesting financial aid. (See the website for more detailed information.)

For teaching assistantship consideration, applicants from non-English speaking countries must take and pass the speaking component of the Internet-based TOEFL with a score of 26 or above.

Three letters of recommendation are required for all applicants.

Statement of purpose from applicant.

For more information please contact:
Srinivas Katkoori, PhD, Graduate Program Director
graduate-program@cse.usf.edu

Additional Requirements For International Students

International students should apply well in advance of admission deadlines since these applications take longer to process.

International students must also submit a Financial Statement (necessary to receive an I-20) if you are not awarded an assistantship.

For complete information on international student concerns related to visa status, please go to: http://www.grad.usf.edu/graduate-admissions-international.php

Student Success

Scholarships and Fellowships
• NSF Computing Innovation Postdoctoral Fellowship
• NSF Graduate Research Fellowship
• NSF East Asia Pacific Institute Fellowship
• Richard Newton Award

Faculty and Post Doctoral Appointments
• University of Virginia
• Moffitt Cancer Center & Research Institute
• Yale University
• Duke University
• Mississippi State University
• James A. Haley VA Hospital
• East Mississippi State University
• USF Health at University of South Florida
• North New Mexico College
• University of Notre Dame
• Stevens Institute of Technology
• University of North Texas
• University of Kentucky
• University of Mississippi

Industry and Government Positions
• Microsoft
• Intel
• Lockheed Martin
• Deutsche Bank
• GE Global Research
• NASA Jet Propulsion Lab
• NASDAQ
• Nokia
• Cisco Systems
• Draper Laboratory
• Nielsen
• AOL
• Jabil Circuit
• Seminole Electric
• TaTa Consultancy
• IBM
• Verizon
• U.S. Dept. of Navy
• Yahoo! Research
• Telefonica
• Amazon
The University of South Florida, a top research university, offers an intellectually challenging environment in a diverse student and faculty population. The outstanding faculty in the department includes a number of IEEE Fellows, IAPR Fellows, and ACM Fellows, several NSF CAREER award winners and several Distinguished University Professors, all performing innovative research.

Kenneth Christensen
Performance evaluation of computer networks

William Armitage
Information technology, systems analysis, network design

Paul Bao
Image/video rendering, virtual reality, multimedia networking systems

Sriram Chellappan
Socio-technical systems, Cyber security, Smart health, Mobile networking, Cyber-Physical Systems

Alessio Gaspar
Evolutionary algorithms, Computing Education Research, Computer-assisted learning, Intelligent tutoring systems

Swaroop Ghosh
Circuit/System design, memory design, hybrid integrated systems, hardware security

Dmitry Goldgof, FIEEE, FIAPR
Image and video analysis, medical imaging

Larry Hall, FIEEE, FIAPR, FAAAS
Pattern recognition, Predictive analytics, Approximate reasoning

Adriana Iamnitchi
Distributed systems, social computing

Rangachar Kasturi, FIEEE, FIAPR
Computer vision, image processing, pattern recognition

Srinivas Katkoori
VLSI synthesis, smart embedded systems, and hardware security

Miguel Labrador
Computer networks, ubiquitous sensing
Jay Ligatti
Software security, programming languages

Yao Liu
Network security, wireless technologies

Xinming Ou
Cyber security, Cyber physical systems, Programming languages, Cloud computing, Human aspects of computing

Rafael Perez
Artificial intelligence, neural networks, genetic algorithms

Les A. Piegl
Computer-aided design (CAD), geometric modeling, bioengineering and biologically inspired design

Nagarajan Ranganathan, FIEEE, FAAAS
VLSI CAD, Circuits systems design, Algorithms and architectures, Hardware security and emerging technologies

Paul A. Rosen
Data visualization, Computer graphics, Human computer interaction, Visual literacy education, Computing entrepreneurship

Sudeep Sakar, FIAPR, FIEEE
Computer vision, sign language recognition, biometrics

Yu Sun
Robotics, computer vision, haptics

Yicheng Tu
Database systems, large-scale scientific data management, high-performance computing

Alfredo Weitzenfeld
Information technology, biorobotics, multi-robotic systems, robot cognition

Hao Zheng
System modeling and analysis
A Message from the Department Chair

The faculty of the Electrical Engineering Department at USF takes great pride in providing a high quality education to our more than 400 graduate students, and invites you to consider joining us in advancing the frontiers of knowledge. Our student body is diverse, our research spans experimental and theoretical studies of many fundamental areas of electrical engineering, and we enjoy strong partnerships throughout industry and with prominent national laboratories and federal agencies. Most importantly our graduate students benefit from the dedicated, personal guidance of our faculty.

As a graduate student in our department, you have the opportunity to perform research in areas that include photovoltaics, nanotechnology and nanoscale systems, smart grids and advanced power distribution systems, wireless communications and sensors, microwave devices and integrated circuits, electromagnetics and biomedical devices – among others. These research areas are supported by state of the art facilities for nano/micro fabrication, metrology and characterization, as well as industry-standard computer-aided-design and simulation software. We also emphasize the professional development of our students through high-quality scholarly publications presentations at international conferences, and participation in grant proposal development. We are very proud of the accomplishments of our students, whose work is consistently recognized with technical conference presentation awards and prestigious national scholarships and fellowships.

The faculty of electrical engineering hails from some of the finest institutions in the country, and includes NSF CAREER Award winners, Fellows of the IEEE and AAAS, Distinguished University Professors, and a member of the National Academy of Engineering. Many serve in national leadership roles in technical societies such as the IEEE, have industry experience to complement their academic backgrounds, and lend their expertise to federal agencies such as the National Science Foundation and the National Institutes of Health. Some are very entrepreneurial and have founded spin-off companies based on their research. This diversity of experience enriches the learning and experiences of our students.

We value the multi-disciplinary opportunities afforded by electrical engineering. As a graduate student, you may find yourself working with engineers in other departments, medical doctors, chemists, biologists, physicists or marine scientists. Together with our dedicated faculty and excellent facilities, these exciting research opportunities have helped us to attract top students to our department and prepare them for enriching careers.

Sincerely,
Tom Weller
Professor and Chair
Admission Requirements

Admission to the MS and PhD degree programs is granted by the Dean of the Graduate School upon recommendation by the Department of Electrical Engineering and the Dean of the College of Engineering. Requirements for admission to the program with regular status are summarized below.

All of our accepted students have a 4-year undergraduate degree in electrical engineering, or a closely related discipline. Most PhD applicants have a master’s degree. However, direct admission into the PhD program is possible from the baccalaureate degree.

Minimum grade point average (GPA) of a 3.0 (or a B average or equivalent) for all coursework completed as part of the baccalaureate degree is preferred.

Test scores for the Graduate Record Examination (GRE) must be within the five years preceding application to the graduate program. The GRE is required for all PhD applicants. The Department of Electrical Engineering requires PhD applicants to achieve minimum scores of V=146 and Q=155.

For teaching assistantship consideration, applicants from non-English speaking countries must take and pass the speaking component of the internet-based TOEFL test with a score of 26 or above. All international students must have a total score on the Internet-based TOEFL of 79 or higher.

Three letters or recommendation, a statement of purpose and goals, and an updated resume are required for all applicants.

For more information or to send a CV please contact:
Andrew Hoff, PhD, Graduate Coordinator
hoff@usf.edu
Jessica Procko, Graduate Program Assistant
eegrad@usf.edu

Student Success

Scholarships and Fellowships
- National Science Foundation Graduate Research Fellowship
- NIH Ruth Kirschstein Postdoctoral Fellowship
- Ford Predoctoral Foundation Fellowship
- Draper Laboratory Fellowship
- UNCF MERCK Graduate Dissertation Fellowship
- NASA Harriett Jenkins Predoctoral Fellowship
- NSF East Asia Pacific Summer Institute Fellowship
- IEEE MTT-S Fellowship
- Marshall Scholarship
- Goldwater Scholarship
- NSF Graduate Research Fellowship
- NASA Graduate Research Fellowship
- Automotive RF Techniques Group Silver Fellowship
- USF Presidential Doctoral Fellowship
- GEM Fellowship

Faculty Appointments and Post Doctoral Appointments
- Argonne National Laboratory
- University of the Virgin Islands
- Baylor University
- University of Alabama-Birmingham
- Duke University
- NASA Graduate Student Research Program Fellowship
- North Carolina A&T State University
- Southern Polytechnic State University
- Washington State University
- NASA Goddard Space Flight Center
- Georgia Research Institute of Technology
- Brookhaven National Laboratory
- Rutgers University
- Texas A&M University
- Florida International University
- NASA Goddard Space Flight Center
- National Institute of Standards & Technology
- GlobalFoundries
- Draper Laboratory
- Honeywell
- Intel
- JP Morgan
- Qualcomm

Industry and Government Positions
- NASA Goddard Space Flight Center
- National Institute of Standards & Technology
- Global Foundries
- Draper Laboratory
- Honeywell
- Intel
- JP Morgan
- Qualcomm
- Agilent Technologies
- Moffitt Cancer Center
- Verizon
- Frontier Communications
- Texas Instruments
- Tampa General Hospital
- Broadcom
- Tampa Electric
- Harris Corporation
The mission of the Electrical Engineering Department is to provide internationally recognized education programs, to conduct and disseminate internationally recognized research benefiting humanity, to provide service to society, and to emphasize the need for lifelong learning, ethical conduct and an understanding of the diverse societal context in which engineering is practiced.

Huseyin Arslan  
Wireless Communications and Advanced Signal Processing for Communications

Sanjukta Bhanja  
Emerging Computing Model/Device/Circuit/Architecture

Robert H. Bishop, PE  
Systems theory, Guidance and control of aerospace vehicles, Navigation and estimation theory

Larry Dunleavy  
Microwave and millimeter-wave device, circuit and system design, characterization and modeling

Lingling Fan  
Modeling and control of energy systems and smart grids

Ralph Fehr  
Power system planning, high-power semiconductor applications

Christos Ferekides  
Materials/Photovoltaics

Nasir Ghani  
Cyberinfrastructure design, networking, cloud computing, cyber-physical systems

Richard Gitlin, FIEEE, NAE  
Communications systems and biomedical signal processing

Drew Hoff  
Afterglow chemical processing, Corona Kelvin Metrology, corona ion-assisted drug

Vijay Jain  
Communications, signal-processing, VLSI, system-on-a-chip, microfabrication, Smart-grid. Biomedical systems and imaging

Chung Seop Jeong  
Control systems, adaptive observers and controllers for linear, nonlinear, stochastic, and chaotic systems
Selcuk Kose
Power and clock distribution networks, 3-D integration, heterogeneous integrated circuits, and emerging circuit technologies

Zhixin Miao, PE
Smart grid automation, electric power system modeling and simulation, microgrid technologies

Don Morel
Electronic Materials, Solar Cells, Thin-Film Devices

Wilfrido Moreno
Wireless and sensor systems, control systems, systems engineering

Salvatore Morgera, PE, FIEEE, FAAAS
Neurological Bioengineering; Secure, High QoS Wireless Sensor/Ad Hoc Networks

Gokhan Mumcu
Computational electromagnetics, THz imaging, metamaterials and miniature antennas

Stephen Saddow
Silicon Carbide Biotechnology

Ravi Sankar
Signal Processing and Wireless Communications Networking

Rudy Schlaf
Electronic Materials and Interfaces

Lee (Elias) Stefanakos

Arash Takshi
Bio and Organic electronic devices, particularly in photovoltaic devices.

Sylvia Thomas
Synthesis, characterization of novel materials for biomedical, biological applications

Ismail Uysal
Wireless and radio frequency identification (RFID) technologies

Jing Wang
MEMS, RF/Microwave/THz devices, Micromachined Sensors and Actuators, Functional Nanomaterials

Thomas Weller
Adaptive microwave circuits and antennas; multi-functional materials; integrated circuits

Paris Wiley
A Message from the Department Chair

Recent societal changes and technological advances have spurred a number of innovative opportunities for further improving the well-being of society. Many of these opportunities are complex and dynamic, and benefiting from them requires sophisticated interdisciplinary approaches.

Several of the critical areas that have emerged are health care delivery, disease diagnosis and prevention, smart electricity grids, water resources, additive manufacturing, global networks, and critical infrastructure. These have inspired and broadened the research and educational agenda of the Department of Industrial and Management Systems Engineering (IMSE) at USF.

IMSE faculty continues to be successful in competing at the national level in securing federal funds for supporting their doctoral students and research. In 2013-14, five of our faculty members were recipients of highly competitive research grants from the National Science Foundation. The results of their high quality research are disseminated in top tier international journals like IEEE Transactions, IIE Transactions, Health Care Management Science, Applied Energy, Journal of Biomedical Science and Engineering, International Urogynecology Journal, among many others.

Our program hosts over 35 highly talented and motivated doctoral students and approximately 150 superb master’s students, who make significant research contributions in addressing globally-critical challenges in engineering, health, business, and natural resources. Their research outcomes are receiving national recognition via prizes including many first place awards for papers and posters. Our graduate students have one of the most active professional society student chapters in the nation. They have the distinction of receiving the Summa Cum Laude award from INFORMS (Institute for Operations Research and the Management Sciences) the last three years in a row.

The IMSE department boasts having one of the most welcoming environments for learning, teaching, and research. IMSE students, staff, and faculty together have a collaborative winning attitude that is second to none.

Regards,
Tapas K. Das, Ph.D.
Professor and Chair
Admission Requirements

PhD applicants are judged on performance in their prior endeavors, usually this means their earned bachelor’s and master’s degrees, GRE score, and TOEFL score (for international students). We also put great emphasis on the applicant’s statement of purpose with research goals, and the letters of recommendation. Applicants should elaborate on their statement any research experiences to which they have been exposed. Applicants who have demonstrated research potential and outstanding performance in their undergraduate program may be considered for admittance directly into the PhD program.

Minimum Requirements

- An undergraduate degree in engineering or a related field with a strong background in mathematics
- An undergraduate GPA of 3.0/4.0
- GRE: quantitative 156, quantitative + verbal 310
- English language proficiency (international applicants only): TOEFL iBT 79 or IELTS 6.5 or GRE Verbal 153 or PTE-A 53
- Statement of purpose including evidence of research potential (one page)
- Three letters of recommendation

International Students must also provide:

- Proof of financial resources and insurance to cover a full year’s expenses.
- English translations of all previous educational transcripts.
- An appropriate undergraduate degree from a reputable institution that is comparable to an accredited undergraduate degree earned in the United States.

Master’s of Science in Industrial Engineering (MSIE)

The Master’s of Science in Industrial Engineering (MSIE) is an advanced graduate degree focused on preparing professionals in the design, evaluation and operation of complex industrial systems in all sectors of the economy. The degree provides students with a strong technical and research background necessary to solve challenging problems with state-of-the-art techniques, including analytics, decision support systems, information technology, applied operations research, production planning and project management, risk analysis, finance, applied automation, engineering statistics, quality control, and reliability. The MSIE offers both thesis and non-thesis options.

Admission requirements are identical to Doctoral Program except minimum GRE Quantitative + Verbal = 300, and statement of purpose letter does not need to address research potential.

Master’s of Science in Engineering Management (MSEM)

The MSEM program helps professionals in engineering develop the leadership competencies needed for progressing into management positions. The MSEM curriculum is designed to provide engineering professionals the opportunity to build competencies in areas like technical management, process optimization, quality and continuous improvement, safety, entrepreneurship, and engineering analytics. The MSEM program can be pursued completely online and also on campus.

- An undergraduate degree in engineering. Other undergraduate degrees in technical fields may be accepted on an individual basis.
- A minimum GPA of 3.0 on a 4.0 scale or equivalent for all undergraduate work taken during the last two years of the applicant’s studies.
- GRE may be required (minimum Q ≥ 156, V ≥ 146).
- TOEFL (international applicants only) ≥ 79
- At least two years of work experience in engineering or management.
- A resume and one letter of recommendation are required.
Success Measures of Recent Graduates

Scholarships and Fellowships
- USF Doctoral Dissertation Fellowship

Faculty Appointments
- Western Michigan University
- University of Wisconsin-Milwaukee
- Northeastern University
- Florida Institute of Technology
- USF College of Medicine
- Peking University, PR of China
- George Mason University
- University of Massachusetts, Amherst
- Universidad del Norte, Baranquilla, Colombia
- Southern Illinois University, Edwardsville
- Fort Hays State University

Post-Doctoral Appointments
- University of California, San Diego
- Centers for Disease Control and Prevention
- University of South Florida

Industry and Government Positions
- Publix Supermarkets
- Boeing
- Raytheon
- Comcast
- Liberty Mutual Insurance
- Lockheed Martin
- Tampa Electric
- Disney World
- Morgan Stanley
- Goldman Sachs
- Citibank
- JP Morgan Chase

For more information or to send a CV please contact:

Alex Savachkin, PhD
Graduate Program Director
alexs@usf.edu

Patricia Anzalone, PhD
MSEM Program Director
panzalone@usf.edu
IMSE faculty have won national research, teaching, and leadership awards and have received nationally competitive research grants from NSF, DOD, and FDOT, among other agencies.

Patricia Anzalone
Program Director, Master’s of Science in Engineering Management

Grisselle Centeno
Capacity Planning, Healthcare Systems Modeling, Transportation Systems

Tapas Das, FIIE
Pandemic Mitigation, Healthcare Engineering, Electric Power Systems and Policy

Changhyun Kwon
Transportation Systems Analysis, Service Operations, Risk Management

Mingyang Li
Bayesian Data Analytics, Data Mining, System Informatics

Susana Lai-Yuen
Haptics, Computer-aided Design, Computational Geometry

Geoffrey Okogbaa
Industrial and Management Systems Engineering

Kingsley Reeves
Lean Six Sigma, Collaborative Networks, Supply Chain

Alex Savachkin
Risk Analysis, Applied Stochastic Processes, Decision Support for Influenza Pandemics

Michael Weng
Applied O.R., Computer Numeric Methods Scheduling

Ali Yalcin
Health and Engineering, Systems Modeling, Analytics Applications, Engineering Education

Carla VandeWeerd
Healthcare Technology and Delivery Systems

José Zayas-Castro, FIIE
Health Care Systems Engineering, Economic and Cost Systems, Manufacturing and R&D Strategy
Welcome to the Department of Mechanical Engineering at the University of South Florida! Mechanical Engineering is the broadest of engineering disciplines that offers a variety of career choices. Mechanical engineers design, develop, build, and test mechanical and thermal devices, including tools, engines, and machines. Mechanical engineers work mostly in engineering services, research and development, manufacturing industries, and the federal government.

The Mechanical Engineering Department at USF has approximately 100 graduate students. Our students come from over 40 countries. The department offers MS, MME and PhD degrees in Mechanical Engineering. We also offer the accelerated BS/MS degree program. Our engineering graduates are making a deep impact on society. Many of our alumni are successful entrepreneurs, researchers, academicians, or hold senior positions in large corporations. Our students are in great demand with lucrative job offers by local, regional, national and international companies including Intel, Boeing, Honeywell, Siemens, Motorola, Honda, Lockheed, TECO, P&G, Jabil, Mitsubishi, Toyota, Harris, and Raytheon. Recent PhD graduates have received faculty or post-doctoral appointments at major universities including Harvard, Ohio State, Carnegie Mellon, Florida Gulf Coast University, Universidad del Norte in Colombia, and King Abdul Aziz University in Saudi Arabia.

Our faculty members are committed to conducting research as a means of improving society and increasing the nation’s prosperity. Most of the research in the department is interdisciplinary and collaborative. Areas of research include robotics, biomedical and tissue engineering, nanomaterials and nanomanufacturing, micro electromechanical systems, biosensors and biofluids, advanced manufacturing systems, clean energy technologies, compliant mechanisms, rehabilitation engineering, system dynamics and vibrations, and composite materials. Sponsors include government agencies such as NSF, DOE, DOD and NASA, non-profit organizations and industry. Our faculty and students have received a large number of patents through innovative research. Current PhD students are supported by research and teaching assistantships as well as national fellowships from NSF, DOE, and Sloan Foundation.

The department has eight professional society fellows, several prestigious national and university teaching award winners including the 2012 US Professor of the Year, four NSF CAREER awardees, and one NSF PECASE awardee.

For details about Mechanical Engineering Graduate Programs, please download the Handbook (http://me.eng.usf.edu/docs/Graduate_Student_Handbook.pdf).

Sincerely,
Rajiv Dubey, PhD
Professor and Chair
Admission Requirements

Requirements for PhD Level Admission and Assistantship:

Admission to the PhD degree program is granted by the Dean of Graduate School upon recommendations by the Department of Mechanical Engineering and the College of Engineering.

- The majority of our accepted students into the PhD program have a four-year undergraduate degree in mechanical engineering as well as a master’s degree in mechanical engineering. Students who do not have a master’s degree but have a high GPA at the undergraduate level can be admitted directly into the PhD program. Students having an undergraduate degree in material science or any other science or engineering discipline can be admitted as long as they have the mathematical foundation required for research and are willing to fulfill pre-requisite classes to make up any deficiency.

- All applicants need to submit their official transcripts. The admission requirement is a GPA of 3.0 in a scale of 0-4 from an ABET accredited engineering program or equivalent.

- All applicants are required to take the Graduate Record Exam (GRE). A minimum percentile rank of 60% on the quantitative portion and a minimum average percentile rank of 60% in verbal and quantitative must be obtained for admission to the Ph.D. Program.

- In addition to transcripts and GRE score, students are encouraged to submit a resume outlining their past research experiences, publications, conference presentations, and patents.

- Applicants are also encouraged to contact faculty members in their areas of interest to enroll in a research group and to seek funding as a research assistant.

- All students admitted to the PhD program who do not have a scholarship or fellowship support are automatically considered for support as a teaching assistant. No separate application is needed for this purpose. However, this form of support is highly competitive.

- Any student appointed as a Research or Teaching Assistant also receives full tuition support to cover expenses for their studies.

- Applicants must also include a Statement of Purpose outlining their research interests.

Requirements for Master’s Level Admission:

The student must have a grade point average (GPA) of 3.0/4.0 for the last two years of course work from an ABET accredited engineering program or a minimum percentile rank of 50% on the quantitative portion and a minimum average percentile rank of 50% in verbal and quantitative must be obtained for admission to the Master’s Program. For admission to the accelerated Master’s degree program (BSME-MSME or BSME-MME), students need to have a minimum cumulative GPA of 3.3 at the time of admission.

For more information, please contact:
Rasim Guldiken, PhD
Graduate Coordinator
Guldiken@usf.edu

Student Success

Fellowships and Scholarships
- National Science Foundation
- Graduation Research Fellowship
- U.S. Department of Energy Postdoctoral Fellowship
- GM Global Research and Development Center

Faculty and Post Doctoral Appointments
- Carnegie Mellon University
- University of South Florida
- Polytechnic University of Puerto Rico, Orlando
- Universidad del Norte Baranquilla, Colombia

Industry and Government Positions
- Draper Laboratory
- Lockheed
- General Motors
- Cummins, Inc.
- Harris
- United Technologies Research Center
- Pratt & Whitney
- Intel
- Busch Gardens
- Sea World
- Raytheon
- Boeing
- Siemens Energy
- Saudi Aramco
- Honeywell
- Boston Scientific
- Syniverse
- Harris Corporation
- General Electric
The Mechanical Engineering Department has 14 tenured and tenure-track faculty members. Our faculty members are committed to conducting research as a means of improving society, increasing the nation’s prosperity, and maintaining up-to-date teaching instruction.
Ashok Kumar, FAAAS, FASM
Nanomaterials, Microelectronics, Thin Film Technology

Craig Lusk
Compliant Mechanisms and Biomechanics

Jose Porteiro
Fluid Mechanics, Heat Transfer

Kyle Reed
Rehabilitation Engineering and Haptics

Alex Volinsky
Thin Films Processing, Mechanical Properties and Characterization

Stuart Wilkinson
Energy Systems Design, Bionomic Engineering
Advanced study and research challenges exist at the interfaces between engineering disciplines. The engineering science program is designed for students who wish to pursue studies in interdisciplinary engineering areas. The college collaborates with other academic units of the university in research activities and selectively educates students to become proficient in such interdisciplinary fields.

Admission to the Program

Admission to the program is granted by the Dean of Graduate School upon recommendation by the host department. The host department is one of the six departments in the College of Engineering and the one most closely associated with the student’s area of study. Minimum requirements for admission to the program are:

- Grade point average of 3.0 or higher (4.0 scale)
- GRE required
- For international students a minimum TOEFL score of 550 (paper-based total) or 213 (computer-based total) or 79 (internet-based total)
- Three letters of recommendation
- A statement of purpose with research interests

For More Information

For more information, contact the department most closely related to your field of interest.

**Chemical & Biomedical Engineering**
Vinay Gupta, PhD
Graduate Coordinator
vkgupta@usf.edu

**Civil & Environmental Engineering**
Jeff Cunningham
Graduate Coordinator
813-974-9540
c ee-grad@usf.edu

**Computer Science & Engineering**
Srinivas Katkoori, PhD
Graduate Program Director
g raduate-program@cse.usf.edu

**Electrical Engineering**
Andrew Hoff, PhD
Graduate Coordinator
eegrad@usf.edu

**Industrial & Management Systems Engineering**
Alex Savachkin, PhD
Graduate Program Director
alexs@usf.edu

**Mechanical Engineering**
Rasim Guldiken, PhD
Graduate Coordinator
Guldiken@usf.edu
The field of Materials Science and Engineering (MSE) applies fundamental principles of physics and chemistry to engineering materials, with a focus on the interrelationship between material structure, their properties, and the means by which they are processed. MSE impacts multiple facets of our economy, such as aerospace, electronics, transportation, communication, construction, recreation, entertainment, environment and energy. It is, by its very nature, an interdisciplinary field. The goal of the MS program in Materials Science and Engineering is to provide a route for well-qualified undergraduate students who desire in-depth graduate-level work including structured courses and research experience, in preparation for work in industry or for entrance into a relevant science or engineering Ph.D. program.

Admission to this program is by meeting University requirements (see Graduate Admissions) as well as those listed below.

- Bachelor’s degree in Engineering (Chemical, Mechanical, Industrial, Civil, Materials Science, Ceramic, Metallurgy, Manufacturing, Polymer and other related engineering disciplines) or Natural Sciences (Physics, Chemistry or Biology) from a regionally accredited institution.
- Minimum undergraduate GPA of 3.00
- GRE with preferred minimum scores of V 50%, Q 50% and AW 50%.
- TOEFL score of 550 (paper-based test) or 213 (computer-based test) or 79 (internet-based test) for international students
- Three letters of recommendation
- Statement of purpose

USF students in Physics, Chemistry and Engineering can apply for the accelerated BS/MS program in their junior year of undergraduate studies.

For more information, contact

Venkat R. Bhetanabotla
Director, Materials Science and Engineering Program
Bhethana@usf.edu
813.974.3041

http://www.eng.usf.edu/msem
College of Engineering Research Centers and Laboratories

• **AMBIR Advanced Materials Bio & Integration Research Laboratory**
  http://ambir.eng.usf.edu/

• **Artificial Intelligence/Intelligent System Laboratory**
  http://www.cse.usf.edu/research/artificial_intelligence

• **Biomorphics Robotics Lab**
  http://www.cse.usf.edu/research/biomorphic_robotics_lab/

• **Cellular Mechanotransduction and Biomaterials Laboratory**
  http://www.eng.usf.edu/ngallant/

• **Center for Applied Research in Medical Devices (CareMed)**
  The mission of CareMed is to improve the overall effectiveness of the medical devices and equipment (MDE) industry across its entire value chain.

• **Center for Assistive, Rehabilitation Robotics Technologies (CARRT)**
  http://carrt.eng.usf.edu/
  The Center incorporates innovative theory and state-of-the-art facilities to develop rehabilitation robotics technologies.

• **Center for Communications & Signal Processing (CCSP)**
  http://ccsp.eng.usf.edu/
  The Center promotes research and development in the transport of information on electronic photonic media; networking of intelligent systems; and processing of signals, images and video.

• **Center for Digital and Computational Video (CDCV)**
  http://cdcv.eng.usf.edu/
  The Center provides a focal point for multidisciplinary research and education in a broad spectrum of digital and computational video.

• **Center for Modeling Hydrologic and Aquatic Systems (CMHAS)**
  http://cmhas.eng.usf.edu/
  CMHAS represents a computational branch focusing on water supply, natural systems (surface and groundwater) environmental impact assessment and evaluation of management alternatives.

• **Center for Urban Transportation Research (CUTR)**
  http://www.cutr.usf.edu/
  CUTR is a nationally recognized center of excellence in transportation issues.

• **Center for Wireless and Microwave Information Systems (WAMI)**
  http://wami.eng.usf.edu/
  Research done here is advancing the state of knowledge in the wireless and microwave field.

• **Clean Energy Research Center (CERC)**
  http://cerc.eng.usf.edu/
  The Center investigates Florida’s abundance of solar and biomass resources for use as environmentally clean sources of power.

• **Computational Biology and Bioinformatics**
  http://www.cse.usf.edu/research/computational_biology_bioinformatics/

• **Computational Methods Research and Education Laboratory**

• **Computer Architecture and Nano VLSI Research Group**
  http://cans.cse.usf.edu/

• **Computer Vision and Pattern Recognition Group**
  http://www.cse.usf.edu/research/computer_vision/

• **Design for X Laboratory**
  http://www.eng.usf.edu/dfx/index.html
  Provides a collaborative, fun environment for undergraduate students at USF to safely pursue meaningful multidisciplinary engineering projects that expand their creative design and project management skills.

• **Distributed Systems Laboratory**

• **Environmentally Benign Design and Manufacturing Lab**

• **Functional Materials Research Institute**
  http://fmri-ret.eng.usf.edu/

• **Global Center for Hearing & Speech Research (GCHSR)**
  http://www.gchsr.usf.edu/
  A multi-college interdisciplinary research center established in collaboration with the Colleges of Engineering and Behavioral & Community Sciences

• **iCONS (interdisciplinary communications networking and signal processing)**
  http://icons.eng.usf.edu/

• **Information Systems Laboratory**
  http://www.cse.usf.edu/research/information_systems

• **iWINLAB In vivo Wireless Information Networking Laboratory**
  http://iwinlab.eng.usf.edu/

• **Materials and Mechanics Lab**
  http://www.eng.usf.edu/~caiw/
• Micro-Integration Laboratory (MINT)  
  http://www.eng.usf.edu/~ncrane/  

• Microfluidics and Acoustic Lab  
  http://eng.usf.edu/me/research/facilities.htm  

• Nanomechanical Testing Laboratory  
  http://www.eng.usf.edu/~volinsky/  

• Nanotechnology Research and Education Center (NREC)  
  http://www.nrec.usf.edu/  

  Research at the NREC deals with diverse fields of nanoscience such as new materials, molecular and nano-electronics, nano-electroptics, nano-medicine and nano-biology  

• National Bus Rapid Transit Institute  
  http://www.nbrit.org/  

  Facilitating the sharing of knowledge and innovation for increasing speed, efficiency, and reliability of high-capacity bus service through the implementation of BRT systems in the United States.  

• National Center for Transit Research  
  http://www.nctr.usf.edu/  

  NCTR’s goal is to make public transportation and alternative forms of transportation, including managed lanes, safe, effective, efficient, desirable, and secure.  

• Personalized Interactive Experiences (PIE) Group  
  http://pie.eng.usf.edu/  

• Rehabilitation Engineering and Electromechanical Design Lab  
  http://reedlab.eng.usf.edu/  

• RF MEMS TRANSDUCER Research Group  
  http://transducers.eng.usf.edu/  

• RFID Center for Applied Research  
  http://ee.eng.usf.edu/RFID/index.htm  

• Robot Perception and Action Lab (RPAL)  
  http://rpal.cse.usf.edu/  

• Software Security  
  http://www.cse.usf.edu/research/software_security  

• Smart Grid Power Systems Lab  
  http://power.eng.usf.edu/  

• Structural and Materials Engineering Corrosion Laboratory  

• USF Center for Entrepreneurship  
  http://www.usf.edu/entrepreneurship/  

  The USF Center for Entrepreneurship is a nationally-ranked, multidisciplinary, campus-wide center focusing on entrepreneurial education, training, and research.  

• USF Defense and Intelligence Research Laboratory (USF:DIRL)  

• USF Surface Science Lab  
  http://rsl.eng.usf.edu/  

• Vibrations and Dynamic Systems Lab  

• Wireless Communication and Signal Processing Group  
  http://wcsp.eng.usf.edu/research.html