Washington University in St. Louis
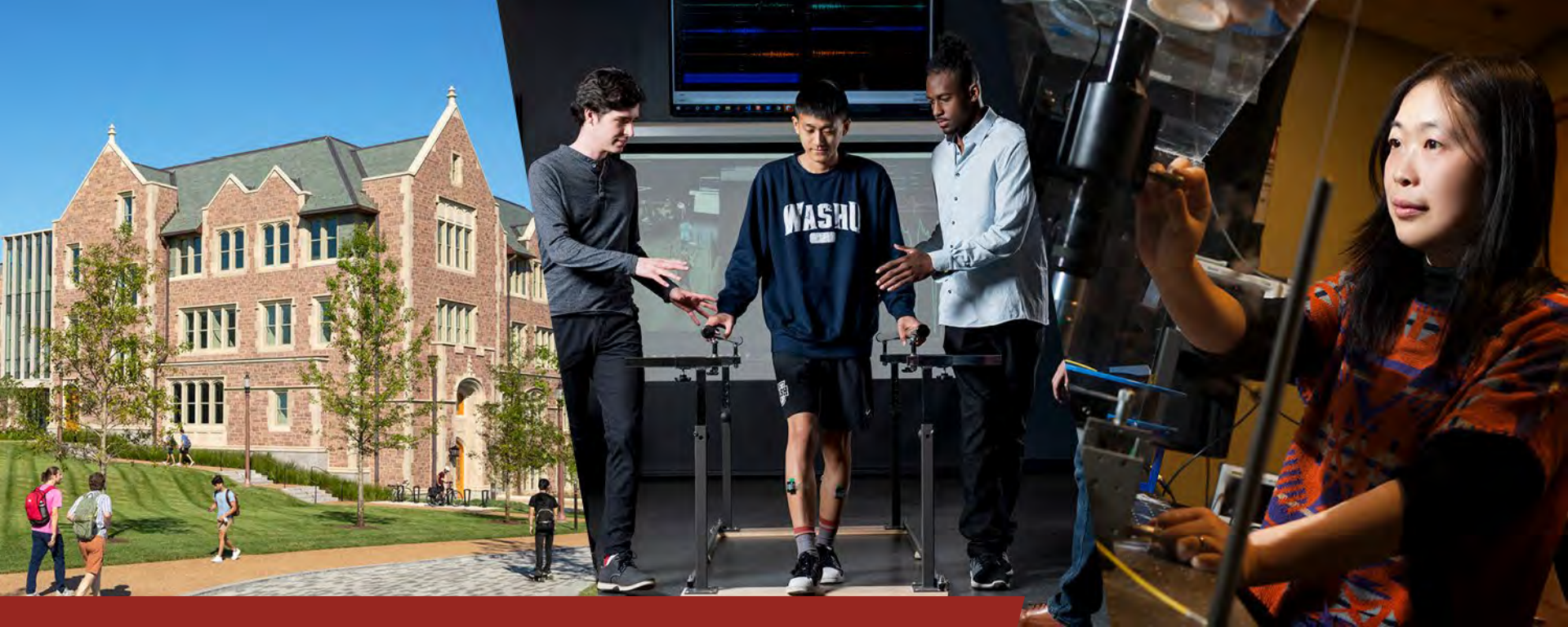
McKelvey Engineering

2023-24

About WashU

A medium-sized, independent university located in the nation's center, Washington University in St. Louis is counted among the world's leaders in teaching, research, patient care and service to society.

Nearly 60 of the university's graduate and undergraduate programs hold a top 25 ranking by *U.S. News & World Report*, including The Brown School and graduate programs in Biomedical Engineering.

McKelvey Engineering

We are a non-traditional engineering school with faculty strength in medicine, environment, AI/machine learning, cyber-physical systems, imaging and nanoscale technologies

Graduate students come here for our:

- Collaborative community and robust entrepreneurial opportunities

- Ability to research across the university with world-renowned faculty

- State-of-the art facilities and easy access to the medical campus

Quick facts

PEOPLE

1,420
Undergraduates

1,062
Master's

552
Doctoral

165
Full-time faculty

RESEARCH & AWARDS

$57M
Research awards in FY23

128%
Increase in research funding since 2015

1/3
Faculty have received the NSF CAREER Award

RANKINGS

No. 14
BME graduate program ranking in U.S. News

No. 15
Engineering school rank by Niche

No. 9
Institution for artificial intelligence by CSRankings

Graduate degrees

Master's (full-time)

- Average time to complete: **1-2 years**
- Coursework and thesis-based programs

PhD (full-time)

- Average time to complete: **5.5 years**
- You must have earned a baccalaureate degree prior to starting a PhD program
- Main focus is research
- **Students are full-funded**

Full-time master's programs

- **Aerospace Engineering**
- **Biomedical Engineering**
- **Computer Science**
- **Computer Engineering**
- **Cybersecurity Engineering**
- **Data Analytics & Statistics**
- **Electrical Engineering**
- **Engineering Management**
- **Energy, Environmental & Chemical**
- **Imaging Science**
- **Information Systems Management**
- **Materials Science & Engineering**
- **Mechanical Engineering**
- **Systems Science & Mathematics**

PhD programs

- **Biomedical Engineering**
  - Also offers MD/PhD (jointly with med school)

- **Computer Science**

- **Computer Engineering**

- **Computational and Data Sciences ***

- **Electrical Engineering**

- **Imaging Science ***

- **Systems Science & Mathematics**

- **Energy, Environmental & Chemical**

- **Materials Science & Engineering***

- **Mechanical Engineering**

- **Aerospace Engineering**

* interdisciplinary program

How to apply

- Online application

- Follow all guidelines on the school's website

- Deadlines and timeframe

- PhD deadlines: December 15 (all programs)

- Master's deadlines between January 15 and March 1

Graduate school application schedule

May & June	July & Aug.	Sept.	Oct. & Nov.	Dec.
• Draft statement of purpose (SOP) • GRE prep • Choose target schools	• GRE exam (first try) • Finalize SOP	• Seek 3 letters of recommendation. • Note: Prepare packets to help remind recommenders about your background	• GRE exam retake • Follow-up on letters of recommendations	• Apply online by Dec. 15. Have unofficial transcript and other materials ready to upload into application

Application: Requirements for Engineering

- $75 application fee

- Unofficial copies of transcripts for full academic history

- Three letters of recommendation (submitted electronically)

- Statement of purpose

- Resume or Curriculum Vitae

- GRE scores

  - **GRE will be optional for most programs for Fall 2023 applicants. (Check the website for specific program requirements)**

- English proficiency test scores for International applicants

  - Please see the admissions checklist for waiver eligibility

- Please see the admissions checklist website for more information

Application: Key Tips

- **Honesty and persistence**

- **Carefully proof all application materials and online information**

- **History of being a good student is assumed (undergraduate GPA)**

- **Pay close attention to the SOP, LOR's, and documenting research**

- **Strive to have a great…**

  - Undergraduate GPA

  - Research experience(s)

  - Extracurricular and leadership experience(s)

  - Work experience(s)

Application: Statement of Purpose

- **If you were on the admissions committee, what would you like to read here?**

- **A classic 5 paragraph essay works well:**

    – Explain ambitions and why you like the program/school

    – Include 1-3 research experiences

    – Demonstrate how you can contribute to program

    – Conclude by clearly showing your engagement and interest in this particular program/school

    – Final copy should be reduced to 1-2 pages max of essentials and easy to read

Application: Letters of Recommendation

- **Provide names of three recommenders (along with email address)**

- Include faculty/researchers who supervised your projects

- Ask recommenders a few months in advance

- Use recommenders who believe in your potential and respond favorably to your request

- Give recommenders helpful packet

- Give recommender everything they need: due dates, resume, SOP, transcript copy, etc.

Application: Highlight research

- **Particularly important for PhD applications**

- Document all initiatives

- Demonstrate potential and self-discipline

- Find a connection between your interests and school's faculty

- If published, include a link or upload paper, etc.

- If unpublished, you can still upload excerpts of papers

We offer a full-funded PhD

All full-time PhD applications are reviewed for **full financial support** (tuition and health fee remission, as well as generous monthly support to assist with living expenses).

Most offers of financial support are guaranteed for up to six years, as long as the student is making progress toward completion of the degree.

Each engineering department may offer specific fellowships.

How much more expensive are other cities compared to St. Louis?

+128%
San Francisco

+82%
Seattle

+71%
Boston

+39%
Chicago

Research: **Biomedical Engineering**

Research areas:

- Biomedical and Biological Imaging

- Cardiovascular Engineering

- Cellular & Molecular Bioengineering

- Neural Engineering

- Orthopedic Engineering

- Regenerative Engineering in Medicine

- Women's Health Technologies

Research: **Computer Science & Engineering**

Research areas:

- Computational Systems Biology

- Computer Engineering

- Cyberphysical Systems

- Graphics, Vision and Imaging

- Human-Computer Interaction

- Machine Learning & Artificial Intelligence

- Natural Language Processing

- Networked Systems

- Parallel Computing Technology

- Theoretical Computer Science

Research: **Electrical & Systems Engineering**

Research areas:

- Applied Physics

- Devices & Circuits

- Systems Science

- Signals & Imaging
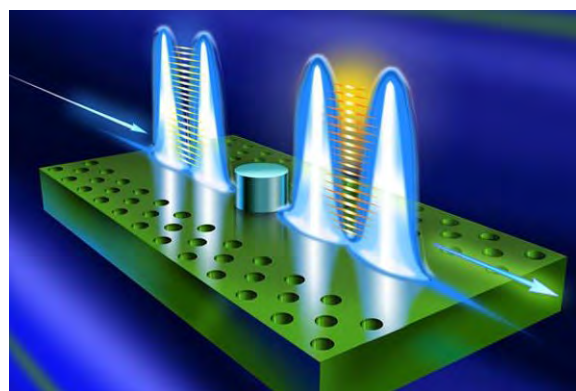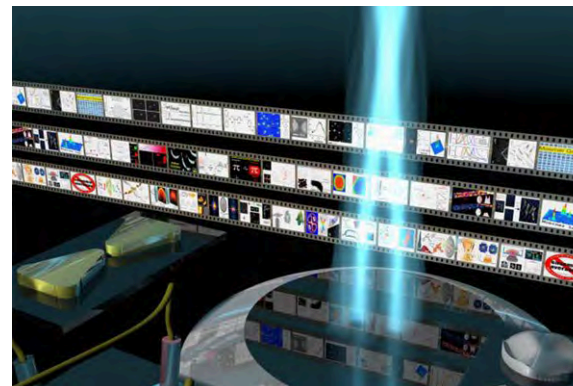
Research: **Energy, Environmental & Chemical Engineering**

Research areas:

- Chemical Engineering
  – Advanced Materials & Nanotechnology
  – Novel Chemical Processes & Technologies
  – Synthetic Biology & Bioproduct Engineering

- Energy
  – Sustainable Energy Systems
  – Energy Conversion & Storage
  – Interface of Energy with Environmental & Chemical Engineering

- Environmental Engineering
  – Air Quality & Climate
  – Environmental Chemistry& Microbiology
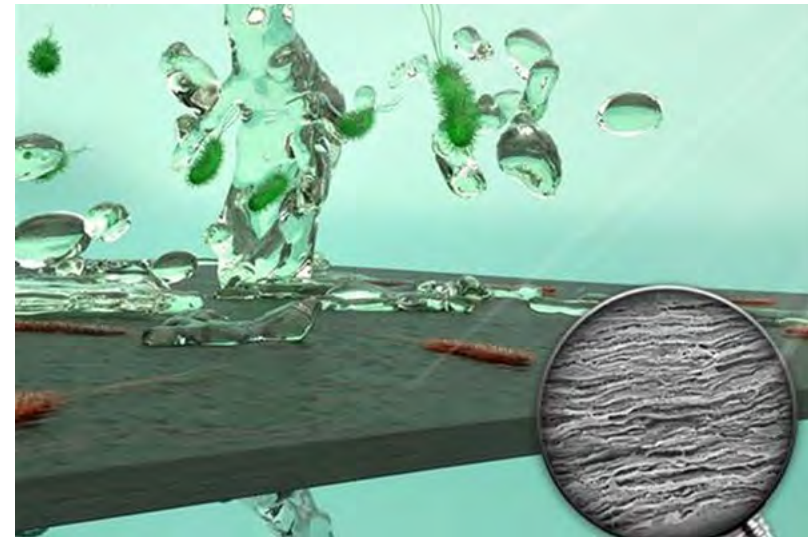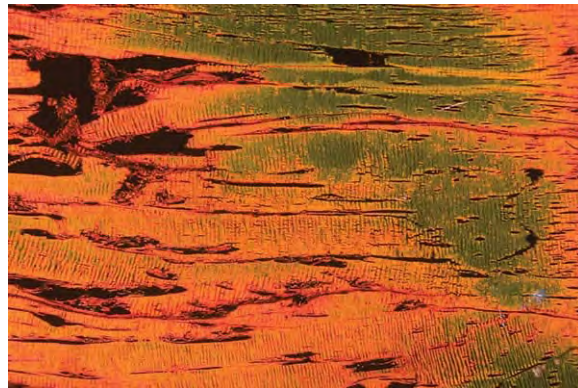 – Water Quality & Resource Management
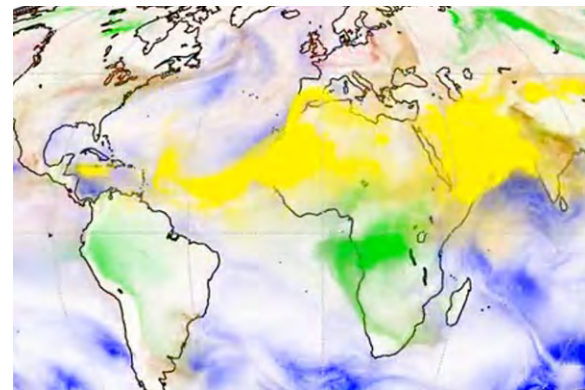
Research: **Mechanical Engineering & Materials Science**

Research areas:

- Advanced Materials

- Biomechanics & Mechanobiology

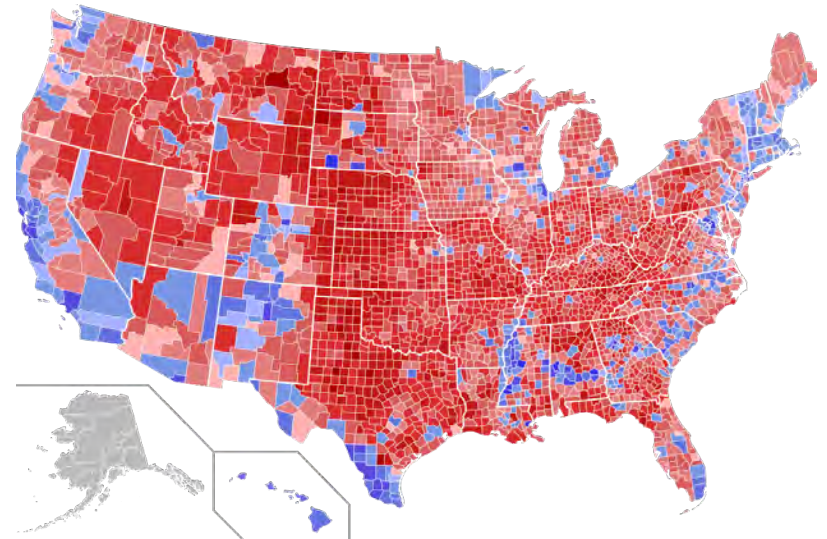- Thermal-Fluids in Energy, Aerospace and Biomedicine
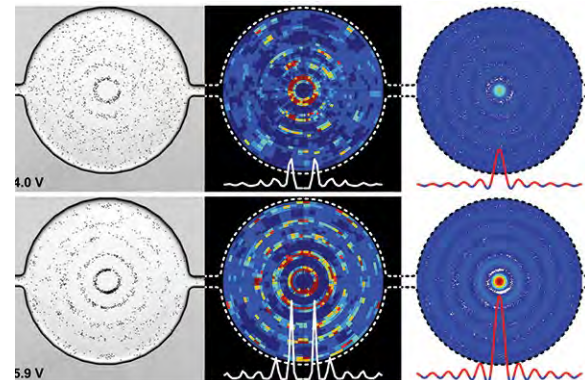
Research: **Computational & Data Sciences**

Program tracks:

- Computational Methodologies

- Political Science

- Psychological & Brain Sciences

- Public Health & Social Work

Research: Imaging Science

Research areas:

- Applications of Imaging in Science & Engineering

- Cancer Imaging

- Computer Vision

- Image Formation and Reconstruction

- Imaging Physics

- Imaging in Radiology & Radiation Therapy

- Imaging Science in Medicine

- Machine Learning in Image Science

- Neuroimaging
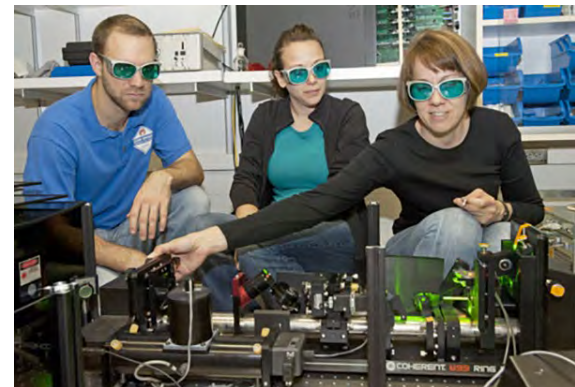
- Quantitative Imaging
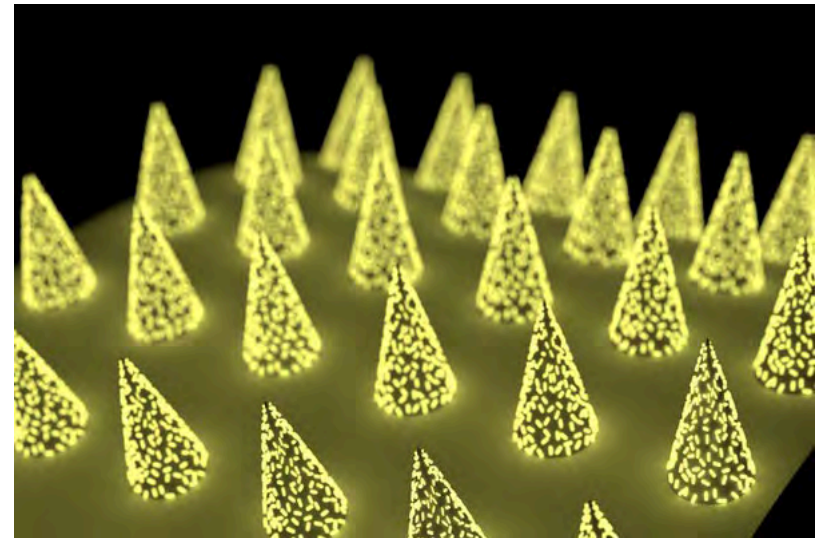
- Theoretical Image Science

Research: **Materials Science & Engineering**

Research areas:

- Artificial Intelligence in Materials Discovery and Design

- Biomedical, Bio-inspired and Bio-derived Materials

- Materials for Energy and Environmental Technologies

- Quantum and Photonic Materials and Devices

Facilities that foster innovation

$300M

invested in new and renovated Engineering space over the past several years

7

Engineering buildings

700,000

square feet of state-of-the-art space for education and research

East End of the Danforth Campus

Resources for innovation & entrepreneurship

- **Office of Technology Management (OTM)**

- **Skandalaris Center for Interdisciplinary Innovation and Entrepreneurship**

- **Sling Health:** student-run biotechnology incubator

- **ArchHacks:** HealthTech hackathon

- **BioEntrepreneurship Core**

- **LEAP Inventor Challenge:** Funding for translational research and inventions

- **Cortex Innovation District**

Summer research opportunities

- Washington University Summer Engineering Fellowship (WUSEF)

- Cardiovascular Research Summer Program

- Computer Science & Engineering Research Experience for Undergraduates

- Center for Engineering MechanoBiology Summer Research Experience

- Thermal Management Research Experience for Undergraduates

- International Student Research Internship Program

engineering.wustl.edu/summerresearch

Engineering Communication Center

The Engineering Communication Center faculty members offer one-on-one assistance to undergraduates, graduate students, faculty with written, oral, and graphic communications

- Journal articles

- Technical graphics

- Proposals

- Theses and dissertations

- Resumes and cover letters

- Oral presentations

- Conference posters

- Grant & scholarship applications

- Research & teaching statements
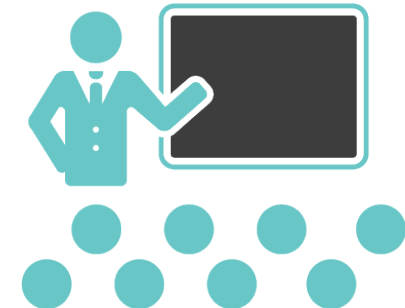
St. Louis: an affordable tech hub

St. Louis has developed into a national hub for research and business development, especially in the fields of biotechnology and plant science. And the St. Louis region offers many opportunities to watch or participate in a wide range of sports, recreational activities and cultural events.

Resources for start-ups and innovators:

- Cambridge Innovation Center St. Louis

- Arch Grants

- Cortex District

- Venture Café

- T-Rex Technology Incubator

#7

Most affordable city in the U.S. according to Forbes

#1

City for start-ups (Business Insider)

Questions?

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engineering.wustl.edu/academics/graduate-admissions/index.html