

AREAS OF SPECIALIZATION

COMPLETE LIST OF DEGREE OPTIONS: ENGIN.UMICH.EDU/GRADPROGRAMS

AEROSPACE ENGINEERING

Adaptive Control for Aerospace Applications
Aeroelasticity
Aerospace Information Systems
Autonomous Air Vehicles
Combustion & Energy Sciences
Composite Structures
Computational Fluid Dynamics
Computational Solid Mechanics
Control of Propulsion Systems
Electric Propulsion & Plasma Physics
Hypersonic Vehicles
Morphing Air Vehicles
Multidisciplinary Design & Optimization
Rotorcraft Aeromechanics
Smart Materials & Structures
Spacecraft Dynamics, Control, & Systems Engineering
Structural Health Monitoring
Turbulence & Fluid Mechanics
Wind Energy

APPLIED PHYSICS

Biomedical, Chemical, & Environmental
Energy Conversion Materials
Energy & Environment
Geophysics
High-field Laser Science
Medical Physics
Nanotechnology
Natural Resources & Sustainability
Optical Science
Plasma Science
Quantum Electronics & Information
Solid State Opto-electronics
Spintronics
Synchrotron Radiation Studies
Thin Films & Nanostructures

BIOMEDICAL ENGINEERING

Artificial Organs
Bio-MEMS & Microfluidics
Bio-Nanotechnology
Biofluids & Biotransport
Bioinformatics & Systems Biology
Biomaterials
Biomedical Computation & Modeling
Biomedical Imaging
Biomedical Optics
Biomedical Ultrasonics & Image-Guided Therapy
Biomembranes
Drug Delivery & Therapeutics
Engineering Education Research
Functional & Molecular Imaging
Medical Product Development
Molecular & Cellular Biomechanics
Neural Engineering
Organ & Whole Body Biomechanics
Tissue Engineering & Regenerative Medicine

CHEMICAL ENGINEERING

Biomolecular Engineering
Biomanufacturing
Catalysis & Reactions
Cellular Engineering
Computing & Simulation
Drug Delivery
Electrochemical Engineering
ImmunBio Engineering
Materials
Microfabricated Systems
Molecular Engineering
Nanotechnology
Personalized Medicine
Polymers & Complex Fluids
Product Engineering
Sustainable Energy
System Engineering
Tissue Engineering

CIVIL & ENVIRONMENTAL ENGINEERING

Civil
- Construction Management
- Geotechnical
- Hydraulics & Hydrologic Engineering
- Intelligent Systems
- Structural & Materials Engineering
- Transportation Systems Engineering
Environmental
- Air Quality
- Ecohydrology & Environmental Fluid Mechanics
- Environmental Chemistry
- Environmental Microbiology & Biotechnology
- Subsurface Processes
- Sustainable Energy Systems
- Water Quality Process Engineering

CLIMATE AND SPACE SCIENCES AND ENGINEERING

Applied Climate
Climate and Space Sciences and Engineering
Space Engineering

COMPUTER SCIENCE & ENGINEERING

Artificial Intelligence
Chip Design, Architecture, and Emerging Devices
Databases and Data Mining
Embedded and Mobile Systems
Human-Computer Interaction
Languages, Compilers, and Runtime Systems
Networking, Operating Systems, and Distributed Systems
Robotics in CSE
Secure, Trustworthy, and Reliable Systems
Theory of Computation
Warehouse-Scale and Parallel Systems

ELECTRICAL & COMPUTER ENGINEERING

Applied Electromagnetics & RF Circuits
Communications
Computer Vision
Control Systems
Embedded Systems
Engineering Education Research (PhD only)
Integrated Circuits & VLSI
MEMS & Microsystems
Optics & Photonics
Power & Energy
Robotics
Signal & Image Processing & Machine Learning
Solid State & Nanotechnology

ENGINEERING EDUCATION RESEARCH

Diversity, inclusion, and broadening participation in STEM
Engineering design and creativity
Entrepreneurship
Teaching and learning

ENGINEERING SUSTAINABLE SYSTEMS

Sustainable Design & Manufacturing
Sustainable Energy Systems
Sustainable Water Systems

INDUSTRIAL & OPERATIONS ENGINEERING

Engineering Management & Financial Engineering
Ergonomics, Human Factors & Occupational Safety
Health Systems Engineering
Operations Research
Production/Distribution/Logistics
Quality Engineering & Applied Statistics

INTEGRATIVE SYSTEMS + DESIGN

Automotive Engineering
Design Science
Energy Systems Engineering
Global Automotive & Manufacturing Engineering
Manufacturing
Systems Engineering + Design

MACROMOLECULAR SCIENCE & ENGINEERING

Biomaterials
Biomedical Engineering
Chemical Engineering
Chemistry
Individualized Option
Innovation
Materials Science & Engineering
Organic Electronics & Photonics
Physics

MATERIALS SCIENCE & ENGINEERING

Computational Materials Science
Electronic Materials
Inorganic Materials
Organic, Polymeric, & Bio Materials
Structural Materials

MECHANICAL ENGINEERING

Automotive & Future Transportation
Biomechanics & Biosystems
Controls
Design
Dynamics & Vibrations
Energy
Fluids
Manufacturing
Mechanics & Materials
Mechatronics & Robotics
Micro/Nano Engineering
Multi-scale Computation and Computational Mechanics
Thermal Sciences

NAVAL ARCHITECTURE & MARINE ENGINEERING

Design, Production, and Management
Dynamics and Control
Hydrodynamics
Marine and Offshore Structures
Marine Renewable Energy
Marine Robotics and Autonomy
Structural and Hydro-Acoustics
Yacht Design

NUCLEAR ENGINEERING & RADIOLOGICAL SCIENCES

Fission Systems & Radiation Transport
Medical Physics Certificate Program (in conjunction with approved PhD diploma or program)
Nuclear Materials
Plasmas & Nuclear Fusion
Radiation Measurements
Scientific Computing (in conjunction with NERS specialization)

ROBOTICS

Autonomous and Connected Vehicles (land, sea, air, space)
Core Disciplines: Sensing, Reasoning, Acting
Human-Robot Interaction
Inspection and Construction Robotics
Legged Locomotion
Multi-agent Systems
Rehabilitation Robotics
Robot Learning
Robot Perception & Computer Vision
Robotic System Validation & Verification (V&V) and Safety
Simultaneous Localization & Mapping (SLAM)

TAUBER INSTITUTE FOR GLOBAL OPERATIONS

