Department of Chemical and Biomedical Engineering

Degrees Offered

• Masters of Science, Biomedical Engineering (M.S.Bm.E.)
• Masters of Science, Chemical Engineering (M.S.Ch.E.)
• Masters of Science, Engineering (M.S.E.)
• Doctor of Philosophy, Chemical Engineering (Ph.D.)

The Department of Chemical and Biomedical Engineering, with fourteen active tenure-track faculty members, approximately 300 undergraduates, and nearly fifty graduate students, has one of the oldest doctoral-granting programs in the university. From the initial doctoral degree in 1932, the graduate course program has been based on advanced chemical engineering fundamentals, while the research program has reflected a balance of fundamental research areas and their application to relevant technological areas such as biomedical, bioengineering, catalysis, coal conversion, energy, fuels, materials, polymer processing, systems control, and dynamic simulation.

Areas of Research

The Chemical and Biomedical Engineering faculty are presently involved in a broad spectrum of research areas which include biomedical and biochemical engineering, systems biology, cancer, bionanotechnology, biomaterials, stem cell technology, dynamic simulation, control systems, molecular dynamics, polymers and biopolymers, catalysis, energy, hydrates, fuels, fuel cells, low-dimensional and high-temperature electronic materials, and reaction engineering. These research activities impact economic development, national security, the stability and sustainability of the energy supply, and many quality-of-life issues.

Faculty members possess a wide variety of industrial experience and are routinely in contact with their counterparts in industry. This contact with real engineering problems enables them to convey a practical experience to students while keeping in perspective many of the fundamental concepts involved in graduate study. The faculty is nationally and internationally recognized through the publication of text books, monograph series, and technical papers. They routinely participate in national and international conferences and advisory meetings. In addition, faculty members have taught short courses throughout the United States and abroad.

FACULTY

CHAIR

- Richard Turton - Ph.D. (Oregon State University)
  Bolton Professor, P.E.; Process systems engineering, Particle and powder technology, Chemical process design

PROFESSORS

- Brian J. Anderson - Ph.D. (Massachusetts Institute of Technology)
  Director, Energy Institute; GE Materials Professor. Natural gas hydrates, Sustainable energy development, Molecular dynamics, Quantum chemical calculations
- Debangsu Bhattacharyya - Ph.D. (Clarkson University)
  Integrated gasification combined cycle (IGCC), Chemical looping, Fuel cells (SOFC & PEM), Optimization, Dynamic modeling of process systems, Process control
- Eugene V. Cilento - Ph.D. (University of Cincinnati)
  Dean, Physiological Transport Phenomena, Biomedical Engineering, Image Analysis, Mathematical Modeling
- Pradeep Fulay - Ph.D. (University of Arizona)
  Associate Dean for Research, Advanced Electronics, Magnetic Materials and Devices, Flexible Electronics, Synthesis and Processing of Nanomaterials
- Rakesh Gupta - Ph.D. (University of Delaware)
  Berry Professor. Polymer processing, Rheology, Non-Newtonian fluid mechanics, Composite materials
- John (Jianli) Hu - Ph.D. (Tsinghua University)
  Statler Energy Chair. Shale Gas Utilization, Catalysis in Refining Processes, Coal and Biomass Conversion
- John W. Zondlo - Ph.D. (Carnegie Mellon University)
  Coal Enhancement and Utilization, Carbon Science, Fuel Cells
ASSOCIATE PROFESSOR

- Zoica Cerasela Dinu - Ph.D. (Max Planck Inst of Molecular Cell Biology & Genetics & Dresden University of Technology)
  Associate Chair, BMEG. Nanomaterials, Bionanotechnology, Biomimetics
- David J. Klinke - Ph.D. (Northwestern University)
  Systems Biology, Kinetics, Cellular Signal Transduction Pathways, Immunology, Mathematical Modeling, Bioengineering
- Charter D. Stinespring - Ph.D. (West Virginia University)
  Semiconductor Growth and Etching, Surface Kinetics, Thin Films, Electronic Materials

ASSISTANT PROFESSOR

- Jessica L. Allen - Ph.D. (University of Texas at Austin)
  Neuromuscular biomechanics; Aging, injury, and disease-related mobility impairments; Rehabilitation engineering; Musculoskeletal modeling and simulation
- Margaret F. Bennewitz - Ph.D. (Yale University)
  Biomedical imaging, Fluorescence intravital lung microscopy, MRI contrast agents, Micro/nano drug delivery systems, Microfluidics, Tumor microenvironment, Cancer metastasis, Stem Cells
- Ahmed E. Ismail - Ph.D. (Massachusetts Institute of Technology)
  Biomass and biopolymers, Interfacial phenomena, Multi-scale modeling, Algorithm development
- Fernando V. Lima - Ph.D. (Tufts University)
- Hanjing Tian - Ph.D. (Lehigh University)
  Chemical looping combustion, CO2 capture, Shale gas utilization, Biomass gasification and refinery
- Shuo Wang - Ph.D. (California Institute of Technology)
  Human intracranial electrophysiology, Cognitive and social neuroscience

TEACHING ASSISTANT PROFESSOR

- Robin S. Hissam - Ph.D. (University of Delaware)
  Biomaterials, Polypeptides, Drug delivery, Bioengineering and materials science

LECTURER

- Jeremy S. Hardinger - Ph.D. (West Virginia University)

RESEARCH ASSISTANT PROFESSOR

- Nasagree Garapati - Ph.D. (West Virginia University)
  Carbon dioxide capture and storage (CCS) in various geologic media, utilizing carbon dioxide in gas hydrate reservoirs, petroleum reservoirs and geothermal reservoirs for enhanced gas, oil and heat recovery

RESEARCH ASSOCIATE

- Sushant Agarwal - Ph.D. (West Virginia University)
  Polymer Processing, Rheology, Nano-composites, Dispersions

ADJUNCT PROFESSORS

- Deepak Doraiswamy - Ph.D. (University of Delaware)
- Laura F. Gibson - Ph.D. (West Virginia University)
  Professor and Senior Associate VP for Research and Graduate Education; Genetics and Developmental Biology
- Joseph D. Henry - Ph.D. (University of Michigan)
  Energy Management, Science and Technology Policy
- Charles M. Jaffe - Ph.D. (University of Colorado)
  Theoretical Chemistry, Molecular and Atomic Physics, Nonlinear Dynamics, Astrodynamics, Forensics
- George E. Keller, II - Ph.D. (Pennsylvania State University)
  Separations, Commercial Practice
- Mahesh Padmanabhan - Ph.D. (University of Minnesota)
  Foods, Polymer Science, Rheology
- Yon Rojanasakul - Ph.D. (University of Wisconsin, Madison)
  Pharmaceutical Sciences
- George A. Spirou - Ph.D. (University of Florida, Gainesville)
  Neuroscience
Robert H. Wildi - B.Ch.E. (Cleveland State University)
Polymer Extrusion

Stephen Zitney - Ph.D. (University of Illinois at Urbana-Champaign)
Dynamics, Control and optimization of energy systems; Computational fluid dynamics (CFD) and Process Co-simulation; Pulverized coal combustion; Integrated gasification combined cycle (IGCC); Chemical looping; Supercritical CO2 power cycles; CO2 capture

ADJUNCT ASSOCIATE PROFESSOR

Yuxin Liu - Ph.D. (Louisiana Tech University)
Microelectronics

Sam M. Mukdadi - Ph.D. (University of Colorado, Boulder)
Mechanical Engineering

ADJUNCT ASSISTANT PROFESSORS

Thirimachos Bourlai - Ph.D. (University of Surrey, U.K.)
Electrical and Electronic Engineering

Scott M. Galster - Ph.D. (The Catholic University of America)
Applied Experimental Psychology

Valeriya Gritseniko - Ph.D. (University of Alberta)
Neuroscience

Joshua A. Hagen - Ph.D. (University of Cincinnati)
Materials Science and Engineering

Victor S. Finomore, Jr. - Ph.D. (University of Cincinnati)
Applied Experimental Psychology (Human Factors)

Jeffrey S. Reynolds - Ph.D. (West Virginia University)
Electrical Engineering

John Twist - Ph.D. (Rutgers University)
Pharmaceutical Sciences

Sergiy Yakovenko - Ph.D. (University of Alberta)
Neuroscience

PROFESSORS EMERITUS

Eung H. Cho - Ph.D. (University of Utah)
Mineral Processing, Leaching, Solvent Extraction, Environmental Science

Dady B. Dadyburjor - Ph.D. (Delaware)
Catalysis, Reaction Engineering

Edwin L. Kugler - Ph.D. (Johns Hopkins)
Catalysis, Adsorption, Coal Liquefaction

Joseph A. Shaeiwitz - Ph.D. (Carnegie-Mellon University)
Design, Design Education, Outcomes Assessment

Alfred H. Stillier - Ph.D. (University of Cincinnati)
Physical/Inorganic/Solution Chemistry, Coal Liquefaction, Carbon Science

Ray Y.K. Yang - Ph.D. (Princeton)
Biochemical and Chemical Engineering, Nonlinear Dynamics

For specific information on the following programs, please see the links to the right:

• Biomedical Engineering
• Chemical Engineering