Department of Chemical and Biomedical Engineering

Degrees Offered

- Bachelor of Science in Biomedical Engineering (B.S.Bm.E.)
- Bachelor of Science in Chemical Engineering (B.S.Ch.E.)
- Accelerated Bachelor's/Master's Program in Biomedical Engineering
- Accelerated Bachelor's/Master's Program in Chemical Engineering

Nature of the Programs

The Department of Chemical and Biomedical Engineering offers undergraduate degrees in chemical engineering (ChE) and biomedical engineering (BMEG). Chemical engineers focus on processes that convert raw materials such as crude oil, biomass, coal and natural gas into value-added finished products such as plastics, paints, detergents and pharmaceuticals. Biomedical engineers are trained to work at the interface of engineering and biomedical sciences, and they focus on developing engineering skills and applying them to materials, processes and procedures used in medicine and biology. Both degree programs require a strong background in chemistry, mathematics, and physics.

The chemical engineering curriculum is structured uniquely with a heavy emphasis on design, beginning in the sophomore year. Graduates with a BSChE degree are prepared for positions in production, product and process development, sales and marketing, management and also research. There is a large concentration of chemical industry in the area, and the ChE program benefits from interactions with industrial practitioners.

The biomedical engineering program offers significant flexibility of study through a variety of electives. With the participation of faculty from several engineering departments, students learn about cells and tissues but also topics such as imaging and mechanics. Students are exposed to both engineering and clinical aspects of the field through interactions with faculty both in engineering and WVU Health Sciences Center. Graduates with a BSBmE degree are prepared for solving the health-related problems and improving the quality of life of the aging population within the state and the nation.

Students in both programs are also prepared for graduate school in engineering and for professional schools in business, law and medicine.

FACULTY

CHAIR

- Srinivas Palanki - Ph.D. (University of Michigan)
  Process systems engineering, Chemical process control, Bioengineering

PROFESSORS

- Debangsu Bhattacharyya - Ph.D. (Clarkson University)
  GE Plastics Material Engineering Professor. Artificial intelligence and machine learning, Biomimetic and other advanced control Nonlinear state estimation, Condition monitoring, Sensor placement, Bayesian analysis, Multi-scale dynamic modeling, Fuel cells and electrolyzers, Carbon capture, H2 production, Biomass conversion, and energy systems.
- Zoica Cerasela Dinu - Ph.D. (Max Planck Inst of Molecular Cell Biology & Genetics & Dresden University of Technology)
  Associate Dean for Student, Faculty and Staff Engagement. Nanomaterials, Bionanotechnology, Biomimetics, Catalysis and Biocatalysis
- Pradeep Fulay - Ph.D. (University of Arizona)
  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 Chair Professor. Catalysis and Reaction Engineering, Utilization of Natural Gas, CO2 and Biomass
- David J. Klinke - Ph.D. (Northwestern University)
  Systems Biology, Kinetics, Cellular Signal Transduction Pathways, Immunology, Mathematical Modeling, Bioengineering
- Fernando V. Lima - Ph.D. (Tufts University)
  Process design and operability, Model-based control and Optimization, State estimation and process identification, Modular energy systems and sustainability

ASSISTANT PROFESSORS

- Margaret F. Bennewitz - Ph.D. (Yale University)
  Biomedical imaging, Fluorescence intravital lung microscopy, MRI contrast agents, Nano drug delivery systems, Microfluidics, Tumor microenvironment, Cancer metastasis, Toxicology
- Stephen M. Cain - Ph.D. (University of Michigan)
  MEMS inertial sensor applications, Wearable sensor applications, Real-world biomechanics, Upper extremity biomechanics, Human gait, Sports biomechanics, Experimental methods, Bicycle dynamics, Medication adherence
- Moriah Katt - Ph.D. (Johns Hopkins University)
  Blood-brain barrier, Tissue engineering, Stroke, Drug delivery, Stem cells
- Wenyuan Li - Ph.D. (West Virginia University)
  Solid state ionics, Solid oxide fuel/electrolysis cells, High temperature electrochemistry, Shale gas conversion and utilization, CO2 utilization
- Oishi Sanyal - Ph.D. (Michigan State University)
  Membrane for water treatment and desalination, Self-assembly based surface modification, Molecular sieving materials, Natural gas and Flue gas purification
- Soumya K. Srivastava - Ph.D. (Mississippi State University)
  Point-of-care (POC) medical diagnostic platforms and environmental bio-separations using electrokinetics, Transport phenomena, Fluid dynamics, and Dielectric spectroscopy
- Yuhe Tian - Ph.D. (Texas A&M University)
  Process systems engineering, Computer-aided process intensification, Process synthesis and optimization, Multi-scale sustainable energy systems, Hybrid mechanistic/data-driven modeling
- Yuxin Wang - Ph.D. (Chinese Academy of Science)
  Plastic upcycling, Natural gas and CO2 utilization, Biofuel, and Catalysis

TEACHING PROFESSOR

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

TEACHING ASSISTANT PROFESSOR

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

PROFESSORS EMERITUS

- Eung H. Cho - Ph.D. (University of Utah)
  Mineral processing, Leaching, Solvent extraction, Environmental science
- Eugene V. Cilento - Ph.D. (University of Cincinnati)
  Physiological Transport Phenomena, Biomedical Engineering, Image Analysis, Mathematical Modeling
- 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)
  Design, Design Education, Outcomes Assessment
- Alfred H. Stiller - Ph.D. (University of Cincinnati)
  Physical/inorganic/solution chemistry, Coal liquefaction, Carbon science
- Charter D. Stinespring - Ph.D. (West Virginia University
  Semiconductor Growth and Etching, Surface Kinetics, Thin Films, Electronic Materials
- Richard Turton - Ph.D. (Oregon State University)
  WVU Bolton Professor, ,P.E.; Process systems engineering, Particle and powder technology, Chemical process design
- Ray Y. K. Yang - Ph.D. (Princeton)
  Biochemical and Chemical Engineering, Nonlinear Dynamics
- John W. Zondlo - Ph.D. (Carnegie Mellon University)
  Coal Enhancement and Utilization, Carbon Science, Fuel Cells