Currently, to achieve the M.S. in Polymer Engineering,
a student must successfully complete:

DEGREE REQUIREMENTS

MASTER OF SCIENCE

30 credits in polymer engineering, including:
- An oral defense of the thesis
- A written thesis
- 6 or more credits of research
- 6 credits of technical electives
- 6 credits of polymer engineering
- 12 credits of polymer engineering core courses
- 12 credits of polymer engineering 700-level electives
- 9 credits of polymer engineering 600-level electives
- 96 credits of preliminary research and doctoral dissertation
- 2 credits of technical electives
- 3 credits of math

Currently, to achieve the Ph.D. in Polymer Engineering,
a student must complete:

DEGREE REQUIREMENTS

DOCTOR OF PHILOSOPHY

An oral presentation of a research proposal
- An oral defense of the dissertation
- A written dissertation
- A language requirement
- 600-level electives
- 6 or more credits of research
- 6 credits of technical electives
- 12 credits of polymer engineering core courses
- 10 credits of polymer engineering 700-level electives
- 9 credits of polymer engineering 600-level electives
- 12 credits of polymer engineering core courses

After Graduation

Polymer engineering students enjoy a high job placement rate after receiving their degree. Graduates go on to successful and lucrative careers in private industry, government and academia. Here is a sampling of the employers of UA polymer engineering alumni:

- Lexmark
- Laird
- Kimberly-Clark
- Johnson & Johnson
- John Deere
- Intel
- Hyundai
- IBM
- Honda
- Halliburton
- Goodyear Tire & Rubber
- General Electric
- ExxonMobil
- Eastman Chemical
- Corning
- Coca-Cola
- Celanese
- Bridgestone/Firestone
- Boeing
- BASF
- Baker Hughes
- Avery Dennison
- Apple Inc.
- Abbott Vascular
- 3M
- U.S. Food & Drug Administration
- U.S. Department of Agriculture
- U.S. Air Force Research Laboratory
- Teknor Apex
- TaylorMade Golf
- St. Jude Medical
- Sherwin-Williams
- Shell Oil Company
- Sealed Air/Cryovac
- Schlumberger
- Samsung
- Saint-Gobain
- SABIC Innovative Plastics
- Renssalaer Polytechnic Institute
- PPG Industries
- PolyOne
- Pirelli
- PepsiCo
- LyondellBasell
- Lubrizol
- L'Oreal
- LG Chemical
- The University of Akron is an Equal Education and Employment Institution - uakron.edu/eeo

About The University of Akron

The University of Akron, Ohio’s Polytechnic University, is the region’s most influential public research university, contributing to the resurgence of the local economy, providing a workforce highly trained in diverse disciplines, and known for an innovative approach to higher education. With nearly 26,000 students and more than 300 associate, bachelor’s, master’s, doctorate and law degree programs, UA offers career-focused and experiential learning that defines the polytechnic approach to education. UA brings together diverse disciplines in ways that provide students with life-long skills, internships and co-ops, opportunities for academic research, study abroad, on-campus student employment and service projects designed for diverse groups of learners, including full-time, part-time and online students, veterans, and adults returning to the classroom. UA offers a vibrant campus, downtown, serene parks, shopping, events and venues that appeal to almost every interest.
Welcome to the Department of Polymer Engineering

The Department of Polymer Engineering at The University of Akron offers both master’s and doctorate degrees in polymer engineering and seeks to provide students with a high-quality educational experience in the engineering and science of polymers. Students are taught the skills of research by regular full-time professors in both classroom and laboratory environments. Students represent the United States and numerous foreign countries, and graduates of the department have gone on to successful careers in private industry, government and academia.

Located in Akron, Ohio — a world-renowned center for polymer research and development — our facilities span three buildings on the UA campus: the Polymer Engineering Academic Center, which provides space for classrooms and faculty and student offices; the Sidney L. Olson Research Center, which houses all the department’s laboratory and research facilities; and the National Polymer Innovation Center, where new knowledge and materials are developed for solving problems of national interest to health, energy and the environment.

We invite you to consider the benefits of studying at The University of Akron in the heart of the polymer industry. Should you have any questions or need additional assistance, please do not hesitate to contact us. We look forward to serving your academic needs in the future!

ADMISSIONS REQUIREMENTS

Students seeking admission into the Ph.D. program in the Department of Polymer Engineering are required to submit all of the materials listed below directly to The University of Akron Graduate School for consideration. Incomplete applications will not be considered under any circumstances.

1. Fully completed Graduate Application
2. Application Fee
3. ALL official undergraduate transcripts and, if applicable, graduate transcripts
4. Three (3) letters of professional recommendation
5. Statement of purpose (personal statement)
6. Submission of Graduate Record Examination (GRE) general test scores
7. All international students must submit official Test of English as a Foreign Language (TOEFL) scores (minimum 550 paper-based; 213 computer-based; or 79 internet-based)

Cumulative Grade Point Average (GPA) Requirement:
3.00 or higher overall on a 4.00 scale (or 75 on a 100-point scale for international students.)

APPLY ONLINE

Please apply online at uakron.edu/gradsch. Please note that ALL application materials, forms, reference letters and scores must be submitted to The University of Akron Graduate School. The deadline for priority consideration of fully completed application files is Dec.1 of each year. The deadline for regular admission consideration is Jan. 15. The Department of Polymer Engineering admits for Fall semester only.

FUNDING YOUR EDUCATION

The Department of Polymer Engineering supports all incoming qualified, full-time doctoral students. Funds for assistantship support are available from several principal sources including: The University of Akron Graduate School; externally funded research activities such as grants or contracts obtained by faculty members; and financial gifts from companies, private donors, or government and public foundations that allow for student fellowships, scholarships, or other awards.
We invite you to consider the benefits of studying at the Department of Polymer Engineering at The University of Akron, located in Akron, Ohio — a world-renowned center for industry, government and academia.

The Department of Polymer Engineering at The University of Akron is a world-class research institution that is dedicated to the advancement of knowledge and the development of new materials and technologies. Our faculty members are full-time professors in both classroom and research activities such as grants or contracts obtained by the University of Akron Graduate School; externally funded research activities such as grants or contracts obtained by the Department of Polymer Engineering; and financial gifts from companies, private foundations, and individuals.

We offer a high-quality educational experience in the United States and numerous foreign countries, with full-time professors in both classroom and research activities. Our students are provided with a comprehensive education that is designed to prepare them for careers in industry, government, and academia.

The Department of Polymer Engineering supports all incoming students and seeks to provide students with a comprehensive education that is designed to prepare them for careers in industry, government, and academia.

Welcome to the Department of Polymer Engineering Faculty at The University of Akron.

Dr. Kevin Cavicchi – Associate Dean for Academic Affairs and Associate Professor
Ph.D. in Materials Science and Engineering, University of Minnesota, 2003
Phone: 330-972-8368 e-mail: kac58@uakron.edu

Structure-property relationships of nanostructured soft materials; thermodynamics of small molecule organogelators and polymer/organogelator blends; synthesis and characterization of shape memory polymers; synthesis and characterization of supramolecular polymers through ionic interactions including block copolymers, ionically crosslinked elastomers, and polyelectrolyte-surfactant complexes.

Dr. Xiong Gong – Associate Professor
Ph.D. in Physics, Nankai University, China, 1997
Phone: 330-972-4983 e-mail: xgong@uakron.edu

Uncooled solution-processed ultrasensitive broad-band photodetectors; polymer photovoltaics, perovskite hybrid photovoltaics; organic-based thermoelectric devices; supercapacitors and self-powered electronics; novel organic/polymeric semiconductors; novel organic-inorganic hybrid materials; high electrical conductive inorganic quantum dots and nanostructured materials.

Dr. Sadhan C. Jana – Department Chair and Professor
Ph.D. in Chemical Engineering, Northwestern University, 1993
Phone: 330-972-8293 e-mail: janas@uakron.edu

Engineering at nanoscale for design of functional materials, such as novel nanofibers by gas jet method for oil/water separation, drug delivery, and photocatalysis; mesoporous gel and aerogel structures in energy storage, nanoparticle filtration, virus removal; design of fillers for low rolling resistance rubber.

Dr. Alamgir Karim – The Goodyear Tire & Rubber Company Professor
Ph.D. in Physics, Northwestern University, 1991
Phone: 330-972-8324 e-mail: alamgir@uakron.edu

Thermodynamics and kinetics of surface and interfacial phenomena associated with multicomponent polymer thin films, hybrid nanoparticles systems and three-dimensional polymeric systems; stability of polymer films, polymer blend phase separation, ordering of block copolymers, nanoparticle effects and biological scaffolds; engineering solutions to photovoltaics, energy storage devices and tissue engineering.

Dr. Thein Kyu – Distinguished Professor
Ph.D. in Polymer Chemistry, Kyoto University, Japan, 1980
Phone: 330-972-6672 e-mail: tkyu@uakron.edu

Phase equilibria and kinetics of phase separation in polymer blends; phase transitions in crystalline and liquid crystalline polymers; flexible and stretchable lithium ion polymer batteries; ion-exchange membranes; pattern formation dynamics and electro-optical properties of dispersed liquid crystal and photonic crystals and nonlinear dynamics of crystal motion.

Dr. Younjin Min – Assistant Professor
Ph.D. in Chemical Engineering, University of California, Santa Barbara, 2009
Phone: 330-972-5167 e-mail: ymin@uakron.edu

Surface and interfacial science; intermolecular interactions and friction phenomena at the molecular level, adhesion, (bio) lubrication and wear; thin film fabrication; biophysics, thermodynamics, kinetics and physiology of disease; bio-inspired synthetic route and biomaterials, regenerative medicine and vaccination; biomechanics.
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Located in Akron, Ohio — a world-renowned center for the environment.

The University of Akron offers both master’s and doctoral degree programs in Polymer Engineering. The Department of Polymer Engineering supports all incoming international students. (For more information, visit uakron.edu/gradsch.)

**FUNDING YOUR EDUCATION**

- **Statement of purpose (personal statement)**
- **Submission of Graduate Record Examination (GRE)**
- **Application Fee**
- **Fully completed Graduate Application**
- **ALL official undergraduate transcripts and, if applicable, general test scores**
- **As a Foreign Language (TOEFL) scores** (minimum 550 on the paper-based test, 525 on the computer-based test, or 80 on the Internet-based test)

**APPLICATION DEADLINES**

- **Graduate School:** Jan. 15 for all programs
- **Graduate School; externally funded research:** Jan. 1 for fall semester

**ADMISSIONS REQUIREMENTS**

- **Minimum score for TOEFL and IELTS:** 550 or 80
- **Minimum score for the general GRE:** 240

**ADMISSIONS DECISIONS**

- **Final decision in:** early June for all programs
- **Notification in:** early July for all programs

**CAREER OUTLOOK**

Graduates of the department are employed by companies such as Dow Chemical, Goodyear, PPG Industries, and DuPont. The department also provides a variety of career services.

The 2018-2019 faculty includes:

**Dr. Erol Sancaktar – Professor of Polymer Engineering and Professor of Mechanical Engineering**

- **Ph.D. in Engineering Mechanics, Virginia Polytechnic Institute and State University, 1979**
- **Phone:** 330-972-5508  e-mail: erol@uakron.edu

Mechanical behavior of adhesives, polymers and composites; materials characterization; viscoelasticity; fracture mechanics; experimental and theoretical solid mechanics; design and manufacture with novel materials; elastomer/rubber/tire behavior and processing; wet friction, polymer-based friction elements, excimer laser applications in polymers; electrically conductive adhesives and polymers; nanoprocessing, nanocomposites and nanodevices.

**Dr. David Simmons – Assistant Professor**

- **Ph.D. in Chemical Engineering, University of Texas at Austin, 2009**
- **Phone:** 330-972-6675  e-mail: dsimon@uakron.edu

Computational design of polymers, integrating molecular simulation, global optimization methods, and machine learning; physics of polymers and the glass transition; dynamics of soft materials at interfaces; elastomer mechanics and reinforcement; advanced additives for polymer glass formation.

**Dr. Mark D. Soucek – Professor**

- **Ph.D. in Inorganic Chemistry, University of Texas at Austin, 1990**
- **Phone:** 330-972-2583  e-mail: msoucek@uakron.edu

Coatings technology in high solids, waterborne, UV-curable and powder coatings; environmentally benign coatings; nanophase inorganic/organic coatings; study of crosslinking processes; self-stratifying coatings; corrosion resistant coatings; anti-reflective coatings; magnetic initiators for cure on demand.

**Dr. Bryan Vogt – Professor**

- **Ph.D. in Chemical Engineering, University of Massachusetts, Amherst, 2003**
- **Phone:** 330-972-8608  e-mail: vogt@uakron.edu

Self-assembly, polymer-templated porous materials; physicochemical properties of polymer thin films; processing-based engineering for devices; electrochemical energy storage.

**Dr. Nicole Zacharia – Assistant Professor**

- **Ph.D. in Materials Science and Engineering, Massachusetts Institute of Technology, 2007**
- **Phone:** 330-972-8248  e-mail: nzacharia@uakron.edu

Making functional materials from polyelectrolytes as well as their solution phase behavior; mechanical properties of polyelectrolyte multilayers as well as properties such as surface wettability, working on “slippery” low adhesion surfaces.
DOCTOR OF PHILOSOPHY
DEGREE REQUIREMENTS

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  ▪ 10 credits of polymer engineering 700-level electives
  ▪ 3 credits of math
  ▪ 2 credits of technical electives
  ▪ 60 credits of preliminary research and doctoral dissertation (12 credits or more must be of doctoral dissertation)

» An oral presentation of a research proposal
» A language requirement
» A written dissertation
» An oral defense of the dissertation

MASTER OF SCIENCE
DEGREE REQUIREMENTS

Currently, to achieve the M.S. in Polymer Engineering, a student must successfully complete:

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  ▪ 6 credits of polymer engineering 600-level electives
  ▪ 6 credits of technical electives
  ▪ 6 or more credits of research

» A written thesis
» An oral defense of the thesis

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Polymer engineering students enjoy a high job placement rate after receiving their degree. Graduates go on to successful and lucrative careers in private industry, government and academia. Here is a sampling of the employers of UA polymer engineering alumni:

- 3M
- Abbott Vascular
- Apple Inc.
- Avery Dennison
- Baker Hughes
- BASF
- Boeing
- Bridgestone/Firestone
- Celanese
- Coca-Cola
- ConocoPhillips
- Corning
- Dow Chemical
- DuPont
- Eastman Chemical
- ExxonMobil
- General Electric
- Goodyear Tire & Rubber
- Halliburton
- Honda
- IBM
- Hyundai
- Intel
- John Deere
- Johnson & Johnson
- Kimberly-Clark
- Laird
- Lexmark
- LG Chemical
- L’Oreal
- Lubrizol
- LyondellBasell
- PepsiCo
- Pirelli
- PolyOne
- PPG Industries
- Renssalaer Polytechnic
- SABIC Innovative Plastics
- Saint-Gobain
- Samsung
- Schlumberger
- Sealed Air/Cryovac
- Shell Oil Company
- Sherwin-Williams
- St. Jude Medical
- TaylorMade Golf
- Teknor Apex
- U.S. Air Force Research Laboratory
- U.S. Department of Agriculture
- U.S. Food & Drug Administration

Life in Akron
With a population of nearly 200,000, Akron is Ohio’s fifth-largest city. It offers a vibrant downtown, serene parks, shopping, events and venues that appeal to almost every interest. Its regional location and easy access to air and highway travel puts you at the hub of a world of experiences and opportunities.

GRADUATE PROGRAM uakron.edu/dpe

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- Akron Art Museum
- Akron Marathon
- Akron Symphony
- Blossom Music Center
- Cedar Point Amusement Park
- Cleveland and Akron Zoos
- Cuyahoga Valley National Park
- Cuyahoga Valley Scenic Railroad
- Lake Erie and Great Lakes Region
- Local Sports: RubberDucks, Racers, All-American Soap Box Derby
- National First Ladies’ Library
- Professional Sports: Cleveland Browns, Cavaliers & Indians
- Stan Hywett Hall & Gardens
- William McKinley Presidential Library & Museum

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