College of Engineering

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Today’s Presentation

• Background about the College of Engineering
• Programs offered in the College of Engineering
• Applying to College – Things to Remember
• Why Akron?
About the College of Engineering

- Established in 1914
- About 90 faculty
- Over 3,200 undergraduates
- Approximately 50% of incoming freshmen in the Honor’s College are engineering students
- Over 80% of direct admits to their major have transfer in CCP/AP credits
- Approximately 30% of engineering students receive a minor
College of Engineering Majors

College of Engineering Majors

# of Students

Years

- 2006-2008
- 2009-2011
- 2012-2014
- 2015-2017

Graduate

Undergraduate
Engineering vs. Engineering Technology

- Engineers come up with innovative ideas and design and develop new products
- Engineering Technologists work with the engineers to decide how to manufacture the products, what equipment is needed
- Engineering Technicians work with the technologists to operate the machines and create the product.
- Engineers are required to take Calculus-based classes, Technologists are required to take Algebra-based classes

(Chart above from the American Society for Mechanical Engineers.)
Undergraduate Programs

• Aerospace Systems Engineering
• Biomedical Engineering
• Chemical Engineering
• Civil Engineering
• Computer Engineering
• Corrosion Engineering
• Electrical Engineering
• Mechanical Engineering
Department of Biomedical Engineering

B.S. Biomedical Engineering
Three Tracks

- Biomechanics
- Instrumentation, Signals and Imaging
- Biomaterials and Tissue Engineering

Biomedical Engineers develop technology to help prevent, diagnose and treat diseases, to help rehabilitate patients and to improve healthcare.

Biomedical Engineers design artificial joints and surgical instruments, medical devices and instrumentation, drug delivery systems and artificial tissues, etc.
Department of Chemical & Biomolecular Engineering

B.S. Chemical Engineering

Chemical engineers transform raw materials into useful products such as chemicals, oil, gas, pharmaceuticals, polymers, paints, textiles, soaps, cosmetics, tires, nuclear power, food, etc.

Chemical engineers also design equipment and devise processes for manufacturing chemicals, pharmaceuticals, polymers, etc., by applying principles and technology of chemistry, physics, biology and engineering.
B. S. Corrosion Engineering

Corrosion engineers integrate knowledge of chemistry, physics and materials science to manage the effects of corrosion on materials, devices and structures.

Corrosion engineers develop new materials (alloys, polymers, ceramics) and strategies to slow down the rate of corrosion.

Corrosion costs the U.S. $400 billion per year

UA has the nation’s only B.S. in Corrosion Engineering

Students work with faculty, industry and government in National Center (NCERCAMP) to solve real-world issues
Department of Civil Engineering

B. S. Civil Engineering

Civil engineers are responsible for contracted projects from start to finish related to infrastructure in a variety of companies and industries, private, public and governmental.

Civil Engineers provide the infrastructure for the growth and maintenance of municipalities. Bridges, roads, highways, traffic lights, buildings, water treatment, etc.

Concentrations focus on structures, geotechnical issues, transportation, or the environment.
Department of Electrical and Computer Engineering

B.S. Electrical Engineering

Electrical engineers are involved with the design and application of small scale electrical circuits as well as large scale power systems, and everything in between.
Department of Electrical and Computer Engineering

B.S. Computer Engineering

Computer engineers are concerned with both the design of computer-based hardware and software, as well as their integration into other devices.
Mechanical engineers design, analyze and/or build various aspects of mechanical systems through their understanding of material properties and physics.
Department of Mechanical Engineering

B. S. Aerospace Systems Engineering

Aerospace systems engineers manage processes which require input from a variety of constituents to identify optimal solutions as they relate to the aerospace industry.

Aerospace Engineers become project managers in the aerospace industry. Nation’s only B.S. Aerospace Systems Engineering, unless you join the Air Force.
Admissions Criteria

When you are admitted to The University of Akron, you are also admitted to the College of Engineering. Depending on your HS preparation, you will be:

• **Directly Admitted to the program/major you have chosen if you have all three of requirements below**
  • 3.4 HS GPA
  • 24 ACT Comp (1160 SAT Composite)
  • 24 ACT Math (580 SAT Math)

• **Admitted as Pre-Admit until you meet the following criteria**
  • Complete 30 credit hours post High School Graduation
  • Complete Calculus II with a C- or better
  • Have a 2.3 grade point average in *at least* three of the following categories:
    in all coursework
    in all engineering coursework
    in all *required* mathematics coursework
    in all *required* science coursework (chemistry, physics, computer science, biology)
Thomas Paine Quotation

“What we obtain too cheap, we esteem too lightly...”

- Paine was speaking about “freedom” as it relates to what would become the American Revolution, but it is applicable in other areas.

- UA may be very close to where you live now. Since it is so close, so accessible, do you value it too lightly?
Why Akron?
The Akron Engineering Experience

- Student Design Teams
- Capstone Senior Projects
- Co-operative Education Experience
- Other Support Services
Student Design Teams

Teams design, budget, build and compete against students at other schools in projects related to their discipline

• Competitions are regional, national, or international

• Any engineering student can join any team

• Provides a teamwork skills and long-term friendships
Society of Automotive Engineers (SAE) Formula Team

- Akron Formula teams placed in the top 15 in 12 of the last 17 years
- UA is invited (one of a few US schools) to compete in Europe
  - Formula Design ranked 5th in Austria and 8th in Germany 2017
Concrete Canoe & Steel Bridge Design Teams

- **Concrete Canoe:**
  - Finished 1\textsuperscript{st} overall in Regional competition 2017
  - National’s Competition coming up June 23-25, 2018!
- **Steel Bridge:**
  - Finished 2\textsuperscript{nd} overall in the 2018 Regional competition
  - Finished 21\textsuperscript{st} Nationally out of 230 teams
Akronauts – Rocket Design Team

• For 2018, Project Lazarus was tasked with reaching a precise altitude of 5,280 feet while carrying an autonomous rover.
NASA Robotic Mining Competition

- NASA-sponsored Robotic Mining Competition held at Kennedy Space Center (44 schools)
- Earned 5\textsuperscript{th} Overall and 3\textsuperscript{rd} place in Outreach in the May 2018 competition
- Gives NASA innovative ideas and solutions for lunar excavation
SAE Baja Design Team

- Finished 2nd overall in the Kansas competition in May 2018 as well as 2nd in sales and endurance
- Finished 6th overall in Maryland and 7th overall in Oregon
Engineering Student Organizations/Teams

- SAE Aero Design Team
- Engineering Service Design Team
- BME Design Team
- Corrosion Design Team
- Human Powered Vehicle Team
- Student Chapters of National Societies
  ASME, IEEE, AIChe, ASCE, BMES, AIAA
- Engineering Student Council
- National Society of Black Engineers
- Society of Hispanic Professional Engineers
- Society of Women Engineers
- EUREKA Honors Engineering
- Tau Beta Pi
- ...and more!
Capstone Senior Design Projects

- A culminating design experience for all engineering students
- Often inspired/supported by industry
- Provides students with real-word/experiential learning
Undergraduate Research

Undergraduate students participate in a variety of research projects in the College of Engineering.

Several faculty work with high school students as well.
Cooperative Education Program

- Real-world, paid ($15-20/hour average) engineering experience
- Optional, except for Aerospace Systems, 92-94% of eligible students participate
- 5th oldest in the US; started in 1914
- 40% of May 2017 graduates received a full-time offer from their Co-op employer
- Companies we work with are located in more than 41 states
- 94% of May 2017 engineering graduates have jobs or continued their education with 6 months of graduation
- Individualized interaction with staff at every step
Cooperative Education Program

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<th>Fall</th>
<th>Spring</th>
<th>Summer</th>
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<td>Class</td>
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- Co-op can extend the program to five years as you are adding a year of work experience to your growing resume.
- You are only paying tuition when you are taking classes.
Co-op and Full-time Employers of UA Engineering Students

There have been nearly **2000 employers** during the last decade, from all over the world.

The University of Akron – College of Engineering
Student Support

- Women in Engineering Program (WIEP)
- Increasing Diversity in Engineering Academics (IDEAs)
- Freshman Learning Communities
- Engineering Tutoring Program
- College of Engineering Academic Advisors
- Full-time Freshman Academic Advisor
- Faculty Advisors once in a major
- Living Communities (WIE, MIE)
Engineering Scholarships

• The College offered almost 400 scholarships for 2017-18.
• One online application for next year, 2018-2019, opening October 1st and due January 5th.
• Submit an application this fall at www.uaengineeringscholarships.com
Take away message

• The most cited rankings are from U.S. News and are based **solely** on peer evaluations – the subjective opinions of deans and senior faculty.

• Using actual metrics to evaluate undergraduate engineering programs, you might consider
  • How students perform in the things engineers do, such as those captured by the student design teams (design, budget, build, compete)
  • The rate of employment after graduation

*Using these more relevant metrics, The University of Akron has a top-tier engineering program ... in your own backyard.*
Thank you for your interest in The University of Akron’s College of Engineering

www.uakron.edu/engineering
www.uakron.edu/futureengineer

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