



# MECHANICAL ENGINEERING



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Engineering  
Accreditation  
Commission



# PRECISION

# *in motion*

**Mechanical engineering** is the broadest engineering discipline with applications in nearly every industry that involves product development, process control, and energy generation/consumption. Using the principles of mechanics and thermal energy, mechanical engineers apply their knowledge of design, manufacturing, and operational processes to improve the world around us. Their approach to research often begins with the same questions – **“How does this work? Why?”** and **“How can I make it better?”**

## CONCENTRATIONS

We offer an ABET accredited Bachelor of Science degree in Mechanical Engineering. The foundation for this degree lies within two traditional concentrations:

- **Energy Systems** – Focuses on energy conversion and fluid/thermal systems
- **Mechanical Systems** – Addresses the dynamics and mechanics of a system/component

Our design-oriented and laboratory intensive program emphasizes hands-on experience and teamwork. Classroom instruction supported by the understanding of basic mechanical engineering principles, the development of problem solving skills, and extensive laboratory experience provides a solid foundation in traditional and emerging areas of mechanical engineering.

# PROGRAM *highlights*

- **Technical electives** help you customize your education. Courses in Aerodynamics, HVAC, Intermediate Manufacturing, Unmanned Aerial Systems, and Mechatronics are available.
- **A Capstone Experience** challenges students to apply what they have learned in a comprehensive design project often done in conjunction with an internship or engineering practitioner. This two-semester experience requires students to engage in a complete design cycle from concept development through design, analysis, manufacturing, report writing, and presentation.
- Our **ASME Student Chapter** provides students with opportunities to enhance leadership skills, build relationships with peers and alumni, and network with business leaders through conferences and seminars.
- The **ASME E-Fast** gives students the opportunity to compete in academic and professional activities with other engineering



The CBU mechanical engineering department made a huge impact on my life and career. The faculty are always willing to answer questions and genuinely want to help you grow as an engineer. During my senior project, NASA HERC Rover, I was able to gain knowledge about the design process and fabrication methods that allowed me excel

in the job I have now. Overall, my time at CBU taught me how to succeed both in and outside the classroom.

**Faythe Hart** ('23)  
*Mechanical Engineering*



schools. Competitions in student designs and presentations help develop skills in oral presentation, written communication, and real-time problem solving.

- The **NASA Human Exploration Rover Challenge** gives students the opportunity to design and build a human-powered vehicle that is raced over a half-mile simulated lunar or mars terrain course, held in April each year in Huntsville, AL.
- The **SAE Baja Competition** simulates a real- world engineering design project where students are challenged to design, build, and test an off-road vehicle (Mini-Baja) that is raced over the harshest elements of rough terrain.
- The **SAE Aero Design Competition** challenges students to design and build a RC airplane that meets technical and payload requirements.



CBU's mechanical engineering program taught me invaluable skills such as adapting to problems or issues that arise during work, providing me hands on experience that is directly connected to my field and encouraging me to reach new heights. Through classes and projects, my professors showed me methods that help me analyze

problems and come up with clever solutions to solve them that transferred over to real world applications. I will always be grateful to everyone at CBU.

**Jacob Arnold** ('17)  
*Mechanical Engineering*

# IN THE WORKFORCE

Mechanical engineering offers diverse career opportunities with the potential for growth and impact across multiple industries. As a mechanical engineer, you have many sub-specialty areas to choose from:

- **Aerospace & Defense** involves the development of commercial and military aircraft and spacecraft.
- **Automotive** concerns the development and improvement of transportation systems.
- **Bioengineering** includes the development and improvement of medical and surgical devices and procedures.
- **Manufacturing & Processing** involves the production of physical goods
- **Fluids Engineering** focuses on pumps, turbines, compressors, pipelines, dam spillways, as well as lubrication, waves, etc.
- **Energy Systems** involves forms of energy and energy conversion including heat, radiation, kinetic, electrical, chemical, nuclear, and gravitation.
- Other engineering areas



The professors in the CBU mechanical engineering program are of the highest caliber in teaching all theory and applications relating to the engineering profession. My time at the university thoroughly prepared me for working in the mechanical design of complex vacuum vessels and large-weight rotating systems supporting the research of neutron sciences at a national laboratory. The

true value of a university is its ability to deliver knowledge in an area that you never knew existed and would never thought to pursue on your own. CBU provided this to me time and time again.

**Cameron Hart, EI ('20)**  
*Mechanical Engineering*

# Why CBU?

- Affordable Tuition
- Internship/Co-Op Opportunities
- International Competitions
- 100% Employment Rate in 6 months (mechanical engineering major as of 2024)
- CBU offers exceptional return on investment: Ranked **#3** in the “Best Value Schools” according to *US News & World Report*
- **#13** out of 136 in Regional Universities South
- **#13** in “Best Undergraduate Teaching”
- **#12** in “Top Performers on Social Mobility”
- 91% of our full-time students receive financial assistance

## LOCATED IN THE HEART OF MIDTOWN MEMPHIS

- Less than 2 miles from Overton Park, a 342-acre public park in Midtown Memphis
- Walking distance to the Cooper-Young and Overton Square Arts & Entertainment Districts

### **Bottom line — CBU graduates succeed.**

More than 90 percent of our recent class was employed or attending graduate school within six months of graduation. In fact, more than 80 percent already had jobs or placement in graduate schools when they crossed the stage at graduation.



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