Biomedical engineering (BME) integrates physical, chemical, mathematical sciences and engineering principles for the study of biology, medicine, behavior, or health. Biomedical engineers design and develop devices and procedures that solve medical and health-related problems and improve health by combining their knowledge of biology and medicine with engineering principles and practices. Many do research, along with life scientists, chemists, and medical scientists, to develop and evaluate systems and products such as artificial organs, prostheses, instrumentation, medical information systems, and health management and care delivery systems. Some specialties include biomaterials, biomechanics, medical imaging, and rehabilitation engineering.

WSU’s Biomedical Engineering ABET accredited program consists of 133 credit hours of general education, math, science, general and biomedical engineering coursework. The coursework includes numerous experiential learning experiences such lab activities, design projects, multidisciplinary projects, and clinical immersion to identify and develop solutions to unmet biomedical and health needs. Many undergraduate students also have the opportunity to work with BME faculty in their cutting-edge and novel research.

Career Opportunities
Fueled in large part by our aging society, the demand for biomedical engineers is increasing, and is expected to continue increasing for several years. Many graduates with a bachelor of science degree go on to graduate studies, medical or professional schools, or work in industry. Employers of biomedical engineers include pharmaceutical companies, biomedical device manufacturers, hospitals and rehabilitation centers, and biomedical and bioengineering research institutes.

Admission
When you choose to major in biomedical engineering, your academic adviser from the BME Department will help you plan your course of study and will outline specific requirements for degree completion. It is important that you complete Calculus I and II, Chemistry I and II, Biology I and Physics for Scientists I before the completion of 48 college hours.

Laboratory and Computer Facilities
Biomedical engineering students have access to several labs as part of their coursework, including the Biomaterials Research Lab, the Biomedical and Biosensor Development Lab, the Multidisciplinary Human Biomechanics and Design Lab, and the Biodevices, Imaging, and Modeling Lab. All engineering students have access to computer laboratories equipped with microcomputers connected through a local area network and terminals connected to the University mainframe computer and the Internet.

Engineer of 2020
All graduates of the College of Engineering are required to complete three of the following activities: undergraduate research, cooperative education or internship, study abroad or global learning, leadership, service learning, and multidisciplinary education. These requirements have been incorporated in response to recommendations by the National Academy of Engineering on the future society and the profession.

Related Opportunities
Biomedical engineering students are encouraged to participate in extracurricular student organizations such as: Biomedical Engineering Society (BMES), Society for Biomaterials, Engineering Council, Society of Women Engineers (SWE), Society of Hispanic Professional Engineers (SHPE), or the National Society of Black Engineers (NSBE). If you are eligible, you may also join Tau Beta Pi, the honor society for all engineering disciplines.

Related Programs
All of Wichita State’s engineering programs - aerospace, biomedical, computer, electrical, engineering technology, industrial, manufacturing, and mechanical- share a math/science background and technical orientation. Graduate programs leading to master’s and doctoral degrees are offered in aerospace, electrical, industrial, and mechanical engineering, as well as master’s programs in engineering management, computer networking, and computer science.
Education Requirements

Basic Skills (9 hours minimum)
Must be completed in the first 48 college hours and a C or better.
- College English Composition (Eng. 100 or 101 and 102) - 6 credit hours
- Public Speaking (Communication 111) - 3 credit hours

Fine Arts, Humanities, and Social and Behavioral Sciences (18 hours minimum)
- One introductory course from a fine arts discipline - 3 credit hours
- One introductory course from a humanities discipline - 3 credit hours
- One introductory course from a social and behavioral sciences discipline - 3 credit hours
- One introductory course from a second social and behavioral sciences or humanities discipline - 3 credit hours
- One further study course from one of the two disciplines in the division, humanities or social and behavioral sciences, in which two introductory courses are taken - 3 credit hours
- Philosophy 385 Engineering Ethics - 3 credit hours

Mathematics and Natural Sciences
- Calculus I and II - 10 credit hours
- Differential Equations - 3 credit hours
- Physics for Scientists I and II - 8 credit hours
- General Chemistry I and II - 10 credit hours
- Elementary Organic Chemistry - 3 credit hours
- Intro to Biochemistry - 3 credit hours
- General Biology I - 4 credit hours
- Human Anatomy & Physiology - 5 credit hours
- Molecular Cell Biology - 4 credit hours
- Engineering Probability & Statistics I - 3 credit hours

Major Requirements
- Intro to Biomaterials - 3 credit hours
- Biomechanics - 3 credit hours
- Intro to Biofluids - 3 credit hours
- Materials Engineering Lab - 1 credit hour
- Biomedical Computer Applications - 3 credit hours
- Design of Biodevices - 3 credit hours
- Bioinstrumentation - 3 credit hours
- Open Electives - 3 credit hours
- Engineering Technical Electives - 12 credit hours
- Capstone Design I and II - 6 credit hours

Engineering Core
- Statics - 3 credit hours
- Circuits I - 4 credit hours
- Thermodynamics I - 3 credit hours
- Engineering Economy - 3 credit hours

Faculty
Michael Jorgensen, Department Chair (PhD). Occupational Biomechanics, Musculoskeletal Injury Prevention
316-978-5904   michael.jorgensen@wichita.edu

Anil Mahapatro (PhD). Biomaterials, Biodegradable Materials, Tissue Engineering
316-978-5912   anil.mahapatro@wichita.edu

Nils Hakansson (PhD). Musculoskeletal Biomechanics, Human Movement Modeling
316-978-5909   nils.hakansson@wichita.edu

Kim Cluff (PhD). Bioinstrumentation and Bioimaging, Instrumentation Design, Biomedical Sensors
316-978-5905    kim.cluff@wichita.edu

Gary Brooking (PhD). Biomedical Instrumentation, Telemedicine, Biomedical Innovation, Robotics
316-978-7637     gary.brooking@wichita.edu

For more information
If you have further questions or would like to schedule a campus visit, please contact the Office of Admissions.

KSDegreeStats.org
Wichita State University does not discriminate in its employment practices, educational programs or activities on the basis of age, color, disability, gender, gender expression, gender identity, genetic information, marital status, national origin, political affiliation, pregnancy, race, religion, sex, sexual orientation, or status as a veteran. Retaliation against an individual filing or cooperating in a complaint process is also prohibited. Sexual misconduct, relationship violence and stalking are forms of sex discrimination and are prohibited under Title IX of the Education Amendments Act of 1972. Complaints or concerns related to alleged discrimination may be directed to the Director of Equal Opportunity or the Title IX Coordinator,

For more information on Biomedical Engineering at WSU visit wichita.edu/BME or call (316) 978-7582.