



HLC Accreditation 2016-2017

Evidence Document

Academic Affairs

College of Engineering

The Experiential Engineering and Makespace Building Labs

Additional information:

The Experiential Engineering

142,661 Sq. Ft. With 25 Hands-On Learning Laboratories

Coming Fall 2016



WICHITA STATE
UNIVERSITY

COLLEGE OF ENGINEERING

The Experiential Engineering and Makerspace Building is the first phase in the development of WSU's Innovation Campus. With input from the faculty and staff of Wichita State University and the local community, the building space will be a project-based experiential learning environment that will bring engineering fundamentals to life. Students will benefit from ideas inspired by multi-disciplinary collaboration with faculty, students from across campus, industry, and the Wichita community. The building will house the tools and equipment for innovators and inventors to develop ideas into new products and bring them to the market. A few highlights of the building include a makerspace, a 3-D print center, business incubator and accelerator spaces, and the WSU Ventures office to offer advice on patents and marketing.

FIRST FLOOR

Aerospace Structures Lab (1,022 sq ft)

\$1,000,000. This lab provides for advanced structural testing of components and prototypes. Students get hands-on experience conducting tests using top-notch equipment, instruments, and methods.

Project & Prototyping Lab (1,844 sq ft)

\$1,000,000. This lab supports project and prototyping activities. Unique wind tunnel models, small aircraft, and interesting concepts are fabricated here.

Mechanics and Materials Laboratory (1,523 sq ft)

\$750,000. This is an experimental workspace where students learn about materials testing and metallurgy, including metal fatigue test equipment.

Power and Engines Lab (660 sq ft)

\$500,000. This lab is for students to experiment with engine and power machinery including advanced data acquisition.

Vehicle Design Lab (1,894 sq ft)

\$2,000,000. This will be the new home of WSU's two SAE design and build race teams: SAE Baja and SAE Formula. This lab will house the team's race cars, a fully equipped machine shop, and a state-of-the-art engine test stand.

Metrology Lab (708 sq ft)

\$500,000. This lab will provide students experience in metrology and measurement. It contains several pieces of advanced measurement equipment such as the coordinate measuring machine and optical comparator.

Manufacturing Processes Lab (2,222 sq ft)

\$1,500,000. This is a lab for developing and testing functional prototypes that also provides students hands-on experience in measurement and inspection, materials testing, heat treatment, lathe and mill operations, plastics forming, and assembly.

Controls Lab (890 sq ft)

\$1,000,000. Here, students take control theory out of the classroom in order to make motors spin, robots navigate, and drones fly at our command.

Project Innovation Hub (4,114 sq ft)

\$2,000,000. A central space where students will use state-of-the-art tools to turn ideas into prototypes and some, eventually, into products that will transform tomorrow.

Project Innovation Cubes (146 SF)

This a five-room student area that is on the second and third floor of the Project Innovation Hub.

*** Makerspace (18,152 sq ft)**

\$3,750,000. This makerspace is for innovators and entrepreneurs from the Wichita region to turn their ideas into prototypes and products.

SECOND FLOOR

*** Ray and Dolores Waldo Aerospace Propulsion Lab (283 sq ft)**

\$100,000. This lab supports the interactive and detailed study of various aerospace propulsion systems, such as a small turbine engine and rocket motor test cell.

Astronautics Lab (1,129 sq ft)

\$500,000. This is a lab where students explore their interests in space systems, mission planning, and small-satellite design. This will provide significant computational and prototyping capabilities.

Continued on reverse

* Named Space



To learn more about the Experiential Engineering Building and the Innovation Campus, visit www.wichita.edu/innovation

Virtual Instrumentation Studio (1,720 sq ft)

\$250,000. Hands-on education requires students to experience modern engineering tools such as software and virtual instrumentation. Here, students will learn how to apply these tools to analog and digital electronics, microcontrollers, communications, data acquisition, and instrumentation.

Thermal and Fluids Engineering Lab (1,330 sq ft)

\$750,000. This is an experimental workspace for students to study thermal and fluid science phenomena.

*** Cybertron Gaming and Flight Simulation Hub (2,147 sq ft)**

~\$1,500,000. Leading edge hardware and software allows the perfect platform for flight simulation and gaming. Computer stations will allow students to demonstrate, evaluate, and refine vehicle behavior or control system design. When not simulating flight, the space becomes a hub for all things games (competition, practice, and gaming software design).

THIRD FLOOR

Computational Hub (3,124 sq ft)

\$2,000,000. No technology has impacted people in the 21st century more than computers and the networks that bring them together. In this hub, students will build the software that runs computers



and the wired and wireless networks that connects them and us. This hub will also allow students to model, simulate, and visualize many complex engineering related applications.

*** Cybertron Collaborative Software Studio (1,568 sq ft)**

\$250,000. Because engineers and computer scientists rarely work on engineering projects or write software as individuals, this lab is designed to facilitate the writing of software and the use of software in teams.

Electronics Hub (486 sq ft)

\$250,000. This hub simplifies the assembly and testing of unique power, wiring, and micro-controller components needed to complete

project and prototyping.

Renewable Energy Lab (980 sq ft)

\$500,000. This is a space for undergraduate learning and outreach activities related to renewable energy technologies, namely wind and photovoltaic and thermal solar power.

*** Cybertron Computer Studio (1,492 sq ft)**

\$250,000. This is an area where students may access computers to design and simulate their projects.

Mechanobiology and Biomedicine Engineering Lab (1,028 sq ft)

\$750,000. Interdisciplinary lab to discover how mechanics regulates human cells and tissues to improve health. Multidisciplinary techniques from mechanics, biology, imaging, and

medicine are used to develop novel technologies for tissue engineering and medical applications, and develop novel diagnostic treatments for disease.

Biomedical Sensors, Imaging, Modeling and Engineering Lab (1,237 sq ft)

\$500,000. This is a space for students to develop quantitative approaches to improve medical diagnosis and treatment through application of mathematics, computational medicine, and bioinstrumentation design.

Multidisciplinary Human Biomechanics & Design Lab (1,233 sq ft)

\$500,000. This is a space for students from multiple disciplines — engineering, exercise science, health professions, human factors — to investigate the neuro-musculo-skeletal mechanics of activities of daily living and develop technologies to improve the quality of life for people with general and age-related disabilities.

*** Charles D. Peer Entrepreneurship Engineering Studio (1,149 sq ft)**

\$250,000. This is a gathering place for students to apply entrepreneurial principles to engineering problems.