



CENTRAL WASHINGTON UNIVERSITY

CWU Hogue Addition: High-Demand Knowledge for Washington State's High-Tech Economy

The “Hogue Technology Building” has been home to Central’s high-demand industrial and engineering technology programs since the construction of the building in 1970. But the heavy concrete facility no longer meets the demands of the 21st-century programs it houses. The university seeks \$47 million during the 2009-11 biennium to expand and update the space these high-demand programs require.

Nearly every aspect of this field has changed significantly over the last 40 years. Manual drafting has given way to Computer Assisted Design and Drafting (CADD). Production manufacturing students now complete projects using robotics rather than wrenches. The building’s computer network can’t handle the rapid transmission, manipulation, and analysis of large and complex data files and CADD files typical of modern technology programs. Three IET programs—Construction Management, Electronic Engineering Technology and Mechanical Engineering Technology—didn’t even exist at CWU when Hogue Hall was built.

Even basics like lighting and heating are out of date in Hogue Hall. Ventilation systems struggle to maintain air quality in labs. Options for room lighting include “on” or “off”; it’s not possible to turn on just one bank of lights so students can view video or PowerPoint. Sound bounces off the concrete walls, ceilings, and floors, making it difficult to hear in classrooms and labs. The lack of air conditioning and insulation makes the building a stifling place to teach and to learn in



100 percent of students in the Construction Management program have jobs in the field as soon as they graduate.

spring through fall, when Ellensburg temperatures often exceed 90 degrees.

Hogue Hall is simply too small to accommodate all of the students who want to participate in industrial and engineering technology programs. Enrollment in the department has *increased by 20 percent* over five years. Hogue’s eight class / labs are designed to accommodate about 200 students. But now the department is serving 350 students in seven different locations across campus – including buildings never intended for technology education.

For example, the Electronic Engineering Technology program is housed at Hebel Hall, constructed in 1938 as an elementary school, with tiny drinking fountains, low hand

rails, and toilets designed for children. Accreditation reviews have raised concerns about the appropriateness of many aspects of the old building for modern engineering technology instruction.

IET students also take classes in the Power Technology Building, a prefabricated metal structure moved to campus from the Wanapum Dam construction site in the 1950s. It was converted to instructional use from a facilities storage function in the 1970s. Nearly every aspect of this structure is inadequate and should be replaced by a permanent modern facility.



2004 commencement speaker Allison Worrell says CWU has a reputation for producing outstanding construction management graduates.

Engineer **Allison Worrell** earned her Bachelor of Science in Construction Management at CWU in 2004. Now a project engineer for Mountain Construction in Tacoma, Worrell manages commercial construction projects from start to finish.

Worrell says that everyone she graduated with got a job right away; her little brother, also a CWU construction management graduate, received multiple job offers, too. Worrell credits CWU's reputation in the industry for well prepared graduates for the program's job placement success.

"Construction companies are hungry for educated people," says Worrell. "Employers know Central graduates have a great combination of technical skills and communications and business education."

Worrell says hands-on experience sets CWU's program apart from other construction management programs. One of her first experiences in the program was to build a full-scale garage. Students actually constructed the building, pouring the foundation, framing the structure, hammering on siding, and completing every other task required.

"Suddenly all of the abstract blueprints came to life under my hands," said Worrell. "That project was a concrete reference I could use in all of my classes."

Worrell says construction management faculty are a critical ingredient in the outstanding program. She describes them as down-to-earth professors who dedicate themselves to the success of students in the program.

"They stay in touch with the industry so students can be effective as soon as they're hired," says Worrell. "They teach you what you need to know."

The Solution? Use Hogue Tech for Classrooms and Build a Hogue Addition for Up-to-Date Laboratories and Distance Education Classrooms

The state approved funding for pre-design of Hogue Tech in the 2005-07 biennium and funded design in the 2007-09 biennium. Initially the university proposed to renovate the old building by demolishing two-thirds of the existing structure and rebuilding it. During the long, three-year process, the university would have to close labs and cancel classes, reducing IET program capacity and disrupting the academic progress of hundreds of students.

A closer look at the old building during the design phase of the project (2005-07) revealed bad news and good news

— and a new solution for high-demand programs at CWU. First, the bad news. The heavy structure has never been remodeled, and it's no wonder. *All of the interior walls are load-bearing walls*, making the remodel of the building difficult and costly.

Now the good news. The study also found that the old state facility still could have value as a classroom building, which would not require moving load-bearing walls to reconfigure space. Constructing an addition to Hogue Tech makes the best use of state resources and is least disruptive to students.

High-Demand Programs Meet Employer and Student Needs

The Hogue Addition will house high-demand programs in the Department of Industrial and Engineering Technology (IET). The placement rate for graduates of IET programs is *100 percent*. The programs include a master's degree program in engineering technology and the following bachelor of science degree programs:

- **Construction Management** prepares students to be managers in all levels of the construction industry, from project managers for the industry's largest general contractors to superintendents for specialized trades. Graduates from this program earn an average salary of about \$54,000.
- **Industrial Technology** prepares students to be technical problem solvers and to manage people in manufacturing, product distribution, and agriculture.
- **Mechanical Engineering Technology** teaches the skills and principles necessary to enable students to design and build high-technology machinery components.
- **Electrical Engineering Technology** prepares graduates to interface with engineers at the product level and produce practical, workable results

quickly. Graduates install and operate technical systems; service machines and systems; manage production facilities; and provide support for technical systems.

- **Technology Education** prepares students to be shop teachers in the K-12 system. This program is the only one of its kind in Washington.
- **Safety and Health Management** prepares students to manage safety plans in construction and industrial settings. This rapidly growing field is the only one of its kind in Washington. CWU offers this program in Ellensburg, Des Moines, and Lynnwood.
- **Bachelor of Applied Science.** CWU is the first and only public university in Washington to offer bachelor of applied science (BAS) degree programs, which allow students to apply credits earned for a two-year technical degree toward a bachelor's degree. CWU offers the Bachelor of Applied Science in Health and Safety Management and in Industrial Technology at Ellensburg and via distance education at University Centers in Des Moines and Lynnwood.

LEED Hogue Addition Jumpstarts Green Jobs Program

The Hogue Addition is designed to earn platinum certification for Leadership in Energy and Environmental Design (LEED). The facility will be a model to CWU students, state agencies, and the Pacific Northwest region.

This “live” building also will be a model learning center for CWU’s growing “green jobs” program. This concentration allows students in construction management, mechanical engineering, and electrical engineering technology to incorporate in their degree programs techniques for the

development and management of renewable energy — from wind farms and solar farms to bio-fuels and other green jobs. CWU now is developing a specific degree program in green technologies through the construction management program.

The building also will be a learning laboratory for students seeking careers in the rapidly evolving construction industry. Faculty will create case studies that apply to real time construction and design right in front of students’ eyes.

CWU’s K-12 Math and Science Pipeline

Each year more than 500 K-12 students visit Hogue Hall, where they receive an exciting introduction to math and science, subject areas that the Legislature has named priorities for education and degree production.

- Hundreds of K-12 students learn about fuel cell technology each year when they visit CWU’s IET department, which has the West Coast’s only hydrogen fuel cell.
- GEAR-UP students tour the foundry. Nearly 100 6th-graders each fall watch IET students dressed in shiny aluminum-coated Kevlar suits work with molten metal.
- Middle school girls learn about science and engineering at the award-winning Aviation, Construction, Engineering, and Safety (ACES) summer camp, a technology and engineering camp hosted by the faculty and students of the IET department.
- The IET department hosted nearly 200 middle and high-school students at the 2006 Technology Student Association state conference, where students competed in the design of robots, drag racers, bridges, films, and animation.



At CWU’s ACES summer camp, girls explore fields of work in which women are under-represented.



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Mike Andler earned a BS in Industrial Technology and a BS in Safety and Health Management at CWU in 2005. For his senior project, Mike built a “tear-drop” travel trailer. His goal: to blaze a green trail in the recreational vehicle industry.

His small trailer has solar panels for power and its sloped-back, aerodynamic design reduces drag and increases gas mileage. Andler, whose trailer project was published in the May 2006 issue of *Popular Mechanics*, incorporated everything he studied as an industrial and engineering technology major: wiring, woodworking, and electronics. He designed the sleeping cabin to fit his 6-foot 5-inch frame and installed a surround-sound system for music and video. He molded the sink from high-density polyethylene and added a laminated plastic countertop with a beveled maple front.

Andler also earned an MS in Engineering Technology at CWU. For his master’s degree program, he designed and built a full-size, “green” travel trailer that uses no external power sources. He used the department’s Computer Numerical Control machine and created a portable wind-power generator to use with the trailer.

Says Andler, “My time at Central and specifically in Hogue with the great faculty and opportunities there gave me the life skills that will make me successful in all future endeavors.”

THE HOGUE INDEX

- 0 Number of times Hogue Hall has been remodeled over the last 40 years.
- 1 CWU is one of only three universities on the West Coast and one of only 24 programs nationally whose programs are accredited by the Foundry Education Foundation.
- 7 Number of buildings across campus IET uses to provide class and lab space for its growing high-demand programs.
- 20 Percent enrollment growth in IET programs since 2000.
- 80 Years of age of Hebel Hall, where the Electronic Engineering Technology classes are held.
- 100 Percent of walls in Hogue that are load-bearing, preventing the renovation of the old building.
- 150 Number of students enrolled in IET programs over the maximum capacity of Hogue.

Hogue Project Enhances Security for Academic and Student Information

The Hogue Addition project will include a modern, secure and technologically efficient data center. These data systems support the day-to-day computer network functions across campus and distance education across the state.

Currently the campus data center — which contains servers for critical data storage and system production and development — is located in a building that formerly served as the college bookstore. Constructed in 1955, the building was remodeled in 1979 and again in 1986 when it was converted to the current computer center use.

The building recently was identified as vulnerable to failure in the event of a major earthquake. Additionally, the un-reinforced brick building lacks the cooling, ventilation, and power supply required for the efficient and safe server layout. The large windows once used for bookstore displays now are a significant security risk.

Distance education servers that maintain connections with 2000 students across the state are located in the library. Inadequate power and cooling recently caused the system to overheat and shut down service to students for three days. Some equipment simply cannot be used because it will overheat the room in which the servers are located.

Test and development systems will be maintained at the old bookstore. This redundancy would enable the university to restore computer functions rapidly should primary service be lost, dramatically increasing business continuity. Such capacity does not now exist, although the university's disaster recovery plan requires it.



In fall 2008, CWU enrolled about 1540 freshman, the largest freshman class in university history.



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