



FERRIS STATE UNIVERSITY

At the Head of the **CLASS**

BY MATTHEW D. MITCHELL

Since 1957, the surveying engineering program at Ferris State University (FSU) in Big Rapids, Mich., has been setting standards for educating future professional survey engineers. Having formed a close relationship with private sector surveyors from across the state and the nation, the Michigan Department of Transportation, the National Geodetic Survey and Leica Geosystems Inc., FSU provides its students with the most up-to-date instrumentation, field survey techniques and technical support. With an impressive surveying equipment lab, the program keeps its students and faculty on the cutting edge of surveying technology, which results in a high demand for the school's students and a continuous supply of new surveying students.

Technology, Theory & The Ferris Balance

While technologically sophisticated, the philosophy of the Ferris faculty is to empower students with the basic skills and background to work in the many surveying

engineering disciplines. "Although the university is ahead of the curve in terms of technology and instrumentation, students are still taught basic measurement skills," says Professor Bob Burtch, PS. "Sometimes the best tool for a surveying measurement is still a steel tape. It's our responsibility as instructors to equip our students with the knowledge required to work with both the basic measurement tools as well as the highest [grade] technology."

The professional surveying engineering faculty members at FSU (with one exception) are professional Michigan surveyors and members of the Michigan Society of Professional Surveyors. "Professionalism in surveying is stressed at the highest level here," says Professor Carl Shangraw, PS. "Our goal at Ferris is to make well-rounded students who have the tools to analyze land boundary surveys, apply sound legal principles to future surveys, write and communicate in a precise and professional manner, follow the footsteps of the original surveyor, and do it all with professionalism and ethics."



Involvement in ACSM

It is almost impossible to not run into a Ferris State University student at the national American Congress on Surveying and Mapping (ACSM) conference. Whether proctoring a session, providing assistance for the surveying olympics competition or aiding in the organization of an event, Ferris surveying students take full advantage of their opportunities to be part of the professional community. As a result of major donations from Leica Geosystems Inc., Michigan surveyor and Ferris State supporter John Fenn, PS, and several other generous donors, 20-25 students are annually funded to attend the national ACSM conference. "We feel it is extremely important that our valued students and future professionals have the opportunity to attend at least one national ACSM conference during their tenure at Ferris

The Burt & Mullet Student Chapter of ACSM, established in 1978, represents the surveying students at FSU. The chapter, with the assistance of Richard R. Sauve II, the Michigan technical sales representative for Leica Geosystems Inc. (and 1983 graduate of the surveying program at FSU), schedules an outside speaker each week to discuss topics relative to surveying engineering. "In order to provide another dimension to their conventional studies, we enacted the 'Burt & Mullet Guest Speaker Club' in 2000," says Sauve, recipient of both the 2004 Ferris State University Distinguished Alumnus award and an Honorary Doctorate of Science and Industry from Ferris State University in May 2005. "As there are no classes scheduled in the program for an hour on Tuesday mornings, we thought it would be an excellent opportunity to schedule a professional surveyor to discuss a topic with the students. Over the last five years we have had more than 200 professional surveyors visit Ferris State University and discuss topics ranging from GLO retracement surveys to understanding road alignments or the Michigan Plat Act [and] understanding public policy, which was recently presented by Ferris State University's Vice-President of Academic Affairs, Dr. Michael Harris. The success of the Burt & Mullet Guest Speaker Club has exceeded expectations and is greatly valued by the entire membership of the Burt & Mullet Student Chapter."

Annual Leveling Project

At a roundtable meeting with a group of surveying students in the spring of 1998, Prof. Shangraw, Brian Dollman-Jersey, PS, supervising surveyor for the Michigan Department of Transportation Design Survey Division, Ron Ramsey (ret.), National Geodetic Survey advisor for the State of Michigan, and Rick Sauve representing Leica Geosystems, were discussing a 200 km line of 3D marks initially set by the NGS and for which NGS had no funding to complete the first-order leveling. The group concluded that no one entity could fund the completion of this work but thought it would be possible to obtain the final values of the much-needed control data through a joint effort. And so was born the "FMNL Leveling Initiative"; FMNL is an acronym that comprises the first letter of each participating organization. The FMNL Leveling Initiative provides a feasible mechanism to extend this first-order vertical network throughout Michigan.

Michigan's Ferris State University surveying engineering program offers a well-rounded framework for professional development.

State University," says Marvin E. Myers, PS, an adjunct professor. "It is an excellent window into the national surveying scene and provides students a vision of why membership in the ACSM is vital to the surveying profession. At Ferris State University we stress professionalism to our students; we continually drive home the importance of dressing well, speaking well, writing well and presenting oneself in a professional manner."

Rotating Ferris State University students make up the six-person team of the FMNL. The Michigan Department of Transportation Design Survey Division provides the vehicle and hourly pay for the students. The National Geodetic Survey provides the training and technical support for the team as well as the bluebooking and quality control of the collected data. And Leica Geosystems provides the calibrated first-order digital level, invar

AT THE HEAD OF THE CLASS

rods and struts for the project as well as any instrument support that may be needed. Over the past several years this project has enabled the state of Michigan to add 456 km of first-order level lines to its First-Order Vertical Network, thereby enhancing the state's ability to better define the local geoidal separation, and at the same time teaching the Ferris survey students the art, science and technology of running first-order level runs. "The FMNL First Order Leveling Project has proven to be a prime example of how different entities can collaborate to produce a final product that benefits everyone involved in surveying and mapping," says David Rigney, National Geodetic Survey advisor to the state of Michigan Department of Transportation Design Survey Division. "In the tight budget times faced by government, this project has enabled us to extend the much-coveted first-order vertical network around Michigan and has served as a model for future survey operations lacking individual funding sources."

Scholarships

Thanks to the valued support of alumni and professional surveying companies throughout Michigan, FSU provides approximately \$30,000 worth of scholarships to qualified surveying engineering students each year. "Our scholarship fund exemplifies the dedication of our alumni and professional surveying companies of Michigan to the surveying engineering program at Ferris State University," says Sayed Hashimi, program director. "The donors to the Ferris State Surveying Engineering program realize the importance of quality surveying education. By providing the highest level of professional development to our valued students, our donors realize that when our students graduate they will have the skills and tools necessary to be outstanding employees."

Best-Equipped Surveying Lab

Many schools in the country have difficulty keeping up to date with the latest technology. Ferris State University fares well in this area because of Leica Geosystems' long-standing commitment to the school. According to Dr. Yaron Felus, PhD, PS, professor, "It is extremely important to enable our students to work with the latest, up-to-the-minute surveying equipment. Our alumni and the professional surveying companies that will be employing our students expect them to be capable of understanding and utilizing the newest technology." This philosophy was further evidenced



(From left): Ben Tank, Sam Miles, Dave LaCross and Guy Stickler ponder over a surveying problem in the well-equipped FSU lab.

last year with the dedication of the John R. and Lynda D. Fenn Digital Photogrammetry and GIS Endowed Laboratory (see sidebar below).

Combined, the theory and application program along with the modern technical instrumentation for the surveying engineering students provides a solid framework for professional development. The education obtained from Ferris' program seems to be paying off—literally. In a recent survey of surveying engineering graduates, the average salary was reported to be \$74,014.

The Ferris Surveying Engineering Philosophy

The surveying engineering program at Ferris State is made up of an ever-developing framework of classes designed to adapt according to both changes in technology as well as changes in the law and techniques. "Whenever we detect that a particular class is not generating the results we intended, we immediately adapt, adjust and modify the material to quickly respond to the industry requirements," Prof. Hashimi says. "With the aid of our valued and specifically chosen Surveying Engineering Advisory Committee, we biannually review our curriculum and ensure that it is [meeting] the needs of the employers that will be employing our students. We also continually monitor the test scores of our students when they sit for their Surveying Fundamentals examination and professional licensure examination. If any shortcomings are detected we immediately spring into action. It is important to note that to graduate

from Ferris State University with a BS degree, 137 credits are required. The Ferris State Surveying Engineering program is the highest rated such program in the nation as directed by the Accreditation Board for Engineering & Technology (ABET). We demand a lot out of our students and as a result, upon graduation they are the biggest beneficiaries of their hard work."

Michigan Spatial Reference Network

With the full implementation of the statewide Michigan Spatial Reference Network (MSRN) established by the Michigan Department of Transportation in the fall of 2000, and its huge benefits to geospatial positioning, a collaborative effort called for an MSRN station to be established on the campus of Ferris State University. "We are one of the biggest benefactors of the

From the Class of '57 to Today

Established in 1957, the program has graduated more than 2,000 surveyors with associate degrees and bachelor of science degrees. In 1977, Michigan enacted a law requiring professional surveyors to have a bachelor of science degree in surveying (or equivalent) to be allowed to sit for the professional licensure test.

Accredited by ABET in 1983, the Ferris State University Surveying Program was one of the first surveying programs accredited in the nation for its bachelor of science degree. In 1990, ABET accredited the school's Surveying Engineering Program. Upon completion of the required professional experience, Ferris State University surveying students are eligible to take both the professional engineering examination and the professional surveying examination.

On April 1, 2005, John Fenn and his wife Lynda dedicated the John R. and Lynda D. Fenn Digital Photogrammetry and GIS Laboratory at Ferris State University. The lab is equipped with 15 stations loaded with the revolutionary technology of Leica Geosystems Photogrammetry Suite and Leica Geosystems High-Definition Surveying (HDS) systems (all courtesy of Leica Geosystems) and ESRI's ArcGIS 9.0 software.

AT THE HEAD OF THE CLASS

Ferris State University for our recruiting efforts in filling positions here at the Michigan Department of Transportation. The Ferris program [gives] our future employees the skills required to perform the tasks of design surveys with accuracy and efficiency," says MDOT's Dollman-Jersey, a 1982 graduate of the Ferris State University surveying program. "In these times of squeezed budgets on state governments, the need to do more surveying with less people is a necessity in providing the valued motorists of the state of Michigan with safe quality roadways."



Top: Beth Chesla and Matt Mitchell discuss the procedure for operating some of the state-of-the-art equipment donated by Leica Geosystems. Below: Katy Moore, equipment room manager, keeps tabs on the sophisticated Leica Geosystems equipment available to FSU's survey engineering students.

A Standard-setting Institution

Perhaps it's the involvement with the professional surveying community that provides students with valuable exposure to the profession. Maybe it is working outside the classroom with local, state and federal government entities to stay on the

cutting edge of survey practices and techniques. Or maybe it is the ever-adapting curriculum, the generous scholarship donations or the unparalleled access to state-of-the-art surveying equipment. Whatever the reasons, there is no question that the surveying engineering program at Ferris State University is continuously respected and recognized as one of the country's standard-setting surveying engineering institutions. 🌐



Matthew D. Mitchell is a 2006 graduate of the Ferris State University Surveying Engineering program. He currently resides in Tallahassee, Fla., where he works for Nick Miller Inc. He plans to pursue a masters of science degree in Geographic Information Systems at Florida State University.

SubSurface Instruments, Inc.

ML-1 & ML-1M Magnetic Locators

- Ferrous metal locators: Find corner markers, PK & MagNails, marker magnets, valve & curb boxes, steel & iron pipes & joints, steel drums, magnetic utility markers, reachable & utility access covers made of iron/steel, and unexploded ordnance... deep and accurate.
- Lightweight, comfortable, easy to use true one-hand operation.
- Strong & durable, all one-piece tube and handle—no hoods to fall off, switches to break, or caps to get loose.
- Lowest unit on the market, a real speaker with excellent clear volume.
- Microprocessor remembers your last volume and sensitivity settings each time you turn the unit on.

SubSurface Instruments, Inc.
10055 Regal Row, Suite 190 • Houston, Texas 77040
Phone: (713) 849-9192 • Fax: (713) 849-9611
www.SSLocators.com

- Available without a meter (ML-1), or with an LCD meter (ML-1M) that indicates polarity, signal strength, gain (sensitivity), and low battery condition.
- Uses two alkaline 9-volt batteries. Shipped with two complete battery sets (one set is a spare).
- Shipped in a soft pack padded shoulder carrying bag inside a protective hard case. You can mount the hard case right in your vehicle; then slide the unit (still in the soft pack) in and out as needed.

See Our Full Line of Products at ...

www.SSLocators.com

Lifetime Warranty!



Magnetic Locators



Pipe & Cable Locators



Leak Detectors

Includes a soft-pack padded shoulder carrying bag and a hard case.