

The Bachelor of Science Degree in Surveying Engineering is designed to meet the needs of all students in the program. The following are objectives of the program:

- A. Program graduates will apply communication skills, lifelong learning attitude, and the knowledge of mathematics and basic science to attain advancement within the surveying profession.
- B. Program graduates will exhibit creativity, leadership and team-building abilities, cultural appreciation and an understanding of global, societal, and environmental context consistent with the principles of sustainable development.
- C. Program graduates will be engaged in the professional practice of surveying engineering with high ethical and professional responsibilities.
- D. The program graduates will strive for professional licensure.

The Program is accredited by Engineering Accreditation Commission (EAC) of ABET. After acquiring qualifying work experience, graduate of this program is eligible to become a licensed professional surveyor (PS) and engineer (PE).

#### First Year Seminar Requirement - 1 Credit Required

FSU Course	FSU Course Title	FSU Cr. Hrs.	NCMC Equiv.	NCMC Course Title	NCMC Cr. Hrs.
SURE 100	Introduction to Surveying Engineering	1	No Equivalent	No Equivalent	No Equivalent

#### Communication Competency Requirements – 9 Credits Required

FSU Course	FSU Course Title	FSU Cr. Hrs.	NCMC Equiv.	NCMC Course Title	NCMC Cr. Hrs.
COMM 121	Fundamentals of Public Speaking	3	No Equivalent	No Equivalent	No Equivalent
ENGL 150	English 1	3	ENG 111	English Composition 1	3
ENGL 250	English 2	3	ENG 112	English Composition 2	3

#### Quantitative Literacy Requirements – 3 Credits Required

FSU Course	FSU Course Title	FSU Cr. Hrs.	NCMC Equiv.	NCMC Course Title	NCMC Cr. Hrs.
MATH 220	Analytical Geometry and Calculus 1	4	MATH 150	Analytic Geometry & Calculus 1	5

#### Natural Sciences Competency Requirements – 2 courses are required with a minimum of 6 credits: must have at least 1 lab course.

FSU Course	FSU Course Title	FSU Cr. Hrs.	NCMC Equiv.	NCMC Course Title	NCMC Cr. Hrs.
GEOL 131	Geology & Land Use Mgmt.	3	No Equivalent	No Equivalent	No Equivalent
CHEM 121	General Chemistry 1	5	CEM 121	Principles of Chemistry 1	5

#### Culture Competency Requirements - 3 courses are required with a minimum of 9 credits: must be from 2 different disciplines and have at least 1 200 level or higher course.

FSU Course	FSU Course Title	FSU Cr. Hrs.	NCMC Equiv.	NCMC Course Title	NCMC Cr. Hrs.
SURE 331	Ethics – Prof. in Engineering Technology	3	No Equivalent	No Equivalent	No Equivalent
Varies	FSU General Education - Culture Electives	6	Varies	Varies	6

#### Self and Society Competency Requirements – 3 courses are required with a minimum of 9 credits: must be from 2 different disciplines, have at least 1 200 level or higher course, and at least 1 Self and Society Foundation course.

FSU Course	FSU Course Title	FSU Cr. Hrs.	NCMC Equiv.	NCMC Course Title	NCMC Cr. Hrs.
Varies	FSU General Education – Self & Society Competency	9	Varies	Varies	9

#### Additional General Education Requirements – 20 Credits Required

FSU Course	FSU Course Title	FSU Cr. Hrs.	NCMC Equiv.	NCMC Course Title	NCMC Cr. Hrs.
MATH 230	Analytical Geometry & Calculus 2	4	No Equivalent	No Equivalent	No Equivalent
MATH 322	Linear Algebra	3	MATH 235	Linear Algebra	3
MATH 330	Differential Equations	3	MATH 225	Differential Equations	3
PHYS 241	General Physics 1	5	PHY 210	General Physics 1	5
PHYS 242	General Physics 2	5	PHY 211	General Physics 2	5

[Ferris State University General Education Program](#) Students are encouraged to work with an advisor to select appropriate general education courses.

**Major Requirements – 75 Credits Required**

FSU Course	FSU Course Title	FSU Cr. Hrs.	NCMC Equiv.	NCMC Course Title	NCMC Cr. Hrs.
CENG 220	Engineering Surveying	3	No Equivalent	No Equivalent	No Equivalent
CENG 240	Engineering Statics	3	No Equivalent	No Equivalent	No Equivalent
CENG 321	Hydraulics Engineering	4	No Equivalent	No Equivalent	No Equivalent
CENG 421	Soils Engineering	4	No Equivalent	No Equivalent	No Equivalent
CENG 499	Applied Research in Surveying Engineering	4	No Equivalent	No Equivalent	No Equivalent
CONM 121	Materials Properties & Testing	3	No Equivalent	No Equivalent	No Equivalent
GISC 225	Principles of GIS	3	No Equivalent	No Equivalent	No Equivalent
GISC 239	Remote Sensing	3	No Equivalent	No Equivalent	No Equivalent
GISC 425	Technical Issues in GIS & Cartography	3	No Equivalent	No Equivalent	No Equivalent
SURE 110	Fundamentals of Surveying	3	No Equivalent	No Equivalent	No Equivalent
SURE 115	Introduction to Computer Mapping	3	No Equivalent	No Equivalent	No Equivalent
SURE 215	Surveying Computations	3	No Equivalent	No Equivalent	No Equivalent
SURE 230	Advanced Surveying	3	No Equivalent	No Equivalent	No Equivalent
SURE 272	Programming Applications in Geomatics	2	No Equivalent	No Equivalent	No Equivalent
SURE 340	Photogrammetry	3	No Equivalent	No Equivalent	No Equivalent
SURE 365	Legal Aspects of Surveying 1	3	No Equivalent	No Equivalent	No Equivalent
SURE 366	Evidence and Procedure for Boundary Locations	3	No Equivalent	No Equivalent	No Equivalent
SURE 372	Adjustment Computations 1 (SURE 230, 272, MATH 230, and 322)	2	No Equivalent	No Equivalent	No Equivalent
SURE 373	Adjustment Computations 2	3	No Equivalent	No Equivalent	No Equivalent
SURE 420	Prof Practice of Surveying	3	No Equivalent	No Equivalent	No Equivalent
SURE 440	Advanced Photogrammetry	3	No Equivalent	No Equivalent	No Equivalent
SURE 452	Geodesy 1	4	No Equivalent	No Equivalent	No Equivalent
SURE 453	Geodesy 2	4	No Equivalent	No Equivalent	No Equivalent
SURE 465	Legal Aspects of Survey 2	3	No Equivalent	No Equivalent	No Equivalent

<b>Total Credits Required for Degree</b>	<b>135</b>
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**Program Delivery Locations and Contact Information:****Main Campus, Big Rapids****College of Engineering Technology – Engineering & Computing Technology**(231) 591-2633 | [Surveying Email](#)[Transfer Partnerships Website](#)

\*Select courses may be delivered online and/or in a mixed delivery format (i.e. a mix of online and face-to-face instruction at the Ferris Main Campus or at an off-campus location).

**General Admission Criteria****New Students**

- High School GPA of 2.75 (on a 4.0 scale)
- Math ACT 26 or (Post-2016) Math SAT 610

**Transfer Students**

- Minimum GPA of 2.0 (on a 4.0 scale)
- Placement into MATH 220
- Placement into ENGL 150

**Advising Notes**

It is recommended that potential applicants meet with an advisor to review the degree, course schedule, and have any questions answered prior to completing an application. Students who are completing the MTA may have different general education course requirements for the particular degree selected. Meeting with a Ferris advisor prior to the selection of general education or elective course work may reduce the chance of completing a course that will not apply toward the selected degree. Once admitted, students must continue to meet with an advisor as they work toward graduation.

**Transfer Student Orientation**

All new students to Ferris State University are required to complete an orientation.

**Reverse Transfer Agreement**

The Community College and Ferris have entered into a partnership in order to work collaboratively and creatively to increase student completion of associate and bachelor degrees. The partners work together to provide a seamless transfer experience and increase student retention and completion at both the community college and Ferris.

**Michigan Transfer Agreement (MTA)**

Ferris participates in the Michigan Transfer Agreement (MTA). This agreement will facilitate the transfer of general education requirements from one Michigan institution to another. Students may complete the MTA as part of a degree program or as a stand-alone package. The MTA consists of a minimum of 30 general education credit hours as identified by the college or university.

Students transferring to Ferris with the Michigan Transfer Agreement (MTA) and entering a degree program will have met a 30-hour block of lower-level general education courses. However, this does not exempt students from completing program specific prerequisites or higher-level general education course requirements. Students should contact their advisor regarding classes that meet the MTA.

Students must work with their Ferris advisor to declare a Minor or Concentration and for selection of Directed Electives.

**Disclaimer**

This is a guide for students who plan to transfer to Ferris State University. This guide is not intended to be a contract with Ferris. The information on this guide is subject to change. Students should contact their community college or Ferris to keep informed of changes. Final responsibility for verifying all transfer information lies with the student. Please refer to effective and/or revised date on the bottom of this guide.