Accelerated Master’s in Integrated Geospatial Technology + Bachelor’s in Surveying Engineering

Purpose

The purpose of this program is to offer exceptional undergraduates an opportunity to complete a BS in Surveying Engineering and an MS in Integrated Geospatial Technology in 5 years. The surveying profession has been experiencing significant change due to advancements in technology, including development of new instruments for collecting data and sophisticated software for processing and analyzing data. Job opportunities for the traditional land surveyor whose primary focus is boundary surveying are diminishing. A broad and deep understanding of GIScience, photogrammetry, and remote sensing, and the knowledge of how they integrate, is becoming a necessity for a successful career. This accelerated Master’s program will address this need and it has the potential to attract a broad range of high school and transfer students, and will provide motivation for advanced study for highly qualified undergraduate students currently in surveying engineering.

General Guidelines

1. This program will be offered as a coursework-only degree option where students will be required to complete at least 152 credits.

2. Students must meet all Graduate School requirements for a coursework master of science degree.

3. The maximum time to MS degree for students in an accelerated master’s program is 5 years from the time the student is accepted into the program.

4. This accelerated master’s program applies only to students who earn a bachelor’s in Surveying Engineering and a master’s in Integrated Geospatial Technology from Michigan Tech.

5. Students already enrolled in a graduate program may not retroactively enroll in this program.

6. In order to be formally accepted into an accelerated master’s program, students must apply to, and be accepted into, the Graduate School at Michigan Tech. Applications will be reviewed by the graduate faculty participating in the Integrated Geospatial Technology Master’s program.

7. Students can apply for admission to an accelerated master’s program at any time after they attain junior-level class standing and up until they are awarded their bachelor’s degree.

8. Only students with a cumulative GPA of 3.0 or above are eligible to enter an accelerated master’s program. Students who are accepted to the program will not be allowed to continue if their cumulative undergraduate GPA falls below 3.0. Students who have been dropped from the program because of a cumulative GPA under 3.0 may reapply if their cumulative GPA returns to 3.0 or above, provided that they have not completed requirements for the BS degree.

9. Students will be considered undergraduates for the purposes of financial aid, tuition, and class standing until their undergraduate degree has been awarded. Once students are awarded their undergraduate degree, they will be considered graduate students for the purposes of financial aid, and tuition.
10. Students may double-count 6 credits toward their BS/MS degrees. These credits must be clearly identified on the MS degree schedule and approved by the graduate program director for Integrated Geospatial Technology.

**Additional Requirements**

1. This plan requires completion of a minimum of 152 credits. As mentioned in 10 above, six credits can be double-counted in the BS and MS degrees. In addition, up to six (6) credits may be taken under Senior Rule (in which courses approved for graduate study are taken while students are undergraduates, but the course credits are reserved for the graduate transcript and cannot be used to satisfy undergraduate degree requirements). The number of credits taken in the fifth year could vary from 12-24 based on the number double-counted and the number taken under Senior Rule.

2. Graduate status under this plan begins in the summer after the fourth year, provided that all degree requirements for the BS degree in Surveying Engineering have been met and the student has been accepted by the graduate program prior to the end of spring semester of the fourth year.

3. Students who plan to participate in this program should see the undergraduate academic advisor for planning a time frame for the required coursework. They should also meet with the graduate program director for Integrated Geospatial Technology as soon as they apply to the program to develop a plan of study.

4. Courses to be double-counted for the BS and MS degrees must be approved by the graduate director for Integrated Geospatial Technology. Students must earn a B or higher in courses that will be double-counted.

**Course Flowchart**

Typical examples illustrating different areas of concentration are shown below. Depending on the number of credits double-counted, and the number of Senior Rule credits taken, the 12 credits per semester would be reduced appropriately. The flowchart shown on the next page depicts the recommended sequence of courses to be taken to complete the accelerated master’s program. There are multiple tracks available for students in the MS program so specific course numbers have been omitted from the Fall 5 and Spring 5 columns of the flowchart.

[Note that two of the examples shown below include a 4-credit course being taken in Fall which results in 13 credits for the semester. A reduction in the credits for Spring is not shown because all of the available courses are three or four credits, so it is not actually possible to reduce the credits to 11. A student choosing one of these example programs of study would end up with 153 total credits.]

<table>
<thead>
<tr>
<th>Year 5</th>
<th>Geodesy</th>
<th>Remote Sensing/Imaging</th>
<th>GIScience</th>
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<tr>
<td></td>
<td>Fall</td>
<td>Spring</td>
<td>Fall</td>
</tr>
<tr>
<td></td>
<td>SU 5020(3)</td>
<td>SU 5010(3)</td>
<td>FW 5540(4)</td>
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<td></td>
<td>SU 5480(3)</td>
<td>SU 5022(3)</td>
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<td>SU 5045(3)</td>
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<td>SU 5023(3)</td>
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<td>13</td>
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<tr>
<td>Total</td>
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<td>25</td>
<td>25</td>
</tr>
</tbody>
</table>
BS Surveying Engineering (128) + MS Integrated Geospatial Technology (24)

Recommended Course Sequence

Fall 1 (15-16)
- UN 1001 (3) Perspectives on Inquiry
- UN 1002 (4) World Cultures
- UN 2001 (3) Composition: Oral, Written, and Visual
- SU 2000 (2) Introduction to Surveying
- SU 2050 (3) Plane Surveying
- CS 1121 or MIS 2100 (3) Intro to Prmg I
- ACC 2000 (3) Accounting Principles I
- MA 1160 (4) or MA 1161 (5) Calculus with Technology I
- CH 1150 & CH 1151 (4) University Chemistry I & Lab I
- PH 1100 (1) Physics by Inquiry I
- PE
- PE

Spring 1 (16)
- UN 2002 (3) Institutions
- SU 2050 (3) Plane Surveying
- SU 2200 (3) Route and Construction Surveying
- BUS 2200 (3) Business Law
- SU 2260 (3) Survey Computations
- SU 3100 (4) Surveying Field Practice
- MA 2160 (4) Calculus with Technology II
- MA 2320 (2) Elementary Linear Algebra
- EET 1411 (4) Basic Electronics
- MA 3160 (4) Multivariable Calculus with Technology
- MA 3170 (3) Engineering Statistics
- SCIENCE ELECTIVE (3)
- PE
- PE

Fall 2 (15)
- HU 3120 (3) Understanding the Earth/Environ Geology
- SU 3180 (3) Boundary Surveying Principles
- SU 3380 (3) Boundary Surveying Principles
- ENG 2120 or ENG 3200 (4) Statics –OR– Thermodynamics/Fluid Mechanics
- MA 3710 (3) Engineering Statistics
- Science Elective (3)
- SU 3540 (3) Geospatial Info Technology with Elements of Field Cartography
- Engineering Elective (3)
- PE

Spring 2 (16)
- GE 2000 or GE 2100 (3) Understanding the Earth/Environ Geology
- SU 3110 (4) Surveying Field Practice
- SU 3250 (3) Geodetic Adjustments Theory
- SU 4060 (3) Geodesy
- SU 4100 (3) Geodetic Positioning
- SU 4140 (3) Photogrammetry
- SU 4180 (3) Land Subdivision Design
- MA 3160 (4) Calculus with Technology II
- MA 3710 (3) Engineering Statistics
- Science Elective (3)
- SU 3540 (3) Geospatial Info Technology with Elements of Field Cartography
- Engineering Elective (3)
- Technical Elective (1-2)
- PE

Fall 3 (16)
- SU 4010 (3) Geospatial Concepts, Technologies and Data
- SU 4900 (3) Capstone Design Project
- SU 4060 (3) Geodesy
- SU 4100 (3) Geodetic Positioning
- SU 4140 (3) Photogrammetry
- SU 4180 (3) Land Subdivision Design
- MA 3710 (3) Engineering Statistics
- Science Elective (3)
- SU 3540 (3) Geospatial Info Technology with Elements of Field Cartography
- Engineering Elective (3)
- Technical Elective (1-2)
- PE

Spring 3 (17)
- SU 4180 (3) Land Subdivision Design
- MA 3710 (3) Engineering Statistics
- Science Elective (3)
- SU 3540 (3) Geospatial Info Technology with Elements of Field Cartography
- Engineering Elective (3)
- Technical Elective (1-2)
- PE

Fall 4 (16)
- SU 4999 (1) Professional Practice Review
- SU 5xxx (3)
- SU 5xxx (3)
- SU 5xxx (3)

Spring 4 (16-17)
- SU 5xxx (3)
- SU 5xxx (3)
- SU 5xxx (3)

Fall 5 (9-13)
- SU/FW 5xxx (3-4)
- SU 5xxx (3)

Spring 5 (9-12)
- SU 5xxx (3)

Total 152

http://www.mtu.edu/registrar/pdfs/HASS-Distribution-List.pdf (requirements for new students starting after August 2008)

This document is to be used as reference only—information found in the University Catalog should be used for final course selection and decisions.

30 graduate credits are required. Six (6) can be double-counted from BS, and an additional 6 credits may be taken as Senior Rule during completion of BS degree.

Depending on the mix of classes taken, the remaining credits to be taken in the fifth year could vary between 18 and 24.