

# SURVEYING & CIVIL ENGINEERING TECHNOLOGY (SCVL), AAS

At Dunwoody College of Technology, the Surveying & Civil Engineering Technology program prepares students to become technicians in the civil engineering and land surveying industries. Technicians may be employed by governmental agencies including counties, cities, and states. Graduates may also be employed in the private sector by contractors and engineering or land surveying firms in a wide range of starting positions. Students are prepared to work in the industries of land surveying and civil engineering under a professional surveyor or civil engineer. Surveying technicians assist surveyors in collecting data and making maps of the earth's surface. Surveying technicians typically work in an office or visit sites to take measurements of the land. Civil engineering technicians help civil engineers plan and design the construction of highways, bridges, utilities, and other major infrastructure projects. They also help with commercial, residential, and land development.

Students are provided with experiences emphasizing surveying, drafting/design, and materials testing. Surveying courses give students the opportunity to learn how to operate industry utilized equipment, including the latest in GNSS (GPS) technology. Survey drawings and engineering plans are developed using enhanced computer-aided drafting programs (CAD).

Arts & Sciences courses round out the course of study, providing students with the analytical, communication, and writing skills the industry demands of its professionals.

The program prepares students to take the National Society of Professional Surveyors (NSPS) Certified Survey Technician (CST) Level I exam.

Credits earned in the Surveying & Civil Engineering Technology AAS directly transfer into the following Dunwoody programs:

- Construction Management Bachelor of Science (CMGT) (<https://catalog.dunwoody.edu/catalog-student-handbook/academic-programs/construction-sciences-building-technology/construction-management-cmgt-bachelor-science/>)
- Business Management & Leadership Bachelor of Science (AMGT) (<https://catalog.dunwoody.edu/catalog-student-handbook/academic-programs/business/business-management-leadership-amgt-bs/>)

For students with a bachelor's degree in a related field, Dunwoody's Surveying certificate (<https://catalog.dunwoody.edu/catalog-student-handbook/academic-programs/construction-sciences-building-technology/land-surveying-scvl-certificate/>) may provide an avenue to licensure as a Land Surveyor. The certificate offers 22 technical credits in land surveying, as currently required by the MN board of licensure (AELSLAGID). Technical courses include lectures and laboratories in areas such as GPS and geodetic surveying, 2D and 3D drafting, boundary control, and land use planning.

**Credential Earned:** AAS

**Length of Program:** 2 years (4 semesters)

**Classes Offered:** Day; Evening

**Available Starts:** Fall Semester; Spring Semester

## Program Outcomes

- Initiate and apply design of entry level complexity.
- Analyze drawings, specifications, surveys, and apply industry standards.
- Interpret and review engineering and survey work.
- Analyze surveying and civil engineering principles, practices, and techniques.
- Utilize field and office procedures to complete tasks.
- Operate industry software and equipment.

## Degree Requirements

Code	Title	Credits
<b>General Requirements</b>		
MATH1000	Algebra & Trigonometry	3
MATH1700	Pre Calculus	3
	or MATH2250 Statistics	
	Communications Elective	3
	Humanities Elective	3
	Social Sciences Elective	3
<b>Technical Requirements</b>		
SCVL1002	Civil Drafting	3
SCVL1111	Introduction to Topographic Surveying	3
SCVL1130	Legal Descriptions & Boundary Law	4
CMGT1112	The Construction Industry	3
SCVL1210	Control & Geodetic Surveying	4
SCVL1220	Transportation & Municipal Design	4
SCVL2300	Adv Surveying & Construction Staking	4
SCVL2111	Materials, Testing, Construction Methods	3
SCVL2120	Utility & Construction Design	4
SCVL2210	Laser Scanning & Remote Sensing	4
SCVL2240	Exam Preparation	1
SCVL2250	GIS	4
SCVL2260	Site & Subdivision Design	4
<b>Technical Elective:</b>		<b>2</b>
CMGT2000	Professional Development	
SCVL2140	SCVL Topics	
SCVL2141	SCVL Topics - Competition	
SCVL2142	SCVL Topics - Service Learning	
OR Choose any CMGT or SCVL course(s)		
<b>Total Credits</b>		<b>62</b>

## Courses

### Descriptions

#### SCVL1002 | Civil Drafting | Lecture/Laboratory (3 Credits)

Introduction to the fundamental aspects and production of drawings through the use of industry software with an emphasis on geometry and problems common to civil disciplines.

#### SCVL1111 | Introduction to Topographic Surveying | Lecture/Laboratory (3 Credits)

Introduction to the technical equipment and industry processes used by surveying technicians to collect and interpret data.

**SCVL1130 | Legal Descriptions & Boundary Law | Lecture (4 Credits)**

Introduction to property descriptions and land survey systems with a focus on composing and interpreting legal descriptions used in surveys.

**CMGT1112 | The Construction Industry | Lecture (3 Credits)**

Aspects of the construction industry are explored through guest speakers, site tours, and exploratory reflections to highlight the variety of opportunities available as a construction professional.

**SCVL1210 | Control & Geodetic Surveying | Lecture/Laboratory (4 Credits)**

Examine the fundamentals of Control Surveys, including Global Positioning Systems, focus and its' application to the geospatial industries, as well as an in-depth study of datums and projections.

**Prerequisite(s):** SCVL1111

**SCVL1220 | Transportation & Municipal Design | Lecture/Laboratory (4 Credits)**

Utilize the principles of civil design with industry software to create elements of transportation and municipal design.

**Prerequisite(s):** CSBT1002 Or SCVL1002

**SCVL2300 | Adv Surveying & Construction Staking | Lecture/Laboratory (4 Credits)**

Examine the fundamentals of advanced surveying methods in the field and office. Focus on field and office techniques for construction, data collection, and survey final products such as land title surveys, boundary and topographic surveys.

**SCVL2111 | Materials, Testing, Construction Methods | Lecture/Laboratory (3 Credits)**

Introduction to testing construction materials and methods, inspection and quality control. Examine construction documents to estimate quantities and costs for civil projects.

**SCVL2120 | Utility & Construction Design | Lecture/Laboratory (4 Credits)**

Utilize the principles of civil design with industry software to create elements of utility infrastructure and its' construction.

**Prerequisite(s):** CSBT1002 Or SCVL1002

**SCVL2210 | Laser Scanning & Remote Sensing | Lecture/Laboratory (4 Credits)**

Analyze Laser Scanning and Remote Sensing technology, including the integration of the data to surveying and civil engineering projects.

**Prerequisite(s):** SCVL1111

**SCVL2240 | Exam Preparation | Seminar (1 Credit)**

Review various categories relevant to certification and licensure exams. Emphasis will be on the topics listed to occur on the exams.

**SCVL2250 | GIS | Lecture (4 Credits)**

Examine the current state of the Geospatial Industry, including Geographic Information Systems(GIS) and Geospatial products.

**Prerequisite(s):** SCVL1111

**SCVL2260 | Site & Subdivision Design | Lecture/Laboratory (4 Credits)**

Utilize the principles of civil design with industry software to create elements of site design, including the design of subdivisions and study of the subdivision process.

**Prerequisite(s):** CSBT1002 Or SCVL1002

**CMGT2000 | Professional Development | Laboratory (1 Credit)**

Apply technical skills in a related industry setting to acquire real world experience in an area of student interest.

**SCVL2140 | SCVL Topics | Seminar (1 Credit)**

Topics in land surveying and civil engineering presented and examined through lectures, speakers, and field trips to develop an awareness of current trends, issues, and the future of the surveying and civil design industries.

**SCVL2141 | SCVL Topics - Competition | Seminar (1 Credit)**

Examine topics in land surveying and civil engineering through preparation, participation, and completion of a national competition.

**SCVL2142 | SCVL Topics - Service Learning | Seminar (1 Credit)**

Examine topics in land surveying and civil engineering through preparation, participation, and completion of a service learning project.

**MATH1000 | Algebra & Trigonometry | Lecture (3 Credits)**

Real numbers and polynomials, exponents and radicals, fractional equations; proportions and linear equations; trigonometric functions, solutions of triangles, radians, trig functions graphs, vectors, and basic identities.

**General Education:** Mathematics

**MATH1700 | Pre Calculus | Lecture (3 Credits)**

Preparation for Calculus. Topics include understanding functions from symbolic, tabular, and graphical perspectives. Explore function transformations and composition, polynomial functions, rational polynomial functions, trigonometric functions, exponential functions, and conic sections. The focus is on problem solving using mathematical models to represent real world situations.

**General Education:** Mathematics

**MATH2250 | Statistics | Lecture (3 Credits)**

Descriptive and inferential statistics, frequency distributions, probability theory, and issues related to gathering data; computer spreadsheets facilitate the organization, analysis and display of data.

**General Education:** Mathematics