SURVEY/GEOMATICS – TECHNICIAN (SGTN 2021)

Preamble

The Canadian Technology Standards (CTS) are a collection of learning outcomes for Canada's engineering technology and applied science profession at the technician and technologist level.

Stakeholders

The CTS may be utilized by accreditation bodies, provincial professional associations, educational institutions, government agencies, industry and others for the purposes accreditation, certification and other applications.

Educational Programs

The Survey/Geomatics CTS is relevant to programs including, but not limited to, geomatics, survey and geographic information systems at the at the technician level.

Learning Outcomes

This CTAC list Discipline Learning Outcomes (DLO) which describe the significant and essential learning that students have achieved and can reliably demonstrate at the time of graduation. Each DLO has a number of Learning Outcome Indicators (LOI), which are examples illustrating, defining and clarifying the level of performance expected. The list of LOI is not comprehensive and there may be other indicators which can be used to assess achievement of learning outcomes.

DLO and their LOI employ only cognitive domain verbs selected from a table of cognitive verbs modeled after a Bloom's cognitive domain table of verbs adapted specifically for engineering technology and applied science disciplines.

Graduate Capability

Students graduating from an accredited program have demonstrated achievement of all general learning outcomes, including a prescribed level of math, and discipline learning outcomes selected by the program.

Having completed a program that is based on applied mathematics and scientific and engineering theory, principles and practices and having acquired the knowledge, skills and attitudes to function in the work place, graduates are;

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- able to evaluate assignments, establish objectives, set parameters and determine appropriate procedures and actions.
- able to exercise due diligence in the workplace and adhere to related practices, applicable laws and health and safety practices.
- able to work in accordance with labor-management principles and practices.
- able to work independently or interdependently as part of a discipline or multi-disciplinary team.
- prepared to assume responsibility for their work.

Graduate Career Opportunities

Graduates of Survey/Geomatics Technology - Technician programs have career opportunities in such areas as: business, industry, construction, government, and public organizations. They may find employment in careers such as cartography; geodesy; photogrammetry; hydrography; remote sensing field and customer service; technical sales; supervision of projects and training activities and many other areas.

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Discipline Learning Outcomes (DLOs)

SGTN01 Geospatial Terrain Data

- Collect, and utilize geospatial terrain data from existing digital, hardcopy, and non-traditional sources, reports, and other geo-related documents.

Learning Outcome Indicators include:

1.1 Identify principles, purposes, and types of survey work.
1.2 Apply systematic approaches to problem solving and decision-making.
1.3 Review criteria for project and identify appropriate information sources.
1.4 Collect, review, and apply data from a variety of sources.
1.5 Explain and justify the selection, interpretation, and use of geospatial data.
1.6 Collaborate in the preparation of preliminary and detailed cost estimates.

SGTN02 Survey Data

- Collaborate in collecting and processing survey data using GPS equipment.

Learning Outcome Indicators include:

2.1 Collaborate in the collection of terrestrial and aerial survey data.
2.2 Conduct, measure, and calculate quantities using appropriate survey equipment.
2.3 Measure, calculate, record, and disseminate data according to industry standards as an active member of the team.
2.4 Present hard copy and digital field notes in accordance with hierarchy of evidence.
2.5 Recognize the usefulness of Global Positioning Systems (GPS) and Geographic Information Systems (GIS) in survey work.

SGTN03 GIS Data

- Communicate information by interpreting, translating, and presenting geomatics data.

Learning Outcome Indicators include:

3.1 Prepare and modify graphics according to industry standards employing standard drafting conventions.
3.2 Access and present survey data to stakeholders.
3.3 Collect, input, and edit data into basic Geographic Information System (GIS).
3.4 Produce, write, translate, and transfer technical data applying computer software.
3.5 Prepare project-related documents including field notes, reports, and graphics.

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SGTN04 Contractual Obligations

- Manage all work in compliance with contractual obligations, applicable laws, and accepted principles and practices of surveying.

Learning Outcome Indicators include:

4.1 Collaborate in review of legal descriptions.
4.2 Identify different types and elements of contracts.
4.3 Access assistance to resolve problems beyond knowledge and skills.
4.4 Monitor project site to identify and deal with obstacles, physical limitations, and potential and actual hazards.
4.5 Apply applicable health and safety-related legislation and practices.
4.6 Implement standard business and administrative principles and practices.
4.7 Apply effective organizational and time-management strategies in own work.

SGTN05 Survey Equipment

- Collaborate in the selection, purchasing, and maintenance of survey equipment.

Learning Outcome Indicators include:

5.1 Describe performance properties, limitations, potential, and safety aspects of survey and geomatics equipment.
5.2 Test, calibrate, and make minor adjustments to survey equipment.
5.3 Identify necessity for and facilitate repairs to survey equipment to ensure its accuracy and operational safety.
5.4 Implement manufacturer's recommended directions for using and maintaining equipment.
5.5 Conduct inspections for quality-assurance sampling and testing following specified criteria.
5.6 Implement survey work using safe, accurate, and effective methods.
5.7 Implement prescribed safety checks.

SGTN06 Project Records

- Maintain project records and inventories.

Learning Outcome Indicators include:

6.1 Apply principles of information management, cost control, and materials management to geomatics projects.
6.2 Collect, retrieve, and organize project-related information by using paper-based and/or electronic methods.
6.3 Maintain current, clear, and accurate project-related records, including quality assurance documents.
6.4 Write clear and accurate reports, minutes of business meetings, and other project related documents.

6.5 Contribute to the management of project related data using computers and

appropriate software.

SGTN07 Environmental Impact Studies

- Contribute to the assessment of environmental impact studies.

Learning Outcome Indicators include:

7.1 Collaborate in coordination and monitoring of impact studies.
7.2 Collect data for and recognize implications of impact studies.
7.3 Present feedback about impact studies and their results to other project stakeholders.
7.4 Implement recommendations of impact studies and assessments.

SGTN08 Project Coordination

- Explain the importance of other disciplines relating to survey and geomatics projects.

Learning Outcome Indicators include:

8.1 Collaborate in planning and implementing projects using data from various disciplines associated with survey and geomatics.
8.2 Access appropriate assistance and clarification from the project team leader.
8.3 Contribute to a multi-disciplinary team to plan, implement, and complete survey work.

SGTN09 Liaison

- Collaborate with stakeholders and record project information.

Learning Outcome Indicators include:

9.1 Explain the importance of developing good communication skills with stakeholders.
9.2 Contribute to the identification and clarification of the needs of stakeholders.
9.3 Recognize the rights, roles, and responsibilities of stakeholders.
9.4 Contribute effectively as a member of project team during on-site and off-site project-related meetings.
9.5 Report in written and oral format results of project-related meetings.

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