

Competency Summary and Profile Survey and Geomatics Technology

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Competency Summary

Introduction

All applicants seeking registration as an applied science, information, or engineering technologist or technician must demonstrate competency in their discipline of applied science, information, or engineering technology.

Competency is a combination of knowledge and skills underlying safe and competent performance in a discipline. The Competency Summary is designed to allow you to describe your work experience in a detailed format for review by subject matter experts.

Instructions

1. Review these instructions carefully to ensure you understand the Competency Summary requirements. If you have any questions after reviewing the instructions, please contact your association.
2. Provide recent work experience examples within the last five years of employment for each of the six competencies in your discipline of practice. **You must use one of the formats described on Page 3 and it is recommended that you use the STAR format as outlined on Page 4.** Documents submitted in any other format and/or with incomplete competency sections will be returned for revisions.
3. Sign and date the declaration page at the end of this document to attest to the validity of your work experience examples.
4. Provide your completed Competency Summary to a supervisor *with direct knowledge of your work*. Your supervisor must also sign the declaration page at the end of this document to validate your Competency Summary.
5. Submit your completed Competency Summary as per the requirements for your association.

Assessment Process

Your Competency Summary will be assessed by a discipline-specific subject matter expert to ensure your application meets the requirements for certification.

Applicants must achieve a **minimum score of 60% in all six competencies**. Technician applicants must demonstrate both common competency indicators and technician-specific indicators. Technologist applicants must demonstrate common competency indicators and technologist-specific indicators.

Reviewers complete a Competency Summary score sheet to assess the completed summary (see the sample image below).

Applicant Name:		ID:		Discipline: Instrumentation					
1. Technical Analysis Competency: Apply knowledge of instrumentation technology to the analysis of measurement, control, and automation of process applications.	Indicator	No.	Demonstrated	Assessment	Comments	Technical Analysis Score		Overall Score	
	Explain the principles of operation and application of instruments for measurement of pressure, level, temperature, flow, weight, and density.	1.1	yes			Common + Technician Score	66.03	Technician	Candidate DOES NOT Meet Technician Requirements
	Explain the principles and operation of analytical instruments for measurement of chemical composition, chemical detection, and vibration.	1.2	no			Common + Technologist Score	62.72	Technologist	Candidate Meets Technologist Requirements
	Explain the principles and operation of final control elements, including control and on-off valves.	1.3	yes					Professional Accountability	
	Distinguish between continuous and batch control processes.	1.4	yes					Yes	
	Describe different types of control strategies (e.g., cascade, ratio, split range, and low/high select).	1.5	no						

Competency Summary Format Requirements

You must format your responses to each section of your Competency Summary in one of the following ways.

Note that indicating multiple indicators in a group at the end of a sentence or paragraph is not accepted and will result in loss of marks for those indicators.

Option 1: Paragraph Response

In the paragraph format, write out your projects or activities in complete sentences, then put the number of the indicator addressed in that paragraph at the end in brackets, as shown below.

Competency Summary Paragraph Example

Instructions: Describe how you would write the competency summary in paragraph form.

When I worked on this project in the summer of 2017, I wrote my competency summary in the form of a paragraph. I based how I wrote the paragraph on the principles set out by the Competency Summary guidelines. My responsibility in this project was to write my competency summary in the form of a paragraph, and to be clear and concise in my wording. I used complete sentences and ensured that my paragraph was dealing only with one single theme. If I was to talk about a different project, I would start another paragraph. (1.1)

This would be the start of my next paragraph explaining another way I met a different set of indicators in my work experience. The project involved teamwork and feedback from my co-workers to address the issues at hand. After group discussions, we were able to set a project direction that I could easily follow and execute. Throughout the project, I relied on comments and criticisms from my coworkers to ensure the project was on the right path. (1.3)

Option 2: Point Form Response

In the point form format, write a brief summary of the project or activity you worked on at the beginning of the response. Then underneath, list the specific indicators and write a brief description of how you met that specific indicator on this project, as shown below.

Competency Summary Point Form Example

Instructions: Describe how you would write the competency summary in point form.

In the summer of 2017, I worked on a project that involved having to write a competency summary in point form. This project was to update the language and format of the document to adhere to legislative guidelines. The project involved planning, networking, and group feedback to find a resolution that adhered to the guidelines and improved the readability and format of the template. The project had several factors to consider and required diligent revisions. The project's outcome was a more coherent summary document that provided clarity to the requirements and the intent of the report.

1.1 : I followed a specific set of guidelines to prepare my competency summary. These guidelines required me to prepare my summary according to a specific format. I also followed the STAR approach to describe each section of my summary in sufficient detail to be reviewed and understood by the file reviewers.

1.2 : I used point form to break down each indicator in my competency summary. I also listed the indicators underneath my general overview of the project...

Preparing Your Examples

Your examples for each competency should include the following: (1) the type of project, situation, or activity; (2) the date the project, situation, or activity was carried out; and (3) a detailed description of your responsibilities in relation to the project, situation, or activity. In preparing your examples, it may be useful to refer to the STAR (Situation, Task, Action, Result) format:

- **Situation:** Describe the project, situation, or activity so that reviewers understand the context of the example.
- **Task:** Describe the responsibilities you had in relation to this project, situation, or activity. What were you expected to or hoping to achieve? Review the competency profile in the appendix of the report to help you highlight key knowledge and skills.
- **Action:** Describe the specific activities you carried out in relation to this project, situation, or activity. Were there any challenges you had to overcome? If so, how did you troubleshoot to resolve these challenges? Review the competency profile in the appendix of the report to help you highlight key activities.
- **Results:** What was the outcome of the activities you carried out in relation to this project, situation, or activity? Did you meet your objectives? Did you learn anything that you have since applied to other projects, situations, or activities?

It is recommended that you provide as much information as possible in the space provided for each competency. **Use “I”/first-person statements** to ensure you are describing work that you perform or performed rather than simply describing organizational policies or processes. The details need to focus on the specific tasks of your work that support each competency. For example, for “design”, what steps did you take in the design process and what theory did you use? What specific codes and standards did you apply?

Although you may not have experience in every competency indicator, your examples should reference as many indicators as possible to sufficiently demonstrate your professional competency.

Citations

All information provided in the Competency Summary must be presented in your own words. If, however, you are referring to external sources of information, please include a citation (using a recognized citation format such as [APA style](#) to direct the reviewer to the appropriate source(s).

1. Technical Analysis

Competency Definition
Apply knowledge of surveying and geomatics to collection, processing, and/or analysis of geospatial data for design, engineering, construction, and legal purposes.

No.	Competency Indicators
Common Indicators	
1.1	Describe the types of geospatial data.
1.2	Explain general concepts used in Geographic Information Systems (GIS).
1.3	Interpret digital and print-based maps and information systems.
1.4	Identify standard survey instrumentation (e.g., level, chain, tape, total station, GNSS, and laser scanner)
1.5	Explain the principles of remote sensing data collection (e.g., sensors and image processing).
1.6	Set up and calibrate instruments for collection of geospatial data.
1.7	Collect geospatial data using standard industry methodology (e.g., conventional, GNSS, aerial photography, and light and radio wave detection systems).
1.8	Interpret imagery (e.g., aerial, ground, and satellite photos).
1.9	Identify data capture techniques appropriate to the data source and application.
1.10	Explain the concept of a datum and a map projection.
1.11	Explain the relationship between local and global datums (e.g., WGS84).
1.12	Explain the framework and application of Global Navigation Satellite Systems (GNSS).
1.13	Use the appropriate types of survey monumentation.
1.14	Apply leveling procedures to determine differences in elevations between points.
Technician-Specific Indicators	
1.15	Identify the scope of work in consultation with one's supervisor.
1.16	Perform queries in a database.
1.17	Analyze geospatial data, including determination of coordinates.
1.18	Assist with measurement of horizontal and vertical angles and distance to determine bearings, azimuths, and reverse directions.
1.19	Define and explain the types of survey accuracy (1st, 2nd and 3rd order).
Technologist-Specific Indicators	
1.20	Identify the scope of work in consultation <i>with stakeholders</i> .
1.21	Explain the structure of a database.
1.22	Describe the Dominion Land Survey System.
1.23	Analyze spatial data using basic analytical methods (e.g., surface analysis, network analysis and cartographic modeling).
1.24	Describe structured language.
1.25	Describe differences between different types of projections.
1.26	Describe errors caused by instrumentation and atmospheric variation.
1.27	Differentiate between different modes of GNSS positioning (e.g., static, rapid static, kinematic, real-time kinematic modes).
1.28	Analyze geospatial data, including determination of coordinates <i>and transformation of coordinates to datums</i> .

1.29	Identify various types of survey monumentation.
1.30	Measure horizontal and vertical angles and distance to determine bearings, azimuths, and reverse directions.
1.31	Explain methods for adjustment of survey measurements.
1.32	Perform traverse calculations and intersection calculations.
1.33	Identify basic types of maps and their features.
1.34	Explain the fundamentals of map projections.
1.35	Apply the Universal Transverse Mercator (UTM), Three Degree Transverse Mercator (3TM), and Ten Degree Transverse Mercator (10TM) map projections in surveying and mapping.
1.36	Interpret legal records, survey records, and land titles to obtain information about property boundaries in the areas to be surveyed.
1.37	Calculate heights, depths, relative positions, property lines, and other characteristics of terrain.
1.38	Compute geodetic measurements.
1.39	Interpret survey data to determine positions, shapes, and elevations of topographic features.
1.40	Calculate longitudes and latitudes using standard survey instrumentation.
1.41	Record survey data including the shape, contour, location, elevation, and dimensions of land or land features.
1.42	Differentiate between legal surveys and other survey types (e.g., topographic, construction, and hydrographic surveys).

Instructions

Review the competency indicators above and prepare your work experience examples on the next page using one of the two format options described on Page 3. Technician applicants must demonstrate the Common Indicators and Technician-Specific Indicators. Technologist applicants must demonstrate the Common Indicators and Technologist-Specific Indicators.

1. Technical Analysis

Instructions: Describe a situation or activity in which you applied knowledge of surveying and geomatics to collection, processing, and/or analysis of geospatial data for design, engineering, construction, and legal purposes.

2. Technical Implementation

Competency Definition
Technicians: Perform a construction survey, assist with performance of geospatial surveys, compile data, and create sketches, survey plans, maps, and reports. Technologists: Plan and perform geospatial surveys, compile data, and create sketches, survey plans, maps, and reports.

No.	Competency Indicators
Common Indicators	
2.1	Interpret engineering drawings.
2.2	Run a database query.
2.3	Select appropriate survey instrumentation for a specific application.
2.4	Perform a construction survey (e.g., layout and as-built).
2.5	Perform engineering survey calculations involving earthworks, volumes, traverse, vertical and horizontal curves, grades, grade stakes, slope stakes, and cross-sections.
2.6	Prepare sketches, field notes, survey plans, maps, and reports using appropriate methods and tools.
Technician-Specific Indicators	
2.7	Assist with performance of a lay-out survey based on project requirements.
2.8	Assist with the preparation of a dataset for field layout.
2.9	Transfer data from the design to the layout in the field using conventional and digital methods.
2.10	Describe basic digital surface modeling.
2.11	Assist with performance of a legal survey (e.g., boundary, RPR, subdivision, right- of-way, well site).
2.12	Assist with performance of a control survey.
2.13	Compile accurate and complete survey data.
Technologist-Specific Indicators	
2.14	Maintain databases of spatial information, including coordinate, descriptive, or quality assurance data.
2.15	Compile spatial data sets (e.g., census data, GNSS data, field observations, and imagery).
2.16	Perform a lay out survey based on project requirements.
2.17	Prepare a dataset for field layout.
2.18	Apply digital surface modeling techniques.
2.19	Create digital maps in specialized software using raster and vector data.
2.20	Perform a legal survey (e.g., boundary, RPR, subdivision, right- of-way, well site).
2.21	Perform a control survey.

Instructions

Review the competency indicators above and prepare your work experience examples on the next page using one of the two format options described on Page 3. Technician applicants must demonstrate the Common Indicators and Technician-Specific Indicators. Technologist applicants must demonstrate the Common Indicators and Technologist-Specific Indicators.

2. Technical Implementation

Instructions: Describe a situation or activity in which you 1) performed a construction survey, assisted with performance of geospatial surveys, compiled data, and created sketches, survey plans, maps, and reports (**Technicians**); or 2) planned and performed geospatial surveys, compiled data, and created sketches, survey plans, maps, and reports (**Technologists**).

3. Technical Evaluation

Competency Definition

Evaluate the quality of geospatial data.

No.	Competency Indicators
Common Indicators	
3.1	Identify types and sources of error in a legal survey.
3.2	Identify types and sources of error in a topographic/hydrographic survey.
3.3	Identify types and sources of error in a construction survey.
3.4	Identify types and sources of error in a control survey.
3.5	Check survey measurements and calculations for quality.
3.6	Determine the need for additional survey data for projects.
3.7	Verify integrity and accuracy of data through checking reference information and benchmarks.
3.8	Apply organizational quality control procedures to geospatial data.
Technician-Specific Indicators	
3.9	Identify types and sources of error in an engineering survey.
3.10	Assess the quality of geospatial data.
3.11	Identify different types of meta-data.
Technologist-Specific Indicators	
3.12	Describe criteria for geospatial data quality (e.g., spatial resolution, accuracy, precision, date of capture, and purpose of original capture).
3.13	Conduct independent data checks using other data sources.

Instructions

Review the competency indicators above and prepare your work experience examples on the next page using one of the two format options described on Page 3. Technician applicants must demonstrate the Common Indicators and Technician-Specific Indicators. Technologist applicants must demonstrate the Common Indicators and Technologist-Specific Indicators.

3. Technical Evaluation

Instructions: Describe a situation or activity in which you evaluated the quality of geospatial data.

4. Project Coordination

Competency Definition

Provide input into project management to ensure high quality of deliverables, customer satisfaction, and adherence to schedules and budgets.

No.	Competency Indicators
Common Indicators	
4.1	Communicate progress on a project.
4.2	Prioritize own work activities to ensure that project objectives are met on time.
4.3	Establish and maintain effective working relationships with internal and external clients.
4.4	Participate in solving technical problems.
4.5	Communicate technical and safety-related problems to a project manager.
4.6	Explain the value of workplace safety legislation.
4.7	Comply with workplace safety legislation.

Instructions

Review the competency indicators above and prepare your work experience examples on the next page using one of the two format options described on Page 3.

4. Project Coordination

Instructions: Describe a project in which you provided input to the management of a project to ensure high quality of deliverables, customer satisfaction, and adherence to schedules and budgets.

5. Professional Accountability

Competency Definition

Act in accordance with the provincial professional association's code of ethics, recognize possible social, cultural, and environmental effects of professional activities, and accept responsibility for own actions and professional development.

No.	Competency Indicators
5.1	Adhere to federal and provincial legislation pertinent to one's practice (e.g., Engineering and Geoscience Professions Act and provincial regulations).
5.2	Hold paramount the safety, health, and welfare of the public and the protection of the environment.
5.3	Accept responsibility for professional assignments only when qualified by training and experience.
5.4	Provide an opinion on a professional subject only when it is founded upon adequate knowledge and honest conviction.
5.5	Act with integrity towards clients or employers, maintain confidentiality and avoid a conflict of interest but, where such conflict arises, fully disclose the circumstances without delay to the employer or client.
5.6	Uphold the principle of appropriate and adequate compensation for the performance of their work.
5.7	Keep informed to maintain proficiency and competence, to advance the body of knowledge within their discipline and further opportunities for the professional development of their associates.
5.8	Conduct themselves with fairness, honesty, courtesy and good faith toward clients, colleagues, and others, give credit where it is due and accept, as well as give, honest and fair professional comment.
5.9	Present clearly to employers and clients the possible consequences if professional decisions or judgments are overruled or disregarded.
5.10	Report to the appropriate agencies any hazardous, illegal, or unethical professional decisions or practices by other members, or others.
5.11	Promote public knowledge and appreciation of applied science, information and engineering technology and protect the Association from misrepresentation and misunderstanding.

Instructions

Review the competency indicators above and prepare your work experience examples on the next page using one of the two format options described on Page 3.

Note: Professional Accountability

You must identify a situation or activity in which you applied professional ethics, including the impact of the situation or activity in relation to society, culture, or the environment, and how you addressed this situation or activity. If you have not faced an ethical dilemma in the workplace, you may wish to reference the codes and standards you are expected to adhere to as part of your role and the impact on the health and safety of the public or environment if these codes and standards are not followed correctly.

5. Professional Accountability

Instructions: Describe a situation or activity in which you applied professional ethics and identify the social, cultural, or environmental impact of this situation or activity as well as how you accepted professional responsibility for the outcome.

6. Communication

Competency Definition

Listen effectively to others and express oneself clearly and concisely using the language and media appropriate to the purpose of communication and target audience.

No.	Competency Indicators
6.01	Use active listening skills when communicating with others.
6.02	Listen to seek understanding.
6.03	Re-state the information to confirm own understanding of what has been said.
6.04	Clearly communicate expectations to others.
6.05	Communicate complex information in a language that is easily understood by the general public.
6.06	Seek input from others on own work or ideas.
6.07	Use data and examples to support own ideas and conclusions.
6.08	Respect cross-cultural differences when communicating with others.
6.09	Select communication media (e.g., phone, email, in-person meeting) appropriate to the situation.
6.10	Use appropriate non-verbal communication.
6.11	Present one's ideas to others clearly and using appropriate language.
6.12	Record work activities and outcomes (i.e., test data) accurately and at the required level of detail.
6.13	Prepare clear and concise technical documents using appropriate language.

Instructions

Review the competency indicators above and prepare your work experience examples on the next page using one of the two format options described on Page 3.

6. Communication

Instructions: Describe a situation or activity in which you listened effectively to others and applied the clear and concise use of language and/or media appropriate to the purpose of communication and target audience.

Applicant Declaration

I certify that the information provided in this Competency Summary is complete, true, and accurate to the best of my knowledge and authorize the provincial professional association to use this information for the purposes of evaluating my eligibility for certification.

Applicant Name
(please print)

Member No.
(if applicable)

Signature

Date

IMPORTANT NOTES: Please have your supervisor review your completed Competency Summary and then sign this page to declare agreement with your level of competency. The Summary can be signed digitally or can be printed, signed, and scanned.

If you are providing multiple supervisory references to cover different positions or places of employment, each supervisor must sign a copy of this declaration.

Once you have received the signed declaration(s) from your supervisor(s), submit to your provincial professional association as advised.

Comments

Supervisor Declaration

I certify that I have direct knowledge of the applicant's work and that I have reviewed and verified the information provided in this Competency Summary to ensure it is complete, true, and accurate to the best of my knowledge.

Name
(please print)

Designation
(if applicable)

Relationship to Applicant
(if not supervisor)

Member
No. (if applicable)

Organization Name

Email Address

Signature

Date

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