FOREST TECHNOLOGIST PROFESSIONAL STANDARDS

Forest Professional Regulators of Canada

FOREST PROFESSIONAL REGULATORS OF CANADA

ORGANISME DE RÉGLEMENTATION DES PROFESSIONNELS DE LA FORÊT DU CANADA

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Standards Development

These standards were developed in consultation with a number of stakeholders including:

Professional Regulators

The following members of the Forest Professional Regulators of Canada (FPRC) have contributed to the development of these standards:

- Association of British Columbia Forest Professionals
- Association of Alberta Forest Management Professionals
- Association of Saskatchewan Forestry Professionals

Post-Secondary Institutions

The following post-secondary institutions have contributed to the development of these standards:

- Northern Alberta Institute of Technology
- Saskatchewan Polytechnic
- Maritime College of Forest Technology

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Table of Contents

About Forest Professional Regulators of Canada

The Forest Professional Regulators of Canada (FPRC) is an advisory group composed of representatives of forest professional regulatory organizations across Canada and the Canadian Institute of Forestry (representing those jurisdictions in which forestry is not a regulated profession).

FPRC's mission is to provide coordination of programs and services enabling transparent, impartial and procedurally fair registration practices of forest professionals by regulators in Canada.

FPRC's purposes are to:

- promote consistency in the regulation of forest professionals in Canada,
- coordinate and communicate issues that affect the regulation of forest professionals,
- enable movement for forest professionals between jurisdictions,
- define standards for entry to practice, accredit forest professional post-secondary programs and conduct credential assessments.

The Forest Professional Regulators of Canada (FPRC) sets national academic certification standards for the professional practice of forestry in Canada.

Forest Professional Regulatory Bodies in Canada

These regulators are provincially mandated to regulate forest technologists in Canada:

Association of Alberta Forest Management Professionals

ASSOCIATION OF BC FOREST PROFESSIONALS

ASFP Association of Saskatchewan FORESTRY PROFESSIONALS

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Glossary

Throughout this document words and terms are used that have specific meaning. It is important to know, at the outset, definitions in the context of these standards.

Note: Terms identified in the glossary are marked with an asterisk (*) in the first occurrence in the document.

Allied science education: programs that are delivered through recognized academic institutions which cover principal areas of practice in the natural, physical, and social sciences, but are not accredited by a third-party accrediting body.

Demonstrable competency: comprehensive statement of the nature of the work forest technologists are able to do.
*Note: A candidate shall be able to demonstrate entry-level competence in each of the demonstrable competencies of a standard and shall be able to do so in a manner that corresponds accurately with the "learning outcomes" level prescribed by a competency's action verb(s).

Entry to practice: the skill level equivalent to the level of a new graduate of an accredited forest technologist program.

Hazard: a potential source of harm or adverse health effect on a person or persons.

Measure: observable knowledge, skills and attitudes of forest technologist used to demonstrate a competency.

Professional practice: the conduct and work of someone from a particular profession.

Professional practice standards: the set of practices, experiences, and behaviours that individuals must meet to be certified as a forest technologist.

Risk: involves uncertainty about the effects/implications of an activity with respect to something that humans value (such as health, well-being, wealth, property, cultural or the environment), often focusing on negative, undesirable consequences.

Standard: the individual standards of the certification standards.

Regulatory organization: (also regulatory authority, body, licensure or regulator) is a public authority or government agency responsible for exercising autonomous authority over some area of professional practice in a regulatory or supervisory capacity.

Introduction

Professional practice standards contribute to public protection by informing the public and forest technologists of their accountabilities.

Professional practice standards* provide an overall framework for the practice of forest technologists. The standards describe, in broad terms, the professional expectations of forest technologists and apply to all forest technologists, regardless of area of practice.

Each standard includes a broad description, one or more demonstrable competencies* and multiple measures* articulating how the standard may be demonstrated.

Professional practice standards are an authoritative document that sets out the legal and professional basis of the practice of forest technologists.

The standards provide the framework for forest technologist practice in Canada by:

- describing performance criteria for forest technologists,
- defining scope of practice to the public and other professionals,
- providing a framework for professional practice*, and
- providing a foundation to all aspects of the regulation of the profession including registration, practice standards and professional exams.

Forest technologists applying for registration as a professional must meet all the measures within the standards.

These standards were developed with a holistic view of the work that forest technologists undertake while looking to the future and how the breadth of the work that forest technologists carry out and societal expectations are evolving.

FPRC recognizes that a broad variety of stakeholders, user groups, and rights holders have vested interests in the forest as an ecosystem and that a broad variety of values are identified with forest resource utilization and intrinsic attributes.

Specific examples of industry tools are not provided in the final measures as it is recognized that different logical tools may be used and may develop over time.

Who is a Forest Technologist?

A forest technologist, as a practitioner of forest management, has:

- the background to research, select, design, supervise, and apply different methodologies, technical procedures, and equipment options required to complete assigned tasks given environmental conditions and project objectives,
- completed a two to three year diploma, advanced diploma or applied degrees (or equivalent) in forestry or related natural resources,
- completed approximately 1,800 - 2,500 hours of instruction time.

Typical Duties:

- Supervise forest inventory surveys and field measurements,
- Prepare operational management plans and related activities,
- Implement silviculture programs,
- Coordinate field activities,
- Analyze, report on data and make operational recommendations,
- Communicate and coordinate activities with other qualified professionals, individuals, and groups, and
- Monitor resource management.

Indigenous Acknowledgement

The Forest Professional Regulators of Canada acknowledge that its member organizations and registrants work and reside in the ancestral lands and territories of First Nations, Inuit, and Métis peoples across Canada.

The standards incorporate the recognition of Indigenous rights and the expectation of skills forest technologists must have in order to effectively honor those rights. FPRC recognizes these standards represent a single point in time and the measures may change in the future and will adjust the standards accordingly.

Structure

The six standards are presented in alphabetical order.
All standards have equal importance and are interconnected.

The professional practice standards articulate the knowledge, skills, attitudes, and values that are required by forest technologists in professional practice. The standards describe what each forest technologist is accountable and responsible for in their practice.

Each standard includes one or more demonstrable competencies (DC) and measures that indicate how the competency must be demonstrated.

A demonstrable competency is a comprehensive statement of the nature of the work forest technologists can do.

Measures are observable knowledge, skills and attitudes of forest technologist use to demonstrate a competency.

The demonstrable competencies and measures are written using action verbs such as “describe”, “apply”, “analyze”, "design" or "develop" as commonly found in Bloom’s Taxonomy Revised (2001) [1]. The taxonomy classifies verbs into levels of complexity and specificity. The taxonomy has been used to articulate the required level of understanding and ability that forest technologist practitioners must demonstrate for each of the measures in this document.

When a measure corresponds to a variety of skills/knowledge, foot notes are provided as guidance for users of the standards.

Measures focused specifically on Indigenous peoples and traditional practices are coloured in orange.

1. Armstrong, P. (2010). Bloom’s Taxonomy. Vanderbilt University Center for Teaching. Retrieved [todaysdate] from https://cft.vanderbilt.edu/guides-sub-pages/blooms-taxonomy/. Retrieved from https://cft.vanderbilt.edu/guides-sub-pages/blooms-taxonomy/

Purpose & Guiding Principles

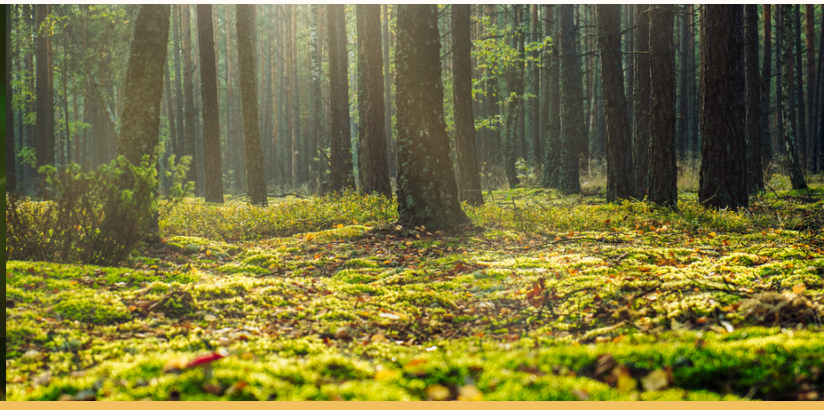
The professional practice standards provide an overall framework for the practice of forest technologists.

Purposes of the Standards:

- Aid in facilitating labour mobility for regulated professions.
- Define distinctions between the professions for the purpose of defining standards and competencies.
- Determine registration eligibility for individuals that have completed non-accredited allied science education and have work experience.
- Help individuals to determine which pathway to professional registration would be best suited for them.
- Set minimum requirements for entry to practice into the forest technologist regulated profession.
- Define educational foundations content.
- Aid in developing a better understanding and respect for the various and complementary roles that forest technologists have.

Guiding Principles

- The foundational knowledge base (education) of foresters and forest technologists is different.
- There are areas of overlap in education between forest technologists and other regulated professions, including foresters.
- Competency standards are developed to ensure public protection and to support forest technologist practice in Canada.
- Competency standards are broad in nature to capture forest technologists working in a variety of roles and areas of practice.
- The demonstrable competencies and measures are relevant for all forest technologists and must be met by all forest technologists.
- The standards are inter-related; an indicator used to illustrate one standard may also demonstrate the application of other standards.



Standards

Communication and Information Management

1

Communication enables the transfer, use, and adaptation of information in various contexts. Forest technologists must effectively communicate the key elements of their work to other parties, verbally and in writing; selecting the most appropriate medium for the task. Information management is essential for ensuring efficient operations. Forest technologists must acquire, maintain, and use information in support of forest management.

Demonstrable Competencies	Measures
A. Communicate effectively	1. Create written and visual technical materials 2. Adapt verbal and visual technical materials to a variety of audiences [1] 3. Apply interpersonal skills to enhance communication and resolve conflicts [2] 4. Communicate in a way that is respectful, non-judgmental, and culturally safe 5. Use appropriate language, conventions, or protocols [3] 6. Interpret communications 7. Apply effective communication principles, standards, and methods 8. Select the most appropriate and effective medium and mode for communicating 9. Use effective cross-cultural communication skills 10. Recognize cultural differences in communication
B. Manage information	1. Acquire relevant information from a variety of sources [4] 2. Implement quality management processes [5] 3. Interpret basic statistics [6] 4. Organize information [7] 5. Support oral histories and Indigenous knowledges [8]

Notes:

1. Includes preparation of sketch diagrams, charts, tables, technical reports, maps, and graphs to report summarized field data.
2. Includes negotiation and conflict resolution skills.
3. Includes documenting scientific reasoning behind ideas.
4. Includes topographic, thematic, cadastral data, lidar, (GIS/mapping data, documents, tabular information, remotely sensed data); includes knowing what rules and requirements are applicable.
5. Includes quality assurance and quality control to ensure accuracy of information.
6. Includes generating mean, range, confidence intervals, standard deviation.
7. Includes file management, documentation, and archiving.
8. Knowledge of Indigenous Peoples, their worldviews, knowledge, governance (including protocols for engagement), and practices related to lands and resources.

Leadership

2

Leadership is an essential skill to ensure appropriate outcomes are achieved when working with a public resource. Leadership is required to complete autonomous work, manage complex and varied work responsibilities, and supervise. Forest technologists must know themselves, collaborate and consult with others, and apply critical thinking skills.

Demonstrable Competencies	Measures
A. Cultivate relationships	1. Contribute to teams 2. Collaborate with others 3. Consult with others 4. Manage conflict [1] 5. Incorporate stakeholder values 6. Support Indigenous reconciliation 7. Apply Indigenous consultation requirements [2]
B. Demonstrate critical thinking	1. Evaluate information and sources 2. Provide rationale for decisions [3] 3. Recognize need for external expertise [4] 4. Analyze issues and problem-solve
C. Lead self & others	1. Use effective interpersonal skills 2. Apply reflective practice 3. Apply principles of emotional intelligence [5] 4. Acknowledge the need for and seek out appropriate resources, training, and/or coaching 5. Apply skills and processes to adapt to change [6] 6. Empower self and others [7] 7. Assess bias [8]

Notes:

1. Includes the ability to embrace and learn from conflict and not necessarily resolve it.
2. Includes the principles of the duty to consult and accommodate, and Free, Prior, and Informed Consent (FPIC).
3. Includes supporting documentation.
4. Includes the ability to recognize personal limitations and identify that assistance is needed.
5. Capabilities of Emotional Intelligence fall into a matrix: 1) Self-awareness - knowing one's internal state and preferences; including the ability to accurately recognize and understand emotions, moods, and motives. 2) Social awareness; including motivation, perspectives, needs, and emotions of others. 3) Regulation of the self - managing one's internal state; including the ability to manage emotions, impulses and actions. 4) Regulation of social skills; including interactions, empathy, organizational awareness, managing relationships, and developing rapport (adapted from Goleman's emotional intelligence model). Includes self-management which comes after self-awareness; includes social awareness; relationship management.
6. Effectively organizes and prioritizes daily workload.
7. Includes the ability to build trust; give and receive feedback; delegate responsibilities; recognize limitations in self and others; show appreciation; create opportunities for others; build confidence; and help others develop skills.
8. Biases are stereotypes or assumptions that a person makes about a certain group of individuals outside of their own conscious and subconscious awareness. It includes diverse, equitable and inclusive culture training and relates to the effects of bias in logical decision making processes (relating to risk*, legal impacts, human resources, etc.).

Operational Management

3 Managing operations involves a suite of skills that relate to overseeing people and work site conditions to ensure that projects are completed safely, competently, and on time. Forest technologists must effectively implement management plans, manage operational practices, and assist in making decisions that ensure operations are efficient and effective.

Demonstrable Competencies	Measures
A. Conduct operations	1. Navigate in the field 2. Operate digital Geographic Information System (GIS) technologies 3. Operate Global Navigation Satellite Systems (GNSS)-enabled technologies 4. Use forestry tools and equipment [1] 5. Mark locations, boundaries, and features 6. Implement wildfire suppression plans and procedures 7. Implement a silviculture system [2] 8. Implement control measures for forest pests, diseases, and invasive species 9. Construct thematic maps using a variety of data sources 10. Implement watershed assessment to ensure hydrological function 11. Employ regional mapping, remote sensing, and survey systems [3]
B. Develop operational plans	1. Plan workflows, scheduling, and tasks 2. Estimate productivity 3. Calculate financial projections 4. Determine human resources [4] 5. Determine relevant data, information, equipment, and materials 6. Determine desired outcome(s) and objectives 7. Create an integrated resource management plan at the regional, landscape or operational level

Notes:

1. Includes operating wildfire tools and equipment; maintaining tools and equipment; operating tree measurement tools; operating modes of field transportation. Can include operating power saws.
2. Includes the ability to apply stand treatments based on a prior silvicultural assessment.
3. Includes the ability to describe standard procedures for monitoring, measuring, and collecting data.
4. Includes the ability to identify the people needed to do a job and their skillsets.

Operational Management continued

Demonstrable Competencies	Measures
C. Manage operations	1. Monitor operational conditions and processes 2. Supervise people 3. Manage workflows, scheduling, and tasks 4. Prepare required resources [1]
D. Prescribe appropriate activities and methods	1. Recommend silvicultural treatments, methods, and systems [2] 2. Recommend operational harvesting activities, methods, and systems [2] 3. Recommend road and crossing locations, maintenance, and deactivation activities [2] 4. Recommend wildfire prevention and containment methods and activities [3] 5. Protect culturally significant features [4]

Notes:

1. May include preparation of maps and materials; forestry tools and equipment; ensuring individuals have the resources they need to work safely, etc.
2. Includes protection of environmentally and ecologically sensitive features.
3. Includes awareness of wildland urban interface.
4. Includes recognition that some sites are movable while others aren't and recognition of cultural sites, traditional use, and sacred sites which occur on a spectrum of highest to lowest importance where highest is reflective of greater sensitivity to impact.

Professionalism and Ethical Behaviour

4 Maintaining and enhancing the public's trust is a cornerstone for any professional. Forest Technologists must protect and serve the public interest by understanding their role, following a code of ethics, seeking out opportunities for continuous improvement, and adhering to regulatory requirements.

Demonstrable Competencies	Measures
A. Act in a manner that protects and serves the public interest	1. Apply a code of ethics to daily conduct 2. Practice within professional scope of practice and individual areas of competence 3. Maintain competence within areas of practice 4. Differentiate between public interests and the demands of employment
B. Adhere to legislation and policies	1. Recognize the functions of professional regulatory organizations* 2. Apply relevant legislation and policies [1] 3. Adhere to applicable occupational health and safety regulations and training requirements [2] 4. Integrate constitutional rights, treaty rights, and international agreements pertaining to Indigenous peoples
C. Demonstrate the duties and obligations of professionals	1. Report non-compliance to appropriate bodies 2. Document evidence gathered to make decisions 3. Differentiate between professional and unprofessional conduct 4. Exercise due diligence in completion of work
D. Make ethical decisions	1. Differentiate between personal values and professional ethics [3] 2. Examine ethical issues [4] 3. Identify conflicts of interest 4. Use evidence-based practices to make decisions [5]

Notes:

1. Includes legislation and policies at the provincial and federal level that link to the practice of forestry in a specific jurisdiction.
2. All employers and workers must understand legislated occupational health and safety rights and requirements. Employees must understand and be able to follow organization specific safe work policy outlining how to perform a task with minimum risk to people, equipment, materials, environment, and processes.
3. Ethics are intended to serve as rules that guide professional behavior to protect the consumer and is judged to be socially valid by others in the profession. It is the application of the fundamental values (good or bad, right or wrong, fundamental rights, and virtues or vices) in decisions relating to professional practice.
4. Includes knowledge of basic ethics which includes an understanding of the underlying basis for ethical principles such as respect for autonomy and justice, situational analysis, and reflection on the influence that one's personal beliefs and values might exert in the decision-making process.
5. A nuanced approach to problem solving and decision-making that brings together the best empirical evidence, the complex decision making repertoires of a trained professional, and important social validity and contextual considerations to solve problems.

Risk Management

5 Risk management is an integral component of good management and governance. Resource management involves the consideration of hazards*, risks*, and consequences in routine decision-making. Forest technologists must conduct risk assessments and prescribe appropriate mitigation techniques.

Demonstrable Competencies	Measures
A. Assess risk	1. Identify hazards specific to person(s) 2. Identify potential risks to the environment, property, society and the economy 3. Assess for probability, severity, and impact of risks 4. Identify potential for adverse impacts on the continuous exercise of Indigenous rights and usage [1]
B. Implement risk-based adaptations and strategies	1. Implement risk management policies, procedures, and action plans 2. Incorporate climate change risk analysis in decision-making 3. Incorporate strategies to mitigate cumulative impacts
C. Mitigate risk	1. Mitigate risk through engineering controls, safe-work procedures, and PPE [2] 2. Perform work according to safety requirements 3. Implement strategies to eliminate or substitute hazards

Notes:

1. Each province has policy and guidelines in place outlining triggers for decisions that may produce consultation requirements if adverse impacts on the exercise of Treaty rights or traditional uses are identified.
2. Everyone at or associated with the workplace takes responsibility for their own health and safety and the health and safety of those around them. This measure can include WHMIS.

Site Condition Assessment

6 The sustainable management of systems involves evaluating a range of ecological, economic, and social conditions. Forest technologists must identify species, use classification systems, and identify cultural values and other factors that contribute to the development or implementation of plans in the forest environment.

Demonstrable Competencies	Measures
A. Conduct field surveys and assessments	1. Conduct silvicultural and timber-harvesting treatment surveys [1] 2. Apply appropriate field sampling methodologies 3. Conduct fire surveys 4. Conduct wildlife and insect and disease surveys 5. Conduct forest inventory surveys [2] 6. Complete field surveys of human-made infrastructures
B. Interpret site conditions	1. Identify forest plants and fungi common to a given region 2. Identify wildlife, wildlife signs, and associated habitat features 3. Identify forest insects and diseases 4. Collect spatial and attribute information 5. Collect field data using appropriate equipment and technologies 6. Interpret landscape features using remotely sensed data, imagery, and maps 7. Identify damage in forests caused from insects, disease, wildlife, and abiotic factors 8. Recognize rare or sensitive ecological features 9. Identify anthropogenic and non-anthropogenic features common to a given region 10. Interpret factors influencing stand dynamics 11. Identify drainage characteristics from local soil and terrain 12. Identify traditional ecological site values relative to a given region [3]

Notes:

1. Includes pre and post-harvest and stand surveys.
2. Includes timber, soils, ecosites, and other characteristics.
3. May include cultural or spiritual - indirect use (health and wellbeing); traditional medicines; potential for gathering.

Site Condition Assessment continued

Demonstrable Competencies	Measures
C. Measure site conditions	1. Measure tree and stand-level attributes 2. Measure topographic, cartographic, and hydrological characteristics [1] 3. Measure soil characteristics [2] 4. Measure forest products pre and post-harvest [3] 5. Measure forest road infrastructure [4]
D. Predict potential uses, products, and other values	1. Rank commercial, non-commercial, and ecosystem service values [5] 2. Describe site features and landforms contributing to access and silviculture potential 3. Identify potential forest products [6] 4. Identify user group and stakeholder values 5. Identify heritage activities [7] 6. Recognize potential site uses for Indigenous peoples 7. Identify anthropological and cultural values and features [8] 8. Identify edible and medicinal plants used by Indigenous peoples
E. Use tools, resources, and classification systems	1. Determine watercourse, waterbody, and wetland classes 2. Determine forest ecosites and productivity 3. Determine the risk of wildfire or fire danger rating 4. Determine forest development and successional stages

Notes:

1. Includes distances, directions, area, topographic position, elevation, aspect, and slopes.
2. Includes texture, pH, colour, structure, and organic matter.
3. Includes mensuration, scaling, timber cruising, vegetation, and forest inventory.
4. Includes geometry - width, length, slope, and changes in elevation of road.
5. Includes consumptive - direct use (e.g. firewood/ mushrooms, wildlife); non-consumptive - direct use (e.g. recreation, hiking, equestrian, quad, camping); ecosystem services - indirect use (e.g. carbon sequestration, water quality, biodiversity, wildlife); and aesthetic.
6. Includes both consumptive and non-consumptive.
7. Includes but is not limited to hunting, rangeland, trapping, fishing, and traditional burial grounds.
8. Definition of anthropological is not limited to Indigenous peoples.