Ontario ProfessionAl Foresters Association

APPROVED BY COUNCIL MARCH 3, 2003

GUIDELINES

FOR

FULL (R.P.F.) MEMBERSHIP

1. APPLICATIONS

All Applications for Membership must be in the form prescribed for that purpose by the O.P.F.A., must be properly completed, and must be accompanied by:

A. Education

i. A certified copy of university and other course records (ie.transcript) in either English or French for which recognition is requested; and/or

ii. Notice of successful completion of O.P.F.A. examinations.

B. Experience

i. A detailed description of professional forestry work experience, including positions held, and the duties and responsibilities and the dates for each position held.

C. Sponsors

i. The recommendation of two or more sponsors, of which two must be currently members of the O.P.F.A. (R.P.F.'s) in good standing **for at least two years**, on the prescribed Sponsor's Form.

ii. The Registration Committee may accept opinions from others that are members of the professional foresters' association in the applicant's jurisdiction.

D. Application Fee

i. The appropriate fees as may be prescribed from time to time by the O.P.F.A.

E. Out of Province R.P.F.s

i. Where an applicant for membership in the O.P.F.A. has already achieved the status of Registered Professional Forester from a Canadian provincial professional foresters association **as defined by provincial statute**; the only requirements for membership in the OPFA will be a demonstrated knowledge of Ontario Forest Policy and a letter from the Registrar of the Association where the applicant is an R.P.F., stating that the applicant is a member in good standing. Applicants will be granted R.P.F. status upon receipt of a satisfactory letter of standing from the Registrar and will be given a six (6) month grace period in which to meet the requirement of demonstrating a satisfactory knowledge of Ontario forest policy. If this knowledge has not been demonstrated by the end of the grace period, the R.P.F. status will be revoked.

Council Amendment September 28, 2001

F. Out of Province R.P.F.s Applying for Temporary Status

i. Registered Professional Foresters from other jurisdictions, who in the course of their employment are required to engage in the practice of professional forestry in Ontario, will require a Practice Permit to be issued by the Ontario Professional Foresters Association. This permit will be in the form of a letter from the Registrar providing the authority for the Registered Professional Forester in question to work in Ontario for the duration of the contract. Permits will be issued for 3- month increments with a fee of $105 per increment. Practice Permits may be issued for a maximum period of 1 year beyond which full membership in the Ontario Professional Foresters

Association will be required.
Council Amendment April 11, 2002

2. ACADEMIC REQUIREMENTS

The policy of the Ontario Professional Foresters Association is:

- that experience is not a substitute for academic standards
- the Academic Standards of the Ontario Professional Foresters Association are the primary accreditation standards for undergraduate university degree programs in Ontario

The Association prefers that its members be graduates of accredited university forestry programs but will accept members with other degrees and/or completion of the O.P.F.A. Examination Program.

A. Graduates from a Canadian Forestry Accreditation Board (C.F.A.B.) Accredited Forestry Program

i. A degree in Forestry from a Canadian University where that forestry degree program is accredited by the Canadian Forestry Accreditation Board.

B. Graduates from Other Canadian and Foreign University Programs

i. A degree from a recognized university, which meets the objectives and attributes of the Forest Science and Management subject areas of the Academic Standards of the Ontario Professional Foresters Association will be considered. Candidates may be required to write and pass an examination set by the O.P.F.A. in any subject area not included in the above university work to the satisfaction of the O.P.F.A.

ii. The O.P.F.A. office will advise all graduates of non-Canadian Universities to submit their transcripts to the University of Toronto Evaluation Office as a first step in getting their courses evaluated. Once this has been completed, then it will be in order for them to make application to the O.P.F.A. in the standard manner and include with their application, the results of their evaluation and their course descriptions.

University of Toronto
Comparative Education Service
315 Bloor St. West, Toronto, Ontario,
M5S 1A3
416-978-2185

C. Non University Graduates

i. Candidates will be required to show completion at the university level, of courses of study that meet the objectives and attributes of the Forest Science and Management subject areas of the Academic Standards of the Ontario Professional Foresters Association, or successfully pass examinations set by the O.P.F.A.

3. FOREST SCIENCE AND MANAGEMENT SUBJECT AREAS

The following subject areas are required by the O.P.F.A. as minimum academic requirements when assessing the qualifications of an applicant for Full Membership:

1. Dendrology
2. Forest Ecology
3. Silvics
4. Forest Pathology
5. Forest Entomology
6. Forest Fire Ecology and Management
7. Forest Hydrology
8. Forest Measuring, Monitoring and Forecasting
9. Forest Operations
10. Wood Science and Utilization
11. Forest Soils
12. Silviculture
13. Tree Morphology and Physiology
14. Forest Economics and Finance
15. Forest Management
16. Forest Policy and Administration (Ontario)

4. PROFESSIONAL FORESTRY WORK EXPERIENCE

The policy of the Ontario Professional Foresters Association is:

- employment as a forest technician may be accepted as work experience if it is judged to be work experience of a professional nature
- experience may be considered in the determination of academic standards on a case by case basis

Council Amendment March, 2003

- professional forestry work experience is not a substitute for academic standards
- professional forestry work experience from outside of Canada is acceptable if the experience is deemed to be relevant to the practice of forestry in Ontario.
- post-graduate studies may count for up to a maximum of 331/3 % of a candidates professional forestry required work experience
- professional forestry work experience is calculated by calendar months
- Sections C and D following shall be interpreted to mean that candidates must be employed in forestry in Ontario in work directly related to one or more of the core subjects at the time of application.

A. Graduates from a C.F.A.B. Accredited Forestry Program

i. At least 18 months post-graduate professional forestry work experience in Ontario, satisfactory to Council, and within the last 5 years, in work directly related to one or more of the core subjects listed in Section 3.

B. Graduates from Other Canadian Forestry Programs or S.A.F. Accredited Forestry Programs

i. At least 18 months post-graduate professional forestry work experience in Ontario, satisfactory to Council, and within the last 5 years, in work directly related to one or more of the core subjects listed in Section 3.

C. Graduates from Other Canadian and Foreign University Programs

i. At **least 3 years** post-graduate professional forestry work experience in Ontario, satisfactory to Council, and within the last **5 years**, in work directly related to one or more of the core subjects listed in Section 3.

D. Non University Graduates

i. At **least 5 years** post-graduate professional forestry work experience in Ontario, satisfactory to Council, and **within the last 8 years**, in work directly related to one or more of the core subjects listed in Section 3.

1. EXAMINATIONS

It is the policy of the Ontario Professional Foresters Association that:

- Candidates may begin the examination process when they are accepted for Provisional Membership instead of waiting until they have gained the necessary level of professional experience.
- Graduate work equivalent to "Fish and Wildlife Management", 'Forest Utilization", Ph.D. thesis and consultant's reports may be considered as a substitute for the completion of a Forest Management Plan.

A. Time Limitations

i. Candidates must sit at least one examination within a period of eighteen months of being informed of the examination requirements and complete all requirements both written and oral within a period of six years of being so informed. If a candidate fails to sit any examinations within the first 18 months period or complete all requirements within the six (6) year period, he/she will have to reapply as a new applicant, subject to all dues and charges as such. Any applicant who does not comply with the time limitations may petition Council for consideration in extenuating circumstances.

B. Place of Writing

i. All examinations may be **written in any place** at the discretion of the Registrar. If not written in Toronto a Registered Professional Forester of Ontario must agree to supervise and invigilate the examinations according to the regulations specified by the Registrar.

C. Time of Writing

i. A period of not less than two months and not exceeding six months from the date of acknowledgement of application to write an examination will be set as the examination time.

D. Papers

i. Candidates will select the subject papers that they wish to write and so apply to the Registrar at least six weeks in advance of the time of the examination.

E. Fees

i. Each candidate must pay the examination fee as prescribed by the O.P.F.A. for each subject paper written, payable at the time of his application for sitting the examination.

F. Standing

i. A candidate must obtain 60% standing in each Forest Science and Management subject area. A candidate who fails to achieve a satisfactory grade in any subject after two attempts shall be advised that his/her application has been terminated and that he/she may request reconsideration to the **Registrar within 60 days.**

G. Thesis

i. The O.P.F.A. may accept a written report, paper or thesis on a forestry or forestry related matter in lieu of a forest management plan.

6. REINSTATEMENTS

It is the policy of the Ontario Professional Foresters Association that:

- All former members are eligible to be considered for reinstatement
- Applicants who apply within 5 years from the date of separation from the Association will be considered to have all of the qualifications required for membership in the Association
- Applicants who apply after 5 years from the date of separation from the Association will be required to obtain two (2) sponsors, provide a summary of their work experience from graduation and indicate how they have maintained their professional competency since their separation from the Association.

7. SUCCESSFUL COMPLETION OF ALL REQUIREMENTS

When a candidate has successfully completed all the prescribed requirements, it is the duty of the Registration Committee to recommend to the Registrar that the applicant be admitted as Full Member of the Association.

It is the policy of the Ontario Professional Foresters Association that:

- The effective date that an applicant becomes a member of the Association shall be the date that the Registrar is instructed to notify the applicant that he/she has been accepted for membership in the Association.

APPENDIX A

Canadian Forestry Accreditation Board Accredited Forestry Programs

1. **Laval University**, Faculty of Forestry and Geomatics, Forest Environment and Forest Resources Management Program – accredited to June 30, 2003
2. **Lakehead University**, Faculty of Forestry and The Forest Environment - Forestry Program (H.B.Sc.F.) – accredited to June 30, 2006

3. **University of Moncton**, School of Forest Sciences, Forest Sciences Program – accredited to June 30, 2004

4. **University of Alberta**, Faculty of Agriculture, Forestry and Home Economics, Forestry and Forest Business Management Programs – accredited to June 30, 2005

5. **University of British Columbia**, Faculty of Forestry, Forest Resources Management and Forest Operations Programs – accredited to June 30, 2005

6. **University of New Brunswick**, Faculty of Forestry and Environmental Management, Forest Ecosystem Management Program – accredited to June 30, 2005

7. **University of Northern British Columbia**, Faculty of Natural Resources and Environmental Studies, Forestry Program – accredited to June 30, 2003

Revisions ratified by Council - July 23, 1999

APPENDIX B

ONTARIO PROFESSIONAL FORESTERS ASSOCIATION

ACADEMIC STANDARDS

These standards set out the academic requirements for entrance into membership in the Ontario Professional Foresters Association (OPFA). They do not include work experience and sponsorship requirements which constitute a separate and additional candidacy obligation. In evaluating the qualifications of membership candidates, the Association will apply the standards in a manner consistent with the requirements of the practice of professional forestry in Ontario. The Association reserves the right to require additional academic qualification of candidates as may be appropriate and necessary.

The standards include all of the academic standards of the Canadian Forestry Accreditation Board (CFAB). In addition, they reflect unique and essential requirements for the practice of professional forestry in Ontario. The standards are designed to satisfy the Association's commitments to the Canadian national forestry accreditation process as set out in the *Canadian Forestry Accreditation Board Policy Statement, 1999,* as well as the commitments of the Association contained in the *Mutual Recognition Agreement among the Registered Professional Foresters Associations of Canada, 2001*.

The standards are subject area requirements, not course descriptions. The material specified under each title may be delivered through one or more courses or parts of courses at a recognized, degree-granting institution. The standards are described under the headings of forest science and management; basic and quantitative sciences; and complementary sciences.

Forest Science and Management Subject Areas

1. Dendrology
2. Forest Ecology
3. Silvics
4. Forest Pathology
5. Forest Entomology
6. Forest Fire Ecology and Management
7. Forest Hydrology
8. Forest Measuring, Monitoring and Forecasting
9. Forest Operations
10. Wood Science and Utilization
11. Forest Soils
12. Silviculture

13. Tree Morphology and Physiology
14. Forest Economics and Finance
15. Forest Management
16. Forest Policy and Administration (Ontario)

Basic and Quantitative Science Subject Areas

This is a non-descriptive standard encompassing knowledge of descriptive and analytical elements of basic and quantitative science subjects required to develop understanding of natural relationships. These include organic and inorganic chemistry, geology, an introduction to biological sciences placing emphasis on plant botany and zoology, and one or more of physics, calculus and statistics.

Complementary Science Subject Areas

Included in an undergraduate university program in forestry are subject areas complementary to core forestry topics. When combined with the other required academic components, these subject areas enable graduates to function at the highest levels of competence and effectiveness. It is intended also to ensure that graduates will be able to undertake professional activities with appropriate knowledge and understanding of the social and cultural needs and differences within society.

Subject areas included are introduction to the social sciences and the humanities, human relationships, professional ethics, introductory computer science and computer applications, communications and technical report writing, and business and management skills.

Normally these standards would be met by earning a Bachelor of Science in Forestry (B.Sc.F. or equivalent) degree from a four year, university-level program accredited by the CFAB. Notwithstanding, graduates of CFAB-accredited forestry programs outside Ontario are obliged to meet the requirements of the *Forest Policy and Administration (Ontario)* Standard under the supervision of the OPFA.

Persons who wish to qualify as Registered Professional Foresters within the Province of Ontario, but who do not possess a degree from a forestry program accredited by the CFAB or from a baccalaureate program in forestry recognized by and acceptable to the OPFA, will be evaluated against the Association's complete set of academic standards.

Credits for some standards may be awarded at the discretion of the OPFA on an individual basis for university credits earned in complementary or associated baccalaureate programs. In all cases, the applicant must satisfy the Association's Registration Committee of compliance with the requirements for admission.

Academic Standard No. 1

DENDROLOGY

Scope

Dendrology is the study of tree and shrub families, genera and species with particular emphasis on taxonomy (classification, nomenclature and identification), growth habit and range. For purposes of this standard, it includes the study and recognition of lesser vegetation present in forest tree communities.

Objectives

An applicant shall:

1. Be able to identify and describe the important tree and shrub genera and species in the forest regions of Canada,

2. Be able to identify and describe all major tree, shrub and lesser vegetation species of the forest regions of Ontario, and
3. Be able to develop and use a dichotomous key for species identification, using reproductive and vegetative characteristics.

Key Attributes

An applicant shall have appropriate knowledge of the following components of the subject area:

1. Taxonomic laws and principles for the classification of plants
2. Species position in the botanical hierarchy, including taxonomic relationships to the other tree and shrub species studied
3. Scientific and common names of the species studied
4. External identification and growth characteristics of the tree and shrub species studied
5. Geographic range, ecological niche and general growth habitat characteristics of the tree and shrub species studied

Academic Standard No. 2

FOREST ECOLOGY

Scope

Forest ecology is the study of the distribution, abundance and productivity of forest species and communities and their interactions with each other and with their physical environment. For purposes of this standard it includes the study of both plant and animal organisms.

Objectives

An applicant shall:

1. Understand the ecosystem concept, including energy use and storage, biomass development, and nutrient cycling, and the concept of ecological niches, including species distribution and the communal relationships of species.
2. Understand the relationships between terrestrial and aquatic ecosystems found within forest ecosystems and landscapes and be able to utilize this understanding in the application of silvicultural treatments and other forest management practices to promote their sustainability.
3. Understand the impact of natural disturbances, including fire, on forest ecosystems, and be able to integrate knowledge of forest ecology with that of other subjects or resource values to develop and implement appropriate ameliorative actions.
4. Be able to apply ecologically sound management techniques to promote or enhance the sustainability, functioning and productivity of forest ecosystems and their various components and values.
5. Know the role individual species may play in providing protection for other species from climatic stresses, insects, disease, and animals; in ameliorating soil-conditions; and in providing biomass as part of the food chain in aquatic and terrestrial ecosystems.
6. Have basic knowledge and understanding of how some species alter their habitat to exclude other species.

Key Attributes

An applicant shall have appropriate knowledge of the following components of the subject area:

1. The concepts of autecology, synecology, population ecology and ecological succession.
2. The principles of ecological forest classification, including the concepts of physiographic, habitat, climatic and vegetative classification, and the role that ecological forest classification plays in forest management planning and the successful implementation of sustainable forest management programs.
3. The ecological amplitude of tree species and communities, particularly with respect to the variables that impact adaptation and successful development given specific site conditions and silvicultural systems.

Academic Standard No. 3

SILVICS

Scope

Silvics is the study of the biological characteristics of trees and tree communities including life cycles, growth, reproductive behaviour, distribution, and adaptability to varying ecological conditions of site and climate.

Objectives

An applicant shall:

1. Be able to describe the silvical characteristics of the important tree species in the forest regions of Canada
2. Be able to describe in detail the silvical characteristics of the important tree species in Ontario and their position in the hierarchy of forest communities and ecosystems.
3. Understand the implications of the silvical characteristics of individual tree species on stand management, soil fertility and management, wood quality and quantity and ecosystem development and management.
4. Be able to apply and integrate silvical knowledge with knowledge from other subjects and varying forest uses to achieve specific objectives at the stand, landscape, forest and watershed levels effectively and efficiently.

Key Attributes

An applicant shall have appropriate knowledge of the following components of the subject area:

1. The concept of silvics.
2. The life cycle, genetics, ecology and growth of tree species.
3. The natural geographic distribution of the tree species of Canada and the factors affecting those distributions.
4. The factors governing species selection by forest managers for silvicultural prescriptions and practices.

Academic Standard No. 4

FOREST PATHOLOGY

Scope

Forest pathology involves a broad understanding of disease agents, how they function in forest ecosystems, and how they affect and are affected by forest management practices.

Objectives

An applicant shall:

1. Have a general knowledge of disease groups in the forest regions of Canada.

2. Have a working knowledge of disease groups, identity and biology of pathogens involved, and their role in natural ecosystems of Ontario.
3. Have an understanding of how forest management practices can affect diseases or be used to prevent or reduce disease.
4. Have an understanding of approaches used to survey and measure disease effects and forecast impacts.
5. Have an ability to develop forest area management plans and prescriptions that consider disease conditions and their treatment.

Key Attributes

An applicant shall have appropriate knowledge of the following components of the subject area:

1. Role of pathogens in forest ecosystems.
2. Major disease groups and abiotic injury.
3. Survey and diagnosis methods.
4. Management treatments, strategies, and effects of management practices on disease development and impacts.
5. Use of models to forecast disease effects and evaluate interactions with management practices.
6. Integration of pathological concerns in landscape and stand-level plans and prescriptions.

Academic Standard No. 5

FOREST ENTOMOLOGY

Scope

Forest entomology involves an understanding of forest insects, how they function in forest ecosystems, and how they affect and are affected by forest management practices.

Objectives

An applicant shall:

1. Have a general knowledge of insect groups in the forest regions of Canada.
2. Have a working knowledge of insect groups, identity and biology of insects and their role in natural ecosystems of Ontario.
3. Understand the various principles of population management including silvicultural, mechanical, biological, chemical, as well as integrated forest pest management
4. Have an understanding of approaches used to survey and measure insect effects, and forecast impact.
5. Have an ability to develop forest area management plans and prescriptions that consider insect conditions and their treatment.

Key Attributes

An applicant shall have appropriate knowledge of the following components of the subject area:

1. Role of insects in forest ecosystems.
2. Major insect groups and their impacts
3. Survey and diagnosis methods
4. Management treatments, strategies, and effects of management practices on insect development and impacts.
5. Use of models to forecast insect effects, and evaluate interactions with management.
6. Integration of entomological concerns in landscape and stand-level plans and prescriptions.
7. Life cycles and population dynamics.

Academic Standard No. 6

FOREST FIRE ECOLOGY AND MANAGEMENT

Scope

Forest fire ecology and management is the study of fire management dynamics, and the role of fire in forest ecology and forest land management. The field of study includes a broad range of topics related to fire behaviour, effects, forecasting, detection and control, and the use of fire as a silvicultural tool.

Objectives

An applicant shall:

1. Understand the principles of forest fire management, including prevention, detection, planning, control and suppression.
2. Have a working knowledge of forest fire behaviour and understand how fire influences and determines forest stand and ecosystem dynamics, landscape patterns and biodiversity.
3. Understand and be able to utilize the principal forest fire weather, hazard, danger rating systems and prediction models.
4. Be capable of utilizing knowledge of forest fire behaviour to effectively employ prescribed and wild fire as a silviculture tool.
5. Have a working knowledge of the prevalent forest fire management systems and practices, including legislation, policy, and enforcement for Ontario and, additionally, have an understanding of the principal forest fire management systems and programs of the other broad forest regions of Canada.
6. Be able to integrate a knowledge of forest fire management with that of other disciplines in the development and implementation of overall forest management planning programs.

Key Attributes

An applicant shall have appropriate knowledge of the following components of the subject area:

1. Evolution of forest fire management and its integration with resource and environmental management.
2. Forest fire management organization and operations, including approach and structure.
3. Social, political and operational aspects of forest fire management and the necessary legislation, policy and research and development for effective and efficient delivery and application of forest fire management programs.
4. Basic principles and processes of weather systems, and energy and water balance concepts.
5. Basics of fuel and combustion chemistry and physics and their influences on fire behaviour.
6. Essential forest fire equipment and forest fire fighting components, and the function of each in forest fire suppression and control
7. The various attributes of wildfire and prescribed fire, their similarities, uniqueness and differences.

Academic Standard No. 7

FOREST HYDROLOGY

Scope

The study of forest hydrology deals with the effects of

forest land management on water quantity and quality, runoff, erosion, sedimentation and the hydrologic cycle. It recognized the relationships between forest land use, soil and water and the linkages between upstream and downstream watershed components.

Objectives

An applicant shall:

1. Understand the principles of soil hydrology with particular emphasis on forest soil hydrology and the relationships between forest land use, the hydrologic cycle and water system dynamics.
2. Be able to integrate knowledge of forest hydrology with that of other disciplines in the development and implementation of sound water and watershed protection and management programs.
3. Understand the potential impacts of forest management practices on water (surface and subsurface) and stream flows, water quality and soil movement (erosion, sedimentation, slope failure) in order to minimize the detrimental effects of forestry operations and activities on soil and water.
4. Understand the potential impacts of forest management practices on water system flora and fauna and be able to undertake preventive and remedial actions.

Key Attributes

An applicant shall have appropriate knowledge of the following components of the subject area:

1. Watershed processes including drainage patterns, stream classification, runoff models, water yield, hydrologic response and recovery, water containment and managed use.
2. Evolution of watershed management and the development of forest hydrology science.
3. Water storage and balance; evapotranspiration; precipitation including snow accumulation and melt; interception; topographic influences.
4. Stream channel dynamics.
5. Basic principles of water crossing construction including scheduling, damage prevention, sediment control and amelioration practices to rehabilitate damaged water courses and bodies.

Academic Standard No. 8

FOREST MEASURING, MONITORING AND FORECASTING

Scope

Forest measuring, monitoring and forecasting involves the collection, manipulation, interpretation and application of data, ranging from basic physical tree and stand measurements to remotely sensed attributes, required to make forest management decisions.

Objectives

Graduates of an accredited forestry program will:

1. Have an understanding of the methods and tools used to measure, monitor, interpret and forecast forest resources and values.
2. Have the ability to use methods of forest measuring, monitoring, interpretation and forecasting within a forest management framework.
3. Have knowledge of the application and limitation of forest measurement data in forest management.
4.

Key Attributes

An applicant shall have appropriate knowledge of the following components of the subject area:

1. Theoretical and practical experience in physical measuring methods of standing and cut trees.
2. Basic understanding of and practical experience in planning, conducting, compiling and reporting on forest inventories.
3. Basic understanding and practical experience in forest mensuration techniques including sampling methods, measures of stand characteristics, measuring of non-timber values, and regeneration surveys.
4. Basic understanding of growth and yield projections and their applications and limitations in forest management.
5. Basic understanding of and practical experience using statistical methods and analyses, including experimental design and regression, in forest management applications.
6. Basic understanding of and practical experience of photogrammetry and other remote sensing tools.
7. Basic understanding of basic cartography, GIS and GPS.
8. Knowledge of the application and limitations of photogrammetry and remote sensing to forest landscape management, including their relationship and integration with GIS and GPS into forest management.

Academic Standard No. 9

FOREST OPERATIONS

Scope

The field of forest operations addresses the engineering, economic, and environmental factors associated with transportation and harvesting systems, and silvicultural operations used in forest management

Objectives

An applicant shall:

1. Have an understanding of the engineering, economic, and environmental implications of harvesting and transportation systems and of silvicultural operations and techniques.
2. Have an understanding of the appropriate harvesting and transportation systems for a range of silviculture systems, site conditions and societal values.

Key Attributes

An applicant shall have appropriate knowledge of the following components of the subject area:

1. Professional competence and limitations within forest operations and forest engineering.
2. Forest road layout and construction, maintenance, deactivation and rehabilitation.
3. Watershed drainage and slope stability, including terrain stability assessment and mapping, surface soil erosion, hydrological assessment and mass wasting.
4. Harvesting methods - machines, systems and environmental considerations.
5. Site preparation and modification alternatives

based on site conditions.

6. Stand establishment and tending alternatives based on species choices and site conditions.
7. Both short term and rotation length forecasting and budgeting of operational productivity and costs.
8. Constraints and techniques used in operational unit design and location for both harvesting and silvicultural operations.
9. Log/tree length and stock handling methods.

Academic Standard No. 10

WOOD SCIENCE AND UTILIZATION

Scope

Forest products deals with the qualities and attributes of wood as a principal component of manufacture at the primary and secondary levels and the qualities of wood which favour processing and product quality and acceptance. It includes the study of wood and non-wood forest products of importance to Canada and Ontario.

Objectives

An applicant shall:

1. Have an understanding of wood anatomy.
2. Be able to identify and describe the woods of economic importance to Ontario and Canada using macro and micro features.
3. Be knowledgeable of the uses to which wood is put and the principal primary and secondary wood manufacturing and conversion processes of importance in Canada, both solid wood and wood fibre.
4. Have knowledge of the non-timber forest products and values (consumptive and non-consumptive) in Ontario having economic, social and cultural importance (e.g., fur bearing and game animals, maple syrup, berries, mushrooms, air, water, viewing).
5. Have a knowledge of domestic and international forest products markets and trends

Key Attributes

An applicant shall have appropriate knowledge of the following components of the subject area:

1. Micro and macro features of economically important wood species with emphasis on Ontario species.
2. Chemical, physical and mechanical properties of wood and how to test.
3. Treatment of wood, wood components in engineered products, and the qualities, attributes and advantages of wood relative to the principal wood substitutes.
4. By-products of wood and wood processing and the uses of non-wood tree components.
5. Other wood products such as shakes, shingles, poles and Christmas trees.
6. Uses of wood in construction.
7. The marketing of forest and wood products and the economics of wood manufacture and of wood and non-wood product use.

Academic Standard No. 11

FOREST SOILS

The study of forest soils deals with the complex biological chemical and physical properties and processes of the medium in a forest context and the interactions with the floral and faunal species and

communities which soil ultimately supports. It includes soil conservation and management and the impacts of and interactions with external forces, pressures and activities.

Objectives

An applicant shall:

1. Be knowledgeable of the Canadian System of Soil Classification employed in Canada and of the main soil types (down to subgroups) and their associated forest communities in Canada.
2. Be able to use forest soil classification systems to recognize and describe the range of soil types of importance to forest ecosystem growth, productivity and management in Ontario.
3. Be knowledgeable of the development and profiles of the principal soil types and be capable of employing this information along with knowledge of other disciplines, including forest soil hydrology, to develop and implement appropriate soil conservation, amelioration and management strategies as part of any forest management planning program.
4. Understand the relationship of soils and site quality to forest growth and the effects of nutrient cycling, fertilization, soil management, erosion and forest fire and be able to prescribe appropriate treatments.
5. Understand the impacts of various silvicultural systems and treatments on forest soils and be able to prescribe and adjust treatments which result in the greatest growth and productivity benefit without inappropriate impact on soil, soil structure and soil processes.

Key Attributes

An applicant shall have appropriate knowledge of the following components of the subject area:

1. Geological and other soil forming processes.
2. Geomorphology, surficial geology and the identification of terrain features from remote sensing images and the relationship with forest vegetation communities.
3. Soil properties and their importance with respect to forest management and engineering operations.
4. Soil physical, chemical and nutritional properties and their impacts with respect to forest operations.
5. Soil water and soil hydrology processes and interactions with and impacts on soil structure and organisms.
6. Soil mapping concepts and their use in forestry programs.
7. Field identification and description of soils utilizing the Canadian System of Soil Classification (down to subgroups).

Academic Standard No. 12

SILVICULTURE

Scope

Silviculture is the science and art of producing and tending forest crops. It is the theory and practice of controlling forest establishment, composition and growth, and selecting cropping systems, to maintain and enhance forest productivity, health and quality and to achieve specific forest management goals and objectives.

Objectives

An applicant shall:

1. Be able to effectively integrate knowledge of

silvics, forest ecology, botany, zoology, physiology, morphology, soil science and other underlying sciences to prepare, plan and implement silviculture strategies for the attainment of specified forest management goals and objectives.

2. Be able to identify and analyze forest stand and site conditions and potentialities and develop silvicultural prescriptions for their continuance, amelioration, enhancement or realization.
3. Understand the relationships between forest establishment, growth and tending and the uses to which forest resources are put for purposes of developing and implementing appropriate sustainable forest management programs and activities at the stand, forest and landscape levels.
4. Be knowledgeable of the various silvicultural and harvesting systems utilized in Canada and be able to assign, implement and monitor complementary systems on a stand or forest basis to achieve specific forest management goals and objectives.
5. Be able to evaluate, analyze, implement, monitor and audit silvicultural and harvesting activities to ensure adherence to and achievement of established forest management standards.
6. Understand and be able to explain the stand dynamics of major forest ecosystems and the implications and impacts of non-intervention.

Key Attributes

An applicant shall have appropriate knowledge of the following components of the subject area:

1. The principles and practices of forest renewal, growth and productivity.
2. The conduct of basic nursery and seed operations, and the elements of tree improvement and genetic manipulation concepts and programs.
3. The influence of planting, density control, spacing, tree improvement, vegetation control, fertilization, drainage and pruning on stand growth, yield, diameter distribution, tree quality and genetic, species, stand and ecosystem diversity.
4. An appreciation of the risks of loss of trees to insects, disease, windthrow and old age and how these risks influence silviculture practice and biodiversity.
5. Natural stand growth and response to human manipulation including the elements of growth and yield and vegetation management.
6. The philosophies, ideas, concepts and notions that influence forest management programs and activities in the various regions of Canada.
7. Classical silvicultural systems, their history and application.

Academic Standard No. 13

TREE MORPHOLOGY AND PHYSIOLOGY

Scope

Tree morphology is the study of the form, structure and development of trees and tree species, and of their individual components, from embryo to maturity. It includes also consideration of the effects of human and natural interventions. Tree physiology is the study of how trees grow and develop and how they respond to environmental and genetic factors and to cultural practices. It includes the biological, physical and chemical processes of a tree which control,

regulate and promote growth.

Objectives

An applicant shall:

1. Be knowledgeable of the morphological features and physiological characteristics of the principal tree species in the forest regions of Canada and of their role and importance in the management of these species.
2. Be knowledgeable of the morphological features and physiological characteristics of the range of tree species in Ontario and understand their role and importance in the establishment, growth and treatment of individual trees and tree species.
3. Be familiar with the morphological and physiological variability of trees and tree species and the effect that such variation may have on tree and stand development and on species suitability in silvicultural prescriptions.
4. Be capable of integrating knowledge of morphological characteristics and physiological suitability of species with that of related subjects to develop appropriate stand establishment and tending prescriptions for achieving specified forest management goals and objectives.

Key Attributes

An applicant shall have appropriate knowledge of the following components of the subject area:

1. The elements of plant, especially tree, morphology including the development and anatomy of plants and trees from embryo stage to maturity.
2. The development, attributes and characteristics of the structural and functional components of a tree including roots, shoots, stems, branches, and leaves; branching habit and crown form; tree size and form; and reproductive structures and mechanisms (flowers, fruits, seeds, embryos, etc.) of the tree species of Canada.
3. The morphological responses of tree species to the principal growing parameters of light, temperature, moisture and nutrition, and of the morphological adaptability of those species to environmental stresses.
4. The variability in structure and function of the various components relative to the position in the crown or the root system and in response to environmental factors and silvicultural practices.
5. The elements of plant and tree physiology.
6. The physiological processes of tree development associated with growth and primary production including photosynthesis, metabolic processes, respiration, assimilation, storage, growth regulation, absorption, transpiration and translocation.
7. The physiology and physiological processes of tree reproduction including seeds and seedlings; vegetative reproduction and early growth; and sexual and asexual reproduction.
8. The physiological responses of tree species to fluctuations in the principal growing parameters of air, light, temperature, moisture and nutrition and the physiological adaptability variability in environmental and genetical factors and to silvicultural interventions.

Academic Standard No. 14

FOREST ECONOMICS AND FINANCE

Scope

Forest economics is concerned with how to allocate forest resources among competing uses and combine

them with other resources for the overall benefit of society.

Objectives

An applicant shall:

1. Understand the basic economic principles that shape and determine the outcomes of forest policies and forest management strategies.
2. Have an ability to apply concepts and tools of economic analysis to decisions concerning the management of forest resources and values.
3. Be knowledgeable of the importance of forests and forest products and values in, and Canada's impact on, the global forest economy.
4. Understand user cost, economics of dispute, damages versus victim pay and trespass.

Key Attributes

An applicant shall have appropriate knowledge of the following components of the subject area:

1. The role and limitations of economics in decision-making forestry.
2. Economic tools and processes such as cost/ benefit and economic project analysis.
3. Economic efficiency over time, capital theory, investment analysis and capital budgeting.
4. Economic factors affecting the demand for and supply of forest products.
5. The role of economics in forest planning and valuation.
6. Forest land allocation.
7. Economic implications of fiscal policies in the forestry sector, for example, stumpage and royalty charges and forest property taxes and rents.

Academic Standard No. 15

FOREST MANAGEMENT

Scope

Forest management involves the development of site prescriptions, planning at the landscape and forest levels, implementing prescriptions and controlling interventions in, and disturbances to, the forest to meet stated goals and objectives.

Objectives

An applicant shall:

1. Understand the basic models of stand, forest and landscape level dynamics, and the impacts of various actions on these dynamics, on a range of forest values over time.
2. Understand the various approaches available to model stand and forest dynamics, and have had experience in the use of each type of model.
3. Understand key planning concepts and principles
4. Be able to function as part of a team in preparing a comprehensive and integrated plan for a particular forested area.
5. Be able to understand the role of publics and be able to design processes to appropriately incorporate their inputs in the preparation of comprehensive and integrated plans for a particular forest area.

Key Attributes

An applicant shall have appropriate knowledge of the following components of the subject area:

1. Biological systems (geologic, terrestrial, aquatic, and biological components and their relationships.

2. Social systems (cultural, institutional, political, and economic components and their relationships).
3. Stand and forest dynamics (e.g. factors that effect the growth and development of stands, predicting future conditions).
4. Tools for the analysis of the above systems (e.g. decision theory, modelling theory, optimization techniques).
5. Problem solving processes (e.g. dispute resolution, consensus building).
6. Forest land planning (concepts and approaches, hierarchical organization, specific examples of planning systems, and planning systems, legislation, policy and practice in Ontario).
8. Understanding the assumptions involved in forest level modeling.

Academic Standard No. 16

FOREST POLICY AND ADMINISTRATION (ONTARIO)

Scope

Forest policy is the framework set by society within which forest and forest land management take place.

Objectives

An applicant shall:

1. Understand the concepts and principles of forest administration and policy.
2. Have the ability to analyze forest legislation, policy and regulation; development and implementation of policy; and interrelationships with forest operations, management and administration.
3. Have knowledge of the major forest legislation, policies and regulations of Canada and its provinces.
4. Have detailed knowledge of the forest legislation, policies and regulations of Ontario.
5. Have an ability to use tools and analysis techniques to develop and implement forest policy

Key Attributes

An applicant shall have appropriate knowledge of the following components of the subject area:

1. Major international policies, regulations and agreements pertaining to forestry and their impacts on forest practice in Canada.
2. Roles of government, the private sector and the public and their involvement in the development and implementation of forest policy.
3. Interrelationships between forest policy and forest practice.
4. Tools for forest policy development and evaluation, including public involvement processes.
5. Tools for the implementation of forest policy, including tenure, taxation, incentives and penalties.
6. Role and obligations of the professional forester, including professional regulation and ethics.

BASIC AND QUANTITATIVE SCIENCES

Descriptive and analytical elements of the following basic and quantitative sciences and mathematics form an integral part of a program of study in forestry. They are designed to impart an understanding of natural relationships. They are recommended only, they are not required.

- **Introductory Organic and Inorganic Chemistry**
- **Introductory Physics**
- **Introductory Calculus**
- **Introductory Statistics**
- **Introductory Geology**
- **Introduction to the Biological Sciences**

- Emphasis is placed on plant botany and zoology

COMPLEMENTARY SCIENCES AND STUDIES

This component of the program of study, when combined with the other required components and elements, is intended to enable graduates to function at the highest levels of competence and effectiveness. It is also intended to ensure that graduates will undertake professional activities with appropriate knowledge and understanding of the social and cultural needs and differences within society. These subjects are recommended only, they are not required.

Introduction to the Social Sciences and the Humanities

- good grammatical knowledge for one official language
- sufficient knowledge and skill to communicate in the other official language
- knowledge of the social and cultural makeup of Canada and an understanding of the social and cultural needs and differences of Canadian society

Human Relationships

- interactions and dynamics between individuals and within groups
- conflict resolution
- development of leadership qualities

Professional Ethics

- main aspects of moral behaviour related to professional practice
- analysis and interpretation of codes of ethics
- study of practical cases and applications

Introductory Computer Science and Computer Applications

- function and structure of computing systems, particularly microcomputers
- familiarity with appropriate computer applications including data management systems, word processors, spreadsheets and geographic information systems
- application of computer technology to the analysis and implementation of forest management procedures, operations and techniques
- computer modeling

Communications and Technical Report Writing

- the communications process including the psychology of the process and overview of methods
- theory and practice of public speaking including visual aids, interviews and interacting with the media
- business correspondence including letters, memos, written instructions and applications for employment
- reporting including formal and informal reports, research techniques, graphic aids, summarization (abstracts, executive summaries) and critiques

Business and Management Skills

- business law
- basic accounting procedures
- budgeting and cost control
- labour relations
- human resources management

APPENDIX C

GUIDELINES ON PROFESSIONAL FORESTRY

WORK EXPERIENCE

The purpose of this guideline is to provide a consistent direction in the way in which the Registration Committee interprets the requirements for professional forestry work experience as set out in the Guidelines for Membership in the O.P.F.A. At the same time, the Registration Committee will examine each applicant individually and requires flexibility to deal with specific cases. Thus, the following points constitute general principles.

1. The reason for requiring professional forestry work experience in forestry following completion of an educational program is to ensure that the applicant possesses the ability and judgement to apply the knowledge gained. Therefore, the Registration Committee needs to be satisfied with four points with respect to the experience:

- the length of time of the professional forestry experience (after completing course work and/or graduation)
- the nature of the duties as providing sufficient opportunities or test of skills
- the relevancy to the practice of professional forestry in Ontario and consistent with the Scope of Practice of professional forestry as defined in the governing legislation
- the supporting evidence that the professional forestry work was satisfactory

2. The primary criterion for experience is that the professional forestry work required the level of education/skills acquired in one or more of the subject areas set out for the education component of these guidelines. This provides a broad range of possible work assignments and roles, and is not necessarily reflective of job titles.

3. The Registration Committee recognizes that work assignments carried out by junior professionals may be similar in character to that of a technician. The difference is that for the professional it is an entry level learning experience from which the candidate is expected to advance. The Registration Committee normally would not accept a job that was simply manual in nature. It must include a significant judgement or skills component and/or require a broad knowledge of forestry and the ability to integrate diverse information.

4. The Registration Committee does accept professional forestry work towards a postgraduate degree in forestry as acceptable professional forestry experience. Post-graduate work experience may count up to a maximum of 33 and 1/3% of a candidates professional forestry required work experience.

5. In assessing candidates, the Registration Committee will review the job descriptions provided by applicants and the sponsorship

forms. At times, the Registration Committee may request additional information or clarification.

6. The Registration Committee may accept that only a portion of a professional forestry work assignment is satisfactory. In this case, it would credit a candidate with a part of the time.

7. The Registration Committee may accept professional forestry work experience outside Ontario as meeting this requirement.

8. The Registration Committee relies heavily on the sponsors' judgements that the professional forestry work was performed satisfactorily and was at a professional level.

9. The Registration Committee needs to be satisfied that the professional forestry work conformed to the Code of Ethics for the Association.