



2017-National Education Entrance Standard For the Agrology Profession in Canada

On June 15, 2017, the Agrologists/Agronomes Canada board accepted the national Ad Hoc Committee's specific recommendation for an "Entry to Practice Education Standard" and results were communicated to provincial institutes. Nine of the 10 provincial regulators accepted the proposed standard and agreed to actively participate in implementation.

AAC is developing a multi-faceted implementation strategy that will involve provincial institutes and other stakeholders in the process.

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Acknowledgements

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Note to Reader

The new entrance standard will apply to future applicants under a comprehensive implementation plan being developed by the AAC board. Education credentials of current Registered Agrologists (PAGs), members in good standing, will not be re-examined.

Executive Summary

Development of a National Entrance Standard for the profession of Agrology has been a long-standing priority for Agrologists Agronomes Canada (AAC). A project team was assembled to assess an approach to be used and to develop the standard. A representative of each of the ten provincial Institutes comprised the project team. The team was assisted by the General Manager of AAC. The project team determined that the best approach forward was to modify the existing national standard, the Montreal Accord.

Coursework credits eligible to meet the requirements of the entrance standard must be obtained from a “Recognized University”. A recognized university is defined as a research and teaching institution with established and continuing research programs in agrology or related sciences. Such a university must be able to provide introductory and senior level courses, and graduate studies research programs in subject matters related to Agrology. Instructors are involved in peer-reviewed research which enhances the teaching program by providing information related to new scientific discoveries and technologies relevant to the “practice of Agrology”.

The need to clearly identify what constitutes the practice of Agrology and what defines an Agrology course is central to this standard. The scope of Agrology and the definition of Agrology coursework must be based on those natural and social sciences in which the Agrology Institutes have amongst their collective membership the expertise to exercise governance over professional practice. It is the duty of the Institutes to exercise governance over professional practice where they have the expertise to do so; and conversely, the Institutes cannot claim Agrology to consist of disciplines in which they do not have such expertise.

Agrology is defined in this standard as the study of and professional practice of those investigating, experimenting with, teaching or providing knowledge and advice on the application of scientific principles involving;

- Agriculture, and the commercial cultivation of biological resources, including the development, production or processing of plant and animal products;
- Identification, classification, or management of biophysical resources (soil, water, vegetation, climate and air) under various land use systems;
- Analysis of the economic, social and environmental requirements for long-term sustainability of various land use systems;
- Economic and business analyses of agriculture, commercial cultivation of biological resources, and related environmental economics.

Four course categories were identified for the standard. These include (i) Foundational Knowledge Courses; (ii) Agrology Courses; (iii) Senior Level Courses; and (iv) Professionalism, Ethics and Legislation Courses. Definitions of each of the course categories and credit requirements can be found in Sections 2.2.1 through 2.2.4. A summary table is provided in Section 3.

For review of International applicants with degrees conferred in nations other than Canada this National Entrance Standard must be interpreted in context with the structure of academic programs in the nation where the degree was conferred, without compromising the academic standards of the National Entrance Standard.

1. Introduction

This document describes the proposed National Entrance Standard for the profession of Agrology across Canada. This standard was developed by a team of representatives from each of the ten provincial Agrology Institutes.

The initial task of the team was to determine whether the existing national standard, the Montreal Accord (2009), should continue to serve as the national standard or if there was a need to modify the Montreal Accord or if there was a need to develop a completely new National Standard. The recommendation of the project team to modify the existing Montreal Accord.

It should be noted that this educational entrance standard does not address educational requirements for registration in the Technical Agrologist categories of Alberta, Manitoba, Ontario and Saskatchewan. Technical Agrologists generally receive education in a two-year Diploma or three-year Applied Degree program at the college level. This document only addresses educational entrance standards for Professional Agrologists who have graduated from a recognized university with a 120-credit four-year Baccalaureate Degree relevant to Agrology.

The objective of this project was to develop clear and consistent educational entrance requirements for the Agrology profession across the nation. A National Standard that is endorsed and implemented by all ten Provincial Institutes would ensure that Professional Agrologists who are registered following the implementation of the standard, have met a minimum educational entrance requirement. This will facilitate interprovincial mobility of Professional Agrologists throughout Canada who meet the National Standard.

1.1 Professions and Professional Regulatory Management

The public recognizes the specialized educational training and work experience of professionals. The public itself, in general, does not have this specialized knowledge and therefore must put themselves in a place of trust when using the services of professionals. Professions must manage themselves to ensure that public trust is justified and maintained. When professions regulate themselves for their own self-interest, such as focusing on membership alone, then public trust can be jeopardized. A fundamental consideration for professional regulation is the assurance that public trust in professionals is warranted and is protected.

In Canada, regulation of professions is a provincial responsibility. Each province enacts legislation that directs the establishment of a professional regulatory body that is mandated to regulate the profession and its members. Provincial governments enact legislation on the premise that government does not have the necessary expertise to regulate a profession and thus professionals are trusted to regulate themselves as directed by legislation. Legislation enabling a profession to exist can be rescinded and self-regulation of a profession can be terminated where legislators, on behalf of the public, determine that a profession is no longer being managed in the public's interest and that public trust has been jeopardized. It is important for professions to realize their right to self-regulation is a privilege and along with that privilege comes responsibility to regulate the profession in a manner that warrants the public's trust. Self-regulation must not be construed by the public to be "self-interest."

Professional legislation across Canada is varied; however, there are seven fundamental principles that inform effective and credible regulation of a profession. These include:

- i. Clear and credible educational entrance requirements for registration with the profession;
- ii. Implementation and enforcement of a Code of Ethics;
- iii. Mandatory continuing competence program for professionals that is routinely audited (ongoing professional development);
- iv. Establishment, maintenance and enforcement of practice standards that identify knowledge, experience and skills required for professional practice;
- v. Implementation of a practice review process;
- vi. Establishment and implementation of a transparent disciplinary process for unprofessional conduct that is readily accessed by the public; and
- vii. Mandatory Professional Liability (errors and omissions) insurance for practicing Agrologists to protect those who use the services of Agrologists.

This document addresses the first of the seven principles listed above. A clear and credible entrance standard for the Agrology profession is a necessary requirement to ensure that the profession is identifying those who truly have the necessary educational training to become registered professional Agrologists across Canada.

1.2 The Agrology Profession in Canada

Ten Agrology Institutes exist across Canada, one for each province. The total number of registered Professional Agrologists is approximately 10,000. The largest Agrology Institutes across the country include Quebec, Alberta, Saskatchewan, British Columbia, and Manitoba accounting for over 92% of the national Professional Agrologist membership.

Agrology is a growing profession that is undergoing a transition to a more rigorously regulated and managed profession. Increasing public scrutiny of professions and recent and upcoming revisions to provincial Agrology legislation have provided drivers for revisiting the need and content of a National Entrance Standard for the profession.

2. National Education Entrance Standard

Professions must clearly identify the necessary educational training to provide Professional Agrology services. These educational requirements identify the training and knowledge that sets the profession apart from others and identifies the specialized knowledge base of Professional Agrologists. Without a clear educational entrance standard, the public's expectation of documented specialized education is not met.

Professions by nature are exclusive. Where a profession tries to be all things to all people it is no longer a profession. Blurring of boundaries between professions for the sake of increasing membership ultimately defeats the purpose of identifying and creating the profession in the first place. Agrology must be distinct and provide clear direction for educational entrance requirements if it is to continue as an independent and valued profession across the country.

For the purposes of this standard, Agrology is defined as the study of and professional practice of those investigating, experimenting with, teaching or providing knowledge and advise on the application of scientific principles involving;

- Agriculture, and the commercial cultivation of biological resources, including the development, production or processing of plant and animal products;
- Identification, classification, or management of biophysical resources (soil, water, vegetation, climate and air) under various land use systems;
- Analysis of the economic, social and environmental requirements for long-term sustainability of various land use systems;
- Economic and business analyses of agriculture, commercial cultivation of biological resources, and related environmental economics.

With these things in mind, the project team has recommended the educational entrance standards outlined and defined in this document. It is hoped that this National Standard will provide the Agrology profession with a solid foundation to build upon and provide greater consistency in defining the educational background of a Professional Agrologist and how it differs from other natural resource professions. The following sections provide a description of the types of courses and number of credits (e.g. instructional contact hours) required for entrance into the Agrology profession across Canada.

2.1 Definition of “Recognized University”

It is important that coursework to be considered as requisite knowledge for entrance into the Agrology profession is credible in that both content and instructional contact hours meet minimum requirements. To ensure that coursework content is credible, only coursework obtained from a “Recognized University” should be considered for entrance to the Agrology profession.

A “Recognized University” is defined as a research and teaching institution, with established and continuing research programs in agrology or related sciences. Such a university must be able to provide introductory and senior level courses, and graduate studies research programs in subject matters related to Agrology. Instructors enhance the teaching program by providing information related to new scientific discoveries and technologies relevant to the practice of Agrology.

2.2 Educational Requirements

A four year 120-credit degree that has been obtained from a recognized university and is directly related to Agrology (either natural sciences or social sciences) is required for entrance into the profession. For the definition of “Recognized University” refer to Section 2.1.

The course work must meet the following requirements:

- Foundational knowledge courses must be introductory in nature and lay the foundation for further coursework in agrology (Section 2.2.1)
- Agrology course content must clearly demonstrate a direct link to the definition of Agrology as defined in Section 2.2.2; and,
- Instructional contact hours (course credits) must meet the requirements for foundational knowledge, Agrology courses and senior level courses (Sections 2.2.1 through 2.2.3).

Course credit is awarded only for courses that have a,

- a) prescribed syllabus of peer review knowledge; and,
- b) standard level of examination and adjudication; and,
- c) nominally defined number of instruction and study hours.

A 3-credit course consists of a minimum of 39 lecture contact hours (e.g. three hours of lecture per week for a term of thirteen weeks). A full course load for a single semester is typically 15 credits (5 courses); a full year course load is typically 30 credits (10 courses); and a four-year degree is typically 120 credits (40 courses).

In some cases, universities do not assign the standard 3 credits to a one term course (minimum of 39 lecture hours). Where a university assigns less than the 3 credits to such a course the credits should be converted to the 3 credits standard provided the course meet the requirement of a one term course with a minimum of 39 lecture hours. For example, if a university assigns 1 credit for a 39 hour one term course, then the single credit should be multiplied by 3 to convert the course to a standard 3 credit course.

International universities often use a credit system that differs substantially from that used by Canadian universities. International credential service organizations are available to provide an assessment of course credits and whether an international degree is equivalent to a Canadian university degree. For example, the International Qualification Assessment Service (IQAS) provides a detailed assessment of credits in Canadian credit equivalents as well as assessing degree equivalency. IQAS will provide a course listing with Canadian equivalent credits when a “specialized assessment” is requested. The World Education Service (WES) also provides an analysis of Canadian equivalent credits by course. This service is referred to as a “course-by-course analysis”. A third group, International Credit Evaluation Service (ICES) provides a similar service offering both basic and analysis of Canadian equivalent credits by course. Typically, the cost of these assessments is the responsibility of the applicant.

Course credit for entrance to the Agrology profession is not awarded for thesis work or for a practicum as work toward a thesis or a practicum does not have a prescribed syllabus of peer review knowledge and usually does not have an adjudicated examination to demonstrate knowledge attained.

2.2.1 Foundational Knowledge Courses

Agrology-related degrees may be focused on a natural science stream or a social science stream and thus foundational courses may include both natural science or social science courses. Foundational Knowledge courses are introductory in nature where concepts and principles of a subject matter are first introduced to a student within the university degree program. These courses are usually taken in the first or second year of a four year 120-credit baccalaureate degree.

A foundational natural science course describes fundamental principles of science and provides instruction that forms the basis upon which subsequent natural science courses or agrology courses are built. Examples of foundational natural science courses include introductory courses in Biology, Biochemistry, Chemistry, Earth Sciences, Ecology, Geology, and Physics.

Where an applicant has an Agrology degree focused on social sciences, then introductory courses in the social sciences meet the Foundational Knowledge course requirement. Examples of foundational social science courses include introductory courses in Economics, Accounting, Finance, Management, Organizational Behavior and Sociology.

Additional Foundational Knowledge courses that are of benefit to Agrology include Mathematics or Statistics, Economics (for the natural science degree) and Communications (e.g. language course, communications course, writing course, public speaking course).

Foundational Knowledge Entrance Requirement:

- *Natural science focused Agrology degree:* 15 credits in introductory natural sciences plus 3 credits in Economics plus 3 credits in Mathematics or Statistics plus 3 credits in Communications. **Total of 24 credits.**

OR

- *Social science focused Agrology degree:* 15 credits in introductory social sciences plus 3 credits in natural sciences plus 3 credits in Mathematics or Statistics plus 3 credits in Communications. **Total of 24 credits.**

2.2.2 Agrology Courses

Agrology courses are those courses which provide instruction directly related to the definition of Agrology as provided in Section 2 above. Agrology courses are those natural and social sciences in which the institutes of agrology have amongst their **membership the expertise to exercise governance over professional practice**. The Agrology institutes must be able to defend in courts of law the standards they set for the practice of Agrology. To do so, they must be able to provide expert testimony that will satisfy the courts that the Institutes have the collective expertise and ability to govern professional practice in those disciplines deemed to be Agrology. It is the duty of the Institutes to exercise governance over professional practice where they have the expertise to do so. And

conversely, the Institutes cannot claim Agrology to be disciplines in which they do not have such expertise.

Agrology shares common subject matter boundaries with the Forestry and Biology professions. Forestry or Biology courses may be differentiated from Agrology courses based on the extent to which the courses directly relate to the definition of Agrology. For example, a course related to Sylvicultural Management for wood production is considered a Forestry course. However, courses that integrate management of biophysical resources for competing land uses within forested areas are considered Agrology courses.

A course that focuses on organism biology such as Ornithology, Herpetology, Wildlife Population Dynamics, for example, are not considered Agrology courses. However, courses related to the management of biophysical resources for the purposes of habitat management under competing land uses are considered Agrology courses (i.e. management of habitat components of soil, water and vegetation).

Agrology Course Entrance Requirements:

- **60 credits of Agrology courses** (such courses must clearly address at least one of the topics identified in points 1 through 4 in the definition of Agrology, Section 2).
- Of the 60 credits of Agrology, **24 credits must be at a senior level** intended for third or fourth year courses toward a four year 120 credit degree, or graduate courses; see the definition of “senior level courses”, Section 2.2.3).

2.2.3 Senior Level Courses

A Senior Level course is an advanced course that requires antecedent academic knowledge on the part of the student, and develops the concepts acquired in introductory courses. A Senior Level course must require scholarly and critical analyses by the student.

A senior Agrology course is course that directly addresses at least one of the subject matters in points 1 through 4 in the definition of Agrology (Section 2). These courses are advanced courses in Agrology that go beyond introductory concepts and increase the depth of knowledge in the subject matter. Senior level courses may have multiple prerequisites including foundational science and introductory Agrology courses and are intended for third or fourth year of a four year 120-credit baccalaureate degree. Graduate level courses are also considered senior level courses. Only senior courses taught by a Recognized University are recognized as senior level courses.

Examples:

- Introductory Soil Science is considered an Agrology course but is not considered a senior level course. Soil Physics, Soil Chemistry, Soil Fertility, Soil Remediation, Land Reclamation are examples of Senior Level courses that build on the Introductory Soil Science course;
- Introductory Animal Science is considered an agrology course but is not considered a senior level course. Animal Health and Disease, Ruminant Nutrition, Physiology of Domestic Animals are examples of Senior Level courses that build on the Introductory Animal Science course;

- Introductory Plant Science is considered an agrology course but is not considered a senior level course. Crop Physiology, Physiology of Herbicide Action, Plant Pathology are examples of Senior Level courses that build on the Introductory Plant Science course.

Senior Level Course Entrance Requirements:

- Total Senior Level course credits required = **24 credits** comprised of:
 - A minimum of **24 credits of the 60 Agrology credits** described for Agrology courses (Section 2.2.2) must be at a senior level.

2.2.4 Professionalism, Ethics and Legislation Courses

The Montreal Accord required 27 credits of professionalism, ethics and legislation (PEL). Of the ten Institutes across Canada, only the OAQ consistently applied this requirement as the two main universities in Quebec provided instruction in these subject areas.

The remaining nine Institutes have been responsible for developing and teaching a course or courses focusing on Professionalism, Ethics and the specific provincial Legislation governing the Agrology profession in their respective provinces. The project team has proposed that the 27-credit requirement be deleted and leave the responsibility for teaching PEL to each Institute. Such course(s) however must be completed prior to being awarded the P.Ag designation.

In addition, the project team suggested that Agrologists Agronomes Canada (AAC) may play an important role in developing and teaching courses that are universal to the profession across Canada. For example, a Professionalism course and an Ethics course may be facilitated or taught by AAC. Such an approach would facilitate a consistent message to Articling Agrologists regarding Professionalism and Ethics across the nation. Courses on Legislation or other relevant subjects specific to each Province would remain the responsibility of each Institute.

3. National Education Entrance Standard Summary

This document describes the proposed National Education Entrance Standard proposed by the project team. The team recommended that a modified version of the Montreal Accord (2009) be developed as the standard for the Agrology profession across Canada.

The team recommended that “Recognized Universities” be identified so that the quality of coursework is assured. A definition of “Recognized Universities” was developed for use with this standard.

A 120-credit four-year Baccalaureate degree in Agrology as defined in this standard and obtained from a Recognized University is required for registration with the profession. In addition, the degree must consist of course credits in specific course categories including Foundational Knowledge, Agrology, and Senior Level courses (Table 1).

Where an applicant has obtained a 120-credit Baccalaureate degree from a university not considered a “Recognized University” but has then subsequently completed the 60 Agrology credits (including the 24 senior level Agrology courses) at a Recognized University, the applicant is eligible to be registered with the profession provided the applicant has also attained the 24 credits of Foundational Knowledge at either university.

Professionalism, Ethics and Legislation courses are also required as part of the articling program of new members. These courses may be part of a degree program or may be directly taught by each Institute. Each Institute is responsible to ensure these subjects are part of the training of new members.

Table 1. Summary of Educational Entrance Requirements for the Agrology Profession

A 120-credit, four-year baccalaureate degree in Agrology is required. The degree must consist of the following course credits.		
Course Category	Course Credit Requirements	Document Section
Foundational Knowledge Courses	<p><i>Natural Science based Agrology degree:</i></p> <ul style="list-style-type: none"> • 15 credits in introductory natural sciences plus 3 credits in Economics plus 3 credits in Mathematics or Statistics plus 3 credits in Communications. • Total credits = 24. <p><i>OR</i></p> <p><i>Social Science based Agrology degree (e.g. Agricultural Economics degree, Natural Resource Economics degree, Agribusiness degree):</i></p> <ul style="list-style-type: none"> • 15 credits in introductory social sciences plus 3 credits in natural sciences plus 3 credits in Mathematics or Statistics plus 3 credits in Communications • Total credits= 24. 	2.2.1
Agrology Courses	<ul style="list-style-type: none"> • 60 credits of Agrology courses. 	2.2.2
Senior Level Courses	<ul style="list-style-type: none"> • 24 credits of senior level Agrology counted as part of the 60 Agrology credits identified under “Agrology Courses”. 	2.2.3
Professionalism, Ethics and Legislation Courses	<ul style="list-style-type: none"> • To be taught by each Provincial Institute OR new Professionalism and/or Ethics courses may be developed by AAC for new members across Canada. • Relevant courses taught by Recognized Universities may be accepted. • Number of credits not specified. Content and duration will remain at the discretion of each Institute. 	2.2.4

For review of international applicants with degrees conferred in nations other than Canada this National Entrance Standard must be interpreted in context with the structure of academic programs in the nation where the degree was conferred, without compromising the academic standards of the National Education Entrance Standard.