PREAMBLE

The APGNS "**Applicant Self-Assessment Worksheet Tool**" is available to all applicants for professional geoscience registration (member and/or member-in-training) as supporting information based on the ***Geoscience Knowledge and Experience Requirements for Professional Registration in Canada*** (GKE).

The GKE has been approved by the APGNS as the fundamental standard for the evaluation of applicants for professional geoscience registration in Nova Scotia. The GKE sets minimum academic requirements that are equivalent to a typical four (4) year degree in geoscience at a Canadian university. The GKE also defines the minimum geoscience work experience requirement for professional registration as a period of forty-eight (48) months of supervised, practical, cumulative and progressive, geoscience work experience (the GKE document is available on the Association website www.geoscientistsns.ca).

The GKE is robust document, setting high and consistent standards for the registration of professional geoscientists, and is currently used at least as a reference document by each of the provincial and territorial regulatory associations in Canada, with the exception of Quebec.

This applicant self-assessment worksheet tool considers only the academic training component outlined in the GKE and required for professional geoscience registration in Nova Scotia. This self-assessment tool is intended to be used by potential applicants to determine whether they may have completed the required academic training necessary for professional geoscience registration.

The basic academic evaluation unit of the GKE is the 'educational unit' (EU). This is defined as the equivalent of a one term course, meeting (lecture time) three hours per week, with or without a laboratory component, for 13 weeks, in a 120 credit-hour, 4-year degree program. These courses must furthermore be acceptable for academic credit in a science or engineering curriculum.

The EU, as used here, does not address the manner in which material in each subject area is presented in university or college programs. Its purpose is to provide a qualitative statement about the knowledge expected, when both knowledge and experience qualifications are evaluated for the purpose of professional registration.

Note: Identification of what is acceptable as an academic credit (EU) is undertaken at the discretion of the APGNS Admissions Board and determined based on their evaluation of all of the information presented in the application file.

This worksheet is provided as a tool, for the applicant to personally evaluate their academic training relative to the academic requirements for professional registration, and to assist the applicant in demonstrating to the APGNS Admissions Board that they have achieved the academic requirements necessary for professional geoscience registration.

Note: Applicants must be aware that completion of the self-assessment worksheet tool is NOT an application requirement, and the results are NOT be binding on the Admissions Board.

Applicants are encouraged to complete the self-assessment worksheet in order to determine whether any potential gaps in their academic training exist, and if so, allowing them to address these gaps by taking the outstanding courses.

Applicants are encouraged to include a copy of the completed self-assessment worksheet tool in their application for professional geoscience registration to indicate to the Admissions Board what courses they believe have fulfilled the academic requirements. Therefore, this self-assessment tool should be completed by potential applicants as accurately and honestly as possible, using guidance from this document to determine what parts of their educational background might qualify for admission into the geoscience profession.

DISCLAIMER

Note to the users of this tool:

This Applicant Self Assessment Worksheet Tool has been developed, published, and distributed by the Association of Professional Geoscientists of Nova Scotia (APGNS) to assist applicants for professional geoscience registration in the evaluation of their academic training.

Persons relying on this tool should be aware that it is intended as only an aid and reference, and that it does not constitute a guarantee of professional registration.

In all cases, the applicant or candidate for professional registration bears the onus and sole responsibility of meeting the requirements for professional registration to the satisfaction of APGNS.

Table of Definitions and Acronyms

Applicant	A person who has applied for membership (professional registration) in APGNS.
Candidate / Potential Applicant	A person who is considering applying for membership (professional registration) in APGNS.
APGNS	The "Association of Professional Geoscientists of Nova Scotia", operating under the business name "Geoscientists Nova Scotia".
Geoscientists Canada	A national society of constituent associations of professional geoscientists from most provinces and territories in Canada, formerly known as the "Canadian Society of Professional Geoscientists".
Canadian Geoscience Standards Council	A standing committee of Geoscientists Canada made up of representatives from each constituent association with a mandate to facilitate standardization of admissions requirements and mobility of professional geoscientists across Canada.
Admissions Board	The body of APGNS members tasked by Geoscientists Nova Scotia with ensuring that those joining the association as professional geoscientists have the necessary qualifications, education, and experience.
Council	The management board that establishes the policies and directs the activities of Geoscientists Nova Scotia.
GKE	The General Knowledge and Experience guidelines produced by the CGSC and used by each constituent association to assess membership qualifications of applicants, or to establish their own requirement qualifications for membership.

INTRODUCTION

To use this self-assessment worksheet assessment tool properly, the applicant must first understand and identify the appropriate 'stream' of professional geoscience registration in which they have trained, will practice and, therefore, will be applying under.

Based on the GKE, in Nova Scotia, three streams of geoscience practice are recognized:

- Geology,
- Environmental Geoscience, and
- Geophysics.

It is important to understand that the selection of which 'stream' to apply under can significantly influence the success or failure of the application. The appropriate 'stream' should be determined based on the applicant's academic training, the applicant's geoscience work experience, and the applicant's career path. As a result, the applicant should consider their academic background, their geoscience work experience, and their current and future career in deciding which 'stream' they should apply under.

In general, APGNS recommends that if the applicant's academic training and work experience are dominantly in the field of geology, environmental geoscience, or geophysics, they should apply under the corresponding 'stream' because it best fits his/her career path. In some cases, the Board may require additional academic training or courses, or additional work experience to fulfill the requirements of a specific stream. For example, an applicant who has completed the academic requirements under the geology stream, but is working or intends to work as an environmental geoscientist, may be required to take additional academic courses or undertake additional work experience to demonstrate that they have fulfilled the requirements for professional registration.

Further, if the applicant's academic training and work experience is largely in the field of geochemistry, he/she should apply under either the geology or environmental geoscience 'stream', depending on which orientation best fits his/her educational background, experience, and career goals.

Also, if the applicant's academic training is in the field of environmental science, and he/she does not have a substantial 'geoscience component', they may not have the academic training required for registration as a professional geoscientist, and therefore they should consider an alternative designation perhaps as an 'environmental scientist'.

If the applicant is uncertain about what 'stream' to apply under, please contact the Registrar to request assistance regarding the appropriate application 'stream' (registrar@geoscientistsns.ca or 902-420-9928).

In addition to the above three 'applicant streams' identified above, there are two registration categories which are

considered by the Board:

- Member-in-Training (MIT), and
- Member (P.Geo.).

Applicants who are accepted as a Member-in-Training (MIT) will have satisfied the academic requirements for professional registration, but may not have satisfied the geoscience work experience requirement for a minimum of forty eight (48) months of acceptable, cumulative and progressive geoscience work experience. The work experience component may be documented through the submission of diaries or through participation in the Work Experience Competence (WEC) Tool.

Applicants who have satisfied both the academic training and work experience requirements, and live and/or work (or intend to work) in Nova Scotia, may be registered as a Professional Geoscientist (P.Geo.) member. Note that applicants who have satisfied both academic training and work experience requirements, and work in Nova Scotia, but do not live in Nova Scotia, will be registered the License to Practice (LTP) category.

If, based on the results of this preliminary and non-binding self-assessment worksheet tool, it appears that you may satisfy (or are close to satisfying) the academic requirements for professional registration, you should apply to APGNS for registration as a member-in-training (MIT) or professional member (P.Geo), in one of the geoscience 'streams', as appropriate.

Submission of an application as soon as practicable after graduation or commencement of employment allows the Board to evaluate an applicant's academic training and, if necessary, allow the Board to identify any outstanding (un-fulfilled) academic requirements. Note that applications are held as 'pending' by the APGNS while any outstanding academic requirements are completed, making re-application unnecessary.

Most importantly, registration as an MIT allows the applicant to legally work on geoscience projects, under professional supervision, in order to gain the required work experience.

MIT's may be eligible for assistance from a mentor in the preparation of their work experience diaries. The diaries must document the professional and personal development of the MIT through their supervised work experience. The diaries must be prepared and submitted in the approved form and format. MIT's are eligible to complete the National Professional Practice Exam (NPPE), which is a requirement for full registration as a professional geoscientist.

Note: Applicants must be aware that completion of the self-assessment worksheet tool is NOT a requirement for their application, and it will NOT be binding on the Admissions Board.

EDUCATIONAL REQUIREMENTS

Each registration 'stream' (Geology, Environmental Geoscience, and Geophysics) requires minimum total of twenty-seven (27) EU's (educational units) to satisfy the academic training requirements of the GKE. Collectively, these may or may not constitute the requirements for an undergraduate (bachelors) degree in geoscience.

All of the EU's are equivalent in duration to a one-semester course (usually 13 weeks), offered at a university or community college. Collectively, these academic requirements comprise the science courses that are typically required for an undergraduate (bachelors) degree in Geology, Environmental Geoscience, or Geophysics from a Canadian university.

These EU's are broken down into three categories and five (5) groups. The table below shows the number of EU's required from each. The categories and groups are:

Category 1 - Foundation Science
• 3 EU's are required from Compulsory Foundation Science (Group 1A)
• 6 EU's are required from Additional Foundation Science (Group 1B)
Category 2 - Foundation Geoscience
• 4 EU's are required from Compulsory Foundation Geoscience (Group 2A)
• 5 EU's are required from Additional Foundation Geoscience (Group 2B)
Category 3 - Other Geoscience / Science
• 9 EU's are required from Other Geoscience / Science (Group 2C)

Applicants should be aware that these EU's need not all be obtained from one post-graduate institution, as part of one degree (bachelor's, master's, or doctorate), or in one language. Furthermore, the curriculum identified in any one of these EU's need not be acquired in a fully corresponding post-secondary course, as some post-secondary institutions organize their curriculum in different ways than that described by the GKE, and material within one EU may be obtained from several courses.

Note: In all cases, it is the responsibility of the applicant to demonstrate or provide sufficient background information to conclude that their academic training is equivalent to the EU's required by the GKE.

Some of the material identified in the 27 EU's may be obtained via non-traditional courses, including professional short courses and workshops, field trips, field schools, and other learning activities. To obtain credit toward any EU via a course, a passing mark of C-minus (1.67 on a 4.00 scale; 60%) is required.

Note: In many of the descriptions provided below, and where appropriate for the purpose of clarity, the term 'course' has been used interchangeably with the term 'EU'.

CATEGORY 1. FOUNDATION SCIENCE

The subject of geoscience builds on scientific principles that are central to a number of other science subjects, notably chemistry, physics and mathematics. A geoscientist needs to have basic knowledge in these foundation sciences to practice geoscience. The sections below provide detailed descriptions of the individual course requirements.

Group 1A – Compulsory Foundation Science

Chemistry, physics, and mathematics are considered to be foundational to geoscience, and thus background in these disciplines is necessary to be able to understand geoscience principles and work as a geoscientist.

University curricula typically offer two overall introductory courses in chemistry and physics that provide an appropriate overview of these subjects and serve as pre-requisites both to advanced courses in chemistry and physics, and to other degrees in science and applied science. These introductory courses, typically offered as 1st year, one semester, general overview classes, with a laboratory component, satisfy the EU's in the Group 1A (Compulsory Foundation Science) because they provide the foundation of the chemistry and physics theory that is built on in geoscience curricula, and thus are necessary to understand material in upper level geoscience courses.

In contrast, university mathematics curricula typically have a different format, as no single pair of mathematics courses provides an overall introduction to all parts of the mathematics discipline. Rather, analogous pairs of introductory mathematics courses in the sub-disciplines of calculus, probability and statistics, and linear/matrix algebra (and possibly others) are typically offered. In geoscience, it can be argued that courses in any of these sub-disciplines would be useful to the geoscientist, providing an appropriate mathematical foundation that can be used in upper-level geoscience courses. Thus, because no single pair of first year mathematics courses provides an overview of the entire discipline of mathematics, and because most first year mathematics courses offered are relevant to geoscience, any pair of first year mathematics courses (not necessarily calculus) can be used to demonstrate that applicants have sufficient numeracy to be able to understand and use quantitative information in geoscience applications.

Chemistry
An introductory chemistry class, with laboratory, that, together with a second similar subsequent chemistry course, covers all of the basics of chemistry and which, with the second subsequent course, represents a pre-requisite for future chemistry courses and other science degrees.

Physics
An introductory physics class, with laboratory, that, together with a second similar subsequent physics course, covers all of the basics of physics and which, with the second subsequent course, represents a pre-requisite for future

physics courses and other science degrees.

Mathematics
A 1st year, one semester, mathematics class in calculus, probability & statistics, or linear/matrix algebra that, together with a second similar subsequent calculus, probability & statistics, or linear/matrix algebra course, covers all of the basics of these sub-disciplines and which, with the second subsequent course, represents a pre-requisite for future mathematics courses in its sub-discipline.

Group 1B – Additional Foundation Science

Although chemistry, physics, and mathematics are three foundational sciences to geoscience, knowledge of other sciences is also necessary to understand many geoscience principles. As a result, geoscientists should also have basic knowledge in this broader array of scientific disciplines.

Chemistry, Physics, Mathematics
The chemistry, physics, and mathematics courses described in Group 1A typically have a second semester course that follows on from the first course to complete presentation of the first year curriculum in chemistry, physics, calculus, probability & statistics, and linear/matrix algebra.

Because a geoscientists general science background will be more complete if they take both of these introductory courses, if the applicant intends to submit one or two chemistry, physics, or mathematics course in the Group 1B category, the Board prefers that the first of those courses be these second chemistry, physics and mathematics courses. A second chemistry or physics course can then be a second-year course that requires the introductory chemistry or physics courses described above as pre-requisites. The second mathematics course can be another first year, introductory course in another mathematics sub-discipline (calculus, probability & statistics, linear/matrix algebra), or a second year course that requires the two introductory mathematics sub-discipline courses described above as pre-requisites.

Biology
Geoscience practice may, because of interactions between the biosphere and geosphere, require basic, foundational knowledge of topics traditionally included in a university biology curriculum.

If an applicant wishes to submit one or more courses in Biology in Group 1B category, the Board requires that the first of, or a pair of, biology courses that provide an introductory overview of biology, covering all of the basics of the discipline at both macro- (organismal and ecological) and micro- (molecular, cell and genetics) scales; these courses should serve as pre-requisites for subsequent, second year biology courses, and should include a laboratory.

Computer Programming

In today's geoscience milieu, software to undertake specific geoscience applications is not always available. As a result, the geoscientist may be required to write or develop computer software to undertake specialized, geoscience-oriented, computer applications. Courses in computer programming offer the geoscientist a skill set that may be of significant use in their geoscience career.

If a applicant wishes to submit one or more courses in computer programming in Group 1B, the Board requires the first of, or a pair of, computer programming courses that present an introduction to the method of writing computer programs. These courses need not involve any specific computer programming language, but rather should present the operational algorithms and data structures used by programmers to achieve specific results and include algorithm performance analysis. If two computer science courses are to be offered to satisfy Group 1B requirements, these do not necessarily have to involve the same computer programming language (although they must include different algorithmic and data structure curriculum).

Note: Eligible computer programming courses are not courses that teach students the basics of word processing and/or spreadsheet calculations, or that overview the use of computers and the organization of computer systems in society.

Statistics

Because:

i) statistics curricula in many universities are offered through mathematics departments,
ii) probability curricula are intimately related to the statistics curricula, and
iii) because students taking both probability and statistics courses enhance their scientific numeracy.

the APGNS Admissions Board makes no distinction between probability and statistics courses and mathematics courses in the GKE, using them inter-changeably in the 1A and 1B Groups. As a result, probability, statistics, calculus, and linear/matrix algebra courses can all serve mathematics EU requirements in Groups 1A or 1B. Additionally, probability & statistics courses can serve as statistics EU requirements in Group 1B.

Note: The intent of the Group 1B EU requirements are to ensure that a professional geoscientist has a broad scientific background. As a result, the Board will not accept more than three numerically oriented courses that satisfy mathematics and statistics requirements in Group 1B (for a total of four numerically-oriented courses). This is because two mathematics and two statistics courses would not provide the applicant with a broad background in the foundation sciences, because too few other science courses would have been completed.

A final note regarding Foundational Science and Additional Foundation Science

At many universities, fundamental science courses are sometimes offered in specialized sections tailored to various types of students (*e.g.,* calculus for physical sciences, physics for engineers, chemistry for pre-med students, *etc.*). The intent is to make the course relevant to these various types of students.

Modifications within these courses range from merely using class, laboratory, or exercise examples with particular relevance to the corresponding student group (*e.g.*, using a genetics problem in a probability course), to the emphasis of certain traditionally-included course components of the science to the exclusion of others (*e.g.*, focusing on the mechanics of limb motion during walking in a physics course for biology majors, requiring the exclusion, due to time constraints, of electromagnetic induction theory).

Whether such courses are acceptable for geoscience or engineering students or acceptable for a geoscience or engineering degree program, they may not satisfy the EU requirements in Groups 1A and 1B if they lack the full spectrum curriculum of traditional science courses.

CATEGORY 2. FOUNDATION GEOSCIENCE

The streams of professional geoscience registration (Geology, Environmental Geoscience, Geophysics) have certain knowledge requirements that are common to each stream. These are described in Group 2A. However, each stream also has certain knowledge requirements that are specific to the stream. These are described in Group 2B.

Group 2A – Compulsory Foundation Geoscience

Four compulsory foundation geoscience courses are common to each of the three geoscience streams, and so every applicant for professional geoscience registration must have background in these fields. All of these courses must be one semester in duration (or equivalent), taught at a level of 2nd year or higher, and include a laboratory.

Field Techniques
This field-based course should present the basics of geoscience data collection, including the collection of strike and dip information, and the construction of geological maps, cross sections, and stratigraphic columns.

This course should provide the geoscientist with exposure to the mapping and measuring of as wide a variety of rock types, ages, structures, sedimentary and metamorphic facies, and igneous phases, and contact relationships as geographically possible.

This course should be the equivalent of a one-semester university course, but can be a full-time course taken within a confined time period (*e.g.*, 8 hrs/day for 14 days = 112 contact hours; note that a traditional course with 3 hours of lecture and laboratory (each), plus 3 hours of study per week for 13 weeks = 117 total hours).

Mineralogy and Petrology
This course should present the basics of mineralogy and petrology, including crystallography (crystal classes and systems), the optical theory necessary for petrographic mineral identification, the classification and hand-sample

identification of minerals, mineral compositions and structures, the principles and uses of X-ray diffraction, and basic petrologic classification using mineral modes.

Sedimentation and Stratigraphy
This course should present the basics of sedimentation and stratigraphy, in a plate tectonic framework, including principles of topography, the law of superposition, cross-cutting relationships, the rule of V's, layer-cake geology, igneous bodies, and contact relationships such as structures, unconformities, disconformities, igneous intrusions, sedimentary facies, and depositional environments.

Structural Geology
This course should present the basics of structural geology, including geological structure identification and geometry, plane and line measurement, the principles of stress and strain, brittle and ductile deformation, folding, faulting, shearing, and foliation, tensional and compressive strength, Mohr's circle, formation mechanisms, structural data analysis, and map interpretation.

Group 2B – Additional Foundation Geoscience

Additional foundation geoscience courses differ for each of the three geoscience streams, precisely because geoscientists must have different academic training to effectively practice in these different fields.

In this section, a number of the required courses are common in the Geology and Environmental Geoscience streams and these are presented in the table below, followed by detailed descriptions of each course. These are followed by a table of the EU requirements for the Geophysics stream, and detailed descriptions of these courses.

Group 2B – Geology and Environmental Geoscience Streams

2B Geology stream	2B Environmental Geoscience stream
Geochemistry	Geochemistry
Geophysics	Geophysics
********	********
Igneous Petrology	Hydrology
Metamorphic Petrology	Hydrogeology
Sedimentary Petrology	********
********	Geomorphology or Soil Science
Sedimentology	Glacial Geology
Glacial Geology or Geomorphology	Remote Sensing
Remote Sensing	

The Board requires that each of the courses presented in the sections below be a 2nd year or higher, one-semester course, with laboratory component.

Geochemistry
This course should present an overview of concepts involving geochemistry, including equilibrium, saturation, precipitation, crystallization, partitioning, fractionation, dissolution, buffering, pH, and redox processes as these relate to the geochemistry of the ocean and atmosphere, and the origin, distribution and geochemical cycles of elements in/on the Earth.

This can be achieved as a course focused in applied, aqueous, thermodynamic, or general geochemistry; unfortunately, courses dealing with isotope geochemistry, lithogeochemistry, and petrogeochemistry typically do not provide this background, and should be used to satisfy requirements in category 2C as advanced geochemistry courses.

Geophysics
This course should present concepts involving applied geophysics, including the theory, survey design, instrumentation, applications, interpretation, and limitations of seismic, gravity, magnetic, radiometric, resistivity, induced polarization, self-potential, and electromagnetic surveys applied to mineral and petroleum exploration, environmental assessment, monitoring, and remediation, and engineering geology, as appropriate.

Igneous Petrology
This course should present an overview of concepts involving igneous petrology, including magma origin and evolution, solid solution, liquidus, solidus, cotectic, peritectic, eutectic, solvus, equilibrium, and fractional crystallization, the application of physical and chemical principles to the origin and occurrence of igneous rocks, liquid immiscibility, filter pressing, heat transfer, mineral phase equilibria, and igneous activity through time.

Metamorphic Petrology
This course should present an overview of concepts involving metamorphic petrology, including the nature, origin, and textural, compositional, and metamorphic grade classification of metamorphic rocks, heat flow, partial melting, isograds, isobars, metamorphic facies, and metamorphic and metasomatic phase equilibria.

Sedimentary Petrology
This course should present an overview of concepts involving sedimentary petrology, including hand sample and microscope description, classification, and interpretation of ancient and modern sediments and sedimentary rocks, and their composition, texture, sorting, diagenesis, and the geochemistry and mineralogy of clastic, carbonate, and (other) chemical sedimentary rocks.

Sedimentology
This course should present an overview of concepts involving sedimentology, including the depositional environment and processes, facies architecture, basin structure and evolution, and an introduction to sequence stratigraphy.

Glacial Geology
This course should present the study of the mass balance of glaciers, the characteristics of flow, erosion and deposition by active and stagnant ice masses, facies relationships in processes and products of glaciated terrain; it should include an assessment of terrain from air photos, maps, geophysical and sample (core) data.

Geomorphology
This course should present an overview of the processes and principles responsible for landscape development; it should include an introduction to induced and natural hazards, such as landslides, coastal erosion, etc., with a practical introduction into air photo and satellite imagery interpretation and terrain analysis in land development and resource applications.

Remote Sensing
This course should introduce the physical principles and geodetic theory, principles, designs, and acquisition of data from various remote sensing platforms, methods of mapping, enhancing, analyzing and interpreting images for study of geological, hydrological, biological, and oceanographic processes and human activities using computer-based visualization methods.

Hydrology
This course should present an introduction to hydrological processes and resulting spatial patterns at various scales, including precipitation, evaporation, transpiration, infiltration, runoff, surface water quality and hydrogeological data analysis.

Hydrogeology
This course should present an introduction to physical hydrogeology, including groundwater flow theory, flow nets, acquifer testing, groundwater quality, and controls on groundwater contamination transport.

Soil Science
This course should present an introduction to the physical, chemical, and biological properties of soil, weathering and pedogenesis, principles of identification and classification of soils, and the nature and distribution of soil classes and their relationship to climate and geomorphology.

Note: The laboratory components of the three petrology courses described above should include transmission microscope petrography of relevant rocks that will allow student to formally name the rock, document its mineralogy, and describe its textural, structural, and other salient characteristics.

Group 2B – Geophysics Stream

As noted above, additional foundation geoscience courses, Group 2B, differ for the Geophysics stream.

In this section, the EU requirements of the geophysics stream, Group 2B, are listed in the table below and the detailed course descriptions follow. Of the detailed descriptions presented in the following sections, it is anticipated that, the majority of these topics will be addressed by the course material and the acceptance of the course as a required EU will be at the discretion of the Board. To satisfy the requirements of the Board, each of the courses presented in the section below must be a 2nd year or higher, one-semester course, in most cases with a laboratory, however in some cases, at the discretion of the Board, a tutorial or special session may be substituted for the laboratory component.

2B Geophysics stream
Digital Signal Processing
****
Global Geophysics / Physics of the Earth
****
Seismology / Seismic Methods
****
Exploration Geophysics
****
Radiometrics /Gravity & Magnetics
****
Electrical & Electromagnetic Methods

Digital Signal Processing

This course should present the application of time series analysis and image processing techniques to large geophysical data sets; topics should include sampling, the problem of aliasing, time and frequency domains, 1D and 2D Fourier transforms, the Z transformation, spectral analysis, windows, filtering and deconvolution.

Global Geophysics

This course should present an overview of concepts involving global (pure) geophysics, including earthquake seismology, gravity, the geoid, geomagnetism, paleomagnetism and geodynamics, heat flow, radioactivity and geochronology, with applications to global tectonics and deep (crustal, mantle, core) structural investigation.

Physics of the Earth
This course should present an overview of concepts involving the physics of the earth, including an introduction to physics of the Earth's interior, with emphasis on Earth's structure, evolution and current dynamic state, at different temporal and special scales and using seismic observations, heat flow, the physics of minerals under high pressures and high temperatures, elasticity, fluid mechanics, equation of state, and seismological, thermal, and compositional models.

Seismology
This course should present an overview of concepts involving seismology, including Hooke's law for isotropic continua, elastic wave equation, reflection and refraction methods for imaging the Earth's internal structure, plane waves in an infinite medium and interaction with boundaries, body wave seismology, inversion of travel-time curves, generalized ray theory, crustal seismology, surface waves and earthquake source studies.

Seismic Methods
This course should present an overview of seismic methods used in geophysical surveys, including concepts and techniques of seismic imaging (migration), practical considerations such as algorithm characteristics and data geometry, post-stack and pre-stack migration, and DMO methods examined from Kirchhoff, Fourier, and downward continuation perspectives.

Exploration Geophysics
This course should present an overview of exploration geophysics, including the theory, survey design, instrumentation, applications, interpretation, and limitations of seismic, gravity, magnetic, radiometric, resistivity, induced polarization, self-potential, and electromagnetic surveys applied to mineral and petroleum exploration, environmental assessment, monitoring, and remediation, and engineering geology, as appropriate.

Radiometrics
This course should present an overview of concepts involving radiometric geophysical applications, including the theory of radioactive decay, radiometric dating, survey design, measurements, quality control, and data processing and interpretation.

Gravity & Magnetics
This course should present an overview of concepts involving gravity and magnetic (potential field) geophysical applications, including theory, terrestrial field characteristics, surveying, and the processing, modeling and interpretation of gravity and magnetic data.

Electrical & Electromagnetic Methods
This course should present an overview of concepts involving electrical and electromagnetic geophysical applications, including theory, terrestrial field characteristics, surveying, and the processing, modeling and

interpretation of conductivity/resistivity, induced polarization, self potential, ground penetrating radar, and tilt-angle-, phase shift-, and amplitude-based electromagnetic data.

CATEGORY 3. OTHER GEOSCIENCE / SCIENCE

Group 2C – Other Geoscience / Science

There are nine other geoscience / science courses that are required to complete the academic requirements for professional registration. These courses serve to 'round out' the academic background of a professional geoscientist. These are not proscriptively identified as being specific to any one stream, but they should complement and reinforce the curriculum obtained from EU's in Categories 2A and 2B of the applicants' 'stream'.

For these other geoscience / science courses, the Board typically requires a 3rd year or higher, one-semester course, with a laboratory component or an alternative, in any geoscience field, provided that it is relevant to the applicant's academic stream. Up to two of these nine courses may be selected from another, related, scientific discipline, provided that they are relevant to geoscience and to the academic stream selected.

Note: In all of the above requirements, the preferred courses have a laboratory component to their instruction. For Chemistry, Physics, and Biology courses in categories 1A and 1B, these are traditional laboratories. In Mathematics, Statistics, and Computer Science courses in categories 1A and 1B, the laboratories are typically tutorials involving the completion of quantitative exercises under the supervision and assistance of the instructor or teaching assistant. In contrast, geoscience course laboratories can take many forms, and include the above more traditional laboratory forms, as well as microscope laboratories, afternoon or weekend fieldtrips, and multi-week-long field schools.

In spite of this, some advanced geoscience courses offered at many universities and colleges may not include a laboratory component. This would not necessarily preclude their potential to satisfy an EU in the GKE, provided that the majority of geoscience courses offered as part of an application include laboratory instruction as part of their curriculum.

HOW TO USE THIS APPLICANT SELF-ASSESMENT WORKSHEET TOOL

Individuals wishing to apply for professional geoscience registration in Nova Scotia are encouraged to assess their academic training using this applicant self-assessment worksheet tool.

Note: Completion of the applicant self-assessment worksheet tool is NOT a requirement of the application for registration, however, it is recommended and it may be included with the application as a supporting document. The results of this worksheet tool will NOT be binding on the Admissions Board.

The applicant self-assessment worksheet tool is intended to assist the applicant in determining whether they meet the academic requirements for professional registration. If the applicant meets the academic requirements but not the practical geoscience work experience requirement, he/she may be registered as a Member-in-Training (MIT). Registration as an MIT allows the individual to legally work on geoscience projects, under supervision, and gain the required experience (see also the APGNS MIT Program Guide). If the applicant is missing one or more (up to three) academic requirements, the application file may be held as 'pending' to allow the applicant the time required to complete the missing academic requirement(s).

If the applicant concludes that they meet the academic requirements then they are encouraged to apply for professional registration. The application form for registration, as well as the Geoscience Knowledge and Experience Requirements for Professional Registration in Canada (GKE), are available for download from the Geoscientists Nova Scotia website (www.geoscientistsns.ca). If the applicant requires assistance they are encouraged to contact the Registrar (registrar@geoscientistsns.ca) or 902-420-9928.

The Registrar will compile all the submitted application materials, including the application form, the official academic transcripts (obtained directly from the academic institution), the professional / character references, the required application and assessment fees, and any other supporting materials (copies of abstracts, academic course descriptions, letters of support, *etc.*), and submit the package to the Admissions Board for evaluation. If deficiencies are identified by the Board, remedial action will be recommended.

Note: Application and assessment fees and service charges are not refundable.

Note: For applicants who have received their academic training outside Canada, it is recommended that, as part of the application, as much additional information detailing their academic training and background as possible or available should be included. This would include, but not be limited to, official course descriptions and/or syllabi, calendar descriptions, graduation documents, third party credential evaluations, etc.).

Finally, it is strongly recommended that applicants should avoid 'resume creep' when undertaking the self-assessment of their academic training. Applicants should attempt to be as objective, dispassionate, and neutral as possible when presenting their credentials, neither overstating nor enhancing their achievements. The Board will assess each application thoroughly, independently, and objectively and will research and investigate an application or applicant when considered necessary.

The application for registration form includes the following declaration:

"I declare that the statements made on this form are true and correct to the best of my knowledge and belief. I understand that any false or misleading statements, willful omissions or misrepresentations on this form shall be considered as sufficient cause for refusal of admission and/or registration to or dismissal from the Association."

THE SELF-ASSESMENT WORKSHEET TOOL

The three (3) "streams" of professional geoscience registration in Nova Scotia are:

- Geology,
- Environmental Geoscience, and
- Geophysics.

Each stream requires minimum total of 27 EU's:

- 3 EU's are required from Compulsory Foundation Science (Group1A);
- 6 EU's are required from Additional Foundation Science (Group 1B);
- 4 EU's are required from Compulsory Foundation Geoscience (Group 2A);
- 5 EU's are required from Additional Foundation Geoscience (Group 2B); and
- 9 EU's are required from Other Geoscience / Science (Group 2C).

This applicant self-assessment worksheet tool is effective as of July, 2015 and it supersedes all previous versions.

Part I - Applicant / Application Information	
Date	
Full Name	
Application Category **Member (P.Geo)** **Member-in-Training (MIT)** **License to Practice (LTP)**	
Geoscience Stream **Geology** **Geophysics** **Environmental Geoscience**	

Part II - Required Geoscience Knowledge	
Requirement	**Applicant's Record**
1 – Foundation Science **All Streams** **Group 1A – Compulsory Foundation Science, &** **Group 1B – Additional Compulsory Foundation Science** **(total of 9 EU's required)**	**Note: These requirements, Foundation Science (1A and 1B), are common to the Geology, Environmental Geoscience and Geophysics Streams.** **1 EU = 1 semester, 13 week, or term course**
Group 1A. Chemistry Mathematics Physics	**Total of 3 EU's are required - 1 EU in each subject** 1 ..... 2. ..... 3 .....
Group 1B. Biology Chemistry Computer Programming Mathematics Physics Statistics	**Total of 6 EU's are required - no more than 2 in any subject** 1 ..... 2 ..... 3 ..... 4 ..... 5 ..... 6 .....

Geology Stream **Group 2A - Compulsory Geoscience; Group 2B - Additional Geoscience and Group 2C - Other Geoscience total of 18 EU's required - 1 EU = 1 semester, 13 week or term course**	
2 – Foundation Geoscience **Geology Stream (Only)** **Group A – Compulsory Geoscience** **Group B – Additional Geoscience** **Group C – Other Geoscience** **(total of 18 EU's required)**	
Group 2A. Field Techniques Mineralogy and Petrology Sedimentation and Stratigraphy Structural Geology	**Total of 4 EU's are required - 1 EU in each subject** 1 ..... 2 ..... 3 ..... 4 .....
Group 2B. Geochemistry Geophysics Igneous Petrology Metamorphic Petrology Sedimentary Petrology Sedimentology Glacial Geology or Geomorphology Remote Sensing	**Total of 5 EU's are required - minimum of 1 & at most 2 from each sub-group, but no more that 1 in each subject** 1 ..... 2 ..... 3 ..... 4 ..... 5 .....

Group 2C. Other Geoscience / Science (see the GKE document for a suggested list); minimum total of 9 EU's; note: extra EU's from A & B can be used in C; must be at a second level or higher acceptable for science credit toward a degree and relevant to geoscience.	**Minimum total of 9 EU's are required – no 1 EU course can be used to cover more than one requirement** 1. ..... 2 ..... 3 ..... 4 ..... 5 ..... 6 ..... 7 ..... 8 ..... 9 .....

Environmental Geoscience Stream **Group 2A - Compulsory Geoscience; Group 2B - Additional Geoscience and Group 2C - Other Geoscience total of 18 EU's are required; 1 EU = 1 semester, 13 week or term course**	
Group 2A. Field techniques Mineralogy and Petrology Sedimentation and Stratigraphy Structural Geology	**Total of 4 EU's are required - 1 EU in each area required** 1 ..... 2 ..... 3 ..... 4 .....
Group 2B. Geochemistry Geophysics Hydrogeology or Hydrology Geomorphology or Soil Science Glacial Geology Remote Sensing	**Total of 5 EU's are required - minimum of 1 & at most 2 from each sub-group, but no more that 1 in each subject** 1 ..... 2 ..... 3 ..... 4 ..... 5 .....

Group 2C. Other Geoscience / Science (see the GKE document for a suggested list); minimum total of 9 EU's; note: extra EU's from A & B can be used in C; must be at a second level or higher acceptable for science credit toward a degree and relevant to geoscience.	**Minimum total of 9 EU's are required - no one single EU course can be used to cover more than one requirement** 1. ..... 2 ..... 3 ..... 4 ..... 5 ..... 6 ..... 7 ..... 8 ..... 9 .....

Geophysics Stream **Group 2A - Compulsory Geoscience; Group 2B - Additional Geoscience and Group 2C - Other Geoscience total of 18 EU's required - 1 EU = 1 semester, 13 week or term course**	
Group 2A. Field techniques Mineralogy and Petrology Sedimentation and Stratigraphy Structural Geology	**Total of 4 EU's are required - 1 EU in each area required** 1 ..... 2 ..... 3 ..... 4 .....
Group 2B. Digital Signal Processing Global Geophysics / Physics of the Earth Seismology / Seismic Methods Exploration Geophysics Radiometrics / Gravity & Magnetics Electrical & Electromagnetic Methods	**Total of 5 EU's are required - minimum of 1 & at most 2 from each sub-group, but no more that 1 in each subject** 1 ..... 2 ..... 3 ..... 4 ..... 5 .....

Group 2C. Other Geoscience / Science (see the GKE document for a suggested list); minimum total of 9 EU's; note: extra EU's from A & B can be used in C; must be at a second level or higher acceptable for science credit toward a degree and relevant to geoscience.	**Minimum total of 9 EU's are required - no one single EU course can be used to cover more than one requirement; EU's must be chosen from at least 4 subject areas** 1. ..... 2 ..... 3 ..... 4 ..... 5 ..... 6 ..... 7 ..... 8 ..... 9 .....