Geoscience Knowledge and Experience Requirements for Professional Registration in Canada

The tables below contain only the **geophysics** column from the GC-Knowledge document, plus a new column for EOAS courses from the geophysics degree requirements in UBC's calendar.

Table 1: 1A - Compulsory Foundation Science
1B - Additional Foundation Science
Table 2: 2A - Compulsory Foundation **Geo**science
2B - Additional Foundation **Geo**science
Table 3: 2C - Other **Geo**science/Science

Regarding "EU's": The fundamental unit of geoscience knowledge used in the tables in Section 3.3 is the Educational Unit or "EU." **One EU is defined as formal instruction equivalent to a one-semester (minimum 12 weeks' duration) course** in a typical Bachelor of Science or Baccalaureate Degree (B.Sc.) in Geoscience at a Canadian university. For example, one EU could consist of three hours of lectures or equivalent per week, with or without a lab component, for at least 12 weeks. An EU can be considered to be the equivalent of one three-credit-hour course in a 120-credit hour, four-year degree program. The EU, as used here, does not address the manner in which material in each study area is presented in a university program. Its purpose is to provide a quantitative statement about the amount of geoscience instruction expected in each required unit of study.

NOTE from page2: "*It must be emphasized that this document is a summary only and that requirements for registration are set out under the legislative act in each province or territory. Therefore, it cannot cover all aspects of registration in depth, nor does it describe differences in requirements that may exist.*"

Which checklist? How does EGBC apply these for registration in British Columbia? See the "guidelines for completing checklists" document. It say (second bullet pg 1) "***If you are applying in Geophysics**, have attended a post-secondary institution outside of BC, or completed your education at a BC institution that does not have a course equivalency list, **please use a general checklist listed under the "General Self-Evaluation Checklists" section**.*". Therefore, it appears as if the 2011 doc may still be applicable.

Table 1: Groups: 1A - Compulsory Foundation Science and 1B - Additional Foundation Science.

	Groups	Geophysics	EOAS / UBC
1A	**Compulsory Foundation Science*** *(Total 3 EUs - One EU in each area required)* Mathematics, Physics and Chemistry are the foundation sciences on which the principles and processes of geoscience are founded. A strong foundation in these sciences provides the grounding necessary to understand and apply geoscience concepts.	Chemistry Mathematics Physics	
1B	**1B Additional Foundation Science*** *(Total 6 EUs; 6 EUs required, no more than 2 EUs in any one of the six subject areas.)* A strong background in a range of sciences allows the geoscientist to understand how the geosphere interacts with other parts of our world, to communicate and interact with scientists from other	Biology Chemistry Computer Programming Mathematics Physics Statistics	

	disciplines and with other professionals, and to adapt to the many challenges encountered in practice. Subject areas containing the foundational topics listed in the linked descriptors may be substituted - e.g. Geostatistics for Statistics, Biochemistry for Biology or Chemistry. * Biology is highly recommended for those in the Environmental Geoscience stream		
	* NOTE – Requirements in this table must be met by EUs at a first year or higher university level course acceptable for credit towards a degree in science, applied science or engineering. Remedial secondary school level courses, such as algebra, chemistry, geometry, physics or trigonometry are not accepted.		

Table 2: Groups 2A - Compulsory Foundation Geoscience and 2B - Additional Foundation Geoscience.

	Groups	Geophysics	EOAS / UBC
2A	**Compulsory Foundation Geoscience** *(Total 4EUs) (1 EU in each area required).* All geoscientists share common core knowledge around which the profession of geoscience is practiced. These subject areas define the common knowledge base in geoscience required to practice in all three streams of geoscience.	Field Techniques _____ Mineralogy and Petrology _____ Sedimentation and Stratigraphy _____ Structural Geology	
2B	**Additional Foundation Geoscience** *(Total 5 EUs) (Total 5 EUs; Geology and Environmental Geoscience require at least 1 and at most 2 EUs from each sub-group (horizontal lines separate sub-groups), but no more than one in each subject; Geophysics requires 1 EU from 5 of the sub-groups.)* Beyond common foundation science and geoscience knowledge documented above, training in geoscience generally falls into three broad specializations or streams (geology, environmental geoscience and geophysics), that reflect the basis of three broad sub-disciplines of practice in the profession. Each of these sub-disciplines requires a different set of foundational geoscience knowledge.	Digital Signal Processing _____ Global Geophysics / Physics of the Earth _____ Seismology/Seismic Methods _____ Exploration Geophysics _____ Radiometrics/Gravity & Magnetics _____ Electrical & Electromagnetic Methods GEOSCIENCE	

Table 3: Groups 2C - Other Geoscience (NOTE: These lists are not meant to be exhaustive)

	Groups	**Geophysics**	**EOAS / UBC**
2c	**Other Geoscience/Science** *(Minimum Total 9 EUs)* *(9 EUs must be at a second level or higher acceptable for science credit toward a degree in science, applied science or engineering and relevant to geoscience).* Extra courses not used in 2A and 2B can be used in 2C. Advanced courses in these topics can also be used. No one single EU	Within each subject area are listed possible courses that could be used to satisfy the geoscience knowledge requirements. EUs must be chosen from at least **4 of the boldfaced subject areas** below. **Applied Math/ Physics** - Calculus - Computer-Controlled Instrumentation - Condensed Matter Physics - Continuum Mechanics - Digital Signal Processing	

	course can be used to cover more than one requirement. The three broad streams of specialization in geoscience (geology, environmental geoscience and geophysics) embrace distinct knowledge sets that are important to geoscientists in each stream, and collectively comprise the particular knowledge base necessary for proper and appropriate practice.	- Electromagnetic Theory - Electronics for Scientists - Fluid Dynamics - Fluid Flow Porous Media - Geostatistics - Integral Transforms - Linear Algebra - Mathematical Physics - Numerical Methods/Computing - Optics - Partial Differential Equations - Signal Analysis - Vector and Tensor Analysis **Communication** - Thesis - Technical Writing **Earth & Planetary Geoscience** - Geomagnetism / Paleomagnetism - Global Tectonics - Global Geophysics **Field Techniques** **Fundamental Math/Physics** - Complex Analysis - Differential Equations - Electricity & Magnetism - Mechanics - Thermodynamics - Vibrations, Waves & Optics **Geology** - Geochemistry - Igneous Petrology - Metamorphic Petrology - Sedimentary Petrology - Structural Geology - Tectonics **Geophysical Methods & Interpretation** - Analytical Methods - Marine Geophysics - Electrical and Electromagnetic Methods - Gravity & Magnetics - Seismology - Radiometrics - Rock Properties/Rock Physics - Seismic Interpretation **Modern Physics** **Near Surface Geoscience** - Environmental Geophysics - Geomorphology - Geographic Information Systems - Glacial/Quaternary Geology	

		- Remote Sensing **Regional Geology** - Geology of Canada - Geology of North America **Resource Geoscience** - Fluid Flow in Porous Media - Hydrogeology / Hydrology - Mineral Deposits Geology - Petroleum Geology - Reservoir Engineering - Well Log Analysis	

Ch.4, Geoscience Practice Experience Requirement

From page 10: "*Geoscience graduates need supervised practice experience working in the capacity of a geoscientist to obtain the necessary range of capabilities required to enter independent practice. Individuals preparing to practice independently must have worked in the capacity of a geoscientist both at sufficient depth and over sufficient breadth to become aware of the responsibilities and accountabilities associated with professional practice, as well as to gain the ability to recognize their own limitations as a practitioner.*" Etc …

What's already done for EOAS engineers and geologists?

- Not much in guidelines for geologists, 2022:
- Geol eng guidelines for 2022-23 are more complete but still do not explicitly relate courses to EGBC requirements.