



**ENGINEERS &
GEOSCIENTISTS**
BRITISH COLUMBIA

**Geophysics
Course Equivalent Listing**

Updated by UBC, Dep't EOAS, Nov 2023

Preliminary; awaiting EGBC approval.

Name: _____

User ID: _____

Instructions for advisors and applicants for registration as a professional geophysicist.

Please review these instructions carefully.

Prior to beginning, please ensure that you have reviewed EGBC's [Guideline to Completing Geoscience Checklists & Course Descriptions](#).

1. When preparing your list of courses for accreditation, you can list each relevant standard single-term course **only one time** on the entire checklist. The exceptions are EOSC 449 (honors thesis) or a 6 credit directed studies. Each of these may be used twice, once for technical communication and once for a discipline-specific course. See an advisor for assistance.
2. Courses you list need to correspond to the course codes that appear on your transcript from the original institution at which you took the course. For example, if you transferred a course from another institution and received transfer credit, write down the institution and course code from the original institution that appears on that original transcript.
3. Courses must be acceptable for credit in the UBC (Vancouver) Faculty of Science or Faculty of Applied Science.
4. NOTE: these courses lists may not be exhaustive, and some courses listed may not be available at the time you want to take them. This is because university departments can change the courses they offer from year to year. **If a course is not included on this list but you feel strongly that it should count, please list the course with explanation separately in the final table.**
5. Field experience is required – see Group 2A, COM-A4 and its footnote.
6. Prior to beginning, please ensure that you have reviewed the Guideline to Completing Geoscience Checklists & Course Descriptions at <https://www.egbc.ca/getmedia/26ae8255-3c16-45b0-9845-73b49304ac6a/Guideline-to-Completing-Geoscience-Checklist-Course-Description.pdf.aspx> (last checked November 2023).
7. Please read bullet notes above each table carefully.
8. For each course include the code, number, institution as follows, "EOSC 211, UBC".
9. The geophysics program requirements at UBC are in the UBC Calendar at <https://vancouver.calendar.ubc.ca/faculties-colleges-and-schools/faculty-science/bachelor-science/geophysics> (last checked November 2023).

This course list reflects the Engineers & Geoscientists BC's (EGBC's) adoption of the 2019 version of the Geoscientists Canada [Geoscience Knowledge & Experience Requirements](#) (GKE).

Group: 1A – Compulsory Foundation Science`

- **All 3 courses are Required.**

| Category | Number | Subject | (Institution Name) Course Commas mean “or” | Applicant: list your courses here (Recommendations in brackets) |
|----------|--------|-----------------------------|--|--|
| | FS-A1 | Mathematics (1 semester) | MATH 100, 102, 104, 120, 180 or 184 | (see GEOPH calendar) |
| | FS-A2 | Physics (1 semester) | PHYS 106, 107, 117, 101 or 131 | (see GEOPH calendar) |
| | FS-A3 | Chemistry (1 semester) | CHEM 121, 111 or 141 or both CHEM 110 and 115 or both CHEM 120 and 115 | (see GEOPH calendar) |

Group: 1B – Additional Foundation Science

- **6 required**

- **You may report a maximum of 2 courses in any one subject.**

| Category | Number | Subject | (Institution Name) Course Commas mean “or” | Applicant: list your courses here (Recommendations in brackets) |
|----------|--------|-------------------------|--|--|
| | COM-B1 | Mathematics | MATH 101, 103, 105 or 121 | (see GEOPH calendar) |
| | COM-B2 | Chemistry | CHEM 123 or both CHEM 130 and 135, or any 200 level or higher CHEM | (see GEOPH calendar) |
| | COM-B3 | Physics | PHYS 108 or 118 plus 119 or 109 or any 200 level or higher PHYS | (see GEOPH calendar) |
| | COM-B4 | Biology | BIOL 112, 121 or any 200 level or higher BIOL | |
| | COM-B5 | Computer Programming | EOSC 211, 213, CPSC 103, 110, APSC 160, or any 200 level or higher CPSC with programming content | (EOSC 211) |
| | COM-B6 | Statistics | DSCI 100, STAT 200, 251, BIOL 300, or GEOG 374 | (DSCI 100) |

Group: 2A – Compulsory Geoscience

- **All 4 courses are required.**

- **One course must be completed in each of the 4 subjects.**

| Category | Number | Subject | (Institution Name) Course Commas mean “or” | Applicant: list your courses here (Recommendations in brackets) |
|----------|--------|---------------------------------|---|--|
| | COM-A1 | Mineralogy & Petrology | EOSC 220, 221, 321, or 322 | (EOSC 220) |
| | COM-A2 | Sedimentation & Stratigraphy | EOSC 222, or 320 | (EOSC 222) |
| | COM-A3 | Structural Geology | EOSC 323 | (EOSC 323) |
| | COM-A4 | Field Techniques ¹ | EOSC 223, 328 or 428 | (EOSC 223 ¹) |

¹ NOTE: **Field work** during co-op term or summer work may be acceptable for COM-A4 if instruction can be shown to have been provided as part of the field work experience.

Group: 2B – Foundation Geophysics

- **5 of the 6 courses are required**
- **Apply only one course per subject.**

| Category | Number | Subject | (Institution Name) Course Commas mean “or” | Applicant: list your courses here (Recommendations in brackets) |
|----------|--------|---|---|--|
| | FGP-A1 | Digital Signal Processing | EOSC 354 | (EOSC 354) |
| | FGP-A2 | Global Geophysics or Physics of the Earth | EOSC 453 | (EOSC 453) |
| | FGP-A3 | Seismology or Seismic Methods | EOSC 353 | (EOSC 353) |
| | FGP-A4 | Exploration Geophysics | EOSC 350 or 454 | (EOSC 350) |
| | FGP-A5 | Radiometrics or Gravity & Magnetics | EOSC 450 | (EOSC 450) |
| | FGP-A6 | Electrical & EM Methods | EOSC 350 or PHYS 301 | |

NOTE: If you have taken all six courses for Group 2B, apply one of these six in Group 2C below.

Group: 2C – Other Geophysics

- **9 courses are required from the 58 subjects in this table.**
- **Multiple courses can be entered in each subject for this table only.**
- **Courses must be chosen from at least 4 of the “Categories”, e.g. Communication, Earth and Planetary Geoscience, etc.**
- The GKE requirement list of geophysics subjects (the Geophysics column of Table 3, pgs 7, 8, 9) notes that “These lists are not meant to be exhaustive”. Therefore, other geophysics topics (eg. inversion, machine learning, planetary geophysics, etc.) may be acceptable for Group: 2C courses.
- See also the last item “Other relevant geophysics courses”.

| Category | Number | Subject | (Institution Name) Course Bold = a UBC geophysics requirement. Commas mean “or” | Applicant: list your courses here ‘NA’ = used elsewhere |
|------------------------------|--------|--|--|---|
| Applied Math & Physics | GP-C1 | Calculus | MATH 200 , 217, 226, 227, 253, 254, 264 or 317 | (see GEOPH calendar) |
| | GP-C2 | Computer-Controlled Instrumentation | Some ELEC, ENGR or PHYS courses may apply. | |
| | GP-C3 | Condensed Matter Physics | PHYS 412 | |
| | GP-C4 | Continuum Mechanics | EOSC 352 | (EOSC 352) |
| | GP-C5 | Digital Signal Processing | EOSC 354 | NA |
| | GP-C6 | Electromagnetic Theory | PHYS 401 or 454 | |
| | GP-C7 | Electronics for Scientists | ELEC 203, Both of ELEC (204 and 205), ELEC 301, PHYS 309 or 319 | |
| | GP-C8 | Fluid Dynamics | PHYS 314 or MECH 280 | |
| | GP-C9 | Fluid Flow Porous Media | EOSC 429 | |
| | GP-C10 | Geostatistics | MINE 420 | |

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|--------------------------------|--------|---------------------------------|--|----------------------|
| | GP-C11 | Integral Transforms | Some MATH courses may apply. | |
| | GP-C12 | Linear Algebra | MATH 221, 223, 307 or 412 | MATH 221 |
| | GP-C13 | Mathematical Physics | PHYS 312 | |
| | GP-C14 | Numerical Methods or Computing | ATSC 409, EOSC 410 , PHYS 210, 410, MATH 210, 360, 405 or 406 | EOSC 410 |
| | GP-C15 | Optics | PHYS 408, 458 | |
| | GP-C16 | Partial Differential Equations | MATH 257, 316 , 400 or PHYS 312 | (see GEOPH calendar) |
| | GP-C17 | Signal Analysis | EOSC 354 | NA |
| | GP-C18 | Vector and Tensor Analysis | EOSC 250 , ATSC 409 or MATH 317 . | EOSC 250 |
| Communication | GP-C19 | Thesis | EOSC 449 ² | |
| | GP-C20 | Technical Writing | ENGL 301, SCIE 113 or 300 | (see GEOPH calendar) |
| Earth & Planetary Geoscience | GP-C21 | Geomagnetism or Paleomagnetism | No equivalent UBC course | |
| | GP-C22 | Global Tectonics | EOSC 332 | |
| | GP-C23 | Global Geophysics | EOSC 212 , 453 | (EOSC 212) |
| Field | GP-C24 | Field Techniques | EOSC 223, 328 or 429 | |
| Fundam'l Math or Physics | GP-C25 | Complex Analysis | MATH 305 or 440 | |
| | GP-C26 | Differential Equations | MATH 215 , 255, 256, 257, 316 or 400 | (see GEOPH calendar) |
| | GP-C27 | Electricity & Magnetism | PHYS 301 | |
| | GP-C28 | Mechanics | PHYS 170, 216, 306 or 350 | |
| | GP-C29 | Thermodynamics | PHYS 203, CHEM 205 or CHEM 304 | (see GEOPH calendar) |
| | GP-C29 | Vibration, Waves & Optics | PHYS 318 or 408 | |
| Geology | GP-C30 | Geochemistry | EOSC 333 | |
| | GP-C31 | Igneous Petrology | EOSC 321 | |
| | GP-C32 | Metamorphic Petrology | EOSC 322 | |
| | GP-C33 | Sedimentary Petrology | EOSC 320 or 421 | |
| | GP-C34 | Structural Geology | EOSC 323 or 422 | NA |
| | GP-C35 | Tectonics | EOSC 332 | |
| Geophysical Methods & Interp'n | GP-C36 | Analytical Methods | ATSC 409, EOSC 454 | (EOSC 454) |
| | GP-C37 | Marine Geophysics | No equivalent UBC course | NA |
| | GP-C38 | Electrical & EM Methods | EOSC 350 | NA |
| | GP-C39 | Gravity & Magnetics | EOSC 450 | NA |
| | | Seismology | EOSC 353 | NA |
| | GP-C40 | | | |
| | GP-C41 | Radiometrics | No equivalent UBC course | |
| | GP-C42 | Rock Properties or Rock Physics | No equivalent UBC course | |
| | GP-C43 | Seismic Interpretation | EOSC 353 | NA |
| Modern Physics | GP-C44 | Modern Physics | PHYS 250, 330 | |

2 EOSC 449, Honor's Thesis, is a 6 credit course. 3 credits count towards a writing credit. 3 additional credits can count towards a topic specific credit with a supporting letter from the supervisor nominating the topic category.

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|-------------------------|--------|--------------------------------|--|------------|
| Near Surface Geoscience | GP-C45 | Environmental Geophysics | EOSC 350 | NA |
| | GP-C46 | Geomorphology | EOSC 330, GEOS 206, 405 or 406 | |
| | GP-C47 | Geographic Information Systems | GEOS 270 or 370 | |
| | GP-C48 | Glacial or Quaternary Geology | GEOS 408 | |
| | GP-C49 | Remote Sensing | GEOS 373 or ATSC 301 | (ATSC 301) |
| Regional Geology | GP-C50 | Geology of Canada | No equivalent UBC course | |
| | GP-C51 | Geology of North America | EOSC 332 | |
| Resource Geoscience | GP-C52 | Fluid Flow in Porous Media | Grad courses only | |
| | GP-C53 | Hydrogeology/ Hydrology | EOSC 325, 329 , 428 or GEOS 305 | |
| | GP-C54 | Mineral Deposits Geology | EOSC 331 , 424 | |
| | GP-C55 | Petroleum Geology | EOSC 432 | |
| | GP-C56 | Reservoir Engineering | No equivalent UBC course | |
| | GP-C57 | Well Log Analysis | Part of EOSC 432 | |

Other relevant geophysics courses

Have you taken other courses that you think are relevant – including graduate level courses - but do not fit into any of the categories above? If so, for each relevant course, please provide a course syllabus, and write a brief explanation of how the course is relevant to the profession of geoscience in geophysics.

| Subject | (Institution Name) Course | How relevant to professional geophysics |
|---------|---------------------------|---|
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