

Checklist for the Bachelor of Science in Geology BS in Geology

Revised for Spring semester 2017



Photo: SSU geology students and faculty at the Mount Stephen trilobite quarry of the Burgess Shale fossil deposits in the Canadian Rocky Mountains in Yoho National Park outside of Field, British Columbia, Canada, September 2012.

Sonoma Geology

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Overview: The B.S. in Geology is ideal for attending graduate school in any subfield in geology, or for becoming registered as a Professional Geologist (PG) with the State of California, or Hydrogeologist or Geophysicist. See: bpelsg.ca.gov

Bear in mind when considering the BS in Geology that you are **required to attend summer field camp** as equivalent to SSU Geology 427 – Advanced Field Geology, usually in the summer after you walk at SSU Commencement. Early on you should research which camp you would like to attend (e.g., at geology.com) in order to ensure that you have enough funds to go to the camp of your choosing. Also, other students in the department are a good way to gather information about summer field camps. You will have to apply to another university and be accepted into their field camp, attend field camp, and transfer the units back to SSU by requesting a transcript from that school to complete your degree. Field camps vary widely in cost. See also Geology 427 below under degree requirements.

CORE COURSES IN THE B.S. MAJOR:

GEOL 205: Mineralogy (Fall only). Prerequisite is prior or concurrent enrollment in GEOL 303 and also in Chemistry 115A General Chemistry (or equivalent elsewhere).

GEOL 303: Advanced Principles of Geology (Fall and Spring). Prerequisite is **one** of the following: GEOL 102, GEOL 105, GEOL 110, GEOL 107 (restricted to those seeking teaching certification), GEOL 120, GEOG 201, ENSP 303, ENSP 309, BIOL 310, ANTH 201, or the equivalent of these courses. This class fills the major requirement and also GE B3, but only if you have 60 units completed by the end of the semester in which you take 303. Registration preference is given to Earth Science BA and Geology BS students.

GEOL 304: Geologic Mapping and Report Writing (Fall and Spring), which is a field course. The prerequisite is concurrent enrollment in GEOL 303. This class is not GE. You should take 303 and 304 together in the same semester, they are offered Fall and Spring. There is a 5-day required field trip in GEOL 304.

GEOL 309: Computer Applications in Geology (Spring only). The prerequisite is GEOL 303 or concurrent enrollment in GEOL 303.

Take **all** the following 300-level **pairs** of Geology courses, each pair consists of a lecture-lab course and an accompanying field course (this is a group of 8 courses total):

GEOL 307 & 308: Igneous and Metamorphic Petrology (Spring only), **and the Field course**. Prerequisite is GEOL 205, Mineralogy (which itself has a prerequisite of CHEM 115A) and GEOL 303. There is a 5-day required field trip in GEOL 308.

GEOL 311 & 312: Sedimentary Geology (Spring only), **and the Field course**. Prerequisite is GEOL 303 and GEOL 304. There is a 5-day required field trip in GEOL 312.

GEOL 313 & 314: Paleontology (Fall only), **and the Field course**. Prerequisite is GEOL 303 or GEOL 102. There is a 5-day required field trip in GEOL 314.

GEOL 317 & 318: Structural Geology (Fall only), **and the Field course**. Prerequisites are GEOL 303, GEOL 304, and a mathematics course in Trigonometry. There is a 5-day required field trip in GEOL 318.

Take the following two capstone mapping and field geology courses once you have finished all the above-listed core courses (one of the 300-level classes above may be taken concurrently with GEOL 420, with instructor permission):

GEOL 420: Integrative Field Experience (Spring only). Often referred to as Senior Field, there is a 10-day required field trip in GEOL 420 over Spring Break.

GEOL 427: Advanced Field Geology. We call this course Summer Field Camp and it is usually taken in the summer after you walk at Commencement. Please be aware of the additional cost of this course and plan early for how you will finance the course. You must apply and be accepted at another university's summer field camp, then transfer the units back to SSU by requesting a transcript from that school. Ask if you have questions.

ELECTIVE COURSES: Take 9 units of upper-division (300+ level) geology courses from the following list:

GEOL 301. Natural History of the Hawaiian Islands. (3 units, prerequisite GEOL 102, or BIOL 115 or 123.) Upper Division GE, GE B3. Often offered through Extended Education in the December/January Winter Session and in the Summer Session.

GEOL 302. The Geology of Climate Change. (3 units, GEOL 303 prerequisite)

GEOL 306. Environmental Geology. (3 units) (currently dormant)

GEOL 310. Geophysics. (4 units, GEOL 303 and MATH through trigonometry are prerequisites). May also be counted as your second semester of physics and may be taken before you take physics. (Spring only)

GEOL 320. Basin Analysis. (4 units, GEOL 311 prerequisite) (currently dormant)

GEOL 321: Burgess Shale Paleontology(Fall only). (3 units, prerequisites GEOL 313, 314). There is a 6-day required field trip in GEOL 321 to Canada. By permission only.

GEOL 323: Hydrology. (3 units, GEOL 102 or consent; MATH 106 or 107) (Spring only)

List of Possible Electives, continued:

GEOL 326 Stratigraphy and Earth History. (4 units, GEOL 303 or consent) (dormant)

GEOL 422 Geochemistry. (3 units) (currently dormant)

GEOL 425 Economic Geology. (3 units) (currently dormant)

GEOL 426A & B: Senior Thesis. (3 units each) – prior arrangements with a particular faculty mentor are required. (Fall and Spring)

GEOL 495: Special Studies. (1-4 units) – prior arrangements with a particular faculty mentor are required. (Fall and Spring)

Electives in other departments: Consult with your Geology Department advisor if you would like to consider a course in another department on campus to count toward your electives. Seek approval before taking the course.

REQUIRED SUPPORT COURSES – MATH, CHEMISTRY, & PHYSICS

Take the following math course: **MATH 161: Calculus I – Differential and Integral Calculus (4 units)**, also consider taking Calc I as MATH 161X, which has more emphasis on review of pre-calculus topics.

Note: Graduate schools often require a **full year** (two semesters) of calculus and physics (not counting Geophysics). If you are considering applying to graduate school (masters: M.A. or M.S., or doctorate: Ph.D.) you should consult with one of the professor in the Geology Department.

Take **both** of these chemistry courses:

CHEM 115A: General Chemistry & CHEM 115B: General Chemistry II (Note: CHEM 115A is a prerequisite for GEOL 205 – Mineralogy). (= one year of General Chemistry).

Take the following physics courses (=one year of physics, with several options below):
PHYS 114/116 (Calc-based) or **PHYS 210A/209A** (Trig-based) = first semester physics.

And **PHYS 214/216** (Calc-based) or **PHYS 210B/209B** (Trig-based), or **GEOL 310 Geophysics**. The Geophysics class may be taken prior to taking your first physics course. Any of these three courses are considered the second semester physics. Ask if you have questions about physics. Note: Graduate schools often require a full year of physics, not counting Geophysics.

See any of the Geology Department faculty if you are interested in majoring in Geology. The department office and the faculty offices are next to the *Dilophosaurus* dinosaur skeleton on the first floor of Darwin Hall, east end (the other end from the elevator). Our Department phone number is: 707-664-2301. Web page: <http://www.sonoma.edu/geology/>



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