

## Upper Division Electives 2019-2020

### Fall 2019

Course	Course Title	Units	Instructor
GEL 131	Risks and Natural Hazards	3	Rundle
GEL 148	Isotopes and Tracers	3	Yin
GEL 160	Geological Data Analysis	3	Rudolph
GEL 190	Seminar	1	TBD

### Winter 2020

Course	Course Title	Units	Instructor
GEL 141	Evolutionary History of Vertebrates	3	Motani
GEL 150B	Geological Oceanography	3	TBD
GEL 156	Hydrogeology and Contaminant Transport	5	Fogg
GEL 163	Planetary Geology and Geophysics	3	Stewart
GEL 190	Seminar	1	TBD

*\*Please note: GEL 108 will only be offered in Winter this year\*  
GEL 3 and 3L will no longer be offered after Summer 2019*

### Spring 2020

Course	Course Title	Units	Instructor
GEL 120	Big Bang to Today	3	Osleger
GEL 133	Environmental Geochemistry	3	Mukhopadhyay
GEL 144	Historical Ecology	3	Vermeij
GEL 150A	Physical and Chemical Oceanography	4	Gaylord
GEL 190	Seminar	1	TBD
GEL 198	Sediments and Strata supplement <i>Prerequisite: GEL 109. Not open to students enrolled in GEL 109 in Spring 2020. CRN: TBD</i>	1	Sumner

*GEL 106 will be offered for the last time this year*

### CalTeach/MAST Courses

Course	Course Title	Quarters	Units	Instructor
GEL 181	Math and Science Teaching – Middle School	F, W, Sp	2	Horn
GEL 183	Math and Science Teaching – High School	F, W, Sp	3	Pinter, Susann
GEL 185A	Integrated Science I	SS1	2	Pinter, Susann
GEL 186	Learning Assistant Seminar	F, W, Sp	1	Stevenson

### **Upper Division Electives:**

- Choose from courses GEL 130-194 or pre-selected non-GEL courses.
- Only one of GEL/EDU 181 or 183 or 185A or 185B or 186 may be applied toward elective credit.
- No more than three units of upper division elective credit for courses GEL 115-120.
- No more than six units of upper division elective credit for GEL 192 or 194A-B or 194HA-HB.
  - Students who receive approval to do a senior thesis for part of the capstone requirement may not use 194A-B or 194HA-HB for the upper division elective courses.
- Pre-selected non-GEL courses:
  - CHE 100 – Environmental Water Chemistry (3 units)
  - ECI 171+171L – Soil Mechanics (5 units)
  - ECI 175 – Geotechnical Earthquake Engineering (4 units)
  - ESM 100 – Principles of Hydrologic Science (4 units)
  - ESM 186 – Environmental Remote Sensing (5 units)
  - ESP 152 – Coastal Oceanography (3 units)

- HYD 144 – Groundwater Hydrology (4 units)
  - HYD 146 – Hydrogeology and Contaminant Transport (5 units)
  - LDA 150/ABT 150 – Introduction to Geographic Information Systems (4 units)
  - Cross-enrollment online class at UCLA: Geography 168 – Intermediate GIS (4 units)  
<https://crossenrollcourses.universityofcalifornia.edu/catalog/view/119?title=GEOG+168+Intermediate+Geographic+Information+Systems> (this course counts as UC Davis' LDA/ABT 150, so students cannot take both)
  - SSC 100 – Principles of Soil Science (5 units)
  - WFC 102+102L – Ecogeomorphology (1 unit) / Lab (6 units)
  - Other courses in related fields must be approved in advance by the major advisor.
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## Update on Sed/Strat for California Professional Geologist License

The Fundamentals of Geology (FG) Exam for the California Professional Geologist License is undergoing review which, if approved, would now require 4.5 units worth of Stratigraphy and Sedimentation. Our GEL 109/109L: Sediments and Strata classes are together worth 4 units. Many are wondering how to make up additional units in this area.

When students apply for the FG Exam, their coursework is evaluated in order to determine if they've met these and other unit requirements. The California Board for Professional Engineers, Land Surveyors, and Geologists (BPELSG) is not able to guarantee any kind of pre-approval for courses to count. The advice is to talk with your faculty advisors to determine if your choice in courses fits into the definition of Stratigraphy and Sedimentation. You may have to demonstrate to BPELSG how your course fits into this definition.

DRAFT definition: "'Stratigraphy and Sedimentation' must include a minimum of 3 semester hours or 4.5 quarter hours of instruction in the identification and interpretation of sedimentary rocks, sedimentary processes and structures, application of stratigraphic and dating methods, identifying the impact of climate and geologic processes on depositional patterns, and facies analysis."

Some of these classes *might* be:

- GEL 198: 1-unit Sed/Strat supplement class offered in Spring 2019 with Dawn Sumner. CRN: TBD
  - Prerequisite: GEL 109. Not open to students taking GEL 109 in Spring 2020
- A Geomorphology class (GEL 136 and 140 won't be offered in 2019-2020)
- A Soil Science class
- Research done in Sed/Strat

For anyone who hasn't taken GEL 109 and 109L yet, it will be worth 5 units next time it's offered in Spring 2020.

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## Geology curriculum change

Comparing the old and new (Fall 2019) Geology major requirements

### Geology B.S.

	Pre-2019	Effective Fall 2019
Geology	GEL 50 & 50L	Same
	GEL 3 & 3L	Replaced with GEL 53: Geobiology
	GEL 60 and 62	Removed GEL 62
Math	MAT 21A-B-C (with options)	More options in math courses
Chemistry	CHE 2A-B-C (with options)	CHE 2C is replaced with GEL 55: Geochemistry
Physics	PHY 7A-B-C or 9A-B-C (with options)	PHY 7C/9C is replaced with GEL 56: Geophysics
Statistics	STA 32 or 100	Added the option of STA 13
Required upper division classes	GEL 101 & 101L: Structure	Same
	GEL 103: Spring Field	Same
	GEL 105: Igneous Rocks	Same
	GEL 106: Metamorphic Rocks	Removed
	GEL 107 & 107L: Paleobiology	Same
	GEL 108: Paleoclimates	Same
	GEL 109 & 109L: Sed/Strat	Same
	GEL 110: Summer Field	Replaced with GEL 110A, 110B, and 110C (take 2)
Electives	16 units	18 units

### Geology A.B.

	Pre-2019	Effective Fall 2019
Geology	GEL 50 & 50L	Same
	GEL 3 & 3L	Replaced with GEL 53: Geobiology
	GEL 60	Same
Math	MAT 16A-B or 21A-B	Added MAT 17A-B as an option
Chemistry	CHE 2A-B	Added GEL 55: Geochemistry
Physics	PHY 7A-B	Same
Statistics	STA 13 or 32 or 100	Same
Required upper division classes	GEL 101 & 101L: Structure	Same
	GEL 103: Spring Field	Same
	GEL 107 & 107L: Paleobiology	Same
	GEL 108: Paleoclimates	Same
	GEL 109 & 109L: Sed/Strat	Same
Electives	16 units	14 units

***You must complete all of the old curriculum or all of the new curriculum***

Interested in completing the new requirements?

- Only open to students registered in classes in Fall 2019 or later
- If you've already taken GEL 110 or will be taking it this summer, that will be counted instead of GEL 110A/B/C
- If you've already taken GEL 106, it can be counted as an elective.

Interested in completing the old requirements?

- It is not required that you complete the new requirements. If the courses you need for the old requirements are still available, you may complete those.
  - GEL 3 will be offered this Summer. GEL 3/3L will no longer be offered after this Summer
  - GEL 106 will be offered next Spring 2020, but is unlikely to be offered after that

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## Course Changes

- New required series
  - GEL 53: Intro to Geobiology (offered every Fall)
  - GEL 55: Intro to Geochemistry (offered every Winter)
  - GEL 56: Intro to Geophysics (offered every Spring)
- Unit changes to help meet the California Professional Geologist licensure requirements (effective Spring 2020)
  - GEL 103 increased by 1 unit to reflect work already being done in the class
  - GEL 109 increased by 1 unit, and will add another hour of lecture each week
- Changes to Summer Field
  - GEL 110A: Summer Field: Structure and Tectonics (4 units)
  - GEL 110B: Summer Field: Volcanology (4 units)
  - GEL 110C: Summer Field: Special Projects (4 units)
  - These can be taken over multiple summers, and in any order (providing you've met the prerequisites)
- GEL 60 changes to reflect the official absorption of GEL 62

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## Prerequisites

- Prerequisites to GEL classes will be updated soon
    - Wherever GEL 3/3L were prerequisites, GEL 53 will be accepted too
    - Wherever CHE 2C was a prerequisite, GEL 55 will be accepted too
    - Wherever PHY 7C or 9C was a prerequisite, GEL 56 will be accepted too
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## **Geology 62 announcement (from 2018-2019)**

GEL 62 (Optical Mineralogy) will no longer be offered as of Fall Quarter 2018. The content of 62 is now folded into a modified and updated GEL 60 (Earth Materials), which will prepare you for GEL 105, 106, and 110. GEL 62 will not be enforced as a prerequisite for future GEL classes.

**All students who have not yet taken GEL 62, and are following the pre-2019 Geology Curriculum, will need to satisfy this 2 unit requirement for the Geology major in a different way.** Your options are:

- 1) Take GEL 53: Intro to Geobiology taught by Professor Dawn Sumner in Fall Quarters.
- 2) Take GEL 55: Intro to Geochemistry taught by Professor Sujoy Mukhopadhyay in Winter Quarters.
- 3) Take GEL 56: Intro to Geophysics taught by Professor Magali Billen in Spring Quarters.
- 4) Talk with your major advisor (Mandy) or your faculty advisor (Professor Jim McClain or Professor Ryosuke Motani) to find a different course that can be substituted for GEL 62.