

Upper Division Electives 2017-2018

Fall 2017

Course	Course Title	Units	Instructor
GEL 115	Earth Science, History, and People	4	Verosub
GEL 131	Risks and Natural Hazards	3	Rundle
GEL 140	Process Geomorphology	4	Pinter, Nicholas
GEL 190	Seminar	1	Mukhopadhyay
GEL 198	Geobiology (CRN: 45069) – see below for more information	3	Sumner

Winter 2018

Course	Course Title	Units	Instructor
GEL 116N	Oceanography	3	Ward, Melissa
GEL 130	Non-Renewable Natural Resources	3	Verosub
GEL 146	Radiogenic Isotope Geochemistry and Cosmochemistry	3	Yin
GEL 150B	Geological Oceanography	3	McClain
GEL 156	Hydrogeology & Transport	5	Fogg
GEL 163	Planetary Geology and Geophysics	3	Stewart
GEL 190	Seminar	1	Carlson

Please note: GEL 108 will only be offered in Winter this year

Spring 2018

Course	Course Title	Units	Instructor
GEL 120	Big Bang to Today	3	Osleger
GEL 144	Historical Ecology	3	Vermeij
GEL 150A	Physical and Chemical Oceanography	4	Gaylord
GEL 190	Seminar	1	Sumner
GEL 198	Environmental Geochemistry (CRN: 65112)	3	Mukhopadhyay

Please note: GEL 109 and 109L will only be offered in Spring this year

MAST Courses

Only one course may be applied toward elective credit

Course	Course Title	Quarters	Units	Instructor
GEL 181	Math and Science Teaching II	F, W, Sp	2	Horn
GEL 183	Math and Science Teaching III	F, W, Sp	3	Pinter, Susann
GEL 185A	Integrated Science I	W	2	Pinter, Susann
GEL 185B	Integrated Science II	Sp	2	Pinter, Susann
GEL 186	Learning Assistant Seminar	F, W, Sp	1	Stevenson

Upper Division Electives:

- Additional upper division electives chosen from GEL 130–194 courses
- Only one of GEL/EDU 181, 183, GEL 185A, 185B, or 186 may be applied toward elective credit
- No more than 3 units upper division elective credit for GEL 115–120 courses
- Maximum of 6 units upper division elective credit for GEL 192 or 194A-B or 194HA-HB
- Preapproved electives outside of Geology:
 - 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/GEL 156 – Hydrogeology and Contaminant Transport (5 units)
- LDA 150/ABT 150 – Introduction to Geographic Information Systems (4 units)
- SSC 100 – Principles of Soil Science (5 units)
- WFC 102+102L – Ecogeomorphology (1 unit) / Lab (6 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)
- And related fields approved *in advance* by faculty adviser

Geobiology

GEL 198-016

Fall 2017

Professor Dawn Sumner

Tuesdays and Thursdays 11-12:30 in EPS 1348.

CRN: 45069

3 units (the course will default to 1 unit on Schedule Builder; you must register for three units)

This course counts for upper division elective credit for the Geology major

All of the biological concepts will be placed into the framework of geological history. In addition, most classes will be structured as

1. 10 minute in class activity
2. 20 minute mini-lecture
3. 10 minute in class activity
4. 20 minute mini-lecture
5. 20 minute in class activity
6. 10 minute summary of activities

The in class activities will consist of a mix of surveys, lab activities, and a project to develop a game using concepts in the course. I think it will be a lot of fun.

Course outline:

What is Life?

- 1: Introduction and Goals of Course
- 2: Genomes and Evolution
- 3: Metabolism as Geochemistry
- 4: Cells as Structures

Web of Life

- 5: Inheritance and Gene Exchange
- 6: Domains of Life and Their Functional Characteristics

How Cells Work

- 7: DNA -> RNA -> Enzymes -> ...
- 8: Cell Structure in the Context of Function
- 9: Energy and Metabolism
- 10: Metabolism and Death

Microbes as Agents of Geological Change

- 11: Autotrophy and Heterotrophy
- 12: Photosynthesis (Fe, S, and O₂)
- 13: Respiration (O₂, SO₄²⁻, Fe)
- 14: Fermentation (and natural gas)
- 15: Microbial C-cycle
- 16: Mineral interactions

Communities and Ecology

- 17: Life as a constructor of environments
- 18: Ecology as a Geological Agent
- 19: Cooperation and Competition
- 20: Life in Extreme Environments and in the Universe