

SYLLABUS GEOGRAPHY 116/EARTH SCIENCE 173 GROUNDWATER
WINTER 2018 UCSB

Instructor: Hugo A. Loáiciga (hloaiciga@ucsb.edu ; http://www.geog.ucsb.edu/~hugo)

Office: 3626A Ellison Hall

Office hours: Tuesday/Thursday 11 am – 12 noon, or by appointment, Room

Teaching Assistants: Dami Eyelade (oeyelade@umail.ucsb) & D.J. Osleger

Office: Dami: 3626 B Ellison Hall; **Office hours:** TBD; D. J. Osleger: TBD

Lecture: Tuesday, Thursday: 9:30-10:45 am; **Room 3621 Ellison Hall**

Laboratory: **Tuesday 6:00 – 7:50 pm** Room 2610 Ellison Hall or 3610 Ellison Hall:

Or **Thursday 5:00 – 6:50 pm** Room 2610 Ellison Hall see note 5, page 2 and 3.

Reader: **SB Printer** UCSB University Center (REQUIRED); Reference book (NOT required): Applied Hydrogeology by CW Fetter

Prerequisites: Geog. 3B (desirable), Geog. 112 (recommended)

Desired: introduction to physical geography/geology, basic calculus, algebra, trigonometry

TABLE 1. GRADING (see Notes 1, 2, 3, 4, 5).

Item	Date or date due	Weight, %
Midterm 1	Thursday February 8	14
Midterm 2	Thursday March 8	16
Homework	At the beginning of lecture on due date	14
Laboratory	due date (see Note 5, pages 2,3)	24
Final	Tuesday March 20; 8 – 11 am , in lecture room.	32
TOTAL		100%

All exams are in the assigned lecture classroom. **The exams are open book.**

FIRST DAY OF CLASSES: TUESDAY JANUARY 16; LAST DAY OF CLASSES: THURSDAY MARCH 15;

HOLIDAYS: NOT APPLICABLE

TABLE 2: COURSE CONTENTS

Week	Subject Item
1,2	Geology and groundwater
3,4	Properties of aquifers
5,6	Principles of ground-water flow
7,8	Ground water wells
8,9	Regional ground-water flow
9,10	GW contamination and Management (field methods)*

*: possible coverage, depending on time availability.

Course objectives: This course is aimed at providing the student with an introduction to the most important topics in groundwater hydrology/hydrogeology. The teaching format consists of the presentation of key concepts followed by problem-solving, and laboratory practice. This course will prepare students to analyze ground-water flow processes taking into account aquifer properties, basic hydraulic factors, geologic controls, and their temporal and spatial interactions. Mastery of concepts relies on quantitative analysis.

NOTES

PLEASE TURN OFF ALL YOUR ELECTRONIC COMMUNICATION DEVICES DURING LECTURE AND LAB

1. Attendance to lecture is generally not required but is required for laboratories. There is no note-taking for this class, and homework, laboratory, and test questions depend heavily on lecture notes and instructions. Past experience shows that **failure to attend lectures leads to deficient grades in this course.**

2. Homework and laboratory reports are due on Thursdays of assigned weeks at the start of lecture, in class, unless otherwise specified by the Instructor. Instructions for homework and laboratory report preparation will be given in class. Turn all due homework to the teaching assistant (T.A.) and reports to the instructor if the T.A. is not present. **Late homework and reports are not accepted, and will automatically result in a grade equal to zero.**

Emailed homework or laboratory reports are NOT acceptable unless there is a valid medical excuse.

3. **Make-up exams, homework, reports, and laboratories will not be accepted or administered.** Failure to take an exam or submit a scheduled assignment will result in an automatic grade of zero. Under exceptional conditions, a medical condition **may** entitle a student to a make up a missed test or assignment, provided that a medical certification extended by a licensed physician in the State of California is presented within 48 hours of the scheduled time of the exam or due time of the assignment. The certification must be submitted to the Instructor together with an explanation on how/why the medical condition prevented the student from fulfilling his/her course work.

4. All exams are written, in class, **open-book**, and to be answered independently by each student. Students are required to bring a **battery-powered calculator** in good working condition to the exams. No sharing of calculators, information, or other materials is permitted during the exams. The operation of **Electronic communication devices is NOT accepted during examinations or lectures.**

5. The laboratory includes: (I) MS EXCEL practice that will prove useful for students in problem solving, homework, and report preparation. This laboratory also includes web browsing of the USGS (United States Geological Survey) public electronic data base. (II) safe yield determination; (III) hydrogeologic data interpretation and analysis: several cases studies; (IV) laboratory experimentation with a flow net simulator and a permeameter, (V) computer analysis of pumping test data. **See a summary of the laboratory contents and weights, meeting dates and places, report due dates, on TABLE 3. All the laboratory reports are due at the start of lecture on the due date.**

TABLE 3: summary of the laboratory contents and grading weights, meeting dates and places, reports' due dates.
FOOD AND DRINK ARE NOT ALLOWED IN THE LABORATORIES AND CLASSROOM

LABORATORY	%	DATE OF PRACTICE	DUE DATE
(I) EXCEL data analysis-training & USGS public web site data base accessing ¹	2	Tues. Jan. 16, 6 pm or Thurs. Jan. 18 @ 5 pm Ellison Hall 2610	Thurs. Jan. 25
(II) Safe yield determination	2	Tues. Jan. 23, 6 pm or Thurs. Jan. 25 @ 5 pm Ellison Hall 2610	Thurs. Feb. 1
(III) Laboratory manual (Reader) ¹ : III-1: Lab. # 16 (p. 121-126) III-2: Lab. # 19-21 (p. 141-144) III-3: Lab. # 8 (p. 59-66)	4 5 4	Tues. Jan. 30, 6 pm or Thurs. Feb 1 @5 pm Tues. Feb. 6, 6 pm or Thurs. Feb 8 @ 5 pm Tues. Feb. 20, 6 pm or Thurs. Feb. 22 @ 5 pm Ellison Hall 2610	Thurs. Feb 8 Thurs. Feb. 22 Thurs. Mar. 1
(IV) Lab. Experiment: hydraulic conductivity by constant-head permeameter & flownet in a sand tank ¹	3	Tues. Feb. 27, 6 pm or Thurs. Mar. 1 @ 5 pm Room 3610 Ellison Hall	Tues. Mar 6
(V) Computer analysis of pumping-test data ¹	4	Tues. Mar. 6, 6 pm or Thurs. Mar. 8, 5 pm Ellison Hall 2610	Tues. Mar. 13
TOTAL:	24		

NOTE: ¹ Must be present during laboratory to receive credit in these laboratories.