

ENVS 2001: Laboratory and Field Methods (Course)

Course Schedule for Fall 2015

Location: KBSB 1N01 Lab E

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COURSE SCHEDULE (subject to change)

Date	Week	Style	Topic	Skills	Assignment	
9/1	1	LECTURE	Lab Safety, The Process of Science, & Projects	safety, equipment, experimental design, scientific method	lab contract (in class)	
9/8	2	LAB	Photosynthesis & Respiration	measuring pH & DO, Winkler titration	the nature of data	
9/15	3	FIELD/ LAB	Water Quality Assessment	secchi, pH, BOD, Van Dorn sampler, TSS, nutrients, microbial community		
9/22	4	FIELD/ LAB	Soil Analysis	pH, density, moisture, organic & nutrient content, texture	bibliography	
9/29	5	FIELD*	Terrestrial Ecology Dr. L. Gibson	ecological analysis, quadrats, transects		
10/6	6	LECTURE /LAB	Stable Isotope Analysis	fundamentals, applications, fingernail survey, analysis	group meetings	
10/13	7	READING WEEK				
10/20	8	FIELD	Marine sediment analysis	sediment sampling, heavy metals analysis (demo)	report outline	
10/27	9	FIELD	Atmospheric Pollution	air sampling, pollution gradients, particulates, isotopes		
10/31*	10	SWIMS Field Trip	Organismal Physiology	Fluorometry, Respirometry, Biochemistry		
11/3	11	LAB	DNA Techniques	DNA extraction, PCR, sequencing	introduction	
11/10	12	TBD	Group Projects	Data, Data, Data		
11/17	13	TBD	Group Projects	Data, Data, Data		
11/24	13	TBD	Group Projects	Data, Data, Data		
REVISION WEEK						
12/1	14	Group Presentations - PUBLIC SPEAKING!			presentation	
12/8	15	EXAM PERIOD				
12/15	16	NO EXAM **Final Report Due**				

*** SWIMS Special Field Trip scheduled for October 31st. Please mark your calendars!**

WEBSITE: www.thelifeisotopic.com > **TEACHING > ENVS2001 > password = 2001**

THIS COURSE:

Welcome to ENVS2001 This is a semi-**NEW** course offered in the ENVS curriculum. We will focus on common laboratory and field techniques used in environmental science as well as other disciplines. The course is not exhaustive but is meant to cover some basics and leave you more confident and conversant with your peers, professors, and future employers.

This is the **third** offering of this course. In a way, you are entering a historic experiment! We **will** deviate from the syllabus, some activities may be dropped or changed as the semester progresses. Please pay attention to all course announcements in class and via email and check with your team regularly for updates you may have missed.

Your feedback on what works and doesn't work is extremely important for the future quality of this course and thus the experiences of your peers and the strength of the program. **Your opinions matter** and I hope you will **express them early and often**.

LEARNING OUTCOMES:

On successful completion of this course, students should be able to:

- 1. Understand how scientific data is used to address environmental problems.*
- 2. Have a basic understanding of the techniques and methodologies necessary for collecting environmental data.*
- 3. Understand some of the problems inherent in data collection, and how this impacts data interpretation.*
- 4. Understand how data collected in the lab and field can be used to critically evaluate ideas.*

ASSESSMENT:

This is a course meant to give you **experiences**. My goal is to help you become conversant in "what" common methodologies and technologies are employed in environmental science. A secondary objective is gaining an understanding of the "how" certain instruments and methods work, and thirdly, "why" they are commonly used to answer scientific questions. Thus, this course will not utilize traditional assessment practices (*e.g.* exams). Instead, you will be assessed on your participation in the laboratory and field setting and your contribution to your team's success in collecting quality data.

Tutorials -- In the past, the 3 hour lab section was not enough time to properly convey the importance and performance of each method. Therefore, I will continue to develop a series of video tutorials which can be viewed prior to coming to class. The tutorials will

guide you through the week's activities while providing some justification for the importance of the method in the context of an environmental problem.

Quizzes -- To make sure everyone understands the objectives of the day, we will have short quizzes at the beginning of each class. You can prepare for the quiz by viewing the video tutorial prior to coming to class.

Team Projects -- Each student will join a team to develop and execute an independent research study. Various topics will be proposed for selection. Groups may propose their own ideas but these must be discussed with me prior to any effort.

Methods	Details	Weighting in final course grade (%)
Laboratory reports	derived from in-class field and lab activities, datasheets and short answers.	20
Assignments	take-home assignments, project report milestones, etc.	10
Project reports	final report draft, including report text & figures, project and assessments	50
Presentation	evaluation of public presentation of team project based on clarity and quality	20

ATTENDANCE:

While HKU's policy places class attendance within the responsibility of the student, you must understand that an experiential course such as this requires class attendance to attain the learning outcomes. Further, you will be working in teams, and therefore reliant on each other for progressing through the course activities and group projects. I recommend that all unavoidable absences are discussed with me and your teammates prior to missing a class. Outside of the unfortunate circumstances of illness and death in the family, my expectation is that all students will attend all class meetings. Besides, it's more fun that way!

Please note that at times, field trips and lab activities may require more time than permitted during our scheduled meeting. We will work together to minimize scheduling conflicts.

SAFETY:

Lab and field safety is the **highest priority** for this course. ***Dangerous and/or careless actions (e.g. playing with fire, abusing animals) will not be tolerated under any circumstances and WILL lead to disciplinary action including expulsion from the course.***

PLAGIARISM:

The intentional copying of content, ideas, images, etc. without proper citation will be treated as plagiarism and reported to the University per HKU policy. Simply re-ordering words is still plagiarism! Your reports should contain your teams' original ideas synthesized from and supported by the scientific literature. If you are unsure if your writing constitutes plagiarism you should ask for a review of a rough draft.