

ENSC 5530.01
Research Methods in Environmental Science
Spring 2012

Class meetings: Thursdays, 7:00 – 9:50 pm; Bayou Building 3215
Instructor: Dr. Cindy Howard
Office: Bayou Building, Faculty Suite 3525
Telephone: (281) 283-3745 (please leave a message if you don't get an answer)
E-mail: howardc@uhcl.edu (best way to contact me)
Office hours: Mon 2-5pm, Wed 4-5pm; other times by appointment
Webpage: <http://sce.uhcl.edu/howard/>

Course text options and materials

Dawson, M.M., B.A. Dawson and J.A. Overfield. 2010. *Communication skills for biosciences*. John Wiley & Sons, West Sussex, UK. 169 pp. ISBN 978-0-470-86393-0.

Davis, M. 2004. *Scientific papers and presentations*, 2nd ed. Elsevier Science & Tech. Books, New York. 336 pp. ISBN# 0-120-88424-0.

Alley, M. 1996. *The craft of scientific writing*, 3rd ed. Springer-Verlag, New York. 282 pp. ISBN# 0-387-94766-0.

Booth, V. 1992. *Communicating in science: writing a scientific paper and speaking at scientific meetings*, 2nd ed. Cambridge Univ. Press, UK. 78 pp. ISBN 0-521-42915-3.

Day, R.A. 1998. *How to write and publish a scientific paper*, 5th ed. Oryx Press, Phoenix, AZ. 275 pp. ISBN 1-57356-165-7.

Matthews, J.R., J.M. Bowen and R.W. Matthews. 1996. *Successful scientific writing: a step by step guide for the biological and medical sciences*. Cambridge Univ. Press, Cambridge. 181 pp. ISBN# 0-521-55948-0.

Penrose, A.M. and S.B. Katz. 1998. *Writing in the sciences: exploring conventions of scientific discourse*. St. Martin's Press, New York. 321 pp. ISBN# 0-312-11971-2.

PowerPoint slides for each lecture and other course information will be available at least one day before each class session in the course Blackboard shell or initially at <http://sce.uhcl.edu/howard> under Courses: ENSC 5530.

Prerequisites

Graduate environmental science (ENSC) major in good standing; completion of STAT 5135 (Applied Statistical Methods) and advisor's approval of research project / thesis topic (see form).

Learning outcomes

Upon successful completion of this course, students will be able to formulate a research hypothesis and objectives, critique primary research literature, make a work timeline plan, and design, write and orally present a detailed proposal for a research project.

Course objectives

Students will learn the elements of scientific proposal writing, including abstracts, significance and objectives statements, literature reviews, methods and materials, and data analysis planning. The final outcome of the course will be the student's research proposal for his/her master's thesis or project. **The student's performance in this course (i.e., completion and quality of research proposal) may be used to determine the student's subsequent placement in project, thesis or seminar option.** The final determination of option placement will be made by the ENSC 5530 instructor, the student's advisor and the ENSC graduate program faculty.

Course format

Informal lectures and student discussions in class; individual advising on proposal writing; assignments designed to lead the student through the proposal writing process; written research proposal; oral presentation of proposal before class members and ENSC faculty.

Evaluation

The assignments lead to the completion of the research proposal. All assignments will be graded and available for return to the student at the class meeting time following the class period in which they were due. When turned in, each assignment must show the student's name, assignment number and date of submission.

Grades on assignments #3, 4 and 5 will be based on the student's progress toward completion of each of these sections of the proposal. Assignments may be submitted by e-mail. **Assignments #5 and 6 must be reviewed and approved by the student's project advisor** before the due date and submission in this class.

Students are expected to turn in assignments and make their presentations on the scheduled dates. ***If Assignments #1 and 2 are turned in late, they will be checked but will not be given credit. Other assignments and final proposals turned in late will be assessed a 10% grade penalty per week late, beginning the day following the due date.*** In general, incomplete grades are not an option in this course. ***Students should note that in order to progress from this course to conducting their research and completing the capstone ENSC 6838, they must earn a minimum grade of B- in ENSC 5530.***

Grading algorithm

Assignment #1a/b/c (Research topic / question; 3 primary research articles)	10 points
Assignment #2 (Intro outline, citations, specific objectives)	5 points
Assignment #3 (Draft Intro)	10 points
Assignment #4 (Draft Methods)	10 points
Assignment #5 (Draft Proposal)	10 points
Assignment #6 (Final proposal)	35 points
Oral presentation	<u>10 points</u>
	100 points

Grading scale (cumulative points)

A	92-100	B-	78-79	D+	66-67
A-	88-91	C+	76-77	D	60-65
B+	86-87	C	70-75	D-	58-59
B	80-85	C-	68-69	F	<58

Standards for grades pertaining to graduate work (from UHCL catalog):

- Performance in the range of "A" represents exceptional scholarship and intellectual initiative in accomplishing graduate level course goals and objectives.
- Performance in the range of "B" represents competent achievement in accomplishing graduate level course goals and objectives.
- Performance in the range of "C" represents the minimally acceptable performance in accomplishing graduate level course goals and objectives.
- A "D" or "F" performance represents unsatisfactory or below minimally acceptable performance in accomplishing graduate level course goals and objectives.

Class attendance

Class attendance is strongly recommended. Handout materials will be available on Blackboard for students who miss class; however, the handouts represent outlines of lecture material and valuable information will be obtained by interacting on assignments with peers during class times. Students are encouraged to utilize advising periods with the course instructor; however, advising sessions are not required. Students are also welcome to participate in ENSC 6838 sessions that occur during ENSC 5530 advising weeks. Students must work closely with their research advisors frequently throughout the proposal development process.

Information on university closures due to weather or other events can be obtained from the UHCL hotline (281-283-2221) or <http://www.uhclmergency.info/go/site/1522/>.

The course instructor will send messages to students during the semester regarding class schedule updates or changes, using the students' university email accounts.

Drop date

The last date to drop this course without a grade penalty is **April 23, 2012**. Students should have completed their draft proposal by this date if they intend to complete the course during this semester.

Academic honesty

Please carefully review the UHCL Academic Honesty Policy in the current UHCL catalog. Every student enrolled in this class is expected to abide by the UHCL Honesty Code, which states, "I will be honest in all my academic activities and will not tolerate dishonesty." Your participation in this class constitutes your acceptance of the UHCL Academic Honesty Policy. Dishonesty of any kind (e.g., plagiarism, cheating on exams) is absolutely unacceptable in this course. All academic code violations will be reported to the Dean of Students and can result in a grade of "F" on an assignment or test, a grade of "F" in the course or suspension from the university (see catalog). Your written work may be checked for plagiarism at any time. For the full UHCL Academic Honesty Policy, please refer to http://prtl.uhcl.edu/portal/page/portal/PRV/FORMS_POLICY_PROCEDURES/STUDENT_POLICIES/Academic_Honesty_Policy.

Special academic accommodations

Students requiring special academic accommodations with regard to exams, etc. should contact the Disabilities Services Office at 281-283-2627 (<http://prtl.uhcl.edu/portal/page/portal/UAO>).

Electronics

Use of cell phones, pagers, PDAs, laptop / notebook computers or similar electronic devices is generally not permitted during class periods. Cell phones must be silenced or turned off and must be stored out of sight for the duration of the class period. Exceptions may be made on a per class period basis and must be cleared with the course instructor prior to the start of class.

Course schedule (subject to revision); dates in bold font indicate formal class meetings

Date	Lecture Topic	Assignment	Due
01/19	Course introduction Developing the topic and research question	Assignment #1a: Determine topic and write research question (form signed by advisor) Assignment #1b: Obtain 3 primary research articles from 3 different peer-reviewed scientific journals in your field	
01/26	Library resources presentation; meet in UHCL Library Finding and reviewing scientific literature; collecting reference materials for the proposal; extracting/paraphrasing information; note card system; constructing the introduction outline	Assignment #1c: Develop note cards from the 3 selected articles	#1a #1b
02/02	Class presentations of topics and research questions Class discussion of Assignments #1a, #1b, and #1c Citing references; avoiding plagiarism; specific objectives and hypotheses	Assignment #2: Write detailed outline for Introduction, with citations; develop hypothesis; write specific objectives and project significance	#1c
02/09	Class discussion of Assignment #2 Proposal writing style; writing the Introduction; writing exercise	Assignment #3: Write draft Introduction, with specific objectives, hypothesis, significance and literature citations; include Literature Cited section	#2
02/16	Individual advising (6-7pm)		
02/23	Writing the Methods section; human subjects and IACUC forms; data analysis planning; project evaluation planning, budgets	Assignment #4: Write draft Methods section, including data analysis plan and evaluation plan	#3
03/01	Individual advising (6-7pm)		#4
03/08	Putting the proposal together, making effective oral and poster presentations	Assignment #5: Write draft Proposal (all sections); <i>must be reviewed and <u>approved</u> by project advisor before submitting</i>	
03/15	<i>No class: Spring Break</i>		
03/22	Individual advising (7-9pm on sign-up sheet)		#5
03/29	Individual advising (7-9pm on sign-up sheet)	Assignment #6: Write final Proposal; <i>must be reviewed and <u>approved</u> by project advisor before submitting</i>	
04/05	<i>No class or advising [meeting]</i>		
04/12	Individual advising (7-9pm on sign-up sheet)		
04/19	Oral presentations of research proposals and projects	Copies of PowerPoint presentation	
04/26	Attend and evaluate poster presentations by ENSC 6838 students in the UHCL Student Conference for Research and the Creative Arts Oral presentations of research proposals and projects	Copies of PowerPoint presentation	#6
05/03	Oral presentations of research proposals and projects	Copies of PowerPoint presentation	

Guidelines for research involving humans or animals

If you are planning to conduct research that involves vertebrate animals or humans, you are required to include the appropriate application forms in your research proposal for ENSC 5530. You will subsequently be required to submit the application to the appropriate UHCL committee (e.g., IACUC [Institutional Animal Care and Use Committee] or CPHS [Committee for the Protection of Human Subjects]) and *receive approval before beginning any work* on your research project. IACUC and/or CPHS applications and approval documents must be included in the final research report submitted for ENSC 6838.

The required information and application forms can be found at the locations listed below.

For research involving vertebrate animals:

<http://prtl.uhcl.edu/portal/page/portal/OSP/ANIMALS>

For research involving human subjects:

<http://prtl.uhcl.edu/portal/page/portal/OSP/PROTECTION%20OF%20HUMAN%20SUBJECTS>

Please print out the appropriate forms, complete them and attach to your research proposal.

ENSC 5530
Research Methods in Environmental Science

Project / Thesis Topic Approval Form

Name: _____

Semester: _____ Concentration area: _____

Planned option: Thesis _____ Project _____

Proposal topic: _____

Research question: _____

The student listed above has an approved research topic and is approved to write his/her research proposal during the current semester.

Research Advisor: _____

Approved: _____

(Advisor's signature)

Date: _____