

**Course Title: Water-Health Research II ENVR 890-005
(1303 McGavran-Greenberg; Wednesdays 2:00pm-3:50pm)**

Co-Instructors:

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[other ESE Faculty involved in water-related research and who may be involved in the course include: Rose Cory, Mark Sobsey, Greg Characklis, Mike Aitken, Marc Serre]

Purpose

To familiarize students with the principles of scientific communication with an emphasis on scientific writing.

To coach students to become successful authors and effective presenters of their research results.

Scope and General Organization

Presented as second of two sub-courses:

Part 1 on reviewing and interpreting a body of literature, identifying a credible research focus, question and hypotheses and designing and implementing research. This 2 credit sub-course occurs in the fall semester and is intended for students in their first year after admission.

Part 2 providing guidance on preparation of thesis, verbal presentation and a publishable peer review paper. This 2 credit sub-course occurs in the spring semester and is intended for students who have a complete data set with results they wish to communicate to the faculty, other scientists and the public. Class will meet once a week for 2 hours. Typically each session will begin with roundtable presentations and discussion, followed by a break, then a lecture to prepare students for their next assignment. Substantive preparation will be required by students between sessions.

The focus on water-health provides opportunity to explore inter-disciplinary issues within this field and to use water related examples to ensure familiarity with research concepts, approaches and tools.

Eligibility and Pre-requisites

Course is open to PhD students and Masters students intending to prepare a research-focused dissertation or technical report on an aspect of water and health.

Undergraduate Honors students are admissible at discretion of instructors (for first course in junior or senior year as appropriate).

Course is highly discussion driven and therefore enrollment is capped. Priority will be given to (a) students advised by collaborating faculty; (b) students with collaborating faculty on their committee; (c) other UNC-CH students engaged in water-related research.

Spring Component ENVR 890-005 Part 2

ENVR 890-005 Part 2: Learning Objectives	
<i>Content</i> learning objectives	<i>Skill</i> learning objectives
<p>Familiarity with principles of scientific communication.</p> <p>Understanding how to report scientific results clearly without oversimplifying scientific issues to both scientific audiences and the public.</p> <p>Learning how to draft and edit a manuscript, along with other steps in the writing process.</p>	<p>Participants will be able to:</p> <ul style="list-style-type: none"> • Write a report of their research that is acceptable as an academic thesis (committee passes student) or article (accepted for publication in a peer-reviewed journal) • Deliver a scientific presentation suitable for a defense or for a conference presentation. • Deliver a 30 second “elevator” speech about the importance of their research. • Write three points about their research (their “message”) they would emphasize in an interview with a newspaper or television reporter.

Attendees must have a complete data set prepared and analyzed to enroll in this course. Enrolled students may be in their last semester of a degree program as the scientific report will be due prior to the graduate school deadline for theses and dissertations. Spring course sessions sequentially address the issues and stages in preparing and presenting a high-quality thesis (or incorporating a paper for peer review journal publication), including the associated presentation and defense.

Curriculum

Section	Sessions	Weeks
Course introduction	Understanding of course flow and structure, grading and deadlines; Understanding of scope and underlying theme of course	1
Written reports of scientific results	Understanding the structure of a scientific paper; Drafting and revising paper sections to effectively communicate research results	2-9
Oral presentation of scientific results	Learning the content and organization of a scientific talk; Preparing and practicing presentations	11-14
Informal presentation of scientific results	Rehearsing and using an “elevator” speech, i.e. communicating the significance of a scientific project in less than 30 seconds	15
Interacting with the media	Defining roles and goals when interacting with the media; Crafting a message and delineating boundaries in preparation for an interview	16

Course materials

Hofmann, Angelika H. (2010) *Scientific Writing and Communication*. Oxford University Press, New York.

Additional readings will be assigned for particular sessions and will be available on course web site.

Student Evaluation

Summary

- Written Report: 50%
- Verbal Report: 20%
- Class Participation: 30% (15% presentation, 15% participation in discussion)

Explanation

Written assignments will take the form of progressive preparation of a scientific report using a format common for peer-reviewed journal articles. Each student will be expected to submit and, when assigned, to present draft sections of their report section for peer (class) comment. The final, compiled report will constitute the written assignment and will be graded accordingly by the instructors. Students will also provide a formal verbal presentation of their results in a format similar to a conference presentation.

Class participation will be graded according to the brief presentations made by students of their own assignment sections and according to their contribution to the discussion of the presentations of assignment sections made by other students. See Annex 1 for scoring criteria.

Notes:

- Content evaluation is on the final submission, draft writing assignments are evaluated on the basis of presentation and discussion (not content).
- Honor code requirements will be strictly enforced and submission may be subject to on-line plagiarism checks.

Annex 1: Grading of Written Assignments

Each section of the written assignment will be scored according to the following criteria. Overall grade will be based on the aggregate of scores. Guidelines and word limits will be strictly enforced (eg for a section with a 500 word maximum then no account will be taken of any text beyond the 500th word)

Score	3	2	1
Clarity	All statements are necessary and clearly expressed (precise, not open to mis-interpretation).	Some excess material not essential or included or statements not clearly expressed.	Multiple statements not clearly expressed (remainder substantively clear).
Comprehensiveness/ completeness	Report captures the full breadth of issues as described in assignment.	Report omits minor aspects of the breadth of the issue as described in the assignment that do not impact overall understanding by reader.	Report omits aspects of breadth of issue as described in assignment that would lead some readers to misunderstand the conclusion(s).
Veracity	No detected errors or ambiguity of interpretation.	Some ambiguity of interpretation and/or errors of detail having limited impact on overall conclusion.	Few examples of substantive error or ambiguity of interpretation <i>or</i> multiple examples that collectively impact on overall conclusion.
Presentation/ Structure	Report is well-structured (logical flow and structure assists reader in navigating and understanding report).	Logic flow has minor inconsistencies and/or structure unclear (eg content does not match sub-titles).	Logic flow not readily evident <i>or</i> structure substantively unclear.
Synthesis	Report successfully conveys the complexity/scale of the issue to the reader.	Reader has an incomplete outline of the complexity or scale of the issue.	Reader may substantively misunderstand the complexity or scale of the issue.

Footnotes:

For all rows a zero score applies to non-submission or performance below that of the right hand column.

Annex 2: Grading Scheme for Student Presentations

Grades will be based on aggregate scoring for all four sub-sections of the draft proposal.

Score	3	2	1
Timekeeping (with reasonable allowance for management of interruptions)	Effectively on time eg +/- ½ minute	Slightly over or under time eg 4mins < presentation > 6mins	Substantively over or under time eg 3mins < presentation > 7mins
Slides or equivalent (includes density and relevance of information) (inadequate or omitted citations lead to a zero score)	Individual slides clearly legible. Words/figures/equivalent convey ideas clearly and support/follow spoken word.	Few slides not clearly legible or where slide material does not support spoken word.	Several slides not clearly legible and/or where slide material does not support spoken word.
Response to/management of questions and interruptions	Responds to interruptions without loss of control of presentation. Conveys the speaker as generally knowledgeable while recognizing limits of their knowledge and expertise without undermining the value of the presentation.	Listener is potentially skeptical about level of knowledge or expertise of speaker or responses perceived as not focused on question or interruptions disturb flow of presentation.	Speaker does not respond to a questions; or unfocused responses to multiple questions; or speaker conveys self as lacking basic familiarity with subject or substantively loses flow of presentation.
Flow/structure	Logical flow to presentation; component themes/messages are in balance.	Logic flow present but not self-evident to listener or some imbalance in attention given component themes/messages.	Logic flow not detectable and or several imbalances in attention given to component themes/messages.
Audience engagement* (eg not read out from notes or slides; makes eye contact; secures attention of audience)	Compelling: speaker able to engage most of audience in presentation and to elicit discussion; highly responsive to audience.	Convincing: speaker able to engage some of audience; moderately responsive to audience; some reading of presentation material or from notes.	Adequate: speaker able to engage few of audience or elicit few questions; audience attention wanders; significant direct reading and/or failure to make eye contact.

* Audience engagement based on performance of speaker rather than actual response of audience

Annex 3: Grading of discussion of student presentations (ie in discussion of presentations made by other students)

As an indication of how scoring will be performed in any given session, each student will be graded according to the *quality* of their contribution to discussion as follows:

- No intervention/question; or interventions that hinder overall development of discussion without benefit to understanding or clarification*: 0
- Relevant comment made that is not focused on scope of assignment, or new information provided that does not contribute to developing overall (group) understanding of assignment: 1
- Intervention/question made that contributes to enhancing overall understanding of assignment theme (includes placing theme in wider context relevant to course, succinct presentation of new relevant information): 2

*includes clarification of issues that would reasonably be expected to have been clear from core background reading or prior learning

One score will be generated per student per discussion session ie scoring is driven by quality, not quantity of participation in any given session