Syllabus Capstone: Senior Seminar, METR 4911, fall 2006

Approximate Plan for Class Activities Version 1 8 August 2006

Instructor: Dr. Mark Morrissey,NWC EVAC 3200 Marshall Ave. (off HI 9) 447-8412, mmorriss@ou.edu

Primary Text: Leedy, P. D. and J. E. Ormrod, 2004: *Practical Research: Planning and Design.* 8th ed. Prentice Hall, 352 pp. (7th ed. acceptable) Watch for updates!

Class meets: W 4:00 – 4:20, NWC 5600 and as needed

Office Hours: By appointment ONLY

Quiz: 20%; Proposals: 80% of Grade NO FINAL EXAM

Wk	Date	Class Topics	Leedy Chap	Things due	Professional development (speakers tentative)
1	23 Aug	Administrative matters Goals of Course	-		Mark Morrissey
2	30 Aug	Research: What it is and isn't the Scientific method	1, 2		Mark Morrissey
3	6 Sep	**NO CLASS**: use time to form groups of 2 -3 research teams	1, 2		
4	13 Sep	Discuss potential projects and mentors	3, 4		Mark Morrissey
5	20 Sep	Discuss finalized teams and topics	5, 6	Partners and project titles due, even if tentative. Send by email.	Mark Morrissey
6	27 Sep	**NO CLASS** work on topic	7, 8, 9		
7	4 Oct	"The 60% Draft"	-		Mark Morrissey
8	13 Oct	Quantitative & qualitative research	7, 8, 9, 10	1st draft mini-proposal due	Mark Morrissey
9	18 Oct	Mini-proposal project check Statistical techniques for analyzing data	11		Mark Morrissey
10	25 Oct	**NO CLASS** work on topic	-		
11	1 Nov	**NO CLASS** work on topic	-		
12	8 Nov	Short Quiz on Leedy Material	12		
13	15 Nov	**NO CLASS** work on topic	-	2nd draft mini-proposal due (ought to be complete, near final)	
14	22 Nov	**NO CLASS** work on topic	-		No class (too close to Thanksgiving!)
15	29 Nov	**NO CLASS** work on topic	-	Mini-Proposal Due	
16	6 Dec	**NO CLASS** work on topic	-	Comments back on mini-proposal via email	

Goal of this Course: Develop a research proposal with a mentor for a research project to carried out next semester.

NOTE: This is a very flexible class and expect that some of the 'NO CLASS' WILL be filled as speakers are found or subjects arise that need discussing.

Additional Notes: Due to the uncertainty of speaker availability, the quiz date is tentative.

Summary of things to due:

1. **Read Leedy chapters**
2. **Pair up in teams of two, maybe 3 ASAP.**
3. **Find mentors and discussed possible topics with them**
4. **Select topics and start preparing 1st draft mini-proposal (be carefully to follow proposal guidelines)**
5. **Use comments by Dr. Morrissey, Dr. White and mentors to prepare final draft of proposal**
6. **Hand in final proposal**

Knowledge Expectations for METR 4911/4922
Senior Seminar (Capstone)

Purpose: The Capstone course is designed to be the pinnacle of the undergraduate experience. Here students integrate and apply knowledge gained in their previous courses to an original research project of their choosing. Capstone provides opportunities to strengthen basic research, report writing, and presentation skills. In addition, Capstone provides opportunities to develop the professional skills needed by meteorologists in government, academia and the private sector.

Pre-requisites: Grade of C or better in METR 3123, METR 3223, senior standing. If taking METR 4922, a grade of C or better is required in METR 4911.

Goal of the course: This course is intended to satisfy the meteorology Capstone course requirement. The instructor will guide senior meteorology majors through a research project. Interdisciplinary topics will be encouraged, and library work will be required. Students will be paired with regular and adjunct faculty mentors. Senior doctoral students may serve as mentors with permission of the instructor. The result will be a written and oral presentation of the senior thesis. In addition, the instructor may present professional skills useful during the job search and interview phases as well as early employment The skills will be useful whether the students are entering the job market or going to graduate school.

Knowledge Expectations

- Project management. Learn the basics of defining a research-worthy project and setting out a meaningful and realistic strategy for bringing it to a successful conclusion.
- Research group synergy. Learn the dynamics of participating in a group project; learn how to be a good individual investigator and a good team-mate.
- Proposal writing. Understand the proposal development and approval process by writing a mini-proposal and by seeking approval of a funding agency (the instructor).
- Literature search. Understand the need and process of placing research in proper perspective by performing a systematic literature search. Learn how to use the Science Citations/Web of Science online database and other tools to locate (i) articles by a specific author, (ii) articles on a given subject, (iii) articles that cite a specific study.
- Data gathering. Learn how to collect data, to search out and find data in federal repositories, and to discover data sources locally, in libraries, and via the Internet.
- Analysis. Understand how to approach a research problem and select and apply appropriate analysis methods. Learn how to draw conclusions from research.
- References. Learn how to properly attribute credit to the work of others. Gain familiarity with the current reference format used in journals of the American Meteorological Society and some other select publications.
- Organization, writing, and presentation graphics. Learn and apply the organization of a refereed journal article or scholarly report. Apply structured writing skills learned in technical writing classes. Learn how to create meaningful figures and tables to enhance communication.
- Oral and poster presentations. Learn how to create an effective oral presentation using proven software tools. Learn how to choose topics for discussion and adjust the level of

detail to match the allocated time of presentation. Learn how to create a poster using a large format printer/plotter or a collage of smaller images and word boards.

- Peer reviews. Learn the importance of peer review by evaluating the work of others (e.g., by critical review of oral or poster presentations).
- Graduate School Skills. Learn how to determine which schools are right for you, and how to approach the application process. Learn the skills and habits that will help you succeed in graduate study.
- Professional Skills. Learn resume writing and interview skills to land the job that interests you. Learn the work habits that will help you succeed in your career.
- Ethical Responsibilities. Understand the ethical responsibilities of undergraduate and graduate students, faculty, researchers in the government and the private sector, and project managers.