ISC 3523C, Section 1B81, RESEARCH METHODS
Spring, 2014, T,Th Periods 3-4

Instructor: Dr. Kathryn R. Williams; krw@chem.ufl.edu; 392-7369
Office Hours: M, 9th; W, 8th; CLB 220

Course Description: Research Methods is a required one-semester, three-hour course in the UFTeach sequence. Students must be pursuing the UFTeach minor in science or mathematics education. Research Methods introduces students to scientific research in a broad sense, including experimental design and data analysis, as well as written and oral presentation.

Student Learning Outcomes: Research Methods is designed to accomplish the following educational goals:

- Provide students with the tools that scientists use to solve scientific problems;
- Give students the opportunity to use these tools in a laboratory and/or field setting;
- Introduce students to scientific communication via peer-reviewed scientific literature;
- Increase student understanding of how scientists develop new knowledge and insights.

Required Activities:

Three investigations:

1. Student-designed inquiry involving simple apparatus or non-intrusive observations. Data analysis using appropriate statistical methods and/or graphing techniques. Written report.
2. Student-designed survey (Institutional Review Board approval required). Data analysis using appropriate statistical methods and/or graphing techniques. Oral class presentation.
3. Research project under the direction of a UF faculty member. Students need to find a project director by the end of January. At least six hours of lab/field work per week. Data analysis in consultation with the project director and Dr. Williams. Written report and oral presentation.

Written reflections:

Throughout the semester, research faculty from various UF departments will give presentations on how research is performed in their disciplines. Students must attend all presentations and write reflections/summaries (one double-spaced page) for 10 of them. Reflections must be submitted by the Tuesday following the faculty visit.

Classroom activities:

Students will be designated to introduce/thank speakers, lead class discussions, provide progress reports, etc. Students are expected to attend class and participate in discussions.

Assignments and quiz:

Written homework will be assigned throughout the semester. One written quiz.

Grading:

Grades will be distributed as follows:

Assignments/quiz: 12%
Classroom activities: 15%

Written reflections:	12%	
Project 1:	15%	(Proposal, 3%; Quality, 3%; Written report, 9%)
Project 2:	12%	(Proposal, 3%; Quality, 3%; Oral report, 6%)
Project 3:	34%	(Proposal, 3%; Quality, 12%; Written, 12%; Oral, 7%)

Grading Scale: Grades will be assigned according to the following percentage totals using standard rounding conventions:

90-100, A 85-89, A- 80-84, B+ 75-79, B 70-74, B- 65-69, C+
60-64, C 55-59, C- 50-54, D <50, E

Date	Speaker; Activity	Special
Tu, 1/7	Introduction; Lab Safety; Data analysis fundamentals	
Th, 1/9	Ms. Michelle Leonard	Meet in Marston 308; Bring laptops
Tu, 1/14	Dr. Anne Donnelly; Discussion of Chapter 1	Library assignment due
Th, 1/16	Prof. Selman Hershfield; Proposal writing	Ideas for Project 1
Tu, 1/21	Prof. Ata Sarajedini; Prof. Sixue Chen	Project 1 proposal due
Th, 1/23	Prof. James Keesling	Topics for Project 3
Tu, 1/28	Prof. Robert McCleery; Report writing	
Th, 1/30	Prof. Bruce McFadden; Data analysis fundamentals	Project 3 proposal due
Tu, 2/4	Prof. Kevin Knudson; Data analysis fundamentals	Project 1 draft report due
Th, 2/6	Ms. Michelle Leonard; Report corrections	
Tu, 2/11	Prof. Marta Wayne; Project 2 ideas	Project 1 final report due
Th, 2/13	Prof. Neil Rowland; Peer review process	Project 2 proposal
Tu, 2/18	Prof. Carolynn Patten Project 1 peer review	
Th, 2/20	Project 2 work	
Tu, 2/25	Data analysis review	Project 2 draft PowerPoint

Th, 2/27	Project 2 corrections	Quiz on data analysis
Tu & Th, 3/4 & 3/6	Break Week	
Tu, 3/11	Project 2	Project 2 presentations
Th, 3/13	Project 2	Project 2 presentations
Tu, 3/18	Project 2	Project 2 presentations
Th, 3/20	Project 3	Project 3 progress reports (Group 1)
Tu, 3/25	Project 3	Project 3 progress reports (Group 2)
Th, 3/27	Project 3	Project 3 progress reports (Group 3
Tu, 4/1	Project 3	Project 3 progress reports (Group 1)
Th, 4/3	Project 3	Project 3 progress reports (Group 2)
Tu, 4/8	Project 3	Project 3 progress reports (Group 3)
Th, 4/10	Project 3	Project 3 presentations
Tu, 4/15	Project 3	Project 3 presentations
Th, 4/17	Project 3	Project 3 presentations
Tu, 4/22		Project 3 written reports due

Note: Class time 3/20-4/8 will be devoted to progress reports. The class will be divided into 3 groups. Only the designated students need to attend and present reports.