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Office Hours TBA

Teaching Assistant: Jeffrey Fedenko  
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Office hours TBA

Location and time:  
Tuesday 5th period (11:45-12:35), McCarty B 3108  
Thursday periods 4th-5th (10:40-12:35), McCarty B 3108

Prerequisite  
Undergraduate statistics is required, but STA6166 or equivalent is desirable.

Course Description  
Techniques and procedures used in design and analysis of field plot, greenhouse, and laboratory research experiments with special focus on application of research methodology, analysis and interpretation of research results.

Intended Audience  
The course is designed for graduate students implementing experiments in plant biology disciplines (e.g. agronomy, horticulture and forestry)

Course Objectives  
To familiarize students with fundamentals of field experimentation: factors to consider, design, implementation and analysis of field, greenhouse and lab experiments. At the end of the course, students will be able to discuss the advantages and disadvantages of major statistical designs, design their own experiments, calculate sample size, and analyze their own data.

Evaluation  
30 points - Homework, at least 1 per calendar month  
10 points - Quizzes, one or two per calendar month  
40 points - Final-Project (see details below)  
20 points - Exam, Thursday Dec 04

A >90  
B+ 85 to 89  
B 80 to 84  
C+ 75 to 79  
C 70 to 74  
D+ 65 to 69  
D 60 to 64  
E < 60

Homework  
Homework will be due before class starts one week after it is handed out. Homework should be emailed in PDF format to the TA. You can collaborate with other students, but you should be able to understand the process, results, and conclusions for the homework. Class will be divided into small groups and on the day the homework is due each group will have to explain the process, results or conclusions of the homework (part of the homework score). Late homework will be penalized at a rate of 10% per day.
Quizzes
Quizzes will be in the first 10 minutes of the class. There will be no notice of when quizzes are happening and there is no make up of quizzes.

Project
The final project will be due on November 20 by 5:00 pm. Project should be emailed in PDF format. Each student will have to develop an experimental design project. It is expected to contain a rationale for the question being answered, justification of the experimental design chosen over the alternatives, plan to execute the design in the field, field and equipment considerations for implementation of experiment, R script for analysis, expected result and data behavior. Late projects will be penalized at a rate of 20% per day.

Exams
Exam will be take-home and due in 24 hours after handing out. If you are unable to take an exam I must be notified prior to the exam by phone or email if you wish to make up the exam. Without notification a zero will be recorded.

Laboratory/Field
The weekly laboratory and/or field work is mandatory. Laboratory topics include, but are not limited to, basics of statistical package R, design of experiments, analysis of data, invited speakers and paper discussions. Field topics include, but are not limited to, field survey, factors affecting experimental design, implementation of research experiments, equipment, planting, labeling, data recording, report results and dealing with unexpected events. We will plan three trips to the Plant Science Research and education Center near Citra, FL to view equipment and experiments. Transportation will be provided.

Software
You will need to bring your own laptop. The main software used will be the statistical software R which can be downloaded from www.r-project.org, and R-studio http://www.rstudio.com/. It is your responsibility to make sure that your computer has the latest version of R. Prior to the first day of class, please make sure you have removed all old versions of R, and have the most recent version installed.

Recommended Literature

There are numerous online resources available for R; however, if you would like a traditional textbook, The R Book, is widely available and comprehensive.
### Course Schedule and Topics (Tentative)

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<thead>
<tr>
<th>Topic</th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>Basic Concepts of Experimentation Lec/Lab</td>
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<tr>
<td>2</td>
<td>Basic Statistics, Review Lec/Lab</td>
</tr>
<tr>
<td>3</td>
<td>Fundamentals of Experimental Design Lec/Field</td>
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<td>4</td>
<td>Field Visit – Survey and Equipment</td>
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<td>5</td>
<td>Experiments with Single Factors I Lec/Lab</td>
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<tr>
<td>6</td>
<td>Experiments with Single Factors II Lec/Lab</td>
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<tr>
<td>7</td>
<td>Field Visit – Single Factors</td>
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<tr>
<td>8</td>
<td>Sample Size and Power Lec/Lab</td>
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<tr>
<td>9</td>
<td>Experiments with Two Factors I Lec/Lab</td>
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<tr>
<td>10</td>
<td>Experiments with Two Factors II Lec/Field</td>
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<tr>
<td>11</td>
<td>Field Visit – Two Factors</td>
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<tr>
<td>12</td>
<td>Dealing with Assumption Departures Lec/Lab</td>
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<tr>
<td>13</td>
<td>Introduction to Experiments Based on Linear Mixed Models Lec/Lab</td>
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<td>14</td>
<td>Project Presentation</td>
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<td>15</td>
<td>Exam</td>
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No class on Tuesday Nov 11th, Thursday Nov 27th 2014 due to UF holidays.

**Attendance and Make-Up Work**

Requirements for class attendance and make-up exams, assignments and other work are consistent with university policies that can be found at: [https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx](https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx).

**Online Course Evaluation Process**

Student assessment of instruction is an important part of efforts to improve teaching and learning. At the end of the semester, students are expected to provide feedback on the quality of instruction in this course using a standard set of university and college criteria. These evaluations are conducted online at [https://evaluations.ufl.edu](https://evaluations.ufl.edu). Evaluations are typically open for students to complete during the last two or three weeks of the semester; students will be notified of the specific times when they are open. Summary results of these assessments are available to students at [https://evaluations.ufl.edu/results](https://evaluations.ufl.edu/results).

**Academic Honesty**

As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge: “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.” You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.”

It is assumed that you will complete all work independently in each course unless the instructor provides explicit permission for you to collaborate on course tasks (e.g. assignments, papers, quizzes, exams). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct to appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For more information regarding the Student Honor Code, please see: [http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code](http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code).
**Software Use:**
All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate.

**Services for Students with Disabilities**
The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues. Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation.

0001 Reid Hall, 352-392-8565, [www.dso.ufl.edu/drc/](http://www.dso.ufl.edu/drc/)

**Campus Helping Resources**
Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university's counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

*University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575, [www.counseling.ufl.edu/cwc/](http://www.counseling.ufl.edu/cwc/)*
  - Counseling Services
  - Groups and Workshops
  - Outreach and Consultation
  - Self-Help Library
  - Wellness Coaching

*Career Resource Center, First Floor JWRU, 392-1601, [www.crc.ufl.edu/](http://www.crc.ufl.edu/)*