ST 511-003: Experimental Statistics for Biological Sciences I
Fall 2016

Time and Location: Tu Th 10:15am – 11:30am at 216 Mann Hall

Course Web Site:  https://wolfware.ncsu.edu

Instructor:  Jung-Ying Tzeng
   Email: jytzeng@stat.ncsu.edu
   Office: 305 Ricks Hall
   Phone: 919-513-2723
   Office Hours and Location:  Tuesdays 4pm-5pm at 305 Ricks Hall

Teaching assistant:  Lili Wu
   Email: lwu9@ncsu.edu
   Mailbox: 4260 SAS Hall (where you turn in the late homework)
   Office Hours:  Monday 10:30-11:30a and Wednesday 4:30-5:30pm
   Location: 1101 SAS Hall

Course Goal:
This course is intended to give students a background in the methods of statistical analysis that will assist them in
analysis of data generated from research in the biological sciences.  Students will learn methods for summarizing
and describing data, and techniques for using sample data to make inferences about a larger population.

Textbook (optional):
An Introduction to Statistical Methods and Data Analysis, 6th edition, by R.L. Ott and M. Longnecker, Brooks/Cole,

Disability Services for Students:
Reasonable accommodations will be made for students with verifiable disabilities. In order to take advantage of
available accommodations, students must register with Disability Services for Students at 1900 Student Health
Center, Campus Box 7509, 919-515-7653.  For more information on NC State’s policy on working with students with
disabilities, please see the Academic Accommodations for Students with Disabilities Regulation (REG 02.20.01).

NCSU Polices, Regulations, and Rules (PRR):
Students are responsible for reviewing the PRRs which pertain to their course rights and responsibilities.
These include:
http://oied.ncsu.edu/oied/policies.php (Office for Institutional Equity and Diversity),
http://policies.ncsu.edu/policy/pol-11-35-01 (Code of Student Conduct), and
http://policies.ncsu.edu/regulation/reg-02-50-03 (Grades and Grade Point Average).

Course Notes:
Course notes of the week will be available on the course moodle site at least 24 hours prior to Tuesday’s lecture.
Please print these and bring them to class with you.
Attendance and communication:

- Regular class attendance is strongly encouraged. If you miss class for any reasons, please make arrangements with another student to obtain the notes and materials that were covered that day. Additionally, students should check their Unity email regularly to receive course announcements.

Grades:

- All grades (HWs, midterm, quiz and final) will be stored in WebAssign Grade Book
- It is the student’s responsibility to be aware of his/her grades in the course and the appropriate level of work required. Your final grade in this course will depend on the following:

<table>
<thead>
<tr>
<th>Item</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>HW Assignments*</td>
<td>25%</td>
</tr>
<tr>
<td>Midterm</td>
<td>30%</td>
</tr>
<tr>
<td>In-class quiz</td>
<td>10%</td>
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<tr>
<td>Cumulative Final Exam</td>
<td>35%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
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- Grades will be determined by calculating the student’s percentage out of the available points. Students achieving >=90% will receive at least an A-; students achieving >=80% will receive at least a B-; students achieving >=70% will receive at least a C-. A+ is reserved for the top 15%, and incomplete (IN) grades are given only as specified in university regulations.

Homework:

- HW problems will be assigned on a weekly basis. Most assignments will be delivered and graded through WebAssign ([https://www.webassign.net/ncsu/login.html](https://www.webassign.net/ncsu/login.html)), and a few assignments will be collected and graded by TA. Please feel free to discuss the homework with me or TA.
- WebAssign HW: You will need to purchase a WebAssign license ($29.95) for this class. This can be purchased online via the WebAssign website. When you access WebAssign for this class, you will be informed how you can purchase the license online with a credit card. While you will need WebAssign for your first homework, there is a 14-day trial period. So you do not have to have your license in order to get started.
- TA-graded HW: For those homework assignments that will be collected and graded by TA, they should be submitted at the beginning of class on the due day. Late homework will not be accepted unless the “extension request” (up to twice in total) is made.
- Each student can request up to twice extensions of the HW deadline, each for 4 days (but not combined), e.g., one may obtain an extension to Monday 5pm for a HW due on Thursday. This is partially designed to cover the cases being sick, being busy, having time conflict, or for any unexpected scenarios that prevent you from finishing the assignments in time. To request an extension, please contact the TA and cc me. Alternatively, you can contact the TA and me in advance if you are going to miss homework day; you can choose to turn it in earlier.

Exams and In-class quiz:

- There will be one midterm and one cumulative final exam. In addition, there will be one in-class quiz.
  - The quiz is non-cumulative, open-book, but with limited time (i.e., 25 minutes only).
  - The exams are closed-book. For the exams students may use one 8 ½ X 11 page of notes (front and back). For the final exam, students may use three 8 ½ X 11 pages of notes (front and back). Calculators
are needed on quiz and exams. Requests for re-grading of exams must be made in writing and within one week of the date that the exam is originally returned. The exams will be held on the following dates:

- Schedules:
  - Mid-term: Tuesday 10/4, in class, 75 minutes
  - In-class quiz: Thursday 11/3, in class, 25 minutes
  - Final: Thursday 12/8, 8-11am

- Make-up quizzes or exams are strongly discouraged and are only given if BOTH of the following two conditions are fulfilled:
  1. contacting the instructor within 24 hours of the exam/quiz given, and
  2. providing suitable and official documentation of the absence.

If you are aware of a scheduling conflict with an exam date, please let me know as soon as possible and no later than a week from the exam date; it is preferred that you arrange to take the exam early.

- For Final exam, the only reasons to reschedule are
  1. A direct conflict with another final exam
  2. Three final exams in one day

If you have either of these issues, you will need to see the Office of Registration and Records (1000 Harris Hall) to obtain an exam reschedule form, which will allow us to reschedule the final exam on individual basis.

Auditing:
Auditors are expected to attend class regularly and submit homework assignments on the same schedule as the other students. The final grade for auditors (AU or NR) will be based on their final written assignment average.

Class evaluation:
- Online class evaluations will be available for students to complete during the last 2 weeks of the semester then become unavailable at 8am on the first day of finals
- Students will receive an email message directing them to a website where they can login using their Unity ID and complete evaluations. All evaluations are confidential; instructors will not know how any one student responded to any question, and students will not know the ratings for any instructors.
- Evaluation website: [http://go.ncsu.edu/cesurvey](http://go.ncsu.edu/cesurvey)
- Student help desk: [classeeval@ncsu.edu](mailto:classeeval@ncsu.edu)
- More information about ClassEval: [http://oirp.ncsu.edu/eval/clev](http://oirp.ncsu.edu/eval/clev)

Academic Misconduct:
The Code of Student Conduct defines a university policy on academic integrity: [http://policies.ncsu.edu/policy/pol-11-35-01](http://policies.ncsu.edu/policy/pol-11-35-01) Your signature on work submitted for grading implies compliance with this policy. Cheating, plagiarism and other forms of academic dishonesty will not be tolerated.

Course Outline:
The following is an outline of the course. Please note that this schedule may be adjusted.

<table>
<thead>
<tr>
<th>Week</th>
<th>Topics (Subject to change)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, 2</td>
<td>Introduction</td>
</tr>
<tr>
<td></td>
<td>Ch3: Data description---graphical methods</td>
</tr>
<tr>
<td></td>
<td>Ch3: Data description---numerical methods</td>
</tr>
<tr>
<td>3</td>
<td>Ch4: Discrete random variables and probability distribution</td>
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<td>----------------------------------------------------------</td>
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</tbody>
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| 4 | Ch4: Discrete random variables and probability distribution  
    Ch4: Continuous random variables and probability distribution |
| 5 | Ch4: Continuous random variables and probability distribution  
    Ch4: Sampling distribution |
| 6 | Ch5: Inference about one population mean—estimation |
| 7 | **Midterm (Thursday, 10/4)** |
| 8 | Ch5: Inference about one population mean—hypothesis testing |
| 9 | Ch6: Inference about two population means |
| 10 | Ch8: ANOVA |
| 11 | Ch9: Multiple Comparisons |
| 12 | Ch10: Categorical data analysis: inference about population proportions  
    **In-class Quiz (Thursday, 11/3)** |
| 13 | Ch10: Categorical data analysis: chi-squares tests |
| 14 | Ch11: Linear regression and correlation |
| 15 | Ch11: Linear regression and correlation |
| 16 | Ch11: Linear regression and correlation  
    **Final Exam (Thursday 12/8)** |

SAS Programming courses:  
http://www.stat.ncsu.edu/working_groups/sas/sasclass.html