

## Applied Statistics II – BIST/STAT5605-001

Spring 2017: Mon 1:25pm - 3:20pm; Wed 1:25pm - 2:15pm; AUST 202

**Instructor:** Ofer Harel <ofer.harel@uconn.edu>

**Office Hours:** AUST 320; Mon and Thur 9am-10am or by appointment

**Grader:** Sudeep Bapat <sudeep.bapat@uconn.edu>

### Course Description (STAT5505-5605):

Statistics from a data analytic viewpoint incorporating parametric and nonparametric methods, exploratory data analysis, graphical methods, one-sample problems, jackknifing, bootstrapping, robustness, two-sample problems, k-sample problems including one-way ANOVA, randomized block designs, two-way ANOVA, additivity, simple linear regression, multiple linear regression, analysis of covariance, and categorical data.

### Topics covered in this course:

This is the second part of a sequence course (STAT5505 and STAT5605). Topics to be covered in STAT5605 include association, simple linear regression, multiple linear regression, model checking and diagnostics, remedies for departures from assumptions, variable and model selection, nonparametric alternatives, generalized linear models including count and binary response regressions, fixed and random effects ANOVA models, and analysis of covariance modeling.

### Textbook:

*Applied Linear Statistical Models*, Fifth Edition, M.H. Kutner, C.J. Nachtsheim, J. Neter, and W. Li, McGraw-Hill/Irwin, 2005.

or

*Custom Textbook For STAT5605 (Spring 2016)*. This is available at the campus store, and contains a subset of material from the *Applied Linear Statistical Models* text.

### Course Material:

Lecture notes, sample code, datasets, information for homework assignments and project, etc., will be posted on the HuskyCT course website (available through <http://lms.uconn.edu>). Please visit this site often to access all the material.

**The lecture notes and corresponding material will be posted on the HuskyCT course website.**

## Software:

- SAS 9.4; SAS ODS, Base, PROCEDURES, STAT, GRAPHICS, IML, and MACRO will be used. Available for (free) use through  
-library (HBL, level 1).  
-Virtual PC (VPC): <http://skybox.uconn.edu/>
- R: freely available for download at <http://www.r-project.org/>.

NOTE: UCLA's Statistical Computing website offers excellent tutorials/resources for SAS and R (and other languages): [www.ats.ucla.edu/stat/](http://www.ats.ucla.edu/stat/).

## Course Activities & Grading:

- **Homework**
  - Approximately 10 homeworks will be assigned during the semester. Students may consult amongst themselves or with the instructor, but each student must submit his/her own work.
  - All homeworks are to be typed in Word or pdf documents, formatted according to the TA's instructions (posted on HuskyCT course website), and submitted through the HuskyCT course website. **Students may submit each assignment only once.**
  - All completed assignments are to be submitted by the indicated due date to be graded for full credit. Late submissions within a 2-day grace period will be graded for only 50% of the credit. Submissions beyond 2 days will not be graded and will receive no credit.
  - No credit will be given for submitted assignments exhibiting duplication or copying of solutions (from peers or existing solutions). See UConn's Academic Integrity policy below.
- **Participation:** We will have "active learning" in the classroom via discussion, Q&A, and problem solving. You must read the material (reading from the text KNNL) before coming to class, and participate.
- **Course project:** There will be one course project that will consist of a sequence of data collection (from interesting websites/sources) and analysis, to be done in teams of two. A project proposal will be due by 11:59pm, March 10, 2017, and the final report will be due by 11:59pm, April 15, 2017. You may discuss with the instructor about the detailed plan of your course project. The typed course project proposal and typed final report are to be submitted to the instructor via email directly by the due date.

- There will be one mid-term exam and one final exam. The date for the mid-term exam will be posted on HuskyCT. The final exam will be given during final exam week according to the school scheduled date.

The grades will be assigned as follows:

Homework Assignments	20%
Participation	5%
Course Project	15%
Mid-term Exam	25%
Final Exam	35%

This grade assignment requires a passing grade in each exam, else the final course grade is up to the discretion of the instructor. In order to obtain a good course grade, students must successfully complete all homework assignments, the course project, the mid-term exam, and the final exam; attend every lecture; and actively participate in class.

### Important Dates

Tuesday, Jan. 17. Spring semester begins

Monday, Jan. 30. Courses dropped after this date will have a W for withdrawal

Sunday, Mar. 12. Spring recess begins

Saturday, Mar. 18. Spring recess ends

Monday, Mar. 27. Last day to drop a course

Friday, Apr. 28. Last day of Spring semester classes

For the complete spring semester schedule, see <http://registrar.uconn.edu/academic-calendar/spring-2017/> recorded on the academic record.

### Approximate Course Schedule

Week	Topic	Reading*
Jan 17	Association, SLR, MLR	Notes 1 & 2
Jan 23	Estimation and Prediction in SLR	Notes 2 & 3
Jan 30	Inference in SLR and MLR	Notes 3 & 4
Feb 6	Testing MLR Models	Note 5
Feb 13	Regression Diagnostics	Note 6
Feb 20	Remedies for Departure from Assumptions	Note 7
Feb 27	Model Selection	Note 8
Mar 6	Qualitative Predictors	Note 9
* Mar 13 & 15	<b>SPRING RECESS</b>	
Mar 20	GLM	Note 10
Mar 27	Count and Binary Regression	Notes 11, 12
Apr 3	Binomial Regression; Misc. Topics	Notes 13, 14
** Apr 10	Fixed-Effects ANOVA Modeling	Note 15
** Apr 17	Random-Effects Modeling	Note 16
** Apr 24	Analysis of Covariance	Note 17

\* You must read all the sections from the course textbook shown in the Notes.

\*\*Not available in Custom Textbook, but course notes will supply sufficient information.

The **Center for Students with Disabilities (CSD)** at UConn provides accommodations and services for qualified students with disabilities. If you have a documented disability for which you wish to request academic accommodations and have not contacted the CSD, please do so as soon as possible. The CSD is located in Wilbur Cross, Room 204 and can be reached at (860) 486-2020 or at [csd@uconn.edu](mailto:csd@uconn.edu). Detailed information regarding the accommodations process is also available on their website at [www.csd.uconn.edu](http://www.csd.uconn.edu).

**Academic Integrity:** A fundamental tenet of all educational institutions is academic honesty; academic work depends upon respect for and acknowledgement of the research and ideas of others. Misrepresenting someone else's work as one's own is a serious offense in any academic setting and it will not be condoned. Academic misconduct includes, but is not limited to, providing or receiving assistance in a manner not authorized by the instructor in the creation of work to be submitted for academic evaluation (e.g. papers, projects, and examinations); any attempt to influence improperly (e.g., bribery, threats) any member of the faculty, staff, or administration of the University in any matter pertaining to academics or research; presenting, as one's own, the ideas or words of another for academic evaluation; doing unauthorized academic work for which another person will receive credit or be evaluated; and presenting the same or substantially the same papers or projects in two or more courses without the explicit permission of the instructors involved. A student who knowingly assists another student in committing an act of academic misconduct shall be equally accountable for the violation, and shall be subject to the sanctions and other remedies described in The Student Code.