

# Generalized Linear Models – STAT4188-001

Fall 2020

*This course will be a remote access course*

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This course is developed by Dr. Ofer Harel, Professor of Statistics at the University of Connecticut, and is facilitated completely online using HuskyCT, UConn's learning management system powered by Blackboard Learn. Any content not created by the developer is used with permission of the copyright holder.

For HuskyCT technical support, during regular business hours contact HuskyTech. Excluding materials for purchase, syllabus information is subject to change. The most up-to-date syllabus is located within the course in HuskyCT.

**Instructor:** Ofer Harel <ofer.harel@uconn.edu>  
**Meeting times:** Mon, Wed 11:00am–12:15pm, 1:00pm - 2:15pm  
**Meeting locations:** HuskyCT course website (available through <https://learn.uconn.edu/>)  
**Office Hours:** HuskyCT; Tue and Thur 11am-noon or by appointment  
**Grader:** Jung Wun Lee <jung.w.lee@uconn.edu>

## Course Description

Prerequisites: STAT 3025 and STST 3115.

This course deals with statistical models for the analysis of quantitative and qualitative data, of the types usually encountered in social science, public health, biological and life sciences research. The statistical methods studied are the general linear model for quantitative responses (including multiple regression, analysis of variance and analysis of covariance), binomial regression models for binary data (including logistic regression and probit models), models for count data (including Poisson regression and negative binomial models) and models for survival data (focusing on piecewise exponential models fitted via Poisson regression). All of these techniques are covered as special cases of the Generalized Linear Statistical Model, which provides a central unifying statistical framework for the entire course.

- **Textbook:**

1. (Required) Vittinghoff E, Glidden DV, Shiboski SC, McCulloch CE (2012). *Regression Models in Biostatistics*, 2nd Edition, Springer.
2. (Recommended) Gelman A, Hill J (2006). *Data Analysis using Regression and Multilevel/ Hierarchical Models*. Cambridge U Press.
3. (Recommended) Ramsey FL, Schafer DW, *The statistical Sleuth*. Duxbury.

Other readings may be assigned as needed. Topics and Readings

- **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.**

- **Hardware** A fully functional computer running on the Windows or the Mac OS is required. Using a computer running on the Linux or the Android OS to complete the coursework is discouraged. A microphone and a webcam are recommended for participating in class, discussion, and virtual office hours.

- **Software**

- I have found that it is most convenient to most students to use Microsoft WORD or R Markdown within Rstudio to work on the assignments. If you do not have Microsoft WORD installed on your computer, you can get it (and other software included in the Microsoft Office Suite) here. Assignments can be submitted using WORD or pdf only. Any other file format will not be graded.
- Most software can found here UConn AnyWare Desktop.
- If the UConn AnyWare Desktop link does not work for you, connect to the UCONN VPN and try again. If you run into any problem with the UConn AnyWare Desktop, please report it to [helpcenter@uconn.edu](mailto:helpcenter@uconn.edu) or call (860)486-4357 during normal business hours. It is extremely important that you determine how you are going to access software well ahead of time.
- 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**
  - Regular homework will be assigned. Homework will consist of both writing and computing exercises. Late homework will not be accepted; however, the lowest HW score will be dropped when computing your grade.
  - All homeworks are to be typed in Word or pdf documents, and submitted through the HuskyCT course website. **Students may submit each assignment only once.**
  - 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:** While class is going to be virtual, we will have “active learning” in the (virtual) classroom via discussion, Q&A, and problem solving. You must read the material (reading from the text VGSM) 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), analysis and interpretation. A project proposal will be due by 11:59pm, October 16, 2020, and the final report will be due by 11:59pm, November 20, 2020. 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.
- **Teachable Moment:** This is your opportunity to teach somebody else. Please choose one work/topic from the class which inspires you, think about an audience who you feel really needs to learn about this work and the messages/values it contains. Find a way to teach this work to them. Can be done as a letter, a short essay, a video, a poster project, or some other way that you feel best works for your intended audience.

The grades will be assigned as follows:

Homework Assignments	20%
Participation	15%
Course Project	15%
Teachable moment	10%
Mid-term Exam	20%
Final Exam	20%

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**

Monday, August 31. Fall semester begins

Monday, Sep. 14. Courses dropped after this date will have a W for withdrawal

Monday, Nov. 2. Last day to withdraw from a course;

    Last day to convert courses on Pass/Fail option to letter grade

Sunday, Nov. 22. Fall recess begins

Saturday, Nov. 29. Fall recess ends

Monday, Dec. 7. Last day of fall semester classes

Dec 8-Dec 13 Reading Days

Monday, Dec. 14 Final examinations begin

Thursday, Dec. 17 Reading Day

Sunday, Dec. 20 Final examinations end

For the complete spring semester schedule, see <http://registrar.uconn.edu/academic-calendar/fall-2020/> recorded on the academic record.

**How to Succeed in this Course:** All students can succeed in this course and we are here to help you along the way. Please do not hesitate to ask questions or attend office hours. All questions are important here. Success in this course program depends heavily on your personal health and well-being. Recognize that stress is an expected part of the college experience, and it often can be compounded by unexpected setbacks or life changes outside the classroom. Your teaching assistants and I strongly encourage you to reframe challenges as an unavoidable pathway to success. Reflect on your role in taking care of yourself throughout the semester, before the demands of exams and projects reach their peak. Please feel free to reach out to me about any difficulty you may be having that may impact your performance in your courses or campus life as soon as it occurs and before it becomes too overwhelming. In addition to your academic advisor, I strongly encourage you to contact the many other support services on campus that stand ready to assist you.

Consider the following support systems:

- Dean of Students Office <https://dos.uconn.edu/>,
- Academic Achievement Center <https://achieve.uconn.edu/>,
- Writing Center <https://writingcenter.uconn.edu/>,
- Quantitative Learning Center <https://qcenter.uconn.edu/>,

- Center for Students with Disabilities <https://csd.uconn.edu/>,
- Title IX Office <https://titleix.uconn.edu/title-ix-at-uconn/about-title-ix-uconn/>,
- Student Health and Wellness – Mental Health <https://counseling.uconn.edu/>, etc.

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).

**Resources for Students Experiencing Distress:** The University of Connecticut is committed to supporting students in their mental health, their psychological and social well-being, and their connection to their academic experience and overall wellness. The university believes that academic, personal, and professional development can flourish only when each member of our community is assured equitable access to mental health services. The university aims to make access to mental health attainable while fostering a community reflecting equity and diversity and understands that good mental health may lead to personal and professional growth, greater self-awareness, increased social engagement, enhanced academic success, and campus and community involvement.

Students who feel they may benefit from speaking with a mental health professional can find support and resources through the Student Health and Wellness-Mental Health <https://counseling.uconn.edu/> (SHaW-MH) office. Through SHaW-MH, students can make an appointment with a mental health professional and engage in confidential conversations or seek recommendations or referrals for any mental health or psychological concern.

Mental health services are included as part of the university's student health insurance plan and also partially funded through university fees. If you do not have UConn's student health insurance plan, most major insurance plans are also accepted. Students can visit the Student Health and Wellness-Mental Health located in Storrs on the main campus in the Arjona Building, 4th Floor, or contact the office at (860) 486-4705, or <https://studenthealth.uconn.edu/> for services or questions.

**Accommodations for Illness or Extended Absences:** Please stay home if you are feeling ill. If illness prevents you from attending class, it is your responsibility to notify your instructor as soon as possible. You do not need to disclose the nature of your illness, however, you will need to work with your instructor to determine how you will complete coursework during your absence. If life circumstances are affecting your ability

to focus on courses and your UConn experience, students can email the Dean of Students at [dos@uconn.edu](mailto:dos@uconn.edu) to request support.

**COVID-19 Specific Information:**” People with COVID-19 have had a wide range of symptoms reported – ranging from mild symptoms to severe illness. These symptoms may appear 2-14 days after exposure to the virus and can include: Fever, Cough, Shortness of breath or difficulty breathing, Chills, Repeated shaking with chills, Muscle pain, Headache, Sore throat, New loss of taste or smell.

Additional information including what to do if you test positive or you are informed through contact tracing that you were in contact with someone who tested positive, and answers to other important questions can be found here: <https://studenthealth.uconn.edu/updates-events/coronavirus/>

**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.