

University of Florida
College of Public Health & Health Professions Syllabus
Fall 2018 STA 6177: Applied Survival Analysis (3 credits)
 Delivery Format: On Campus
 T 9th period in HPNP G-114 and R 8-9th Periods in HPNP G-312
 Course Content in E-Learning using CANVAS: <http://elearning.ufl.edu>

Instructor Name: Dr. Robert Parker
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 Office Hours: M 6th Period CTRB 5219 or by appointment

Preferred Course Communications: E-mail in CANVAS

TA: Haocheng Ding

Prerequisites: STA 6327: Introduction to Theoretical Statistics II or PHC 6092: Introduction to Biostatistical Theory or Permission of the Instructor

PURPOSE AND OUTCOME

Course Overview: This course discusses “time to event” data, where the event can be response to treatment, relapse of disease, or death. This course will introduce the basic concepts and statistical methods used for survival data. Topics include censoring, Kaplan-Meier estimation, log-rank test, Cox proportional hazards regression model, accelerated failure time model and competing risks. Statistical analyses will be performed using R.

Relation to Program Outcomes: This course provides the knowledge to interpret and apply biostatistical methods needed to analyze time to event data.

Course Objectives and/or Goals:

Upon successful completion of this course, students should be able to:

1. Apply and interpret one sample methods for survival data including the Kaplan-Meier and Nelson-Aalen estimators.
2. Apply and interpret methods to compare two or more groups with a time to event response, including the log-rank test and weighted alternatives.
3. Apply, build and interpret regression models for survival data including the accelerated failure time model, Cox model and extensions.
4. Apply and interpret model diagnostics for regression models with survival data.

Instructional Methods: Lectures with slides, data analysis demonstrations in R, and whiteboard use will be presented live. Homework assignments and exams will be provided through CANVAS in E-learning.

DESCRIPTION OF COURSE CONTENT

Course Materials

There will be no assigned textbook for this class; however, the following list provides some useful references

- Survival Analysis: Techniques for censored and truncated data (Statistics for biology and health) by John P. Klein and Melvin L Moeschberger (2005)
- The statistical analysis of failure time data by John D Kalbfleisch and Ross L. Prentice (2002)

Additional course material will be posted in CAVNAS via E-learning at elearning.ufl.edu.

Course Schedule

Week	Date	Topics	Important Dates
1	Aug 20-24	Syllabus/ Fundamental Quantities and Parametric Distributions	
2	Aug 27-31	Censoring and Likelihoods	
3	Sept 3-7	Kaplan-Meier and Nelson-Aalen Estimators	
4	Sept 10-14	Log-rank Test	
5	Sept 17-21	Log-rank Test (cont'd)	
6	Sept 24-28	Exam 1	Exam 1 Due 10/1
7	Oct 1-5	Parametric Regression Models	
8	Oct 8-12	Cox Model: Estimation	
9	Oct 15-19	Cox Model: Ties and Baseline Survival	
10	Oct 22-26	Cox Model: Inference	
11	Oct 29-Nov 2	Building and Interpreting Regression Models	
12	Nov 5-9	Regression Model Diagnostics: Residuals	
13	Nov 12-16	Exam 2	Exam 2 Due 11/20
14	Nov 19-23	Extending the Cox Model	No Class 11/22
15	Nov 26-30	Extending the Cox Model	
16	Dec 3-7	Review and handout Final Exam	12/6 – Reading Day
17	Dec 10-14	Final Exam Due	Final Exam Due 12/11

Holidays: No class November 22 (Thanksgiving Holiday).

Technology: A computer capable of running R.

E-Learning: An E-Learning site will be available for the course using CANVAS. The weekly schedule and all course materials are available online through this site including lecture notes, grades, assignments, and other course information. E-Learning is accessible at elearning.ufl.edu. You must have a valid Gatorlink ID and password to access this course site. For assistance call the UF Help Desk at 392-HELP.

For technical support for this class, please contact the UF Help Desk at:

- Learning-support@ufl.edu
- (352) 392-HELP - select option 2
- <https://lss.at.ufl.edu/help.shtml>

ACADEMIC REQUIREMENTS AND GRADING

Assignments and Grading

Grades will be based on attendance, assignments, and exams.

- Attendance will be based on number of absences, where 1 point will be deducted for each unexcused absence.
- Homework assignments will be assigned every 1-2 weeks and due the following week. DO NOT copy another students solutions. Late submissions will result in point deductions.
- There will be three take home exams. The final exam is cumulative. You may use the notes, but students should not use the internet or consult other students for help on the exams.

Requirement	% of final grade
Attendance	5%
Assignments	25%
Exam 1	20%
Exam 2	20%
Final Exam	30%

Point system used (i.e., how do course points translate into letter grades).

Final Average	94-100	90-93	85-89	80-84	77-79	74-76	70-73	67-69	64-66	60-63	57-59	Below 57
Letter Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E

Please be aware that a C- is not an acceptable grade for graduate students. A grade of C counts toward a graduate degree only if an equal number of credits in courses numbered 5000 or higher have been earned with an A. In addition, the Bachelor of Health Science Program does not use C- grades.

Letter Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E	WF	I	NG	S-U
Grade Points	4.0	3.67	3.33	3.0	2.67	2.33	2.0	1.67	1.33	1.0	0.67	0.0	0.0	0.0	0.0	0.0

For greater detail on the meaning of letter grades and university policies related to them, see the Registrar's Grade Policy regulations at:

<http://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Policy Related to Make up Exams or Other Work: Students are allowed to make up work ONLY as the result of illness or other unanticipated circumstances warranted a medical excuse and resulting in the student missing an assignment deadline, consistent with the College policy. Documentation from a health care provider is required. Work missed for any other reason will receive a grade of zero. Any requests for make-ups due to technical issues MUST be accompanied by the ticket number received from LSS when the problem was reported to them. The ticket number will document the time and date of the problem. You MUST e-mail your instructor within 24 hours of the technical difficulty if you wish to request a make-up.

Policy Related to Required Class Attendance: Class attendance is mandatory. Excused absences follow the criteria of the UF Graduate Catalogue (e.g. illness, serious family emergency, military obligations, religious holidays.), and should be communicated to the instructor prior to missed class days when possible. UF rules require attendance during the first two course sessions. Regardless of attendance, students are responsible for all materials presented in class and meeting the scheduled due dates for class assignments. Finally, students should preview the currently assigned materials prior to the class meetings, and be prepared to discuss the material. Please note that all faculty are bound by the UF policy for excused absences. For information regarding the UF Attendance Policy see the Registrar website for additional details:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

STUDENT EXPECTATIONS, ROLES, AND OPPORTUNITIES FOR INPUT

Communication Guidelines: Questions about course material should be in class or through E-mail in E-learning. Questions about a specific quiz question or of a personal nature should be sent by email INBOX through E-Learning.

Academic Integrity: Students are expected to act in accordance with the University of Florida policy on academic integrity. 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 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 additional information regarding Academic Integrity, please see Student Conduct and Honor Code or the Graduate Student Website for additional details:

<https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>
<http://gradschool.ufl.edu/students/introduction.html>

Please remember cheating, lying, misrepresentation, or plagiarism in any form is unacceptable and inexcusable behavior.

Online Faculty Course Evaluation Process: Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results/>.

SUPPORT SERVICES

Accommodations for Students with Disabilities

If you require classroom accommodation because of a disability, you must register with the Dean of Students Office <http://www.dso.ufl.edu> within the first week of class. The Dean of Students Office will provide documentation of accommodations to you, which you then give to me as the instructor of the course to receive accommodations. Please make sure you provide this letter to me by the end of the second week of the course. The College is committed to providing reasonable accommodations to assist students in their coursework.

Counseling and Student Health

Students sometimes experience stress from academic expectations and/or personal and interpersonal issues that may interfere with their academic performance. If you find yourself facing issues that have the potential to or are already negatively affecting your coursework, you are encouraged to talk with an instructor and/or seek help through University resources available to you.

- The Counseling and Wellness Center 352-392-1575 offers a variety of support services such as psychological assessment and intervention and assistance for math and test anxiety. Visit their web site for more information: <http://www.counseling.ufl.edu>. On line and in person assistance is available.
- You Matter We Care website: <http://www.umatter.ufl.edu/>. If you are feeling overwhelmed or stressed, you can reach out for help through the You Matter We Care website, which is staffed by Dean of Students and Counseling Center personnel.
- The Student Health Care Center at Shands is a satellite clinic of the main Student Health Care Center located on Fletcher Drive on campus. Student Health at Shands offers a variety of clinical services. The clinic is located on the second floor of the Dental Tower in the Health Science Center. For more information, contact the clinic at 392-0627 or check out the web site at: <https://shcc.ufl.edu/>
- Crisis intervention is always available 24/7 from:
 Alachua County Crisis Center
 (352) 264-6789
<http://www.alachuacounty.us/DEPTS/CSS/CRISISCENTER/Pages/CrisisCenter.aspx>

Do not wait until you reach a crisis to come in and talk with us. We have helped many students through stressful situations impacting their academic performance. You are not alone so do not be afraid to ask for assistance.