FLORIDA ATLANTIC UNIVERSITY™

Graduate Programs—NEW COURSE PROPOSAL[1]

UGPC APPROVAL _____
UFS APPROVAL _____
SCNS SUBMITTAL _____
CONFIRMED _____
BANNER POSTED _____
CATALOG _____

DEPARTMENT: MATHEMATICAL SCIENCES
COLLEGE: SCIENCE

RECOMMENDED COURSE IDENTIFICATION:
PREFIX STA COURSE NUMBER 6177 LAB CODE (L or C) _____
(TO OBTAIN A COURSE NUMBER, CONTACT RSHIMAN@FAU.EDU)
COMPLETE COURSE TITLE: **SURVIVAL ANALYSIS**

EFFECTIVE DATE
(first term course will be offered)
_____

CREDITS: 3

TEXTBOOK INFORMATION:
Survival Analysis, 2nd ed. by D.G. Kleinbaum and Mitchel Klein, Springer.

GRADING *(SELECT ONLY ONE GRADING OPTION)*: REGULAR X SATISFACTORY/UNSATISFACTORY _____

COURSE DESCRIPTION, NO MORE THAN THREE LINES:

This course first introduces basic concepts of clinical trials, then introduces the principles and methods of statistical inference that are commonly used for epidemiologic analysis of survival data. The major topics covered are: Basic concepts in survival analysis, types of censoring, life table and Kaplan-Meier, log-rank method and Cox proportional model. Software package R language is utilized.

PREREQUISITES *:	COREQUISITES*:	REGISTRATION CONTROLS (MAJOR, COLLEGE, LEVEL)*:
STA 4234 or equivalent	NONE	

* *PREREQUISITES, COREQUISITES AND REGISTRATION CONTROLS WILL BE ENFORCED FOR ALL COURSE SECTIONS.*

MINIMUM QUALIFICATIONS NEEDED TO TEACH THIS COURSE:
PH.D. IN MATHEMATICS

Faculty contact, email and complete phone number:
~~Lianfen Qian~~
lqian@fau.edu
297-2436

Please consult and list departments that might be affected by the new course and attach comments.[3]
N/A

Approved by:	*Date:*
Department Chair: Lee Klingler	9/12/13
College Curriculum Chair:	9/12/13
College Dean:	9/12/13
UGPC Chair:	9-13-13
Graduate College Dean:	9.13.13
UFS President:	
Provost:	

1. **Syllabus** must be attached; see guidelines for requirements: *www.fau.edu/provost/files/course syllabus.2011.pdf*
2. Review **Provost Memorandum: Definition of a Credit Hour** *www.fau.edu/provost/files/Definition Credit Hour Memo 2012.pdf*
3. **Consent** from affected departments (attach if necessary)

Email this form and syllabus to *UGPC@fau.edu* one week before the University Graduate Programs Committee meeting so that materials may be viewed on the UGPC website prior to the meeting.

Syllabus

1. Course Name	Course Number	Credit Hours
Survival Analysis and Clinical Trials	STA 6177	3

2. Course prerequisites

STA 4234 or equivalent

3. Instructor

Lianfen Qian, Office SE 244
Phone: (561) 297-2486, fax (561) 297-2436
E-mail address: lqian@fau.edu

4. Course description

This course first introduces basic concepts of clinical trials, then introduces the principles and methods of statistical inference that are commonly used for epidemiologic analysis of survival data. The major topics covered are: Basic concepts in survival analysis, types of censoring, life table and Kaplan-Meier, log-rank method and Cox proportional model. Software package R language is utilized.

5. Course objectives

Upon completing this course students can expect to be able to:

- design basic clinical trials.
- compute and interpret the product limit estimate (Kaplan-Meier) estimate of survival and associated confidence intervals.
- perform and interpret the log-rank test for differences between survival curves with right censored survival data.
- perform Cox proportional model to estimate proportional hazards model coefficient, interpret coefficient estimates and confidence intervals, and test hypotheses that one or more coefficients in the regression model are zero.
- interpret and critique the results of application of these statistical techniques as found in the health science literature.

6. **Lecture Schedule**

- Design basic clinic trials (ca. 1 week)
  - Homework: Design pre-described clinic trials from the textbook
- Introduce Software (ca. 1 week)
  - Homework: Using R package to do exercise problems
- Life table (ca. 1 week)
  - Homework: Construct life tables for survival data
- Kaplan-Meier estimator and its inference (ca 2 weeks)
  - Homework: Calculate Kaplan-Meier estimate and make inference for survival data, read assigned papers selected by the instructor

- Log-rank test for censored data (ca. 2 weeks)
  - Homework: Conduct inferential tests for censored data with log-rank test for survival data, read some assigned paper related to the topic
- Cox proportional model (ca 3 weeks)
  - Homework: Model given survival data using Cox proportional model
- Model assumption check (ca. 1 week)
  - Homework: Analyze real data set using Cox proportional model and check the validity of the model assumption, begin final project
- Extended Cox model (ca. 2 weeks)
  - Homework: Analyze real data set using the extended Cox model and continue final project
- Recent developments (ca. 2 weeks)
  - Homework: Read recently published papers on survival analysis and complete final project

7. Required Text

Survival Analysis, 2nd ed. by D.G. Kleinbaum and Mitchel Klein, Springer.

8. Supplementary/recommended readings

- *Fundamentals of Clinical Trials*, 3rd Ed. by L.M. Friedman, C.D. Furberg and D. L. Demets. Springer.
- *Survival Analysis: Techniques for Censored and Truncated Data* by John P Klein and Melvin L. Moeschberger, Springer. 1997.

9. Assessment Procedure and Grading

There will be graded homework assignments accounting for 40% of your cumulative performance, a midterm exam, accounting for 30% of your cumulative performance, and a final project that accounts for 30% of your cumulative performance. Your overall grade in the course is derived from your cumulative performance according to the following table.

Cumulative Performance	Grade
$\geq$ 94%	A
$\geq$ 90% – 94%	A–
> 87% – 90%	B+
> 83% – 87%	B
> 80% – 83%	B–
> 75% – 80%	C+
> 65% – 75%	C
> 60% – 65%	C–
> 57% – 60%	D+
> 53% – 57%	D
$\geq$ 50% – 53%	D–
<50%	F

10. Incomplete Grades

A grade of *I* (incomplete) will only be given under certain conditions and in accordance with the academic policies and regulations put forward in FAU's *University Catalog*. The student has to show exceptional circumstances why requirements cannot bet met. A request for an incomplete grade has to be made in writing with supporting documentation, where appropriate.

11. Makeup Tests and Extra Credit

If you cannot attend an exam or hand in a homework project in time due to a relevant reason like significant health problems or being involved in a major traffic accident, and you document this, then you can make up the respective assignment.

Extra credit work is not possible.

12. Method of Instruction

The course is conducted in lectures combined with lab sessions. Assignments may require the use of a statistical software package such as Minitab or R language. Unless otherwise specified, for those assignments you can use statistical package of your choice.

13. Disability policy statement

In compliance with the Americans with Disabilities Act (ADA), students who require special accommodations due to a disability to properly execute coursework must register with the Office for Students with Disabilities (OSD) located in Boca Raton - SU 133 (561-297-3880), in Davie - MOD I (954-236-1222), in Jupiter - SR 117 (561-799-8585), or at the Treasure Coast - CO 128 (772-873-3305), and follow all OSD procedures.

14. Honor Code policy statement

Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty, including cheating and plagiarism, is considered a serious breach of these ethical standards, because it interferes with the University mission to provide a high quality education in which no student enjoys an unfair advantage over any other. Academic dishonesty is also destructive of the University community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. For more information, see University Regulation 4.001 at
http://www.fau.edu/ctl/4.001_Code_of_Academic_Integrity.pdf