UNIVERSITY OF NEVADA LAS VEGAS
Department of Mathematical Sciences

Survival Analysis
STA 777, Section 1001
Fall 2017 Syllabus

- **Lectures:** Mon, Wed 2:30–3:45pm.

- **Instructor:** Dr. Kaushik Ghosh

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Phone:	(702) 895-0392	Office hours:	Mon, Wed 1:00-2:00 or by appt.
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- **Learning Outcomes:** This is a graduate-level course in modeling and analysis of time-to-event data. After completing the course, students will be

  - able to recognize the various situations where time-to-event data arise and the specific characteristics of such data

  - able to estimate the underlying event-time distribution using parametric or non-parametric methods and provide error bands on the estimates

  - able to compare the event-time distributions of two or more groups

  - able to develop and interpret prediction models for event-time based on other variables

  - able to use statistical software to analyze such data

  - prepared to read journal articles for research in this area

- **Topics Covered:**

  1. Survival function, hazard function, cumulative hazard function

  2. Common parametric models for survival data

  3. Estimation of survival and cumulative hazard function: Kaplan-Meier estimator, Nelson-Aalen estimator and their properties

  4. Regression models for survival data: accelerated failure time model, proportional hazards model

  5. Censoring, truncation, construction of likelihood, partial likelihood

  6. One-, two- and multi-sample tests for survival data: log-rank test, Wilcoxon test

  7. Competing risk models

  8. Use of statistical software in analyzing survival data

  9. Time dependent covariates, counting process approach (if time permits)

- **Prerequisites:** STA 768.

- **Required Text:** *Survival Analysis: Techniques for Censored and Truncated Data* (2nd ed.) by John P. Klein and Melvin L. Moeschberger; Publisher: Springer; ISBN-13: 978-0-387-95399-1.

  We roughly plan to cover chapters 2, 3, 4, 6, 7, 8, 9, 11 and 12 of the text. Any changes will be announced in class.

- **Suggested references:**

  - *Modelling Survival Data in Medical Research* (2nd ed.) by David Collett; Publisher: Chapman and Hall /CRC; ISBN: 1584883251.
  - *Survival Analysis* by Rupert G. Miller; Publisher: Wiley; ISBN: 0-471-25548-3.
  - *Applied Survival Analysis: Regression Modeling of Time to Event Data* (2nd ed.) by David W. Hosmer Jr. and Stanley Lemeshow and Susanne May; Publisher: Wiley; ISBN: 0471754994.

- **Webpage:** Course-related materials (homeworks, solutions, grades, etc.) will be posted on UNLV WebCampus. You can access them at `http://webcampus.unlv.edu`. Please check it often for updates.

- **Homework:** Homework will be assigned roughly every other week. No late homework will be accepted. Solutions of the homework will be available on WebCampus after the due date. The lowest homework will be dropped.

- **Exams:** There will be one midterm and one final exam. No make-up exams will be allowed except for well-documented reasons such as a medical emergency.

Midterm	Tuesday, October 17 (during class)
Final	Thursday, December 12, 6–8pm

- **Grading:** The final grade will be assigned based on a composite score computed using the following weighting scheme:

Homework:	35%
Midterm:	30%
Final:	35%

- **Disclaimer:** The syllabus is subject to changes. Any modifications will be announced in class.

THE FINE PRINT

- **Academic Misconduct:** Academic integrity is a legitimate concern for every member of the campus community; all share in upholding the fundamental values of honesty, trust, respect, fairness, responsibility and professionalism. By choosing to join the UNLV community, students accept the expectations of the Student Academic Misconduct Policy and are encouraged when faced with choices to always take the ethical path. Students enrolling in UNLV assume the obligation to conduct themselves in a manner compatible with UNLVs function as an educational institution. An example of academic misconduct is plagiarism. Plagiarism is using the words or ideas of another, from the Internet or any source, without proper citation of the sources. See the Student Academic Misconduct Policy (approved December 9, 2005) located at: `https://www.unlv.edu/studentconduct/student-conduct`.

- **Copyright:** The University requires all members of the University Community to familiarize themselves with and to follow copyright and fair use requirements. **You are individually and solely responsible for violations of copyright and fair use laws. The university will neither protect nor defend you nor assume any responsibility for employee or student violations of fair use laws.** Violations of copyright laws could subject you to federal and state civil penalties and criminal liability, as well as disciplinary action under University policies. Additional information can be found at: `http://www.unlv.edu/provost/copyright`.

- **Disability Resource Center (DRC):** The UNLV Disability Resource Center (SSC-A 143, `http://drc.unlv.edu/`, 702-895-0866) provides resources for students with disabilities. If you feel that you have a disability, please make an appointment with a Disabilities Specialist at the DRC to discuss what options may be available to you. If you are registered with the UNLV Disability Resource Center, bring your Academic Accommodation Plan from the DRC to the instructor during office hours so that you may work together to develop strategies for implementing the accommodations to meet both your needs and the requirements of the course. Any information you provide is private and will be treated as such. To maintain the confidentiality of your request, please do not approach the instructor in front of others to discuss your accommodation needs.

- **Religious Holidays Policy:** Any student missing class quizzes, examinations, or any other class or lab work because of observance of religious holidays shall be given an opportunity during that semester to make up missed work. The make-up will apply to the religious holiday absence only. It shall be the responsibility of the student to notify the instructor **within the first 14 calendar days of the course for fall and spring courses (excepting modular courses), or within the first 7 calendar days of the course for summer and modular courses**, of his or her intention to participate in religious holidays which do not fall on state holidays or periods of class recess. For additional information, please visit: `http://catalog.unlv.edu/content.php?catoid=6&navoid=531`.

- **Transparency in Learning and Teaching:** The University encourages application of the transparency method of constructing assignments for student success. Please see these two links for further information:

  `https://www.unlv.edu/provost/teachingandlearning`

  `https://www.unlv.edu/provost/transparency`

- **Incomplete Grades:** The grade of I (Incomplete) can be granted when a student has satisfactorily completed three-fourths of course work for that semester/session but for reason(s) beyond the students control, and acceptable to the instructor, cannot complete the last part of the course, and the instructor believes that the student can finish the course without repeating it. The incomplete work must be made up before the end of the following regular semester for undergraduate courses. Graduate students receiving "I" grades in 500-, 600-, or 700-level courses have up to one calendar year to complete the work, at the discretion of the instructor. If course requirements are not completed within the time indicated, a grade of F will be recorded and the GPA will be adjusted accordingly. Students who are fulfilling an Incomplete do not register for the course but make individual arrangements with the instructor who assigned the I grade.

- **Tutoring and Coaching:** The Academic Success Center (ASC) provides tutoring, academic success coaching and other academic assistance for all UNLV undergraduate students. For information regarding tutoring subjects, tutoring times, and other ASC programs and services, visit `http://www.unlv.edu/asc` or call 702-895-3177. The ASC building is located across from the Student Services Complex (SSC). Academic success coaching is located on the second floor of the SSC (ASC Coaching Spot). Drop-in tutoring is located on the second floor of the Lied Library and College of Engineering TEB second floor.

- **UNLV Writing Center:** One-on-one or small group assistance with writing is available free of charge to UNLV students at the Writing Center, located in CDC-3-301. Although walk-in consultations are sometimes available, students with appointments will receive priority assistance. Appointments may be made in person or by calling 702-895-3908. The students Rebel ID Card, a copy of the assignment (if possible), and two copies of any writing to be reviewed are requested for the consultation. More information can be found at: `http://writingcenter.unlv.edu/`.

- **Rebelmail:** By policy, faculty and staff should e-mail students Rebelmail accounts only. Rebelmail is UNLVs official e-mail system for students. It is one of the primary ways students receive official university communication such as information about deadlines, major campus events, and announcements. All UNLV students receive a Rebelmail account after they have been admitted to the university. Students e-mail prefixes are listed on class rosters. The suffix is always @unlv.nevada.edu. **Emailing within WebCampus is acceptable**.

- **Final Examinations:** The University requires that final exams given at the end of a course occur at the time and on the day specified in the final exam schedule. See the schedule at: `http://www.unlv.edu/registrar/calendars`.

  Any other class specific information(e.g., absences, make-up exams, status reporting, extra credit policies, plagiarism/cheating consequences, policy on electronic devices, specialized department or college tutoring programs, bringing children to class, policy on recording classroom lectures, etc.)

- **Electronic devices:** Please set your cellphones to silent mode.

I hope you will enjoy this course. Have a great semester!