

## AS4823A/AS9004A Course Outline

### 1. Course Information

#### Course Information

**Course Number:** AS4823A/AS9004A  
**Course Name:** Survival Analysis  
**Academic Term:** Fall, 2023  
**Lectures:** M: 2:30-4:30pm, W:3:30-4:30pm  
**Class Room :** WSC 240

#### List of Prerequisites

A minimum mark of 60% in Statistical Sciences 3858B

Unless you have either the requisites for this course or written special permission from your Dean's Designate (Department/Program Counsellors and Science Academic Counselling) to enroll in it, you may be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.

### 2. Instructor Information

Instructors	Email	Office	Phone	Office Hours
Dr. Wenqing He	<a href="mailto:whe@stats.uwo.ca">whe@stats.uwo.ca</a> whe23@uwo.ca	WSC213	519-6612111 ext. 86982	Mon. 11:30am- 12:30pm (In person)
TA:				

Students must use their Western (@uwo.ca) email addresses when contacting their instructors.

### 3. Course Syllabus, Schedule, Delivery Mode

Survival models, nonparametric estimation of the survival functions, one and two or more sample hypothesis tests, inference for semiparametric regression models, inference for parametric regression models.

#### Learning Outcomes

This course is intended to provide students with an understanding of the theory and applications of survival analysis. By the end of the course, students are expected to be able to perform statistical inference for various types of survival data by using parametric, semi-parametric or nonparametric survival models.

#### Table of Contents and Schedule

1. Introduction to survival analysis.
2. Essential preliminaries: survivor function, hazard function, cumulative hazard function, density function and their relationships for both continuous and discrete survival times. Censoring and truncation.
3. Basic properties of lifetime distributions: the common lifetime distributions, how the distributions are derived in survival analysis, and their properties that are essential in choosing distributions in practice.
4. Non-parametric estimation and graphical methods: Kaplan-Meier estimator, Nelson-Aalen estimator, and their variance estimators; Log-rank test for distribution difference; Graphical methods that combining nonparametric estimation and choices of parametric models in practice.
5. Parametric survival models: statistical inference for parametric model settings.
6. Regression analysis for parametric models: goodness of fit and model selection for regression models under parametric settings.
7. Regression analysis for semi-parametric models: goodness of fit and model selection for regression models under semi-parametric settings where part of the models is left unspecified.

#### Key Sessional Dates

Classes begin: September 7  
Non-Instructional Day: September 29  
Thanksgiving Holiday: October 9  
Reading Week: October 30-November 5  
Classes end: December 8, 2021

#### Contingency plan

Although the intent is for this course to be delivered in person, should any university-declared emergency require some or all of the course to be delivered online, either synchronously or asynchronously, the course will adapt accordingly. The grading scheme will **not** change. Any assessments affected will be conducted online as determined by the course instructor.

## 4. Course Materials

Main Reference Books:

1. Statistical Models and Methods for Lifetime Data, 2nd Edition, by Jerald F. Lawless, John Wiley & Sons, 2003.
2. The Statistical Analysis of Failure Time Data, 2nd Edition, by John D. Kalbfleisch and Ross L. Prentice. John Wiley & Sons, 2002.

Students are responsible for checking the course OWL site (<http://owl.uwo.ca>) on a regular basis for news and updates. This is the primary method by which information will be disseminated to all students in the class.

If students need assistance with the course OWL site, they can seek support on the OWL Help page. Alternatively, they can contact the Western Technology Services Helpdesk. They can be contacted by phone at 519-661-3800 or ext. 83800.

## 5. Methods of Evaluation

The overall course grade will be calculated as listed below:

Assignments (3)	_20_ %
Test #1	_20_ %
Test #2	_25_ %
Final group project	_25_ %
Presentation	_10_ %

Three assignments due in class on

Oct. 4  
Nov. 8  
Nov. 29

Two tests in class (closed book)

Test #1: Oct. 18 (W: 3:30-4:20pm)  
Test #2: Nov. 29 (W: 3:30-4:20pm)

Group project presentations:

Dec. 4,6

Final group project due

Dec. 11, 11:59pm (Canadian Eastern Time)  
Group membership will be randomly assigned.

Course-specific conditions that are required to pass the course:

- There will be no final grade if both tests are missed. If there are logistical reasons to miss both tests, the student will receive a grade of Incomplete (INC) and will get assessment with the next offering of the course.

## Accommodated Evaluations

- Late assessments without valid medical or supporting documentation will be counted 0.
- Late assessments with valid medical or supporting documentation should be submitted within 24 hours.
- No make-up tests. If valid documents are provided, the weight of one test will be redistributed to either the other test or the final project, determined by the instructor.
- If the two tests are missed with whatever reasons, the student will receive an incomplete (INC) in the course grade. The student will get assessment from the next time the course is offered.

## Rounding of Marks Statement

Across the Sciences Undergraduate Education programs, we strive to maintain high standards that reflect the effort that both students and faculty put into the teaching and learning experience during this course. All students will be treated equally and evaluated based only on their actual achievement. *Final grades* on this course, irrespective of the number of decimal places used in marking individual assignments and tests, will be calculated to one decimal place and rounded to the nearest integer, e.g., 74.4 becomes 74, and 74.5 becomes 75. Marks WILL NOT be bumped to the next grade or GPA, e.g. a 79 will NOT be bumped up to an 80, an 84 WILL NOT be bumped up to an 85, etc. The mark attained is the mark you achieved, and the mark assigned; requests for mark “bumping” will be denied.

## 6. Student Absences

If you are unable to meet a course requirement due to illness or other serious circumstances, please follow the procedures below.

### Assessments worth less than 10% of the overall course grade:

In the assessments of this course, only each assignment has less than 10% of the overall grade. You will be given around 2 weeks for each assignment; thus no academic considerations will be considered for not submitting your assignment on time. If you are not able to come to class to hand in the assignment, electronic form of assignment is allowed to be submitted before the class of the due date.

### Assessments worth 10% or more of the overall course grade:

For work totalling 10% or more of the final course grade, you must provide valid medical or supporting documentation to the Academic Counselling Office of your Faculty of Registration as soon as possible.

For further information, please consult the University’s medical illness policy at

[https://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/accommodation\\_medical.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_medical.pdf).

The Student Medical Certificate is available at

[https://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/medicalform.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf).

No make-up tests. If valid documents are provided, the weight of one test will be redistributed to either the other test or the final project, determined by the instructor. If the two tests are missed with whatever reasons,, the student will

receive an incomplete (INC) in the course grade. The student will get assessment from the next time the course is offered.

## 6. Accommodation and Accessibility

### Religious Accommodation

When a course requirement conflicts with a religious holiday that requires an absence from the University or prohibits certain activities, students should request accommodation for their absence in writing at least two weeks prior to the holiday to the course instructor and/or the Academic Counselling office of their Faculty of Registration. Please consult University's list of recognized religious holidays (updated annually) at

<https://multiculturalcalendar.com/ecal/index.php?s=c-univwo>.

### Accommodation Policies

Students with disabilities are encouraged to contact Accessible Education, which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The policy on Academic Accommodation for Students with Disabilities can be found at:

[https://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/Academic\\_Accommodation\\_disabilities.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Accommodation_disabilities.pdf).

## 7. Academic Policies

The website for Registrarial Services is <http://www.registrar.uwo.ca>.

In accordance with policy,

[https://www.uwo.ca/univsec/pdf/policies\\_procedures/section1/mapp113.pdf](https://www.uwo.ca/univsec/pdf/policies_procedures/section1/mapp113.pdf),

the centrally administered e-mail account provided to students will be considered the individual's official university e-mail address. It is the responsibility of the account holder to ensure that e-mail received from the University at their official university address is attended to in a timely manner.

**Non-programmable calculators will be permitted for tests. Other devices such as cell phones are not allowed.**

**Scholastic offences** are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site:

[http://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/scholastic\\_discipline\\_undergrad.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf).

## 8. Support Services

Please visit the Science & Basic Medical Sciences Academic Counselling webpage for information on adding/dropping courses, academic considerations for absences, appeals, exam conflicts, and many other academic related matters: <https://www.uwo.ca/sci/counselling/>.

Students who are in emotional/mental distress should refer to Mental Health@Western (<https://uwo.ca/health/>) for a complete list of options about how to obtain help.

Western is committed to reducing incidents of gender-based and sexual violence and providing compassionate support to anyone who has gone through these traumatic events. If you have experienced sexual or gender-based violence (either recently or in the past), you will find information about support services for survivors, including emergency contacts at

[https://www.uwo.ca/health/student\\_support/survivor\\_support/get-help.html](https://www.uwo.ca/health/student_support/survivor_support/get-help.html).

To connect with a case manager or set up an appointment, please contact [support@uwo.ca](mailto:support@uwo.ca).

Please contact the course instructor if you require lecture or printed material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Accessible Education at

[http://academicsupport.uwo.ca/accessible\\_education/index.html](http://academicsupport.uwo.ca/accessible_education/index.html)

if you have any questions regarding accommodations.