

Module code

SPM-3419

Type of module

Undergraduate: Mathematical Sciences – Elective

Survival Analysis



Modular credits

4

Total student
engagement

56 hours

Prerequisite

**SPM-2203 Probability
and Statistics**

Anti-requisite

None

Aims

To introduce the principles of survival analysis and its application to time-to-event data. It seeks to develop students' ability to analyse and interpret survival data, apply appropriate models using statistical software, and communicate findings clearly and responsibly.

Module learning outcomes (MLO)

On successful completion of this module, a student will be expected to be able to:

MLO 1

Analyse and evaluate the use of time-to-event methods and the influence of different censoring mechanisms on survival data analysis.

MLO 2

Summarise and estimate survival functions and related characteristics from time-to-event data.

MLO 3

Apply appropriate statistical models for survival analysis and justify their underlying theory.

MLO 4

Analyse and interpret survival data using statistical software, and construct effective reports for communication.

MLO 5

Demonstrate independence, project management, and professional responsibility when carrying out survival analysis on real datasets.

Module contents

Introduction to survival data:
Characteristics of time-to-event outcomes

Censoring and truncation: Types and implications for analysis

Estimation of the survival function: Kaplan-Meier, Nelson-Aalen, comparison of survival curves

Cox regression model:
Estimation, interpretation, and diagnostics

Accelerated failure time models:
Parametric assumptions and interpretation

Parametric survival models:
Exponential, Weibull, log-normal, log-logistic

Applications of survival analysis:
Implementation in software

Assessment

60%

Examination

40%

Coursework

Examination
60%

Class tests
30%

10%

■ Examination — 60% ■ Class tests — 30% ■ Assignments — 10%

Formative assessment

Weekly discussion
and feedback

Summative assessment

COMPONENT		WEIGHTING
Examination		60%
Coursework		40%
Individual		40%
Class tests		30%
Assignments		10%

Graduate attributes and skills

Programme learning objectives (PLO) addressed

1	PLO 1 (Core Mathematical Knowledge)	2	PLO 2 (Analytical Problem-Solving)
3	PLO 3 (Computational And Digital Tools)	4	PLO 4 (Mathematical Communication)
5	PLO 5 (Collaboration, Project Management And Industry Engagement)		

Sustainability concept addressed

3	SDG 3 Good Health and Well-being
4	SDG 4 Quality Education

Digital skills/software used (not limited to)

☐	Learning management and collaboration platforms (e.g. Canvas)
☐	Statistical computing and programming software

Micro-credentialling option

No

Stackable towards GenBESTARI Undergraduate Degree Programme or other relevant Lifelong Learning Programmes

No

Document details

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