Course Title:	**Stochastic Modelling**
Course Code:	**STAT800**
Descriptor Start Date:	**01/01/2022**

POINTS:	**15.00**
LEVEL:	**8**
PREREQUISITE/S:	**STAT700**
COREQUISITE/S:	**None**
RESTRICTION/S:	**None**

LEARNING HOURS

Hours may include lectures, tutorials, online forums, laboratories. Refer to your timetable and course information in Canvas for detailed information.

Total learning hours: 150

PRESCRIPTOR

A study of events that occur as points in time or space. An overview of mathematical methods for deriving properties of stochastic processes. Applications and model fitting using MatLab or R to data selected from different areas.

LEARNING OUTCOMES

1. Select an appropriate stochastic model for an application.
2. Derive basic mathematical properties for a stochastic model
3. Fit a selected stochastic model to data
4. Validate a model against observed data

CONTENT

Topics selected from:
- Poisson process
- Renewal processes
- Markov renewal and semi-Markov processes
- Markov chains in discrete and continuous time
- Poisson cluster processes
- Time series
- Applications and model fitting in MatLab or R
- Model validation
- Generalized linear models
- Brownian motion
- Recurrent event process
- Gaussian processes
- Markov decision processes
- Model fitting using Bayesian methods

LEARNING & TEACHING STRATEGIES

Class meetings and tutorials discussing the content. Reading assignments and exercises

ASSESSMENT PLAN

Assessment Event	Weighting %	Learning Outcomes
Assignments	60.00	1-4
Test	40.00	1-2

Grade Map **MAP1**

A+ A A- Pass with Distinction
B+ B B- Pass with Merit
C+ C C- Pass
D Fail

Overall requirement/s to pass the course:

To pass the course, the student needs to obtain a minimum of 50% overall.

LEARNING RESOURCES

Lecture notes prepared and provided by the Lecturer Relevant readings as indicated by the Lecturer

For further information, contact: Te Ara Auaha - Faculty of Design & Creative Technologies

Principal Programme:	**DJ1037, Master of Science (Research)**
Related Programme/s:	**AK1037** **AK2037** **AK2040** **DJ1038** **DJ1039** **DJ1040** **DJ2037** **HA1037** **HA1038** **HA1039** **HA1040** **HA2037** **ICE1** **INEXCH1** **SABRD1**