



Science

STATS 326 : Applied Time Series Analysis (15 POINTS)

Course Prescription

Components, decompositions, smoothing and filtering, modelling and forecasting. Examples and techniques from a variety of application areas.

Course Overview

STATS 326 covers the analysis of Time Series data. Initially, the unique features of Time Series data are investigated. Then the main focus is on how to model Time Series data and use the models to forecast future values. Since there are many different models that can be fitted to a given Time Series, techniques to determine which model gives the most accurate predictions are also developed. By the end of STATS 326, students should be able to model and predict discrete univariate Time Series data and have an understanding of more complicated Time Series models that involve multivariate Time Series and/or more advanced modelling techniques mainly selected from a commercial (finance or economic) context.

Course Requirements

Prerequisite: 15 points from STATS 201, 208, BIOSCI 209, ECON 221 Restriction: STATS 727

Capabilities Developed in this Course

- Capability 1: Disciplinary Knowledge and Practice
- Capability 2: Critical Thinking
- Capability 3: Solution Seeking
- Capability 4: Communication and Engagement
- Capability 5: Independence and Integrity
- Capability 6: Social and Environmental Responsibilities

Graduate Profile: [Bachelor of Science](#)

Learning Outcomes

By the end of this course, students will be able to:

1. Understand how Time Series data differs from other data types and what components are likely in a given set of Time Series data. (Capability 1)
2. Communicate effectively on the results of Time Series models and forecasts in a concise manner. (Capability 4)
3. Make informed decisions on future prospects using Time Series models and forecasts. (Capability 2, 3 and 6)
4. Have sufficient exposure to more complex Time Series models to understand other modelling techniques not covered in the course. (Capability 5)

Assessments

Assessment Type	Percentage	Classification
5 Assignments	30%	Individual Coursework
Quizzes	10%	Individual Coursework
2 Tests	30%	Individual Test
Final Exam	30%	Individual Examination
4 types	100%	

Assessment Type	Learning Outcome Addressed			
	1	2	3	4
5 Assignments	✓	✓	✓	
Quizzes	✓		✓	
2 Tests	✓	✓	✓	
Final Exam	✓	✓	✓	✓

Must get 50% in the Final Examination to pass.

Plussage: Provided all coursework is completed, the best of:

- Basic assessment **OR**
- Best Test score 34%, plus Examination 66%,

whichever is best for each student.

Learning Resources

Course book **free** from Science Resource Centre.

Workload Expectations

This course is a standard 15 point course and students are expected to spend 20 hours per week involved in each 15 point course that they are enrolled in (for Summer School **ONLY**).

For this course, you can expect 36 hours of lectures, 24 hours of reading and thinking about the content and 60 hours of work on assignments and/or test preparation.

Digital Resources

Course materials are made available in a learning and collaboration tool called Canvas which also includes reading lists and lecture recordings (where available).

Please remember that the recording of any class on a personal device requires the permission of the instructor.

Copyright

The content and delivery of content in this course are protected by copyright. Material belonging to others may have been used in this course and copied by and solely for the educational purposes of the University under license.

You may copy the course content for the purposes of private study or research, but you may not upload onto any third party site, make a further copy or sell, alter or further reproduce or distribute any part of the course content to another person.

Academic Integrity

The University of Auckland will not tolerate cheating, or assisting others to cheat, and views cheating in coursework as a serious academic offence. The work that a student submits for grading must be the student's own work, reflecting their learning. Where work from other sources is used, it must be properly acknowledged and referenced. This requirement also applies to sources on the internet. A student's assessed work may be reviewed against online source material using computerised detection mechanisms.

Inclusive Learning

All students are asked to discuss any impairment related requirements privately, face to face and/or in written form with the course coordinator, lecturer or tutor.

Student Disability Services also provides support for students with a wide range of impairments, both visible and invisible, to succeed and excel at the University. For more information and contact details, please visit the Student Disability Services' website at <http://disability.auckland.ac.nz>

Special Circumstances

If your ability to complete assessed coursework is affected by illness or other personal circumstances outside of your control, contact a member of teaching staff as soon as possible before the assessment is due.

If your personal circumstances significantly affect your performance, or preparation, for an exam or eligible written test, refer to the University's aegrotat or compassionate consideration page: <https://www.auckland.ac.nz/en/students/academic-information/exams-and-final-results/during-exams/aegrotat-and-compassionate-consideration.html>.

This should be done as soon as possible and no later than seven days after the affected test or exam date.

Student Feedback

During the course Class Representatives in each class can take feedback to the staff responsible for the course and staff-student consultative committees.

At the end of the course students will be invited to give feedback on the course and teaching through a tool called SET or Qualtrics. The lecturers and course co-ordinators will consider all feedback.

Your feedback helps to improve the course and its delivery for all students.

Student Charter and Responsibilities

The Student Charter assumes and acknowledges that students are active participants in the learning process and that they have responsibilities to the institution and the international community of scholars. The University expects that students will act at all times in a way that demonstrates respect for the rights of other students and staff so that the learning environment is both safe and productive. For further information visit Student Charter (<https://www.auckland.ac.nz/en/students/forms-policies-and-guidelines/student-policies-and-guidelines/student-charter.html>).

Disclaimer

Elements of this outline may be subject to change. The latest information about the course will be available for enrolled students in Canvas.