Staff

Position	Name	Email	Room
Lecturer-in-charge	Dr Rohitash Chandra	Rohitash.chandra@unsw.edu.au	RC-2

Course Aims

This course is expected to give students an understanding of the fundamentals of machine learning and the basics of data mining, which is essential for anyone contemplating a career as a professional statistician or data analyst in industries reliant upon such expertise. The student should develop a working knowledge of the statistical and theoretical underpinnings of the topics covered.

Given this fundamental statistical understanding of these methodologies, this will allow the student to utilise these techniques with confidence on real-world data sets and scenarios. As such the student is expected to develop applied working knowledge of the methodologies covered, largely through practical applications. In addition, students will undertake additional reading of a collection of associated research papers in each topic, to further add context to the methodologies presented during the course. This will enhance the student's ability to utilise these techniques to solve real-world problems. It is stressed that this course is aimed at fundamental statistical properties of these methods, it is not a course on the application of computer software.

Course Description

Increasingly, organisations need to analyse enormous data sets to extract useful information. In response to this, a range of statistical and machine learning methods have been developed in recent times. This course covers the key techniques in data mining and machine learning with theoretical background and applications. The topics include methods such as linear and logistic regression, neural networks, Bayesian neural networks, clustering and dimensionality reduction, ensemble learning, and an introduction to deep learning. Emerging machine learning tools and libraries are used to illustrate the methods in programming environments that includes Python and R.

Rationale

New ideas and skills are introduced and demonstrated in lectures and through the recommended reading of supplementary material such as research papers, then students develop these skills by applying them to specific tasks in assessments. We believe that effective learning is best supported by a climate of inquiry, in which students are actively engaged in the learning process. Hence this course is structured with a strong emphasis on problem-solving tasks. Students are expected to devote the majority of their class and study time to solving such tasks. New ideas and skills are first introduced and demonstrated in lectures, and then students develop these skills by applying them to specific tasks in assessments. This course has a major focus on research, inquiry and analytical thinking as well as information literacy. We will also explore capacity and motivation for intellectual development through the solution of both simple and complex mathematical models of problems arising in finance, economics and engineering, and the

Assessment and Deadlines

Assessment	Week	Weighting %	Due date if applicable
Assessment 1: Online Quiz. Duration 30 minutes	3	5%	Wednesday 6pm
Assessment 2	5	20%	Saturday 10pm

Assessment 3

Completing the ELISE tutorial and quiz will enable you to:

- ƒ analyse topics, plan responses and organise research for academic writing and other assessment tasks
- ƒ effectively and efficiently find appropriate information sources and evaluate relevance to your needs
- ƒ use and manage information effectively to accomplish a specific purpose
- ƒ better manage your time
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Academic Skills Support and the Learning Centre

The Learning Centre offers academic support programs to all students at UNSW Australia. We assist students to develop approaches to learning that will enable them to succeed in their academic study. For further information on these programs please go to:

http://www.lc.unsw.edu.au/services-programs

Applications for Special Consideration for Missed Assessment

Please adhere to the Special Consideration Policy and Procedures provided on the web page below when applying for special consideration.

https://student.unsw.edu.au/special-consideration

Please note that the application is not considered by the Course Authority, it is considered by a centralised team of staff at the Nucleus Student Hub.

The School will contact you (via student email account) after special consideration has been granted to reschedule your missed assessment, for a lab test or paper-based test only.

For applications for special consideration for assignment extensions, please note that the new submission date and/or outcome will be communicated through the special consideration web site only, no communication will be received from the School.

For Dates on Final Term Exams and Supplementary Exams please check the "Key Dates for Exams" ahead of time to avoid booking holidays or work obligations.

https://student.unsw.edu.au/exam-dates

If you believe your application for Special Consideration has not been processed, you should email specialconsideration@unsw.edu.au