MATH 3011 PROBABILISTIC MODELS AND INFERENCE

Credit Points 10

Legacy Code 301250

Coordinator Oliver Obst (https://directory.westernsydney.edu.au/search/name/Oliver Obst/)

Description The subject provides students with an understanding of probabilistic models and inference. It covers model-based approaches for complex systems - from constructing these models to applying information to models. The models, which can be created manually and obtained by learning from data, will also be useful to make decisions under uncertainty. A variety of models and techniques will be discussed; examples include Monte Carlo Methods, Decision Theory, Bayesian networks, Markov networks, and the use of information theory.

School Computer, Data & Math Sciences

Discipline Statistics

Student Contribution Band HECS Band 1 10cp

Check your fees via the Fees (https://www.westernsydney.edu.au/currentstudents/current_students/fees/) page.

Level Undergraduate Level 3 subject

Pre-requisite(s) MATH 1033
OR
MATH 1028
AND
COMP 1013
OR
COMP 2023

Assumed Knowledge

Probability, Linear Algebra, Basic Programming.

Learning Outcomes

On successful completion of this subject, students should be able to:
1. 1. Manually construct probabilistic models for specific data.
2. 2. Automatically construct probabilistic models by learning from data.
3. 3. Use the models to make decisions under uncertainty.
4. 4. Accurately represent a probabilistic model using a graphical representation.

Subject Content

Network representation and graphical models
Probabilistic models and entropy
Inference in graphical models
Learning graphical models

Assessment

The following table summarises the standard assessment tasks for this subject. Please note this is a guide only. Assessment tasks are regularly updated, where there is a difference your Learning Guide takes precedence.

Type	Length	Percent	Threshold	Individual/ Group Task
Intra-session Exam	2 hours	30	N	Individual
Applied Project	15 pages	40	N	Individual
Quiz	6x40 min	30	N	Individual

Teaching Periods

Autumn (2024)
Parramatta - Victoria Rd
On-site
Subject Contact Oliver Obst (https://directory.westernsydney.edu.au/search/name/Oliver Obst/)

View timetable (https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=MATH3011_24-AUT_PS_1#subjects)