Course Outline

GSOE9210
Engineering Decision Methods
Semester 2 2013

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Course Staff

Contact Details

Staff Name	Role	Email	Phone
Victor Jauregui	Course Convenor	vicj at cse.unsw.edu.au	
Maurice Pagnucco	Lecturer	morri at cse.unsw.edu.au	56925

Consultations

Staff Name	Day/Time	Location
Victor Jauregui	Wednesday 1500-1700	K17-203

Course Details

Course Code: GSOE9210
Course Title: Engineering Decision Methods
Units of Credit: 6
Course WebSite: http://www.cse.unsw.edu.au/~gs9210/
Handbook Entry: http://www.handbook.unsw.edu.au/postgraduate/courses/2013/GSOE9210.html

Lectures

Lecture Time and Location	
Time and Day	**Location**
2-5pm Fridays	Matthews Theatre B

This course starts in Week 2 on Tuesday 29 July. Lectures are in Weeks 2Â–13: Tuesday 29 July (first class) to Tuesday 29 October (last). One can add freely throughout Week 2; following that one needs an approval form (to be signed by the lecturer).

The supplementary exam is yet to be scheduled.

Course Summary

The course comprises three main groups of topics, each group spanning from three to five weeks of classes.

- (Part I) single agent decisions
  These topics are jointly described as decision theory.
- (Part II) competitive decisions
  These topics are jointly described as game theory.

- (Part III) revision of likelihoods
  These topics are jointly described as bayesian updating.

Course Aims

The course is structured to support the vocational needs of future engineering graduates, with emphasis on problem solving in decision-making situations that may be faced by every postgraduate, whether coursework or research. Emphasis is on Â‘algorithmicityÂ’ - being able able to apply certain standard methods, inferences, procedures and formulae to the typical problems.

Student Learning Outcomes

Following completion of this course students are fully cognisant of all the formal fundamentals of computing techniques that may be encountered in their further courses. They acquire the skills for independent learning of those fundamental processes that might be required in the postgraduate programs of their choosing.

Students learn the basic techniques required for formal reasoning, quantification of uncertainty, performance evaluation, and structuring of relationships and data.

General educational benefits

Extensive problem practice and opportunities for self-assessment enable building self-confidence in dealing with formalised problems and issues of computer science and engineering.

Examples drawn from a range of science and engineering applications emphasise the cross-disciplinary relevance of all the acquired learning. Formal reasoning and problem solving skills prepare the graduating students for further postgraduate science and engineering programs.

Assumed Knowledge

There are no formal prerequisites other than a general good background in logical reasoning. Several topics rely on the ability to perform computations involving probabilities, calculus or linear algebra. Any such computations will discussed in class along with references if warranted. Each class combines conceptual material with practical problem solving questions. All problems are related to the questions in the in-class exams. This part of the class requires taking written notes. The posted solutions to tutorial problems are kept terse. Use of any recording devices is not allowed in the class.

Teaching Rationale

This course is taught by a combination of theory and practice. Each lecture combines an explanation of the relevant concepts combined with the practical solution to problems. In this way students are exposed to the required concepts and trained in their application.

Teaching Strategies

Lectures

They present the core material of all the topics, with strong emphasis on the applicability of the subject matter. At the same time they define the content of the course and the examinable material. All lectures emphasise the placement of the subject in the context of further courses, giving links to later applications.

Classroom practicum

Lectures also include practical problems and their solutions.

The practicum typically comprises practical exercises. They and their solutions are discussed in the class.

Individual consultation and tutoring

`https://www.cse.unsw.edu.au/db/DOdbs/Tutor/find/index.html`
`http://do.cse.unsw.edu.au/tutor/index.html`

Assessment

The final mark for the course is based on a mid-term paper and a final exam. The mid-term paper is worth 30% and the final exam is worth 70% of the final mark.

The course uses a full grading scheme, following the UNSW scale

> *85+ → HD, 75Â–84 → DN, 65Â–74 → CR, 50Â–64 → PS*

A supplementary exam is given only on the basis of a Â‘Consideration requestÂ’. Such a request must lodged (at Student Central) within three days of the exam. The supplementary exam is administered by the School of CSE. The exam is comprehensive, based on the entire course material. It applies only to the Final exam; there is no Supplementary for any missed take-home tests.

Academic Honesty and Plagiarism

Plagiarism is defined as "using the words or ideas of others and presenting them as your own". UNSW and CSE treat plagiarism as academic misconduct, which means that it carries penalties as severe as being excluded from further study at UNSW. There are several on-line sources to help you understand what plagiarism is and how it is dealt with at UNSW:

- Learning Centre: Plagiarism and Academic Integrity
- MyUNSW: Plagiarism and Academic Misconduct
- CSE: Addendum to UNSW Plagiarism Guidelines
- CSE: Yellow Form (whose terms you have agreed to)

Make sure that you read and understand these. Ignorance is not accepted as an excuse for plagiarism.

Course Schedule

The course consists of twelve (12) weeks of classes. Each class will consist of a theoretical (lecture) and practical (tutorial) component. Tutorials will consist of exercise problems and solutions worked out during class. Written answers or solutions will also be provided.

Assessment for this course consists of a mid-term paper and a final exam. The dates and times will be announced soon.

Resources for Students

Materials are given a free access. No login is needed. They consist of class notes (and copies of the slides), tutorial problems and reference materials.

There is no textbook for the course and the posted materials are sufficient to prepare for the exams. A few supplementary textbooks will be placed on the Open Reserve in the Library of the UNSW.

Reference books
Luce and Raiffa. *Games and Decisions*. Dover, 1957.
One of the classic references on game and decision theory. Middle to advanced level. Most relevant for the latter parts of the course.
Staffin, P. *Game theory and strategy*. Mathematical Association of America, 1993.

Course Evaluation and Development

This course is evaluated each session using the CATEI system. Feedback from previous CATEI evaluations has been incorporated to ensure that lecture and tutorial materials are more closely aligned to the assessment structure of the course.