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FIT5047 Intelligent systems - Semester 1, 2013

This is the foundation unit for the Intelligent Systems specialisation. It introduces the main problems and approaches to designing intelligent software systems including automated search methods, reasoning under uncertainty, planning, software agents, recommender systems, machine learning paradigms, natural language processing, user modelling and evolutionary algorithms.

Mode of Delivery

Caulfield (Evening)

Contact Hours

2 hrs lectures/wk, 2 hrs laboratories/wk

Workload requirements

For on-campus students, workload commitments per week are:

- two-hour lecture
- two-hour lab/tutorial (requiring advance preparation)
- a minimum of 8 hours of personal study

Students are expected to work 12 hours per week.

Unit Relationships

Prohibitions

CSE5610

Chief Examiner

Dr Mark Carman

Campus Lecturer

Caulfield

Mark Carman
Academic Overview

Learning Outcomes

At the completion of this unit students will have -

- A knowledge and understanding of:
  
  • the applications of intelligent software systems;
  • the principles and theoretical underpinning of intelligent software systems;
  • models and approaches to building intelligent software systems;
  • different software toolkits and development environments;
  • current research trends in the field.

Developed attitudes that enable them to:

• foster critical and independent analysis of how intelligent techniques can be used to enhance software applications and the development of smart environments.

Developed the skills to:

• design and develop of intelligent applications;
• select and apply appropriate tools for a particular application.
## Unit Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Activities</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No formal assessment or activities are undertaken in week 0</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Introduction</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Problem Solving</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Knowledge Representation</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Planning</td>
<td>Assignment 1 due 28 March 2013</td>
</tr>
<tr>
<td>5</td>
<td>Soft Computing</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Evolutionary Algorithms</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Bayesian Networks</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Intelligent Decision Support</td>
<td>Assignment 2 due 3 May 2013</td>
</tr>
<tr>
<td>9</td>
<td>Supervised Machine Learning</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Unsupervised Machine Learning</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Agent-Based Modeling</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Stochastic Problem Solving</td>
<td>Assignment 3 due 31 May 2013</td>
</tr>
<tr>
<td></td>
<td>SWOT VAC</td>
<td>No formal assessment is undertaken in SWOT VAC</td>
</tr>
<tr>
<td></td>
<td>Examination period</td>
<td>LINK to Assessment Policy:</td>
</tr>
</tbody>
</table>

*Unit Schedule details will be maintained and communicated to you via your learning system.

## Assessment Summary

Examination (3 hours): 70%; In-semester assessment: 30%

<table>
<thead>
<tr>
<th>Assessment Task</th>
<th>Value</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignment 1 - Knowledge Representation and Planning</td>
<td>10%</td>
<td>28 March 2013</td>
</tr>
<tr>
<td>Assignment 2 - Bayesian Networks and Soft Computing</td>
<td>10%</td>
<td>3 May 2013</td>
</tr>
<tr>
<td>Assignment 3 - Machine Learning</td>
<td>10%</td>
<td>31 May 2013</td>
</tr>
<tr>
<td>Examination 1</td>
<td>70%</td>
<td>To be advised</td>
</tr>
</tbody>
</table>
Teaching Approach

Lecture and tutorials or problem classes

This teaching and learning approach provides facilitated learning, practical exploration and peer learning.
Assessment Requirements

Assessment Policy

Faculty Policy - Unit Assessment Hurdles

Academic Integrity - Please see the Demystifying Citing and Referencing tutorial at http://lib.monash.edu/tutorials/citing/

Assessment Tasks

Participation

• Assessment task 1
  
  Title: Assignment 1 - Knowledge Representation and Planning
  
  Description: A problem solving exercise on knowledge representation and planning.
  
  Weighting: 10%
  
  Criteria for assessment: Correctness and completeness of answers to problems.
  
  Due date: 28 March 2013

• Assessment task 2
  
  Title: Assignment 2 - Bayesian Networks and Soft Computing
  
  Description: A problem solving exercise on Bayesian networks and soft computing.
  
  Weighting: 10%
  
  Criteria for assessment: Correctness and completeness of submitted answers and/or Bayesian networks.
  
  Due date: 3 May 2013

• Assessment task 3
  
  Title: Assignment 3 - Machine Learning
  
  Description: A problem solving exercise on machine learning.
  
  Weighting: 10%
  
  Criteria for assessment: Correctness and completeness of answers to machine learning problems.
  
  Due date:
Examinations

- Examination 1
  
  Weighting: 70%
  
  Length: 3 hours
  
  Type (open/closed book): Closed book
  
  Electronic devices allowed in the exam: None

Learning resources

Monash Library Unit Reading List
http://readinglists.lib.monash.edu/index.html

Feedback to you

Types of feedback you can expect to receive in this unit are:

- Informal feedback on progress in labs/tutes
- Graded assignments with comments
- Solutions to tutes, labs and assignments

Extensions and penalties

Submission must be made by the due date otherwise penalties will be enforced.

You must negotiate any extensions formally with your campus unit leader via the in-semester special consideration process:

Returning assignments

Students can expect assignments to be returned within two weeks of the submission date or after receipt, whichever is later.

Resubmission of assignments

No resubmissions.
Referencing requirements

See Library Guides for Citing and Referencing at http://guides.lib.monash.edu/content.php?pid=88267&sid=656564

Assignment submission

It is a University requirement (http://www.policy.monash.edu/policy-bank/academic/education/conduct/plagiarism-procedures.html) for students to submit an assignment coversheet for each assessment item. Faculty Assignment coversheets can be found at http://www.infotech.monash.edu.au/resources/student/forms/. Please check with your Lecturer on the submission method for your assignment coversheet (e.g. attach a file to the online assignment submission, hand-in a hard copy, or use an online quiz).

Online submission

If Electronic Submission has been approved for your unit, please submit your work via the learning system for this unit, which you can access via links in the my.monash portal.

Required Resources

Please check with your lecturer before purchasing any Required Resources. Limited copies of prescribed texts are available for you to borrow in the library, and prescribed software is available in student labs.

Netica (free)

Netlogo (free)

Weka Data Mining Toolkit (free)

Web access

Prescribed text(s)

Limited copies of prescribed texts are available for you to borrow in the library.


Recommended text(s)


Other Information

Policies

Monash has educational policies, procedures and guidelines, which are designed to ensure that staff and students are aware of the University’s academic standards, and to provide advice on how they might uphold them. You can find Monash’s Education Policies at: www.policy.monash.edu.au/policy-bank/academic/education/index.html

Key educational policies include:

- Plagiarism; http://www.policy.monash.edu/policy-bank/academic/education/conduct/plagiarism-policy.html
- Special Consideration; http://www.policy.monash.edu/policy-bank/academic/education/assessment/special-consideration-policy.html
- Grading Scale; http://www.policy.monash.edu/policy-bank/academic/education/assessment/grading-scale-policy.html
- Discipline: Student Policy; http://www.policy.monash.edu/policy-bank/academic/education/conduct/student-discipline-policy.html
- Academic Calendar and Semesters; http://www.monash.edu.au/students/dates/
- Orientation and Transition; http://intranet.monash.edu.au/infotech/resources/students/orientation/
- Graduate Attributes Policy http://www.policy.monash.edu/policy-bank/academic/education/management/monash-graduate-attributes-policy.html

Student services

The University provides many different kinds of support services for you. Contact your tutor if you need advice and see the range of services available at http://www.monash.edu.au/students. For Sunway see http://www.monash.edu.my/Student-services, and for South Africa see http://www.monash.ac.za/current/.

Monash University Library

The Monash University Library provides a range of services, resources and programs that enable you to save time and be more effective in your learning and research. Go to www.lib.monash.edu.au or the library tab in my.monash portal for more information. At Sunway, visit the Library and Learning Commons at http://www.lib.monash.edu.my/. At South Africa visit http://www.lib.monash.ac.za/.
Disability Liaison Unit

Students who have a disability or medical condition are welcome to contact the Disability Liaison Unit to discuss academic support services. Disability Liaison Officers (DLOs) visit all Victorian campuses on a regular basis.

Website: http://www.monash.edu/equity-diversity/disability/index.html
Telephone: 03 9905 5704 to book an appointment with a DLO; or contact the Student Advisor, Student Community Services at 03 55146018 at Sunway
Email: dlu@monash.edu
Drop In: Equity and Diversity Centre, Level 1, Building 55, Clayton Campus, or Student Community Services Department, Level 2, Building 2, Monash University, Sunway Campus

Your feedback to Us

Monash is committed to excellence in education and regularly seeks feedback from students, employers and staff. One of the key formal ways students have to provide feedback is through the Student Evaluation of Teaching and Units (SETU) survey. The University’s student evaluation policy requires that every unit is evaluated each year. Students are strongly encouraged to complete the surveys. The feedback is anonymous and provides the Faculty with evidence of aspects that students are satisfied and areas for improvement.

For more information on Monash’s educational strategy, see:
www.monash.edu.au/about/monash-directions and on student evaluations, see:
www.policy.monash.edu/policy-bank/academic/education/quality/student-evaluation-policy.html

Previous Student Evaluations of this Unit

Assessment weighting has been changed due to students’ feedback.

If you wish to view how previous students rated this unit, please go to