FIT5047
Intelligent systems

Unit Guide

Semester 1, 2012

The information contained in this unit guide is correct at time of publication. The University has the right to change any of the elements contained in this document at any time.

Last updated: 24 Feb 2012
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FIT5047 Intelligent systems - Semester 1, 2012

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 (Day)

Contact Hours

2 hrs lectures/wk, 2 hrs laboratories/wk

Workload

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 Kevin Korb

Campus Lecturer

Caulfield

Kevin Korb

Consultation hours: Tuesday 2-3 (Clayton 63/205), Thursday 3-4 (Caulfield, H7.34)
Tutors

Caulfield

Owen Woodberry

Consultation hours: TBD
Academic Overview

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.

Graduate Attributes

Monash prepares its graduates to be:

1. responsible and effective global citizens who:

   a. engage in an internationalised world
   b. exhibit cross-cultural competence
   c. demonstrate ethical values

critical and creative scholars who:

   a. produce innovative solutions to problems
   b. apply research skills to a range of challenges
   c. communicate perceptively and effectively

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>23 March 2012</td>
</tr>
<tr>
<td>Assignment 2 - Bayesian Networks and Soft Computing</td>
<td>10%</td>
<td>27 April 2012</td>
</tr>
<tr>
<td>Assignment 3 - Machine Learning</td>
<td>10%</td>
<td>25 May 2012</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.

Feedback

Our 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

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 SETU, Student Evaluation of Teacher and Unit. 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, and on student evaluations, see:
http://www.policy.monash.edu/policy-bank/academic/education/quality/student-evaluation-policy.html

Previous Student Evaluations of this unit

Assessment weight has been changed due to students' feedback.

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

Required Resources

Please check with your lecturer before purchasing any Required Resources. 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)
Prescribed texts are available for you to borrow in the library.


**Recommended text(s)**


# 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 23 March 2012</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 27 April 2012</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 25 May 2012</td>
</tr>
<tr>
<td></td>
<td>SWOT VAC</td>
<td>No formal assessment is undertaken SWOT VAC</td>
</tr>
</tbody>
</table>

*Unit Schedule details will be maintained and communicated to you via your MUSO (Blackboard or Moodle) learning system.*
Assessment Requirements

Assessment Policy

Faculty Policy - Unit Assessment Hurdles

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:
  23 March 2012

• 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:
  27 April 2012

• 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:
  25 May 2012
Examinations

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

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 VLE site for this unit, which you can access via links in the my.monash portal.

Extensions and penalties

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


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 athttp://guides.lib.monash.edu/content.php?pid=88267&sid=656564
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: http://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/key-dates/)
- Orientation and Transition (http://www.infotech.monash.edu.au/resources/student/orientation/)
- Codes of Practice for Teaching and Learning (http://www.policy.monash.edu/policy-bank/academic/education/conduct/suppdocs/code-of-practice-teaching-and-learning.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 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/

The Monash University Library provides a range of services and resources that enable you to save time and be more effective in your learning and research. Go to http://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/.

Academic support services may be available for students who have a disability or medical condition. Registration with the Disability Liaison Unit is required. Further information is available as follows:

- Website: http://monash.edu/equity-diversity/disability/index.html
- Email: dlu@monash.edu
- Drop In: Equity and Diversity Centre, Level 1 Gallery Building (Building 55), Monash University, Clayton Campus, or Student Community Services Department, Level 2, Building 2, Monash University, Sunway Campus
- Telephone: 03 9905 5704, or contact the Student Advisor, Student Community Services at 03 55146018 at Sunway
Reading list

**Prescribed text:**


**Recommended texts:**