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FIT5047 Intelligent systems - Semester 1, 2014

This unit introduces the main problems and approaches to designing intelligent software systems including automated search methods, knowledge representation and reasoning, planning, reasoning under uncertainty, machine learning paradigms, and evolutionary algorithms.

Mode of Delivery

Caulfield (Day)

Workload Requirements

Minimum total expected workload equals 12 hours per week comprising:

(a.) Contact hours for on-campus students:

- Two hours of lectures
- One 2-hour laboratory

(b.) Additional requirements (all students):

- A minimum of 8 hours independent study per week for completing lab and project work, private study and revision.

Unit Relationships

Prohibitions

CSE5610

Chief Examiner

Dr Kevin Korb

Campus Lecturer

Caulfield

Dr Kevin Korb

Tutors

Caulfield

Minh Le

Muhammad Amar
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
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 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 2014</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 2 May 2014</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 30 May 2014</td>
</tr>
<tr>
<td></td>
<td>SWOT VAC</td>
<td>No formal assessment is undertaken in SWOT VAC</td>
</tr>
</tbody>
</table>

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

## Teaching Approach

### Lecture and tutorials or problem classes

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

## 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 - Problem Solving and Knowledge Representation</td>
<td>10%</td>
<td>28 March 2014</td>
</tr>
<tr>
<td>Assignment 2 - Bayesian Networks and Soft Computing</td>
<td>10%</td>
<td>2 May 2014</td>
</tr>
<tr>
<td>Assignment 3 - Machine Learning</td>
<td>10%</td>
<td>30 May 2014</td>
</tr>
<tr>
<td>Examination 1</td>
<td>70%</td>
<td>To be advised</td>
</tr>
</tbody>
</table>
Assessment Requirements

Assessment Policy

Faculty Policy - Unit Assessment Hurdles

Academic Integrity - Please see resources and tutorials at
http://www.monash.edu/library/skills/resources/tutorials/academic-integrity/

Assessment Tasks

Participation

• Assessment task 1

  Title: Assignment 1 - Problem Solving and Knowledge Representation
  Description: A problem solving exercise on problem solving and knowledge representation.
  Weighting: 10%
  Criteria for assessment: Correctness and completeness of answers to problems.
  Due date: 28 March 2014

• 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: 2 May 2014

• 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 (if applicable to the unit)
http://readinglists.lib.monash.edu/index.html

Faculty of Information Technology Style Guide

Feedback to you

Examination/other end-of-semester assessment feedback may take the form of feedback classes, provision of sample answers or other group feedback after official results have been published. Please check with your lecturer on the feedback provided and take advantage of this prior to requesting individual consultations with staff. If your unit has an examination, you may request to view your examination script booklet, see
http://intranet.monash.edu.au/infotech/resources/students/procedures/request-to-view-exam-scripts.html

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: http://www.monash.edu.au/exams/special-consideration.html

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 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). Please note that it is your responsibility to retain copies of your assessments.

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:

Key educational policies include:

- Student Academic Integrity Policy and Student Academic Integrity: Managing Plagiarism and Collusion Procedures;
  http://www.policy.monash.edu/policy-bank/academic/education/conduct/student-academic-integrity-policy.html
- Assessment in Coursework Programs;
- 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/
- Academic and Administrative Complaints and Grievances Policy;
  http://www.policy.monash.edu/policy-bank/academic/education/management/complaints-grievance-policy.html

Faculty resources and policies

Important student resources including Faculty policies are located at
http://intranet.monash.edu.au/infotech/resources/students/

Graduate Attributes Policy

http://www.policy.monash.edu/policy-bank/academic/education/management/monash-graduate-attributes-policy.html

Student Charter


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 Malaysia 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 Malaysia, 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 Malaysia
- 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, Malaysia Campus