
SCSSE

**School of Computer Science and Software Engineering
Faculty of Informatics**

**CSCI444 Perception and Planning
Subject Outline
Spring Session 2009**

Head of School –Professor Willy Susilo, Student Resource Centre, Tel: (02) 4221 3606

GENERAL INFORMATION

Subject Coordinator

Telephone Number:

Email:

Location:

Dr Koren Ward

02 4221 5322

koren@uow.edu.au

3.110

Dr Ward's consultation times during session:

Day

Thursday

Friday

Time

15:30 – 17:30

15:30 – 17:30

Subject Organisation

Session:

Credit Points

Contact hours per week:

Lecture Times & Location:

Tutorial Day, Time and Location can be found at:

Spring Session, Wollongong Campus

6 credit points

2 hours lectures

8:30 –10:30 Thurs, 19.2114

<http://www.uow.edu.au/student/timetables/index.html>

Students should check the subject's web site regularly as important information, including details of unavoidable changes in assessment requirements will be posted from time to time via e-Learning space <http://www.uow.edu.au/student/>. Any information posted to the web site is deemed to have been notified to all students.

Subject Description

This subject explores ways in which a robot can combine data from a variety of sensors to create or update a model of its environment, and then use this model to infer the consequences of proposed actions. The subject will cover the use of internal sensors, such as those measuring odometry and location, and external sensors including those for touch, vision, and range finding.

Subject Objectives

At the completion of this subject students should be able to:

- i) describe the sensors used for navigation of a mobile robot;
 - ii) understand the process of perception for robot sensing and navigation;
 - iii) design a software architecture for perception using behavioural, fuzzy logic and learning technique;
 - iv) select appropriate data structure and algorithms for path planning.
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Graduate Qualities

This subject will continue to the following graduate qualities:

Informed
Independent Learners
Problem Solvers
Effective Communicators
Team Work
Innovation & Design

Further information can be found at:

<http://www.uow.edu.au/informatics/scsse/current/SubjectInformation/UOW049401.html>

Attendance Requirements:

It is the responsibility of students to attend all lectures/tutorials/labs/seminars/ practical work for subjects for which you are enrolled. It should be noted that the amount of time spent on each 6 credit point subject should be at least 12 hours per week, which includes lectures/tutorials/labs etc.

Satisfactory attendance is deemed by the University, to be attendance at approximately 80% of the allocated contact hours.

Attendance rolls will be kept for lectures, tutorials and laboratories (include only the ones you need). If you are present for less than 80% and would have otherwise passed you need to apply for student academic consideration, otherwise a TF (technical fail) grade will be recorded.

Method of Presentation:

In order to maximize learning outcomes, it is strongly recommended that students attend all lectures.

The techniques and principles will be examined in short lectures, followed by practical sessions. These practical sessions will provide an opportunity for students to develop hands-on familiarity with a range of applications. Students are required to comprehend many new topics in this subject. To enable students to gain a full understanding of the concepts they should attend all lectures and tutorials.

The lectures will be supplemented with laboratory work. Assignments 1 and 2 will involve writing programs in Labview to analyse sensor data. Assignment 3 will be a robot builders assignment (in pairs) using Lego Robolab (Mindstorms) to build and program a robot to solve a problem.

Lecture Schedule:

A proposed Lecture schedule for the subject is as follows:

Week	Topic	Reading
1	Introduction	
2	Robot Programming	
3	Simulating and Modeling	
4	Robot Navigation	
5	Perception	Assignment 1 due
6	Path Planning	
7	Motion Control	
8	Behavioural Architectures	
9	Fuzzy Logic	Assignment 2 due
10	Robot Vision	
11	Robot Learning	
12	Robotic Applications	
13	Robot Builders Competition	Assignment 3 due

Changes to the above schedule will be posted via e-Learning space <http://www.uow.edu.au/student/>. Any information posted to the web site is deemed to have been notified to all students.

Subject Materials:

Any readings/references are recommended only and are not intended to be an exhaustive list. Students are encouraged to use the library catalogue and databases to locate additional readings

Assessment:

This subject has the following assessment components.

ASSESSMENT ITEMS & FORMAT	% OF FINAL MARK	DUE DATE
Assignment 1 – Sensing and Locomotion	15%	Week 5
Assignment 2 – Perception and Planning	15%	Week 9
Assignment 3 – Group assignment	30%	Week 13
Exam	40%	

Notes on Assessment:

All assignments are expected to be completed independently. Plagiarism may result in a FAIL grade being recorded for that assignment.

Electronic Submission of Assessment Items:

Unless otherwise notified by the subject coordinator, all written assignments must be submitted electronically.

Submission of assessment items via email will not be accepted.

Other Procedures for the submission of assessment items:

In addition to electronic submission students are required to submit assignments in hard copy to their tutor.

All assignments will be returned within 2 weeks of their submission.

Remarks on Assessment

There will be 3 assignments: a group assignment worth 30% and 2 individual assignments worth 15% each. The size of the groups in Assignment 3 will depend on the size of the class.

All of the work for this subject can be done on the Macintosh Computers in the Multimedia Laboratory. Demonstrations of assignments will be done on the Macintosh Computers in the Multimedia Laboratory.

Students will be required to borrow a box of Robot Lego for their assignments - they will be required to sign a form to declare that they will return the box with all the Lego components at the end of the assignment. To borrow the Lego see the lecturer or tutor of this subject.

Penalties may apply to all late work, except if student academic consideration is deemed necessary and the subject coordinator or tutor has granted an extension or exemption.

To be eligible for a Pass in this subject a student must achieve a mark of at least 40% in the final exam. Students who fail to achieve this minimum mark & would have otherwise passed will be given a TF (Technical Fail) for this subject.

Procedures for the return of assessment items:

Assessments items can be collected during laboratory classes or from the subject coordinator or tutor

during consultation times. Penalties apply to all late work, except if student academic consideration has been granted.

Penalties for late submission of assessment items:

Penalties apply to all late work, except if student academic consideration has been granted. Late submissions will attract a penalty of 10% of the assessment mark.

This amount is per day including weekends.

Work more than seven (7) days late will be awarded a mark of zero.

Tutorial/Lab Closure Policy

If for any reason, the number of students in a tutorial or lab falls below a sustainable enrolment level, as determined by the Head of School, tutorials/labs offered for that subject may be collapsed or deleted.

You will have to attend the new tutorials/lab if this closure affects the one you are attending.

We will endeavour to make this decision no later than Week 4 of session.

Supplementary Exams

Supplementary Exams will be dealt with in accordance with student academic consideration policy (<http://www.uow.edu.au/about/policy/studentacademicconsiderationpolicy.pdf>) 9.2 Timing of Supplementary Exams.

While the School normally grants supplementary exams when the student does not sit the standard exam for an acceptable reason, each case will be assessed on its own merit and there is no guarantee a supplementary exam will be granted. If a supplementary exam is granted, you will normally be notified via SOLS Mail the time and date of this supplementary exam. You must follow the instructions given in the email message.

Please note that if this is your last session and you are granted a supplementary exam, be aware that your results will not be processed in time to meet the graduation deadline.

Student Academic Consideration Policy

The School recognises that it has a responsibility to ensure equity and consistency across its subjects for all students. Sometimes, in exceptional circumstances, students need to apply for student academic consideration in order to complete all assessable work.

The University applies strict criteria to the granting of student academic consideration. Before applying for student academic consideration, students should carefully read the University's policy which can be found at: <http://www.uow.edu.au/about/policy/studentacademicconsiderationpolicy.pdf>.

Plagiarism

When you submit an assessment task, you are declaring the following

1. It is your own work and you did not collaborate with or copy from others.
2. You have read and understand your responsibilities under the University of Wollongong's policy on plagiarism.
3. You have not plagiarised from published work (including the internet). Where you have used the work from others, you have referenced it in the text and provided a reference list at the end of the assignment.

Students must remember that:

Plagiarism will not be tolerated.

Students are responsible for submitting original work for assessment, without plagiarising or cheating, abiding by the University's policies on Plagiarism as set out in the University Handbook under University Policy Directory and in Faculty handbooks and subject guides. Plagiarism has led to the expulsion from the University.

Student Academic Grievance Policy

The School aims to provide a fair, equitable and productive learning environment for all its students. The Student Academic Grievance Policy seeks to support the achievement of this goal by providing a transparent and consistent process for resolving student academic grievances.

Any student who has a grievance over a result should obtain a Faculty of Informatics Appeal Against Decision or Action Affecting Academic Experience form from the Informatics Student Enquiry Centre. (<http://www.uow.edu.au/content/groups/public/@web/@inf/@faculty/documents/doc/uow017433.pdf>) The student should firstly take the form to the marker/lecturer to discuss the matter and, if the student is still not satisfied, s/he should take the next step as outlined on the form.

Once the grievance has been considered by the Faculty, if the student still feels the situation has not been fully resolved s/he may consult the Dean of Students. However, the Dean of Students can have no input into the academic judgment of the lecturer and can only review the grievance to ensure proper procedure has been followed.

Relevant University Policies, procedures and students services:

For more information students must refer to the Faculty handbook, online references or consult the UOW policy in full at <http://www.uow.edu.au/handbook/courserules/studacgrievpol.html> which contains a range of policies on educational issues and student matters.

This outline should be read in conjunction with the following documents:

Code of Practice - Teaching and Assessment http://www.uow.edu.au/handbook/codesofprac/teaching_code.pdf	Code of Practice - Students http://www.uow.edu.au/handbook/codesofprac/cop_students.html
Code of Practice-Honours http://www.uow.edu.au/handbook/CodeofPractice-Honours.pdf	Acknowledgement Practice Plagiarism will not be tolerated: http://www.uow.edu.au/handbook/courserules/plagiarism.html
Key Dates http://www.uow.edu.au/student/dates.html	Student Academic Consideration Policy: http://www.uow.edu.au/about/policy/studentacademicconsiderationpolicy.pdf
Course Progress Requirements: http://www.uow.edu.au/student/mrp/index.html	Graduate Qualities Policy: http://www.uow.edu.au/about/teaching/qualities/index.html#_The_new_UOW
Academic Grievance Policy (Coursework and honours students) http://www.uow.edu.au/handbook/courserules/studacgrievpol.html	Non-Discriminatory Language Practice and Presentation http://staff.uow.edu.au/eed/nondiscrimlanguage.html
Occupational Health and Safety http://staff.uow.edu.au/ohs/commitment/ohspolicy/index.html	Ownership of Work & Intellectual Property Policy: http://www.uow.edu.au/handbook/generalcourserules/UOW028651.html
Human Research Ethics Committee: http://www.uow.edu.au/research/rso/ethics/human/	Rules for student conduct: http://www.uow.edu.au/handbook/generalrules/StudentConductRules.pdf
Independent Learners' Introductory Program http://www.uow.edu.au/student/attributes/ilip/	Informatics Faculty Librarian, Ms Annette Meldrum, phone: 4221 4637, email: ameldrum@uow.edu.au
Student Support Services: http://www.uow.edu.au/student/services/ Informatics Faculty SEDLO (Student Equity and Diversity Liaison Officers) Virginie Schmelitschek, phone 4221 3833, virginie@uow.edu.au	SCSSE Internet Access & Student Resource Centre http://www.uow.edu.au/informatics/common/uow024466.html
SCSSE Computer Usage Rules http://www.uow.edu.au/informatics/common/uow024457.html	SCSSE Subject Outlines http://www.uow.edu.au/informatics/scsse/current