

ENG4528 – Computer Vision.**Subject details:** *First semester 2008***Credit points:** 6**Pre-requisite:** *ENGN2226***Lectures:** *3 hours per week,***Laboratories:** *3 hours per week.*

Students must expect to spend a minimum of 3-4 hours of private study per week.

Subject leader: *Dr Robert Mahony,***Office:** room E234, Bldg 32. **Telephone** 02-612.58613, **Email:** Robert.Mahony@anu.edu.au**Office hours:** Monday afternoon

Syllabus: Image formats, binary images, histograms, histogram equalisation, geometric transformations, pixel interpolation, binary morphology, open and close operations, connectedness, linear filtering, 2D convolution, blurring, sharpening, separable kernels, gradient calculation, non-maximal suppression, DoG edge operator, Marr-Hildreth edge detector, Canny edge detector, feature detection, Hough transform, template matching, image correlation, sum of absolute difference, normalised cross-correlation, 2D Fourier transform, 2D-FFT, Nyquist frequency and sampling, power spectrum, low pass, high pass and notch filtering, colour, colour spaces, luminance, chrominance, homogeneous coordinates, coordinate transformations, pin hole camera model, projective geometry, camera calibration, least squares minimization, epipolar geometry, fundamental matrix, normalised 8-point algorithm, essential matrix, patches, texture mapping, pose ambiguity, scale ambiguity, depth maps. Statistical foundations of decision making and associated techniques.

Assessment:

Assessment:	Marks	Rough timetable.
Laboratory Work	10%	Collected during lab sessions throughout semester.
Assignment 1	20%	Due Week 8
Assignment 2	20%	Due Week 11
Problem sheets	10%	5 problem sets.
Final Exam	40%	Exam period.

A PASS IN THE FINAL EXAM IS REQUIRED TO PASS THE COURSE.**Marking exams:** Exams can be viewed by contacting the lecturer. The lecturer retains the right to remark the whole exam should the student demand any adjustment in the grade.**Supplementary exams:** Supplementary examination will be offered to students that fail the course but achieve an overall grade of above 45%. Supplementary exams will be either a sit down 3 hour exam or an oral, at the discretion of the lecturer.**Web Site:** A web site for the course will be linked to the department course web site and the ANU webCT. All documents prepared for the course will be posted on the web. All administrative arrangements will be posted on the web site.**Lecture Notes:** Lecture notes will be posted on the web site. I will endeavour to have the notes for the coming week posted the preceding week.**References:**

There is no recommended text.