436-353 Mechanics 2

Credit Points:	12.50
Level:	3 (Undergraduate)
Dates & Locations:	2009, This subject commences in the following study period/s: Semester 1, - Taught on campus.
Time Commitment:	Contact Hours: Unit 1: Eighteen hours of lectures, six hours of tutorial and laboratory work. Unit 2: Seventeen hours of lectures, seven hours of tutorial and laboratory work Total Time Commitment: Not available
Prerequisites:	**436-202** Mechanics 1 and (200-level mathematics - **431-201** Engineering Analysis A and **431-202** Engineering Analysis B; or **620-231** Vector Analysis and **620-232** Math Methods and **620331** Applied PDE's) .
Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	None
Core Participation Requirements:	For the purposes of considering request for Reasonable Adjustments under the Disability Standards for Education (Cwth 2005), and Student Support and Engagement Policy, academic requirements for this subject are articulated in the Subject Overview, Learning Outcomes, Assessment and Generic Skills sections of this entry. It is University policy to take all reasonable steps to minimise the impact of disability upon academic study, and reasonable adjustments will be made to enhance a student's participation in the University's programs. Students who feel their disability may impact on meeting the requirements of this subject are encouraged to discuss this matter with a Faculty Student Adviser and Student Equity and Disability Support: http://services.unimelb.edu.au/disability
Coordinator:	Dr Colin Reginald Burvill
Subject Overview:	Unit 1, Stress Analysis: Upon completion of this unit, students should understand the principles of energy methods as applied to solving a variety of problems in elasticity, including statically indeterminate ones; comprehend the nature of inelastic deformation and its basic governing laws together with their application to simple manufacturing processes; and understand the techniques of experimental stress analysis. Topics covered include energy methods in stress analysis, stationary potential and complementary energy theorems, virtual work, Castigliano's first and second theorems, method of Rayleigh-Ritz, statically indeterminate systems, suddenly applied loads, impact stresses, inelastic behaviour, yield criteria, constitutive relations, work hardening, basic problems in inelastic deformation, thermal stresses and experimental stress analysis. Unit 2, Mechanics of Rigid Bodies: Upon completion of this unit students should be able to understand the principles of three-dimensional mechanics of rigid body and carry out kinematic analysis of mechanical systems. Topics covered include motion of particles in terms of inertial frames, motion of particles in terms of translating and rotating frames, matrix of directional cosines, Euler's angles, angular velocity and angular acceleration, Coriolis statement, motion of a rigid body, kinetics of a system of particles, linear and angular momentum, inertia constants, parallel axes theorem, principal axes, Euler equations, and modified Euler equations.
Objectives:	-
Assessment:	One 3-hour examination at the end of semester (80%). Two assignments each up to 1000 words (20%) due throughout the semester.
Prescribed Texts:	None

Recommended Texts:	Information Not Available
Breadth Options:	This subject is not available as a breadth subject.
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Generic Skills:	# ability to apply knowledge of basic science and engineering fundamentals # in-depth technical competence in at least one engineering discipline # ability to undertake problem identification, formulation and solution # ability to function effectively as an individual and in multi-disciplinary and multi-cultural teams, with the capacity to be a leader or manager as well as an effective team member # understanding of professional and ethical responsibilities and commitment to them # expectation of the need to undertake lifelong learning, capacity to do so # capacity for independent critical thought, rational inquiry and self-directed learning # intellectual curiosity and creativity, including understanding of the philosophical and methodological bases of research activity # profound respect for truth and intellectual integrity, and for the ethics of scholarship
Related Course(s):	Bachelor of Engineering (Biomedical) Biomechanics Bachelor of Engineering (EngineeringManagement)Mechanical&Manufacturing Bachelor of Engineering (Mechanical &Manufacturing) and Bachelor of Arts Bachelor of Engineering (Mechanical &Manufacturing)& Bachelor of Science Bachelor of Engineering (Mechanical &Manufacturing)/Bachelor of Commerce Bachelor of Engineering (Mechanical and Manufacturing Engineering) Bachelor of Engineering (Mechatronics) and Bachelor of Computer Science Bachelor of Engineering(Mechanical & Manufacturing) and Bachelor of Laws