Course Outline (Higher Education)

School: School of Engineering, Information Technology and Physical Sciences

Course Title: ENGINEERING DYNAMICS

Course ID: ENGIN2302

Credit Points: 15.00

Prerequisite(s): (ENGIN1005)

Co-requisite(s): Nil

Exclusion(s): Nil

ASCED: 030701

Description of the Course:

Within mechanical engineering the understanding of how object move and interact is fundamental to the design of engineering systems. This course introduces students to the concepts of Newtonian mechanics on which the field of engineering dynamics is founded. The course features an application-based treatment in order for students to be able to readily assimilate the theory and concepts introduced.

Grade Scheme: Graded (HD, D, C, P, MF, F, XF)

Work Experience:

No work experience: Student is not undertaking work experience in industry.

Placement Component: No

Supplementary Assessment: Yes

Where supplementary assessment is available a student must have failed overall in the course but gained a final mark of 45 per cent or above and submitted all major assessment tasks.

Program Level:

Level of course in Program	AQF Level of Program					
	5	6	7	8	9	10
Introductory						
Intermediate			✔			
Advanced						

Learning Outcomes:

On successful completion of the course the students are expected to be able to:

Knowledge:

K1. Describe the concepts of particleâ€ and rigid bodyâ€ as used in engineering dynamics.
K2. Explain the kinematics of particles in various coordinates.
K3. Describe the kinetics of particles and rigid bodies.

Skills:

S1. Model the behaviour of mechanical systems mathematically.
S2. Communicate your work to others in a clear and scientific manner.
S3. Explain how mathematics is used to model the behaviour of dynamical systems.

Application of knowledge and skills:

A1. Apply mathematical modelling to rigid body kinetics
A2. Use mathematical methods to predict the performance of dynamical systems.

Course Content:

Topics may include:

- Revision of rectilinear and curvilinear motion

- Kinematics of a particle

  - rectangular coordinates
  - normal and tangential coordinates
  - polar coordinates

- Relative motion

- Kinetics of a particle

  - F = ma
  - work and energy
  - impulse and momentum

- Mass moment of inertia

- Kinetics of a rigid body

  - F = m.a
  - Work & Energy

Values:

V1. Appreciate the scientific foundation of mechanical engineering

V2. Appreciate the importance of ethical conduct to a successful technical career

V3. Recognise learning as a life-long endeavour in engineering

Graduate Attributes

The Federation University FedUni graduate attributes (GA) are entrenched in the Higher Education Graduate Attributes Policy (LT1228). FedUni graduates develop these graduate attributes through their engagement in explicit learning and teaching and assessment tasks that are embedded in all FedUni programs. Graduate attribute attainment typically follows an incremental development process mapped through program progression. **One or more graduate attributes must be evident in the specified learning outcomes and assessment for each FedUni course, and all attributes must be directly assessed in each program**

Graduate attribute and descriptor		Development and acquisition of GAs in the course	
		Learning Outcomes (KSA)	Assessment task (AT#)
GA 1 Thinkers	Our graduates are curious, reflective and critical. Able to analyse the world in a way that generates valued insights, they are change makers seeking and creating new solutions.	K1-K3, S1, A1-A2	AT1, AT2, AT3, AT5
GA 2 Innovators	Our graduates have ideas and are able to realise their dreams. They think and act creatively to achieve and inspire positive change.	A1-A2	AT4
GA 3 Citizens	Our graduates engage in socially and culturally appropriate ways to advance individual, community and global well-being. They are socially and environmentally aware, acting ethically, equitably and compassionately.	S2	AT4
GA 4 Communicators	Our graduates create, exchange, impart and convey information, ideas, and concepts effectively. They are respectful, inclusive and empathetic towards their audience, and express thoughts, feelings and information in ways that help others to understand.	S2-S3, A2	AT4
GA 5 Leaders	Our graduates display and promote positive behaviours, and aspire to make a difference. They act with integrity, are receptive to alternatives and foster sustainable and resilient practices.	S2	AT4

Learning Task and Assessment:

Learning Outcomes Assessed	Learning Tasks	Assessment Type	Weighting
K1 - K3, S1 - S3	Within the course the assigned tutorial questions will form part of the assessed work.	Assessed tutorial problems	15 - 35%
S1 - S3, A1	A practical laboratory based exercise and/or project will be undertaken during the course.	Report and/or demonstration	15 - 30%
K1 - K4, S1	Assessment of all or part of the course via examination.	Examination	40 - 60%

Adopted Reference Style:

Other (Refer to the library website for more information: IEEE)

Refer to the library website for more information

Fed Cite - referencing tool