

2019/0 - ENG-5004B DYNAMICS AND VIBRATION

Spring Semester, Level 5 module
(Maximum 35 Students)

UCU: 20 Organiser: Dr Dianzi Liu

MODULE - 40% PASS ON AGGREGATE

Module Type: Examination with Coursework or Project

Timetable Slot:F2/-A2*G1*E1/-H3\, D3\, B1

Exam Paper(hrs):3

BEFORE TAKING THIS MODULE YOU MUST TAKE ENG-4005Y

You will build on the introductory material you gained in first year engineering mechanics. An appreciation of why dynamics and vibration are important for engineering designers leads to consideration of Single-degree-of-freedom (SDOF) systems, Equation of motion, free vibration analysis, energy methods, natural frequency, undamped and damped systems and loading. Fourier series expansion and modal analysis are applied to vibration concepts: eigenfrequency, resonance, beats, critical, under-critical and overcritical damping, and transfer function. Introduction to multi-degree of freedom (MDOF) systems. Applications to beams and cantilevers. MathCAD will be used to support learning.

2019/0 - ENG-6001B ELECTRICITY GENERATION AND DISTRIBUTION

Spring Semester, Level 6 module
(Maximum 60 Students)

UCU: 20 Organiser: Dr Ben Milner

MODULE - 40% PASS ON AGGREGATE

Module Type: Coursework

Timetable Slot:F2, G1-H2

BEFORE TAKING THIS MODULE YOU MUST TAKE CMP-5027A OR TAKE CMP-5027B

This module is highly practical and will allow you to study how electricity is generated and how it is distributed to users. The first part studies DC and AC electricity and looks at how RLC circuits behave through complex phasor analysis. The second part will give you the chance to study electricity generators, beginning with magnetism and Faraday's Law. Synchronous and asynchronous generators are studied along with application to conventional power stations and to renewable generation (e.g. wind). You'll also look at transformers and transmission lines with a view to distribution of electricity. Voltage conversion methods such as the rectifier, buck and boost converters are examined and finally electricity generation through solar is covered. Your lab classes will build on material from lectures which in turn forms the basis for coursework.