Course Outline

Semester 2 2015

Never Stand Still

Engineering | Mechanical and Manufacturing Engineering

MECH9223

MACHINE CONDITION MONITORING

Contents

1.Staff Contact Details

Contact details and consultation times for course convenor

Name: Wade Smith
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I will be available to answer your questions for one hour per week outside class time; the time and exact location for this consultation slot will be advised during the first lecture. If you need to see me outside this time, it is preferable that you make prior arrangements via phone or email.

Contact details and consultation times for additional lecturers/demonstrators/ lab staff

Please make arrangements beforehand, via phone or email, if you need to see the following teaching staff outside scheduled class times.

Lecturers

Dr Sangarapillai Kanapathipillai
Room: ME 408J (J17)
Tel: (02) 9385 4251
Email: s.kanapathipillai@unsw.edu.au

Associate Professor Zhongxiao Peng
Room: ME 408B (J17)
Tel: (02) 9385 4142
Email: z.peng@unsw.edu.au

Demonstrators

Dr Lav Deshpande
Email: l.deshpande@.unsw.edu.au

Mr Chongqing Hu
Email: chongqing.hu@.unsw.edu.au

2. Course details

Credit Points

This is a 6 unit-of-credit (UoC) course, and involves 3 hours per week (h/w) of face-to-face contact.

The UNSW website states “The normal workload expectations of a student are approximately 25 hours per semester for each UoC, including class contact hours, other learning activities, preparation and time spent on all assessable work. Thus, for a full-time enrolled student, the normal workload, averaged across the 16 weeks of teaching, study and examination periods, is about 37.5 hours per week.”

This means that you should aim to spend about 9 h/w on this course. The additional time should be spent in making sure that you understand the lecture material, completing the set assignments, further reading, and revising for any examinations.

Contact Hours

The contact hours for this course will be as outlined in the following table. Lectures will begin

Learning Outcome		EA Stage 1 Competencies
1.	Understand the concept of machine condition monitoring and develop familiarity with the technology used in this field	PE1.1, PE1.2, PE1.3
2.	Apply vibration analysis techniques to diagnose faults in rotating and reciprocating machines and take proper actions	PE1.1, PE1.2, PE1.3, PE1.5, PE2.1, PE2.2

3. 3.

5. Assessment

You will be assessed by way of two MATLAB®-based assignments and two examinations, all of which will generally involve a combination of calculations and written descriptive material.

The various assessments contribute towards the overall grade as follows:

Task	Weight	Learning outcomes assessed	Assessment criteria	Due date, time, and submission requirements
Assignment 1: Fourier Analysis	15%	1, 3, 4	Technical content	11am, 4 Sep 2015, online submission via Moodle
Assignment 2: Diagnostics Project	30%	1, 2, 3, 4	Technical content and report writing skills	11am, 23 Oct 2015, online submission via Moodle
Mid-Semester Exam	15%	1, 4	All course content from weeks 1-5	11am, 11 Sep 2015
Final Exam	40%	1, 2, 4	All course content from weeks 1-12	Exam period, date TBA

In order to pass the course, you must achieve an overall mark of at least 50%.

Assignments will be handed out in hardcopy in class, and will be available on the UNSW Moodle website in case you miss the hand-out in class. Any data required for you to complete the assignments will be supplied to you via Moodle or email.

Assignments

Presentation

All submissions should have a standard School cover sheet which is available from this subject's Moodle page.

All submissions are expected to be neat and clearly set out. Your results are the pinnacle of all your hard work. Presenting them clearly gives the marker the best chance of understanding your method, even if the numerical results are incorrect.

Submission

Assignments are due by the commencement of class on the dates nominated above. Assignments should be submitted electronically via Moodle.

Late submissions will be penalised 5 marks per calendar day (including weekends). An extension may only be granted in exceptional circumstances. Where an assessment task is worth less than 20% of the total course mark and you have a compelling reason for being unable to submit your work on time, you must seek approval for an extension from the

course convenor

Calculators

You will need to provide your own calculator, of a make and model approved by UNSW, for the examinations. The list of approved calculators is shown at - 5 . 9 (o 8 .

Thomson, W. T., Theory of Vibration with Applications, 4th Edition, Chapman & Hall, 1993.

Other Resources

If you wish to explore any of the lecture topics in more depth, then other resources are available and assistance may be obtained from the UNSW Library. One starting point for assistance is: https://www.library.unsw.edu.au/servicesfor/index.html.

7. Course evaluation and development

Feedback on the course is gathered periodically using various means, including the Course and Teaching Evaluation and Improvement (CATEI) process, informal discussion in the final class for the course, and the School's Student/Staff meetings. Your feedback is taken seriously, and continual improvements are made to the course based, in part, on such feedback.

In this course, recent improvements resulting from student feedback include a reduction in the number of lecturers, which should ensure greater consistency of delivery, and an increase in the number of worked examples demonstrating the application of the theory. Another change has been the switch to a MATLAB®-based first assignment, which is intended to provide greater familiarity with MATLAB® and to give a practical introduction to Fourier Analysis, which forms the basis for many advanced condition monitoring methods.

8. Academic honesty and plagiarism

UNSW has an ongoing commitment to fostering a culture of learning informed by academic integrity. All UNSW students have a responsibility to adhere to this principle of academic integrity. Plagiarism undermines academic integrity and is not tolerated at UNSW. *Plagiarism at UNSW is defined as using the words or ideas of others and passing them off as your own.*

Plagiarism is a type of intellectual theft. It can take many forms, from deliberate cheating to accidentally copying from a source without acknowledgement. UNSW has produced a website with a wealth of resources to support students to understand and avoid plagiarism: https://student.unsw.edu.au/plagiarism The Learning Centre assists students with

If plagiarism is found in your work when you are in first year, your lecturer will offer you assistance to improve your academic skills. They may ask you to look at some online resources, attend the Learning Centre, or sometimes resubmit your work with the problem fixed. However more serious instances in first year, such as stealing another student's work or paying someone to do your work, may be investigated under the Student Misconduct Procedures.

Repeated plagiarism (even in first year), plagiarism after first year, or serious instances, may also be investigated under the Student Misconduct Procedures. The penalties under the procedures can include a reduction in marks, failing a course or for the most serious matters (like plagiarism in an honours thesis) even suspension from the university. The Student Misconduct Procedures are available here:
http:tt(m)-29(ay)8.9(as6(l)2.6(3260.002 Tc 6M 6.6(ud(ay)8.9(be -6(pay)8.9(i)2.6(ng)-11.2((on)-6.6( )]TJ u8