Course Syllabus

ENME 360 – VIBRATION – SUMMER 2015

Instructor: Mr. Douglas Howle

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Office hours: By Appointment

Book: Engineering Vibration, 4th Edition, by Daniel J. Inman

Final class grade will be based on:

Quizzes	20%
Classwork	10%
Midterm Exam	30%
Final Exam	30%
Homework	10%

Grading Policy:

- The following scale will be used:
  - **A = 90 and above**
  - **B = 80-89**
  - **C = 70-79**
  - **D = 60-69**
  - **F = < 60**
- Only neatly written problems will be graded.
- Correct answers without any analysis (calculations, diagrams, etc.) will not get any credit.
- Work not intended for grading must be clearly crossed out on the page.
- Each solution must have proper units.
- Makeup exams will only be given only under extreme circumstances. Where possible, the student should give sufficient advance notice to the instructor.

Quizzes:

- Will cover theoretical aspects and problem solving skills.
- Will be closed book and closed notes unless otherwise stated by the instructor.
- May or may not be announced.
- No makeup quizzes will be available unless coordinated with the instructor.

Midterm Exam:

- Will contain three or four problems.
- Will be closed book and closed notes.

Final Exam:

- Will contain three or four problems.
- Will be closed book. An equation sheet will likely be authorized.

Homework:

- Will be due at the beginning of class in accordance with the most up to date course outline.
- Will be graded only if written clearly.
- Peer cooperation on homework is allowed but the final presentation must be your own. No copying of homework.
- No late homework will be accepted.

Prerequisites *(completed with a grade of "C" or better)* **:**

- ENME 220: Mechanics of Materials
- ENME 221: Dynamics
- ENME 303: Topics in Engineering Mathematics
- MATH 225: Introduction to Differential Equations

Statement on Academic dishonesty:

Cheating on exams and plagiarism in the preparation of homework will be considered unacceptable conduct. Academic sanctions will be taken against all parties involved. A student participating in the act of cheating and/or plagiarism for a second time will receive a failing grade in this class.

Statement on Disruptive Conduct

Please be considerate of the learning mission of the class by refraining from any activity that may be considered disruptive.

Course Outline and Content
ENME 360 - Vibration – Summer 2015

Day	*Date*	*Subject*	*Chapters*
Th	28-May	Introduction to Free Vibration	1.1
		Harmonic Motion	1.2
M	1-Jun	Viscous Damping	1.3
		Modeling & Energy Methods	1.4
		Quiz 1	
Th	4-Jun	Stiffness	1.5
		Undamped Harmonic Excitation	2.1
M	8-Jun	Numerical Simulation of the Time Response	1.9
		Coulomb Friction and the Pendulum	1.10
		Quiz 2	
Th	11-Jun	Damped Harmonic Excitation	2.2
		Alternative Representations	2.3
M	15-Jun	Base Excitation	2.4
		Rotating Unbalance	2.5
		Impulse Response Function	3.1
Th	18-Jun	Response to Arbitrary Input	3.2
		Transform Methods	3.4
		Quiz 3	
M	22-Jun	**Midterm Exam**	*The midterm exam will cover chapters 1 and 2.*
Th	25-Jun	*Measurement via Transfer Functions*	*3.7*
		Undamped 2-DOF System	4.1
		Eigenvalues and Natural Frequencies	4.2
M	29-Jun	Numerical Simulation and Design	2.8
		Numerical Simulation of the Response	3.9
		Quiz 4	
Th	2-Jul	Modal Analysis	4.3
		MDOF Systems	4.4
		MDOF Systems with Viscous Damping	4.5

M	6-Jul	Modal Analysis of the Forced Response	4.6
		Lagrange's Equations	4.7
		Quiz 5	
Th	9-Jul	Computational Eigenvalue Problems	4.9
		Numerical Simulation of the Time Response	4.10
M	13-Jul	Vibration Isolation	5.2
		Vibration Absorbers	5.3
Th	16-Jul	**Final Exam** (The final exam is cumulative)	

Homework assignments:

HW1: 1.18, 1.37, 1.47, 1.58, 1.69, 1.79
HW2: 1.91, 1.92, 1.93, 2.8, 2.24, 2.33
HW3: 2.56, 2.57, 2.62, 3.12, 3.14, 3.23
HW4: 3.39, 3.55, 4.12, 4.29, 4.43, 4.48
HW5: 4.71, 4.73, 4.81, 4.84