Course Syllabus

Year ___2021____ Semester ___Summer____

Course Title	Adv. Mechanical Vibration		
Course Type		**Credits (hours)**	3
Department	Mechanical Engineering	**Professor**	Park, Gyuhae
Classification (year in school)	Graduate School	**Office Number**	Engineering 1A-404
Classroom		**E-mail**	gpark@jnu.ac.kr
Class hour		**Office Hours / Place**	
Prerequisite(s)			

Course objectives	The purpose of this course is to provide the student with an understanding of the response of vibrating structural systems subjected to time-varying dynamic loads and displacements. Students will study the response of discrete and continuous systems to harmonic and general loading conditions. Students will also study instrumentation and signal processing techniques used for experimental vibration testing. - The topics include: Formulation of dynamic models for discrete and continuous structures; normal mode analysis, basic instrumentation and signal processing. Vibration testing of a simple structure			
Core Competency to be Acquired	Creativity	Sensibility	Community Values	Total (%)
	60%	30%	10%	100%
	- Creative competency consists of convergency, identification and resolution of problem competency, and computing mind competency. - Emotional competency consists of humanity, culture and arts, and leisure competency. - Community competency consists of self-planning, civility, and glocal competency.			
Other competency (optional)				

<table>
<tr><td rowspan="11">Teaching Methods</td><td colspan="4">Instruction Format (Choose One)</td></tr>
<tr><td>Hybrid of Online and In-Person Class</td><td colspan="2">Online Class</td><td>In-Person Class</td></tr>
<tr><td></td><td colspan="2">0</td><td></td></tr>
<tr><td colspan="4">Teaching Methods</td></tr>
<tr><td>Lecture</td><td>100 %</td><td>Flipped Learning</td><td>%</td></tr>
<tr><td>Presentation /Discussion</td><td>%</td><td>Experiment/ Hands-on Practices</td><td>%</td></tr>
<tr><td>Problem Based Learning</td><td>%</td><td>Others (Describe)</td><td>%</td></tr>
<tr><td>Project Based Learning</td><td>%</td><td>Total (%)</td><td>100%</td></tr>
<tr><td colspan="4">- Powerpoint lectures will be given.
- A supplementary explanation will be given on the board or using computer simulation.
- All lectures are online. Recorded video files will be provided each week. If the COVID situation improves, in-person classes could be implemented.</td></tr>
<tr><td rowspan="6">Grading</td><td>Mid-Term</td><td>35 %</td><td>Class participation</td><td>%</td></tr>
<tr><td>Final</td><td>50%</td><td>Attendance</td><td>5 %</td></tr>
<tr><td>Individual Tasks</td><td>%</td><td>Homework</td><td>10 %</td></tr>
<tr><td>Team Projects</td><td>%</td><td>Total (%)</td><td>100%</td></tr>
<tr><td colspan="4">- All exams will be given in a “take-home exam” format.
- The final exam is comprehensive (i.e. covers the entire subjects taught during the semester).
- There will be (tentatively) 6 homework assignments. Each assignment will be graded on a 0-2 scale that can be interpreted in the following way:
2 points – Satisfactory,
1 points – Unsatisfactory,
0 points – Not turned in, or not original work</td></tr>
<tr><td>Accommodations for Handicapped</td><td colspan="4">- Visually impaired: provision of course related materials in audio, note taking helper, permission to record the lecture
- Audibly impaired: provision of course related materials in visual, note taking helper, permission to have e-learning lectures in sign language or shorthand
- Physically or mentally challenged: provision of course related materials, note</td></tr>
</table>

	taking helper, permission to record the lecture.

Textbooks & References				
Category	Title	Author	Publisher	Year of publication
Main textbook	Engineering Vibration (4th edition)	Daniel J. Inman	Pearson	2014
Reference	Modal Testing	David Ewins	Research Studies Press	2000

Weekly Course Schedule

Week	Lecture Topic	Method of Instruction	Method of Evaluation	Class Materials & Assignments	Instruction Format
1	Introduction	Powerpoint lecture			Online
2	Single degree of freedom systems I	Powerpoint lecture		Homework #1	Online
3	Single degree of freedom systems II	Powerpoint lecture			Online
4	Multi-degree of freedom systems I	Powerpoint lecture			Online
5	Multi-degree of freedom systems II	Powerpoint lecture		Homework #2	Online
6	Continuous Systems I	Powerpoint lecture			Online
7	Continuous Systems II	Powerpoint lecture		Homework #3	Online
8	Midterm Exam Week				
9	Instrumentation	Powerpoint lecture			Online
10	Signal Processing I	Powerpoint lecture			Online

11	Signal Processing II	Powerpoint lecture		Homework #4	Online
12	Vibration Testing I	Powerpoint lecture			Online
13	Vibration Testing II	Powerpoint lecture		Homework #5	Online
14	Computational Methods in Structural Vibration	Powerpoint lecture		Homework #6	Online
15	Final Exam Week				

The schedule above is subject to change.

References

Previous year course evaluation

(Student evaluation of teaching and CQI*)

*Continuous Quality Improvement