



Jordan University of Science and Technology
 Faculty of Engineering
 Aeronautical Engineering Department

Course name and number:

AE 461 Mechanical Vibrations

Credit, contact hours and categorization:

Credit and contact hours	Contact hours	Categorization
3 Credit Hours	Sunday-Tuesday-Thursday: 1-hour lecture Monday-Wednesday 1.5-hours lecture	Engineering Topic

Instructor's or course coordinator's name:

Name	Dr. Ahmad Alshyyab
Office location	N1-L2
Email address	asalshyyab@just.edu.jo

Textbook and other supplemental materials:

Textbook			
Title	Engineering Vibrations		
Author(s)	D. Inman		
Edition	4 th Edition		
Other Information	Pearson Education, Inc.		
References			
Book Name	Author(s)	Edition	Other Information
Mechanical Vibrations	Singiresu S. Rao	3rd Edition	
Machinery Vibration: Measurement and Analysis	Victor Wovk	2nd Edition	

Course information:

Course Catalogue		
3 Credit Hours. Properties of oscillatory motion, Derivation of governing differential equations, Free and damped vibrations, Harmonically excited motion, rotating and reciprocating unbalance, support motion, Vibration measurements, Vibration isolation, Transient vibrations, Free and forced vibrations in multi-degrees-of-freedom systems, Vibration absorbers, Continuous systems.		
Course type : This course is required to fulfill the program.		
Prerequisites or co-requisites		
Line Number	Course Name	Prerequisite Type
712120	AE212 Dynamics	Prerequisite / Pass
713030	AE303 Applied Math For Engineers	Prerequisite / Study



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Specific goals of the course :

Specific outcomes of instruction and the student outcomes (SO) mapping		
Outcomes	SO Mapping	Course Outcome Weight (Out of 100%)
Formulate mathematical models of problems in vibrations using Newton's second law or energy principles	40SO 1, 5SO2	45%
Determine a complete solution to the modeled mechanical vibration problems.	45SO 1	45%
Learn to use numerical, mathematical and presentation tools in the solution of practical engineering problems, and have relevant software packages available for use in completing work	3SO 1, 3SO 6, 4SO 7	10%

Brief list of topics to be covered:

Tentative List of Topics Covered		
Weeks	Topic	References
Weeks 1, 2, 3	Introduction to Vibration and the Free Response.	Chapter 1 From Textbook
Weeks 4, 5, 6	Response to Harmonic Excitation	Chapter 2 From Textbook
Weeks 7, 8, 9	General Forced Response	Chapter 3 From Textbook
Weeks 10, 11, 12	Multi-Degree-of-Freedom System	Chapter 4 From Textbook
Weeks 13, 14	Design for Vibration Absorber	Chapter 5 From Textbook
Weeks 14, 15	Continuous systems	Chapter 6 From Textbook