

COURSE IDENTIFICATION FORM

Course Code and Name: IM5028 STRUCTURAL DYNAMICS

Department of : CIVIL ENGINEERING / MASTER PROGRAMME

Semester	Theoretic Hour	Practice Hour	Total Hour	Credits	ECTS	Education Language	Type: Compulsory Elective
Autumn/Spring	3	0	3	3	5	Turkish	Optional

Prerequisite (s)

Instructor

Mail :
Web :

Course Assistant

Mail :
Web :

Groups / Classes

Course Aim

Determination of the dynamic behavior of structural systems under the influence of various dynamic forces such as earthquake motion.

Course Goals

- Teaching the analysis of Single and Multi Degree of Freedom Systems under free and forced vibration.

Course Learning Outcomes and Proficiencies

- Students establish mathematical models of structural systems under the influence of dynamic loads under basic concepts.
- Students understand the free vibration motion of the TSD system.
- Students interpret the solution of the forced harmonic vibration equation of the TSD system.
- Performs free vibration analysis of multi-degree-of-freedom (MDOF) systems.
- Forced vibration of CSD systems with response spectrum curves, mode Analyzes with the superposition method.

Course Basic and Auxiliary Contexts

- Lecture Notes
- Zekai Celep and Nahit Kumbasar, Introduction to Earthquake Engineering and Earthquake Resistant Structural Design, 2004.
- Chopra , AK, Dynamics of Structures , Theory and Applications to Earthquake Engineering , 6th Edition, Prentice Hall , 2001.
- Clough , R. W. and Penzien , J, Dynamics of Structures , 2nd Edition, McGraw-Hill Int . Editions , 1993.

Methods of Give a Lecture

Face to Face

Assessment Criteria		If Available, to Sign (x)	General Average Percentage (%) Rate
	1. Midterm Exam	X	25
	2. Midterm Exam		
	3. Midterm Exam		
	4. Midterm Exam		
	Oral Exam		
	Assignments-Seminars	X	25
	Final Exam	X	50
Semester Course Plan			
Week	Subjects		
1	Energy Methods, Conservation of Energy		
2	Impulse , Momentum		
3	Single degree of freedom (SDOF) systems		
4	undamped and damped free vibration of TSD systems		
5	Forced vibration analysis of undamped TSD systems under harmonic load effect		
6	Forced vibration analysis and force conductivity of damped TSD systems under harmonic load effect		
7	Impact load effect and general loading		
8	Midterm Exam		
9	Equivalent load and spectral analysis		
10	Multi-degree-of-freedom (MDOF) systems		
11	Undamped free vibration analysis of CSD systems		
12	Damped free vibration analysis of CSD systems		
13	Mode superposition method (Modal Analysis)		
14	General Exam		