

MM 575 Random Vibrations				MECHANICAL ENGINEERING DEPARTMENT					
Semester	Methods of Education							Credits	
	Lecture	Recit.	Lab.	Project/Field Study	Homework	Other	Total	Credit	ECTS credit
1,2	30	12				146	188	3	7.5
Language	Turkish								
Compulsory / Elective	Optional								
Prerequisites	-								
Course Contents	Mathematical description of stochastic processes. Probability distributions, averages, autocorrelation and cross-correlation, frequency decomposition of stationary random processes, spectral density. The normal and Gaussian random processes. Wideband and narrowband random processes. Transmission of random vibrations. Fourier analysis, Fast Fourier Transforms and its applications in random vibrations. Response of linear time invariant systems to stationary random excitation. Failure due to random vibrations. Examples and application of random vibration analysis.								
Course Objectives	Introduction to random vibration theory, probability distributions, Fourier analysis, transmissibility of random vibration.								
Learning Outcomes and Competences	Understanding of fundamentals in the investigation of random vibration theory.								
Textbook and /or Reference	1. Newland, D.E., (1997). An Introduction to Random Vibrations, Spectral & Wavelet Analysis. Singapore: Longman. 2. Bendat, J.S. Ve Piersol, A.G. (1986). Random Data: Analysis and Measurement Procedures. USA: Wiley-Interscience.								
Assessment Criteria					If any, mark as (X)		Percentage (%)		
	Midterm Exams				X		40		
	Quizzes								
	Homeworks								
	Projects								
	Term Paper								
	Laboratory Work								
	Other								
	Final Exam				X		60		
Instructors	Prof. Nizami AKTÜRK								
Week	Subject								
1	Mathematical discription of stochastic processes								
2	Mathematical discription of stochastic processes								
3	Autocorolation and cross-corelation								
4	Normal distribution and spectral density								
5	Wide and norrow processes								
6	First midterm								
7	Transmission of random vibration								
8	Fourier analysis								
9	FFT and its application to random vibration								
10	Response of linear system to stationary random excitation								
11	Response of linear system to stationary random excitation								
12	Response of linear system to stationary random excitation								
13	Second midterm								
14	Failure due to random vibrations								