No	Information of subject		
1	Unit name:	Modern Control System	
2	Code:	McE 51017	
3	Classification:	Engineering subject	
4	Credit value:	2.5	
5	Semester/ Year Offered: 1/5		
6	Pre-requisite: Modeling & Control		
7	Mode of delivery:         Lecture, Presentation, Discussion		
8	Assessment system and breakdown of	Assignment, Tutorial, Practical	
	marks:		
	Mid-term/ final Examination	70%	
	Assignment/Home work /Practical	30%	
9	Academic staff teaching unit:	Department of Mechatronic engineering	
10	Course outcome of unit:		
	In this course, students will be able		
	(a) To explain the relative stability	of a system utilizing the root locus graphical	
	method.		
	(b) To analyze the frequency response of a system by using the polar plot and		
	logarithmic plots (Bode plot).		
	(c) To determine the stability of a feedback control system in the frequency		
	domain by utilizing Nyquist's criterion.		
	(d) To sketch the important concepts of gain margin, phase margin and		
	bandwidth are developed in the	context of Bode plot and Nyquist diagrams.	
11	Synopsis of unit:		
	The course introduces students to the st	udy of Modern Control System, its principles	
	and techniques. Course covers the root	locus method, a graphical technique, can be	
	used to obtain an approximate sketch in	order to analyze the initial design of a system	
	and determine suitable alternations of th	e system structure and the parameters values.	
	A computer is commonly used to calcul	ate several accurate roots at important points	
	on the locus. Furthermore we have c	onsidered the representation of a feedback	
	control system by its frequency response characteristics. And also the stability o		
	feedback control system can be determined in the frequency domain by utilizing		
	Nyquist's criterion. Nyquist's criterio	on provides us with two relative stability	

comprehensive course in Mechatronic engineering and can be applied in the control field and any other various applications.         12       Topic:         1       The Root Locus Method         1.1 Introduction       1.2 The Root Locus Concept         1.3 The Root Locus Operation of a Control System Analysis and Design Utilizing the Root Locus Method         1.5 Design Example Problems and Exercises         2       Frequency Response Methods         2.1 Introduction         2.2 Frequency Response Methods         2.3 An example of Drawing the Bode Diagram         2.4 Frequency Response Measurements         2.5 Performance Specifications in the Frequency Domain         2.6 Log Magnitude and Phase Diagrams         2.7 Design Example Problems and Exercises         3       Stability in the Frequency Domain         3.1 Introduction         3.2 Mapping Contours in the s-Plane         3.3 The Nyquist Criterion         3.4 Relative Stability and the Nyquist Criterion         3.5 Time-Domain Performance Criteria Specified in the Frequency Domain         3.6 System Bandwidth         3.7 The Stability of Control System with Time Delays         3.8 Design Example Problems and Exercises         13		measures: (1	1) gain margin and (2) phase margin. Modern Control System subject is a	
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