

**INDIAN INSTITUTE OF TECHNOLOGY TIRUPATI**  
**PROFORMA FOR NEW COURSE**

1.	Title of the Course	Control Engineering
2.	Course Number	EE3105
3.	Status of the Course	Core
4.	Structure of Credits	3-1-0-4
5.	Offered To	UG
6.	New Course/Modification to	New
7.	To be Offered by	Department of Electrical Engineering
8.	To take effect from	July 2018
9.	Prerequisite	Nil
10.	Whether approved by the Department	Yes
11.	<b>Course Objective:</b> To understand the basic principles of feedback control systems. To introduce mathematical techniques to model and determine the stability of systems in time and frequency domains. Practical examples from various industrial processes will be discussed.	
12.	<b>Course Content:</b> Introduction concept of measurement; Feedback and automatic control; Example from various fields; Classification of systems: linear/non-linear time invariant/ time varying lumped/distributed parameters analog/digital; Mathematical modelling: integro-differential equations for electrical, mechanical and electro-mechanical systems; Transfer functions, signal flow graph using Mason's gain formula; Various examples; Pneumatic, hydraulic and electrical systems; Various test signals in time domain; Response of zeroth and first order systems, second order systems; Time response specifications of first and second order systems; Compensation techniques; Higher order systems; Stability and Routh test; Root locus and time domain design; Frequency domain analysis with polar, Nyquist and Bode plots; Design in frequency domain; Introduction to state space analysis.	
13.	Text book(s): 1. Kuo B C and Golnaraghi F, <i>Automatic Control Systems</i> , John Wiley & Sons (2003). 2. Ogata K, <i>Modern Control Engineering</i> , Prentice Hall India (2010).	
14.	Reference(s): 1. Dorf R C and Bishop R H, <i>Modern Control Systems</i> , Addison Wesley (2010).	