Program and Degree: **BSc in Aerospace Engineering**	
Course Description	
Course Title	**Automatic Control**
Prerequisites	Engineering Mathematics, Mechanical Vibrations
The course aims	This course provides an introduction to transfer functions, Laplace transforms, and state-space models. It covers stability and feedback, and provides basic Laplace and time domain design tools for specifications of the system response. It also briefly covers frequency-domain techniques. The course objectives: - To learn the process of modeling linear time-invariant (LTI) dynamical systems in the time domain and in the Laplace domain. - Understanding the behavior of LTI systems, both in the transient and steady state regimes. - To introduce feedback control and understand, using the s-domain primarily, how feedback affects transient and steady state performance. - To learn how to design proportional, proportional-integral, proportional-derivative, and proportional-integral-derivative feedback control systems. - To introduce the frequency response analysis of LTI systems - To introduce control design using state feedback
Contents	1- Mathematics preview; complex analysis and matrix algebra 2- Introduction to control systems 3- Dynamic modeling, transfer functions and state-space models 4- Transient and steady-state response analysis 5- Control design and analysis by Root-Locus methods 6- Frequency response analysis 7- Introduction to control design in state-space
Duration	**1 Semester (16 weeks)**
Course Hours	**3 hours/week**
Course Type	**Required**