

EEPW 3200	CONTROL SYSTEMS	3 Credit Hours
Prerequisites	EEPW 2320 AND MATH 3120	
Goal	To give the students an insight into control system modeling, time response analysis, and stability in time and frequency domains. They should also get knowledge of compensation techniques.	
Objectives	Outcomes	
<p>This course should enable the student to :</p> <ul style="list-style-type: none"> a) formulate the differential equations, transfer functions for electrical, mechanical, and electro-mechanical systems b) analyze impulse and step responses, principle of PI, PD and PID compensations c) analyze stability in time domain using Routh - Hurwitz criterion and root locus method d) conduct frequency analysis using polar plot, Bode plot and magnitude phase plot e) design compensation circuits with lag, lead and lag-lead compensation techniques 	<p>A student who completes the course should be able to:</p> <ul style="list-style-type: none"> 1. do time response analysis of first and second order systems, determine the impulse and step responses, steady state error etc 2. do the stability analysis in time domain using Routh – Hurwitz criterion and root locus methods 3. construct the root locus diagrams, study the stability and applications of root locus diagrams 4. do the stability analysis in the frequency domain, using polar plot and bode plot, magnitude-phase plot 5. do the nyquist stability criterion, relative stability, gain margin and phase margin 6. study the use of Nichols chart to find relative stability 7. do the cascade and feedback compensation 	