

**Course Plan for GIAN course on
State of the Art Computational Methods and Software for Computer-Aided
Control Systems Design and Analysis**

Tentative duration: 01 December – 11 December 2016

Total Contact hours: 28, Credits: 02

Expert faculty: Prof. Biswa N Datta,

Distinguished Research Professor, Northern Illinois University, USA.

Lecture Plan:

01 December 2016 DAY I: INTRODUCTION AND OVERVIEW			
TIME	Topics		
4.15 PM to 5.15 PM	Inauguration of the course		
5.30 to 6.00 PM	Overview of the course by the expert		
The classes have been shifted to Saturday due to exam of PG students			
02 December 2016			
The classes have been shifted to Sunday due to exam of PG students			
03 December 2016			
4.15 PM to 6.15 PM	Lecture 1: Basic Concepts and Stable Computations in Numerical Linear Algebra: Errors, Efficiency and Stability ; Orthogonal Transformations of Matrices		
04 December 2016			
10.00 to 12.00	Lecture 2: Modeling, and Analysis: Controllability, Observability, Stability and Robust Stability.		
15.00 to 17.00	Tutorial and Problem solving		
05 December 2016: Systems Design I			
10.00 – 12.00	Lecture 3: Stabilization, Eigenvalue Assignment problem		
14.00 – 16.00	Lecture 4: Numerical Methods for Lyapunov Equations		
06 December 2016: Tutorial II			
14.00 to 16.00	Tutorial and Problem solving		
07 December 2016: Systems Design II			
Time	Topics		

10:00 – 12:00	Lecture 5: Optimal and H- Infinity Control		
14:00 – 16:00	Lecture 6: Numerical methods for H-infinity control		
08 December 2016: Tutorial III			
14.00 to 16.00	Tutorial and Problem solving		
09 December r 2016: System Theory			
Time	Topics		
10:00 – 12:00	Lecture 7: Internal Balancing and Model Reduction, Observer Design		
14:00 – 16:00	Lecture 8: Pole Placement & associated Algorithm	This is followed by 1 hour of tutorials	
10 December 2016: Applications			
Time	Topics		
10:00 – 12:30	Lecture 9: Active Vibration Control problem		
14:00 – 16:00	Lecture 10: Numerical solution methods for the vibration problem		
11 December 2016: Applications			
10.00 – 12.00	Examination	Objective/subjective type as decided by the expert	
13.00 – 16.00	Evaluation, Declaration of results and valedictory		

Course Coordinators
GIAN course