

## MINI-COURSE ON

### “State-of-the Art Computational Methods and Software for Control Systems”

Department of Mathematics, University of Aveiro, Portugal, 14-15 December, 2005

**Lecturer:** Professor Biswa Datta  
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**Organizer:** control theory group (cotg), CEOC  
<http://ceoc.mat.ua.pt/>

**Lecture Notes:** Detailed Lecture Notes are available at:  
<http://www.mat.ua.pt/delfim/biswa/workshop05.pdf>

## SCHEDULE – 14/December (Wednesday)

**Local:** anfiteatro da Mecânica (22.3.1), Universidade de Aveiro

9:00-10:00 - Introduction. Basic Concepts: Modelling; System Responses; Controllability, Observability and Distance to uncontrollability; Stability, Robust Stability and Distance to Instability.

10:00-10:30 - COFFEE BREAK

10:30 -11:30 - Feedback Stabilization (LQR Design), Numerical Methods and Conditions for Lyapunov, and Algebraic Riccati Equations (and possibly H-Infinity Control).

11:30-12:30 - Numerical Methods and Conditioning of Pole Placement, Algorithms for Observer Design, Kalman Filter, and LQG Design.

## SCHEDULE – 15/December (Thursday)

**Local:** sala Sousa Pinto, Universidade de Aveiro

9:00-10:00 - Model Reduction and Hankel Norm Approximation

10:00-10:30 - COFFEE BREAK

10:30 - 11:15 : System Identification

11:15- 12:00 - Control Software

12:00- 12:30 - Discussions