**SWEDISH COLLEGE OF ENGINEERING & TECHNOLOGY**

**RAHIM YAR KHAN**

**B.Sc. Electrical (Electronics) Engineering**

Session: 2010-14 Term: 6th

**Department of Electrical Engineering**

**Course Title: Control Systems (EE-303)**

**Course Supervisor: Engr. M Asif Munir**

**Credit Hours: 3+1**

**Text book**

1. Automatic Control System Benjamin C Kuo et al, 8th Ed

**Reference books**

1. Control Systems for Engineers S.K Hasnain
2. Control System Engineering Norman S Nise, 5th Ed
3. Control Systems Theory and applications Smarajit Ghosh

**Sessional Marks Evaluation Procedure:**

* Conduction of Quizzes on Weekly basis
* Conduction of Assignment and Viva voce on Monthly basis

**Week-wise Course Breakup for Mid-term**

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| **Week** | **Course Description** | **Book Author** |
| **Week 1** | Chapter#01) Introduction): 1.1 Introduction 1.2 What is Feedback and what are its effects? 1.3 Types of Feedback control Systems | Benjmin C KUO |
| Chapter#01 Fundamentals of Control Systems 1.1 Basic Definitions1.2 Classification of Control Systems1.3 Open-loop and closed-Loop system1.4 effects of Feedback1.5 Servomechanism 1.6 Standard Test Signals1.7 Impulse Function | Smarajit Ghosh |
| **Week 2** | Chapter#06) Block Diagram6.1 Definition of Basic Elements of Block diagram6.2 Cannonical Form of Closed Loop System6.3 rules for Block Diagram Reduction6.4 Procedure for Reduction of Block Diagram6.5 Reducing to Unity Feedback systems  (Including Related Examples + Exercise Problems of Medium Level Complexity) | Smarajit Ghosh |
| **Week 3** | Chapter#07) Signal-Flow Graphs):7.1 Basic Definitions in SFG7.2 Rules for Signal Flow Graph7.3 Properties of Signal Flow Graph7.4 Mason’s Gain Formula(Including Related Examples + Exercise Problems of Medium Level Complexity) | Smarajit Ghosh |
| **Week 4** | Chapter#02): Transfer Functions of Physical Systems2.3 The Transfer Function2.4 Electrical network Transfer Functions2.5 Translational Mechanical System Transfer Functions2.6 Rotational Mechanical System Transfer Functions (Including Related Examples + Skill Assessment Problems + Exercise Problems of Medium Level Complexity)  | Norman S Nise |
| **Week 5** | Chapter#03 State Equations for Physical Systems):3.1 Introduction3.2 Some Observations3.3 The General State-Space Representation3.4 Applying The State-Space Representation3.5 Converting a Transfer Function to State Space 3.6 Converting From State Space To A Transfer Function(Including Related Examples + Skill Assessment Problems + Exercise Problems of Medium Level Complexity)  | Norman S Nise |
| **Week 6** | Chapter #05 Equivalent Systems):5.6 Signal Flow Graphs of Sate Equations5.7 Alternative Representations In State Space 5.8 Similarity Transformations(Including Related Examples + Skill Assessment Problems + Exercise Problems of Medium Level Complexity)  | Norman S Nise  |
| **Week 7** | Chapter#06 Transient Response Stability):6.1 Introduction6.2 Routh-Hurwitz Criterion 6.3 Routh-Hurwitz Criterion: Special cases6.4 Routh-Hurwitz Criterion: Additional Examples(Including Related Examples + Skill Assessment Problems + Exercise Problems of Medium Level Complexity)  | Norman S Nise  |
| **Week 8** | Review of Syllabus |  |
| MID-TERM EXAM |