

ITT Technical Institute

AM412

Control Systems Analysis

Onsite Course

SYLLABUS

Credit hours: 4

Contact/Instructional hours: 50 (40 Theory Hours, 10 Lab Hours)

Prerequisite(s) and/or Corequisite(s):

Prerequisites: TM420 Technical Calculus

Course Description:

This course offers the opportunity to analyze, using several different techniques, system response and stability using functional block diagram representations of electrical, mechanical, and electro-mechanical systems.

Outside Work:

For purposes of defining an academic credit hour for Title IV funding purposes, ITT Technical Institute considers a quarter credit hour to be the equivalent of: (a) at least 10 clock hours of classroom activities and at least 20 clock hours of outside preparation; (b) at least 20 clock hours of laboratory activities; or (c) at least 30 clock hours of externship, practicum or clinical activities. ITT Technical Institute utilizes a "time-based option" for establishing out-of-class activities which would equate to two hours of out-of-class activities for every one hour of classroom time. The procedure for determining credit hours for Title IV funding purposes is to divide the total number of classroom, laboratory, externship, practicum and clinical hours by the conversion ratios specified above. A clock hour is 50 minutes.

A credit hour is an artificial measurement of the amount of learning that can occur in a program course based on a specified amount of time spent on class activities and student preparation during the program course. In conformity with commonly accepted practice in higher education, ITT Technical Institute has institutionally established and determined that credit hours awarded for coursework in this program course (including out-of-class assignments and learning activities described in the "Course Outline" section of this syllabus) are in accordance with the time-based option for awarding academic credit described in the immediately preceding paragraph.

Instructor Name: _____

Office Hours: _____

Class Hours: _____

I. MAJOR INSTRUCTIONAL AREA

Control Systems Terminology
Z-Transform
Stability
Transfer Functions
Block diagram
Classification of Feedback Systems
Nyquist Analysis
Root-Locus Analysis
Bode Analysis

II. COURSE OBJECTIVES

1. Identify definitions of terms commonly used in control systems analysis.
2. Complete Laplace and z-transforms and inverse transforms.
3. Derive the specified transfer function for a given system.
4. Identify classifications of feedback systems and their properties.
5. Analyze given feedback control systems using any of the following methods:
Nyquist criteria and stability plot
Root-Locus method
Bode plot

TEACHING STRATEGIES

Curriculum is designed to promote a variety of teaching strategies that support the outcomes described in the course objectives and that foster higher cognitive skills. Delivery makes use of various media and delivery tools in the classrooms.

III. TEXT AND SUPPLIES

Joseph J. DiStefano, Allen R Subberud, Ivan J. Williams. Schaum's Outline of Theory and Problems of

Feedback and Control Systems.-2nd ed. McGraw-Hill. ISBN 0-07-017052-5

IV. Evaluation

The evaluation of student achievement is conducted objectively. Evaluations are constructed from, and directly related to lesson objectives. The assignment of grades is based on the following grading criteria:

Homework & Quizzes.....	20%
Progress Tests (3)	60%
Labs	20%

Final grades will be calculated from the percentages earned in class as follows:

A	90 - 100%	4.0
B+	85 - 89%	3.5
B	80 - 84%	3.0
C+	75 - 79%	2.5
C	70 - 74%	2.0
D+	65 - 69%	1.5

D	60 - 64%	1.0
F	<59%	0.0