

ECEN 6901 - Control Systems 1

Fall 2026 Syllabus, Section 01, CRN 41090,

Credit hours: 3

Instructor

Ghassan Salim

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Public Instructor Information

Instructor Title: Lecturer

Instructor Professional Qualifications:

PhD (ABD) West Virginia University

MSEE West Virginia University, 1994

BSEE - Wright State University, 1986

Registered Professional Engineer, West Virginia, 2000- present

Instructor Office Location: Moser Hall, 2057

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Course Description

6901. Control Systems 1. Fundamental concepts in linear system theory. matrix algebra, linear vector spaces, linear operators. Input-output and state-space models for continuous-time systems; canonical forms. Solutions of state space equations. Characteristics of linear systems: stability; controllability and observability. State variable feedback; introduction to state estimation. 3 s.h.

Course Readings

Group	Title	Author	ISBN
Required	Linear State-Space Control Systems	Williams & Lawrence	978-0-471-73555-7
Required	Instructor Class Notes		

The course readings are subject to change in the event of extenuating circumstances, research developments, current events, and/or to ensure better learning.

Schedule of Topics and Assignments

Day	Date	Reading(s)	Proposed Topic	Due/To Prepare for Class
Mon	8/24	Ch1	Introduction and Course Expectations Mechanical and Electrical System Modeling	NE 1.1 (a, c), NE 1.2(a,c), AE 1.1, AE 1.4
Mon	8/31	Ch 1 - Continued	System Modeling – continued	CME 1.1, CME 1.2, CE 1.1
Mon	9/7	Legal Holiday		
Mon	9/14	Ch2	State Space Fundamentals	N.E. 2.1, 2,2(a,d), 2.3, 2.4, 2.5, 2.7, 2.9, 2.10 A.E 2.1, 2.3, 2.4
Mon	9/21	Ch3	Controllability	N.E 3.1 (a, b, d) N.E 3.2 (a,b,d) CME 3.1 (a,b)
Mon	9/28	Ch3 - Continued Ch4	Controllability - Continued Observability	NE 4.1 (a,c), NE 4.2 (A,c)
Mon	10/5	Ch4 - contined Project Proposal	Observability - Continued Project Proposal Exam -1 Discussion	AE 4.1, CM 4.1
Mon	10/12	Exam 1	Ch1- Ch4	Inclass Portion and a Take-home portion

Mon	10/19	Ch5	Minimal REalization	Exam-1 Take home portion is due. by 11:59PM Sunday night.
Mon	10/26	Ch6	Stability	NE 5.1 (a,b,c), CME 5.3, CME 5,4
Mon	11/2	Ch7	Design of Linear Feedback Control Law	NE 7.1, NE 7.2
Mon	11/9	Ch7 Continued	Design of State Feedback Law	CME 7.1
Mon	11/16	Ch7 Coninued Ch8	Design of Feedback Law - Continued Observed Based Controller Exam 2 Discussion	
Mon	11/23	Exam 2	Ch5, 6, and 7	Excam 2 in class portion and a take-home portion
Mon	11/30	Ch9	Optimal Control	Term Project report nd presentation Exam -2 - Takehome portion is Due
Mon	12/7	Final Exam	Ch5,6,7,8 and 9	Final Exam 17:30 -19:30 (may be take home)

The course schedule, policies, procedures, and assignments in this course are subject to change in the event of extenuating circumstances, by mutual agreement, and/or to ensure better learning.