

SYST680/OR683/ECE670: Principles of C4I

Fall 2009

Instructor: Dr. K. C. Chang

Class time: Wed, 4:30~7:10 PM

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<http://ite.gmu.edu/~kchang/course/syst680.htm>

Course Description

This course provides a broad introduction to fundamental principles of Command, Control, Communication, Computing, and Intelligence (C4I). The principles and techniques are applicable to a wide range of civilian and military situations. Modeling and simulation of combat operations are discussed. The sensing, fusion, and situation assessment processes are studied in details. Optimal decision making rules are derived. The concepts of C4 architectures are discussed. Tools to evaluate and design C4 systems such as queuing theory are developed. **Prerequisite:** ECE528 or equivalent.

Course Assignments and Grading

This course will have homework assignments, a take-home mid term, a take-home final exam, and a term project. They will constitute 25%, 25%, 25%, and 25% of the grade, respectively. The homework that is assigned in a unit is due in two weeks.

Course Materials

There is no required text. Supplementary readings will be assigned from handouts and additional references.

Course Outline

	Topics	Assignments
Unit #1	Introduction, Course Overview and Prerequisite, C3 Concept and Fundamentals	Class notes
Unit #2	Target Detection, Tracking, and Identification	Class notes
Unit #3	Target Detection, Tracking, and Identification (con't)	Class notes
Unit #4	Data Fusion, Situation Assessment	Class notes
Unit #5	Data Fusion, Situation Assessment, Communication & Networking	Class notes
Unit #6	Communication & Networking	Class notes
	Mid term Examination	Units 1-6
Unit #7	Combat Modeling	Class notes
Unit #8	Decision Making	Class notes
Unit #9	Decision Making (con't)	Class notes
Unit#10	C4ISR Architectures	Class notes
Unit#11	Queuing Theory and Applications	Class notes
Unit#12	Queuing Theory and Applications (con't)	Class notes
	Project Presentations	
	Final Examination	Units 1-12