

ME588: Assembly Modeling for Design and Manufacturing

Fall 2014 SAMPLE Syllabus

Synopsis

Product realization starts with assembly as the product, and ends with assembly as the manufacturing process. This course will cover various modeling and designing approaches for assembled products and assembly systems, including assembly representation, constraint modeling, variation analysis, assembly sequence analysis, and assembly systems modeling.

Prerequisites

- Knowledge on manufacturing processes (eg. ME 381)
- Knowledge on statistics (eg., ME401)
- Knowledge on linear algebra
- Experience with MATLAB

Textbooks

None. Course pack is available at Dollar Bill Copying.

Lectures

Tuesdays and Thursdays at 1:30 - 3:00pm in 151 Chrysler Center.

Instructor

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GSI

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Grading

- Homeworks 25%
- Exam 1 25%
- Exam 2 25%
- Project 25%

The Honor Code is in effect for homeworks, exams, and project. Unless otherwise announced, all homeworks and reports are due at the beginning of the class on their due dates. Off-campus students should submit homeworks and reports as advised by the designated CPD staff.

Homeworks

Homeworks consist of written problems and computer assignments. Computer assignments include simple programming in MATLAB. While it is acceptable, and often helpful, to discuss basic strategies for some problems, all work must be completed individually.

Project

The course project emphasizes the application of the course material to a product of your choice. It should be by a team of 3-4 students. The project requires a proposal (2%), a progress report (8%), an oral presentation (5%), and a final report (10%). Members of a team will receive same grades for the proposal, reports and final presentation. Details of the project deliverables will be provided separately.

Schedule (subject to change)

Lec #	On-campus date	topic	Reading	Hw/project due
1		Introduction, course overview	Whitney, Chap 1	
2		Key Characteristics	Whitney, Chap 2	
3		Assembly feature modeling	Whitney, Chap 3	
4		Assembly feature modeling	Whitney, Chap 3	
5		Constraint modeling	Whitney, Chap 4	HW#1
6		Constraint modeling	Whitney, Chap 4	
7		Constraint modeling	dfm08-shalaby	
8		Tolerance modeling	Whitney, Chap 5	Proposal
9		Variation analysis	Whitney, Chap 6	
10		Variation analysis	Isam07-lee	
11		Assembly sequence analysis	Whitney, Chap 7	HW#2
12		Assembly sequence analysis	dfm06-takeuchi	
13		Design for assembly guidelines		
14		Review		HW#3
15		Fall study break (no class)		
16		Exam 1		
17		Datum Flow Chain	Whitney, Chap 8	
18		Datum Flow Chain	dac04-lee	Progress report
19		Product architecture	Whitney, Chap 14	
20		Manual assembly lines	Groover, Chap 15	
21		Manual assembly lines	gecco03-hamza	HW#4
22		Automatic assembly lines	Groover, Chap 17	
23		Automatic assembly lines	case06-kazancioglu	
24		Review		HW#5
25		Exam 2		
26		Thanksgiving		
27		Project work (no class)		
28		Project presentation		
29		Project presentation		Final report