

ME 0022 Kinematics of Machinery
Spring 2005, MWF 3 – 3:50 pm (1022 BEH)
<http://www.pitt.edu/~hshst7/Courses.htm>

Instructor:

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Teaching Assistant:

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Textbook:

Kinematics, Dynamics, and Design of Machinery, 2nd edition, by Kenneth J. Waldron and Gary L. Kinzel, John Wiley & Sons, 2004.

Homework:

Homework assignments will be given and graded periodically.
Homework is due at the start of class and no late homework will be accepted.

Team Project:

Students will work in teams to complete a design project. The output will include a presentation, a written report and a poster describing the results of the project. Further details will be provided.

Attendance Policy: Attendance of classes is mandatory. If a student has a valid excuse for missing a class, they must inform the instructor beforehand.

Cellular phones must be turned OFF during class. Repeated disruptions will count as absences.

Prerequisites:

MATH 0240, ENGR 0135, and ME 0024

Exams:

Two exams and a Final.
The final examination will be on Tuesday, April 26, from 8 – 9:50 am at room 1022 BEH

Note:

There will be no class on Friday, January 14, 2005

Overview:

The specific topics of lectures are subject to change.

Topics	Number of lectures
Introduction	3
Graphical analysis	5
Instant center	3
Analytical methods	5
Planar mechanism design	5
Special mechanism	2
Cams	2
Spur gears	5
Other gears	3
Gear trains	3
Static force analysis	3
Project presentation	1
Total classes	40

Grading:

Semester grades will be computed as follows:

Homework	20%
Design projects	20%
Exam 1	15%
Exam 2	15%
Final	30%
Total	100%

ACADEMIC HONESTY

Academic honesty means performing all academic work without plagiarism, cheating, lying, tampering, stealing, receiving unauthorized or illegitimate assistance from any other person, or using any source of information that is not common knowledge.

DEPARTMENTAL GRADING POLICY REGARDING COMMUNICATION SKILLS

Thirty percent of the grade on all written assignments (reports / papers) will be based on quality of communication. Spelling, grammar, punctuation, and clarity of writing are evidence of written communication quality.

Week	Lecture	Date	Chapter	Subject	HW	
	1	January 5, 2005	Wednesday	1	Introduction	
1	2	January 7, 2005	Friday	1	Planer Linkage, Degrees of Freedom	
	3	January 10, 2005	Monday	1	Motion	
2	4	January 12, 2005	Wednesday	2	Graphical position analysis	
		January 14, 2005	Friday	Class cancel		
		January 17, 2005	Monday	No Class		
3	5	January 19, 2005	Wednesday	2	Planar velocity polygons	HW1, 1-7.8.30 & 34
	6	January 21, 2005	Friday	2	Planar velocity polygons	
	7	January 24, 2005	Monday	2	Graphical acceleration analysis	
4	8	January 26, 2005	Wednesday	2	Graphical acceleration analysis	
	9	January 28, 2005	Friday	2	Image Theorm	HW2, 2-6, 11 & 18
	10	January 31, 2005	Monday	2	Image Theorm	
5	11	February 2, 2005	Wednesday	4	Instant center	
	12	February 4, 2005	Friday	4	Instant center	
	13	February 7, 2005	Monday	5	Position, velocity and acceleration	
6		February 9, 2005	Wednesday	Exam 1		
	14	February 11, 2005	Friday	5	4 bar-linkage	
	15	February 14, 2005	Monday	5	4 bar-linkage	HW3, 4.3 & 8
7	16	February 16, 2005	Wednesday	5	Slider crank	
	17	February 18, 2005	Friday	5	Position, velocity and acceleration	
	18	February 21, 2005	Monday	5	RPRP	HW4: 4-Bar Excel
8	19	February 23, 2005	Wednesday	5	RPRP	
	20	February 25, 2005	Friday	6	Double rocker	
	21	February 28, 2005	Monday	6	Motion generation	HW5: Slider Crank+5.3
9	22	March 2, 2005	Wednesday	6	Motion generation	
	23	March 4, 2005	Friday	8	Uniform motion	
		March 7, 2005	Monday	Spring break		
10		March 9, 2005	Wednesday			
		March 11, 2005	Friday			
	24	March 14, 2005	Monday	8	Parabolic motion	HW6: 6-2& 4
11	25	March 16, 2005	Wednesday	8	Harmonic motion	
	26	March 18, 2005	Friday	8	Cycloidal motion	
	27	March 21, 2005	Monday		Review	HW7: 8-1
12		March 23, 2005	Wednesday	Exam 2		
	28	March 25, 2005	Friday	8	Roller-follower	
	29	March 28, 2005	Monday	8	Flat-faced follower	
13	30	March 30, 2005	Wednesday	8	Cam profile	HW8: Cam profile of
	31	April 1, 2005	Friday	Class cancel (E-week)		problem 3 of exam 2
	32	April 4, 2005	Monday	10	Spur gears	
14	33	April 6, 2005	Wednesday	10	Contact ratio	
	34	April 8, 2005	Friday	10	Gear profile	
	35	April 11, 2005	Monday	12	Gear trainss	
15	36	April 13, 2005	Wednesday	12	Gear trainss	
	37	April 15, 2005	Friday	Class cancel		
	38	April 18, 2005	Monday	Presentation		
16	39	April 20, 2005	Wednesday	Presentation		
	40	April 22, 2005	Friday	Review		
Final		April 26, 2005	Tuesday	8 - 9:50 am		
No Chapters 3, 7, 9 & 11						