INME 4005 Mechanism Design
Syllabus and Policy

Dr. Bob Williams williar4@ohio.edu	Fall 2014 people.ohio.edu/williar4

Time & Venue

2:00 – 3:15 p.m. Martes Jueves 3 credit hours L-121

Description

Fundamental concepts of the kinematic analysis of basic mechanics, such as linkages, cams, gears, and flexible connectors.

Prerequisites

INGE3032 Y (INGE3017 O INME3810)

Office Hours

11:00 a.m. – 1:30 p.m. Martes Jueves and by appointment

Required NotesBook

Mechanism Kinematics & Dynamics, Dr. Bob Productions, 2014

Required Textbook

none

Dr. Bob's MATLAB Primer

www.ohio.edu/people/williar4/html/PDF/MATLABPrimer.pdf

Course Website

www.ohio.edu/people/williar4/html/Courses.html

NotesBook Supplement

www.ohio.edu/people/williar4/html/PDF/Supplement3011.pdf

Dr. Bob's Mechanisms Atlas

www.ohio.edu/people/williar4/html/PDF/MechanismAtlas.pdf

Mechanism and Robot Animations developed at Ohio University

www.ohio.edu/people/williar4/html/MechanismAnimations.html

Apague todos los teléfonos celulares y otros dispositivos electrónicos portátiles antes de entrar al salón de clases!

Turn off all cell phones and other portable electronic devices before entering the classroom!

Homework

Six homework assignments will be collected at the beginning of class as shown in the schedule on the following page, every other Thursday. Each homework will be assigned via e-mail at least one week before it is due.

Quizzes

Six quizzes will be given at the start of class as shown in the schedule on the following two pages, every other Thursday on which a HW is not due. All quizzes are closed notes and closed NotesBook. Q4 is the midterm quiz, worth 2 quiz grades, and Q6 is the final quiz, worth 4 quiz grades.

Homework/Quiz Drop – NONE!

The single lowest homework or quiz grade will NOT be dropped at the end of the semester in calculating your final grade.

Homework/Quiz Makeup Policy

You can make up any quiz, with a valid written university excuse, on the following Monday before class. For planned absences with a valid university excuse, please turn in the homework early. For unplanned absences with a valid university excuse, you can turn in the homework the following Tuesday at the beginning of class. You must turn in the homework early if you have an unexcused absence on one of those HW due dates.

Capstone Term Project

The term project is assigned here: http://www.ohio.edu/people/williar4/html/PDF/Proj4005.pdf; it is due Tuesday November 25, 2014 in class (assuming no hurricane delays). The project may be done in pairs or singly. One final report will be submitted per pair and both partners earn the same grade, in general. The project will be evaluated via an interim report, a final oral presentation, and a final report.

Academic Dishonesty

Cheating in any form will not be tolerated. A grade of zero will be registered for any infraction, and the matter will be referred to University Judiciaries. There will be a zero-tolerance punishment of plagiarism in any form – the assignment in question will receive a zero and you will be referred to University Judiciaries. Cite all references properly and do not copy ANY text (with the exception of an important short quote, in quotation marks, and attributed and referenced properly).

Attendance

Full attendance is required. Class participation is expected. No homework, quiz, or exam can be made up without a valid written university excuse.

Grading

Homework 30%	Quizzes 30%	Project 40%

93.3-100	90-93.3	86.7-90	83.3-86.7	80-83.3	76.7-80	73.3-76.7	70-73.3	66.7-70	63.3-66.7	60-63.3	< 60
A	A–	B+	B	B–	C+	C	C–	D+	D	D–	F

INME 4005 Fall Semester 2014 Schedule

Week	Date	Day	Topic	Notes	HW	Quiz
1	8/14	J	Syllabus and Policy			
2	8/19	M	Introduction	1.1		
		J	Vectors and matrices overview, MATLAB	1.2,4,6		
3	8/26	M	Mobility	1.5		
		J	4-bar position analysis	2.1.1	HW1	
4	9/2	M	4-bar graphical, mu, Pt C, MATLAB ex	2.1.1		
		J	Trig uncertainty, 4-bar solution irregularities	2.1.1		Q1
5	9/9	M	Imaginary soln, Grashof's Law, 4-bar jnt lim	2.1.2-4		
		J	Slider-crank position analysis	2.1.2-4	HW2	
6	9/16	M	3-part velocity formula	2.2.2		
		J	4-bar velocity analysis, matrix, singularity	2.2.3		Q2
7	9/23	M	Mayaguez Campus Anniversary Holiday			
		J	Slider-crank velocity analysis	2.2.4	HW3	
8	9/30	M	5-part acceleration formula	2.3.2		
		J	4-bar acceleration analysis, matrix, sing	2.3.3		Q3
9	10/7	M	Slider-crank acceleration analysis	2.3.4		
		J	Link extension, Input motion specification	2.4.1-2	HW4	
10	10/14	M	Dynamics Introduction, m, CG, Ig	3.1-2		
		J	Midterm Quiz (worth two quiz grades)			Q4
11	10/21	M	Single-rotating-link inverse dynamics	3.3		
		J	4-bar inverse dynamics	3.4	HW5	
12	10/28	M	4-bar inverse dynamics – matrix,link 3	3.4		
		J	Slider-crank inverse dynamics	3.5		Q5
13	11/4	M	Gears Intro, Gear Ratio	S4.1		
		J	Gear Standardization, Gear Trains	S4.1	HW6	
14	11/11	M	Veterans Day Holiday			
		J	Cam Introduction	S4.2		
15	11/18	M	Cam Synthesis	S4.2		
		J	Final Quiz (worth four quiz grades)			Q6
16	11/25	M	Capstone term project pres, report due			
		J	Thanksgiving Day Holiday			