

CIVE 261 ENGINEERING MECHANICS: DYNAMICS

Fall 2011 – P.Y. Julien

Class: CIVE 261 03(3-0-0) Engineering Mechanics: Dynamics,
Prerequisites: CIVE-260 Engineering Mechanics - Statics
Instructor: Dr. P.Y. Julien, Professor of Civil Engineering
Engineering Building, Room A207H (Office Hours)
Engineering Research Center, B205, 491-8450 (main office)

Lectures: Mon, Wed. and Fri., 1:00-1:50 pm, Clark A203

Office Hours (A207H): Monday 11:30-12:30
Wednesday 2:00-3:30

Objectives: Understand the basic principles underlying the dynamics of particles and rigid bodies. Develop sufficient skills to solve most dynamic problems encountered in engineering practice.

Topics: Kinematics of particles
Kinetics of particles
Kinematics of rigid bodies
Kinetics of rigid bodies
Vibration and time-response

Web Page: http://www.engr.colostate.edu/~pierre/ce_old/classes/CIVE261/index.html

Problems: This semester's problems can be downloaded from the class web page.
(Additional problems are listed below)

Problems need to be solved on separate 8 1/2 x 11 sheets kept in a 3-ring binder. Students must bring binder to class every Friday.

Evaluation:	Midterm I (1 hour) - Sept. 30	20%
	Midterm II (1 hour) - Oct. 28	20%
	Quizzes, Homework & Class Participation	20%
	Final Exam (2hours) - Week of Dec. 12 - TBD	40%

Failure to attend midterms and/or final exam must be justified in writing and approved by both the instructor and the Department Head, substitute exams will be oral. Cases of misconduct, cheating, etc. will be reported to the Conflict Resolution and Student Conduct Services, and can lead to dismissal from the University.

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Additional Problems – not required
Meriam and Kraige, 4th Edition P. Julien, Ph.D.

TOPIC	Section	Sample Problems	
1 Introduction	1/all	--	Problems A 1-3
2 Rectilinear coordinates	2/2	2/1	4-8
3 Curvilinear motion	2/3, 2/4	2/6	9-12
4 Normal coordinates	2/5	2/8	13-15
5 Polar coordinates	2/6	2/10	16-18
6 Relative motion	2/8	2/12	19-21
7 Constrained motion	2/9	2/14	22-24
8 Rectilinear motion	3/1 to 3/4	3/3	Problems B 1-3
9 Curvilinear motion	3/5	3/10	4-5
10 Work-Energy	3/6	3/14	6-8
11 Work-Energy	3/7	3/16	9-10
12 MIDTERM - A			
13 Linear momentum	3/8		11-12
14 Linear momentum	3/9	3/21	13-15
15 Impact	3/12	3/26	16-17
16 Angular Momentum	3/10	3/23	18-20
17 Mass flow	4/6	4/5	21-22
18 RB kinematics	5/1, 5/2	5/2	Problems C 1-2
19 Absolute motion	5/3	5/4	3
20 Relative velocity	5/4	5/9	4-6
21 Relative acceleration	5/6	5/15	7-9
22 MIDTERM - B			
23 RB kinetics	6/2, 6/3	6/2	10-11
24 Moments of Inertia	6/4	6/3	12-13
25 General motion	6/5	6/5	14-18
26 Work-Energy	6/6	6/9	19-20
27 Free vibrations	8/2	8/1, 8/2	21-24
28 Damped vibrations	8/3	8/6	25
29 Forced vibrations	8/3	8/6	26-28
30 Review			
31 FINAL EXAM	Comprehensive exam		

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SPRING, 2009

Beer, Johnson and Clausen, 8th Edition

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TOPIC		Section	Sample Problems	Problems
1	Syllabus - Units	12.4	--	Problems A 1-3
2	PARTICLE KINEMATICS Rectilinear coordinates	11.1-5	11.1-4	4-8
3	Curvilinear motion	11.9-14	11.8	9-12
4	Normal coordinates	11.13	11.10	13-15
5	Polar coordinates	11.14	11.12	16-18
6	Relative motion	11.6	11.9	19-21
7	Constrained motion	11.6	11.5	22-24
8	PARTICLE KINETICS Rectilinear motion	12.1-3	12.1-4	Problems B 1-3
9	Curvilinear motion	12.5-8	12.5	4-5
10	Work-Energy	13.1-5	13.1-3	6-8
11	Work-Energy	13.6-9	13.4-6	9-10
12	MID TERM - A			
13	Linear momentum	13.11	13.11-16	11-12
14	Linear momentum	13.12	"	13-15
15	Impact	13.13-14	"	16-17
16	Angular momentum	12.7-9	12.7-8	18-20
17	Mass flow	14.11	14.7	21-22
18	RIGID BODY KINEMATICS	15.1-3	15.1	Problems C 1-2
19	Absolute motion	15.5	15.2	3
20	Relative velocity	15.6	15.3	4-6
21	Relative acceleration	15.8	15.6-8	7-9
22	MID TERM - B			
23	RIGID BODY KINETICS	16.1-5	16.1-5	10-11
24	Moments of inertia	APPENDIX B	B1-3	12-13
25	General motion	16.6-8	16.5-10	14-18
26	Work-Energy	17.1-6	17.1-5	19-20
27	VIBRATIONS Free vibrations	19.2-5	19.1-2	21-24
28	Damped vibrations	19.8	-	25
29	Forced vibrations	19.7	19.5	26-28
30	Review			
31	FINAL EXAM	Comprehensive Exam		