Grande Prairie Regional College
Department of Science

PC1310 A3 – Mechanics
Winter Session, 2006-2007
4.3 (3-1-1.5) UT
U of A Equivalent – ENPH131

Course Outline

Kinematics and dynamics of particles; gravitation; work and energy; linear momentum; angular momentum; systems of particles; introduction to dynamics of rigid bodies are covered in the course.

Prerequisite: MA1000, EG1300
Co-requisite: MA1010 Pre- or Co-requisite: PC1300
Note: Restricted to engineering students only.

Instructor	Tanvir Sadiq, P.Eng. J209 539-2865 tsadiq@gprc.ab.ca
Lecture	TR 0830 – 0950 J204
Laboratory	F 1430 – 1720 J103
Seminar	R 1300 – 1350 J227
Textbooks	*Engineering Mechanics, Statics and Dynamics, 11th Edition* by R. C. Hibbeler, Pearson/Prentice Hall *University Physics, 11th Edition* by Hugh D. Young and Roger A. Freedman, Pearson/Addison-Wesley
Laboratory Manual	*Physics 130, En Ph 131 Laboratory Manual* Department of Physics, University of Alberta
Marks Distribution	Problem Sets 7% Seminars 10% Laboratory Work 20% (Students must pass the lab to pass the course.) Midterm Exam 25% Final Exam 38% *Note that satisfactory performance on the final exam and the aggregate mark is required in order to pass this course. "Satisfactory performance" is defined by University of Alberta every year.*
Office Hours	1000 - 1200 Tuesday and Thursday OR by appointment

Experiment No.	Week of	Title
6	January 6/13	Acceleration Due to Gravity
7	January 20/27	Non-Uniform Motion
8	February 3/10	Atwood's Pulley
9	February 17/March 3	Conservation of Mechanical Energy
10	March 10/17	Collision: Ramp
11	March 31/April 7	Moment of Inertia

Note: *Lab reports are due at the end of the lab period through Digital Dropbox feature of Blackboard.* **Late reports will not be accepted and will receive zero marks. There will be no exception to this rule.** *Graded reports will not be returned before all the lab sections have submitted their reports.*

Prerequisite, Seminars, Assignments and/or Reports

Prerequisite: A good background in Calculus (including Integral and Vector Calculus) is required for this course. Students are also expected to have a fairly good knowledge of Trigonometry.

Seminars[#]: These are approximately one hour sessions held weekly in which students will be required to solve several problems. The problems will be handed in at the end of the seminar period for marking. **Late submissions will not be accepted and will receive zero mark. There will be no exception to this rule.** Limited help in solving these problems will be available from the instructor. The first seminar begins the week starting January 7, 2007.

Assignments[#]: There will be several assignments throughout the semester, each consisting of a number of problems. Due dates will be announced in the class. There will be approximately one assignment weekly. **Late assignments will NOT be accepted and will receive zero mark. There will be no exception to this rule.** All assignments MUST be written neatly and submitted on 8.5 x 11 in. (Letter size) Engineering paper. All answers should be boxed. Leave space between problems.

Laboratory: There are six lab sessions which introduce the student to the experimental process and report writing. Students must achieve a score of at least 50% in the lab component of the course in order to obtain an overall passing grade in PC1310. Students who achieve a grade of at least 65% in the lab, but fail the remaining parts of the course may not have to repeat the lab.

Midterm Exam: The midterm will be 1½ - 2 hours long (exact duration TBD), and is a closed-book, closed-notes exam with the formulae sheet provided by the instructor. Date and location will be announced in class.

Final Exam: The final exam will be comprehensive and 3 hours long. The final exam is a closed-book, closed-notes exam with the formulae sheet provided by the instructor. Date and location will be announced by the College. **There will be NO make-up final exam.**

Note: (1) *If I can not read your work, I can not grade it. Please write neatly and legibly.* **(2)** *A correct answer without a correct solution will not carry any grade. I do not award marks for writing irrelevant stuff. (#) For more info see separate sheet provided today.*

Lecture Topics

Topic	Sections in Hibbeler	Sections in Young & Freedman
Introductory Material	Chapters 1 & 2	Chapter 1
Kinematics of Rectilinear Motion	12.1–12.3	2.1–2.6
Kinematics of Planar Motion	12.4-12.7,12.9, 12.10	3.1-3.5
Dynamics of a Particle	13.1, 13.2, 13.4, 13.5, *8.1*	4.1-4.6, 5.1
Systems of Particles	13.3, *9.1, 9.3*	5.2-5.5
Work and Energy	14.1-14.6	6.1-6.4, 7.1-7.4
Linear Momentum and Impulse	15.1-15.4	8.1-8.5
Introduction to Dynamics of a Rigid Body	16.1-16.3, 17.1-17.4	9.1-9.3, 10.1-10.3
Angular Impulse and Momentum	15.5-15.7	10.5-10.7

Grades

Letter Grade	4-Point Equivalent	Designation
A+	4.0	Excellent
A	4.0	
A-	3.7	First Class Standing
B+	3.3	
B	3.0	Good
B-	2.7	
C+	2.3	Satisfactory
C	2.0	
C-	1.7	
D+	1.3	Minimal Pass
D	1.0	
F	0.0	Fail

The University of Alberta will only accept for transfer credit courses where a student obtains a grade of **C-** or higher.

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List of Assignments

Problem Set	Date Assigned	Due Date	Problems
1			Hibbeler: 1-8, 12-8, 12-12, 12-16, 12-22
2			Hibbeler 12-23, 12-24, 12-28, 12-38, 12-45
3			Hibbeler 12-73, 12-76, 12-92, 12-98, 12-105
4			Hibbeler 12-108, 12-116, 12-122, 12-179, 12-203
5			Hibbeler 13-4, 13-11, 13-15, 13-25, 13-47
6			Hibbeler 13-54, 13-64, 13-72, 13.81, 13-82
7			Hibbeler 14-3, 14-10, 14-25, 14-35, 14-55
8			Hibbeler 14-72, 14-84, 15-10, 15-25, 15-52
9			Hibbeler 15-61, 15-63, 15-81; **Y & F** 9.8, 9.85
10			**Young & Freedman** 10.17, 10.68, 10.72, 10.75, 10.92

Note: *Assignments will be collected at the beginning of the class on the Due Date.* **Late assignments will NOT be accepted and will receive zero mark. There will be no exception to this rule.**

Note:
- All assignments, homeworks, seminars, recitations etc. must be submitted on 8.5 x 11 in. Engineering Paper on the due date during class (if applicable). All work must be neat and legible, done in pencil, stapled and folded length-wise with the following information appearing on the outer left fold.

  - **Your Last Name, First Name**
  - **Your College/Student ID**
  - **Course No. and Course Name**
  - **Assignment No.**
  - **Due Date**

- Leave space between problems. Box your final answers.

- Late homework will **NOT** be accepted.

- In case you do not receive your submitted work back with the rest of the class, please see me right away to resolve the problem.