

# Advanced Dynamics, Physics 821 – Syllabus Spring 2010

Instructor: Mick O'Shea

Office: CW331

Office Hours: 8:30 –10:00 a.m., Tues. and Thurs.

Textbook: H. Goldstein et, 'Classical Mechanics', 3<sup>rd</sup> Edition.

Course website: K-State Online

## Material covered

- Lagrangian and Hamiltonian mechanics
- Principle of least action
- Motion under central force and scattering theory
- Canonical transformations, Hamilton-Jacobi theory
- Special relativity
- Chaotic systems

## Prerequisite

Math methods Phys 801. Undergraduate knowledge of mechanics is assumed (basic Lagrangian mechanics, motion under a central force).

Problem solving is an important part of this class. I encourage you to discuss the problems with each other. Once you come to write out your homework solutions, you must write them out by yourself. I will also give some guidance on selected problems in class.

Grade	Points
A	405-450
B	360-404
C	315-359
D	270-314
F	< 270

Exam	Date	Coverage	Points
1	Tues. Mar. 2 <sup>nd</sup>	Chaps. 1, 2, 3	100
2	Tues April 27 <sup>th</sup>	Chaps. 8, 9, 10	100
Final	Wed May 12 <sup>th</sup> , 2:00–3:50 p.m.	All material covered in class.	150
HW	9:00 a.m. in my mailbox on due dates as listed.		100
Total	Possible point in course		450

I. Disabilities: If you have any condition such as a physical or learning disability, which will make it difficult for you to carry out the work as I have outlined it or which will require academic accommodations, please notify me and contact the Disabled Students Office (Holton 202), in the first two weeks of the course.

II. Plagiarism: Plagiarism and cheating are serious offenses and may be punished by failure on the exam, paper or project; failure in the course; and/or expulsion from the University. For more information refer to the "Academic Dishonesty" policy in K-State Undergraduate Catalog and the Undergraduate Honor System Policy on the Provost's web page at <http://www.ksu.edu/honor/>.

Advanced Dynamics, Physics 821 –HW schedule Spring 2010

Chapter	Homework	Due Date (by 9:00 a.m.) in my mailbox.
1	1, 5, 7, 9, 10, 13, 17, 18, 21, 23	Jan. 26 <sup>th</sup>
2	1, 3, 9, 11, 12, 14, 16, 18, 19, 20	Feb. 9 <sup>th</sup>
3	11, 13, 14, 19, 24, 31, 30, 33	Mar. 2 <sup>nd</sup>
8	1, 4, 5, 12, 19, 23, 26, 33	Mar 23 <sup>th</sup>
9	1, 2, 7, 12, 15, 21, 28, 30, 39	Apr. 8 <sup>th</sup>
10	5, 6, 8, 11, 12, 14, 16	Apr. 22 <sup>nd</sup>
7	To be announced	
11	To be announced	

HW is due at date/time listed above. Please put in my mail box. Make sure your work is well organized and legible.

I encourage you to work in groups on the HW. When you actually write out your HW solution, you must work by yourself. You may not use any published solutions or solution manuals – see 'Plagiarism' in syllabus.