

BIOMECHANICS OF CRASH INJURY PREVENTION

Spring Semester 2006
MW 2:30pm-3:45pm, 200 Norris



Goal: The objective of this course is to present an introduction to the design and analysis of crash injury prevention methods in vehicle crashes. The course will encompass three major focus areas for occupant protection in crashes: crash energy absorption in (1) the vehicle structure, (2) the occupant, and (3) the occupant restraints. Topics will include the biomechanics of impact injury, analysis of occupant response in crash tests, vehicle crash kinematics, modeling of vehicle impact response, modeling of human impact response, and occupant restraint design.

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Text: Instructor's Notes

Grading: Mini-projects (6-7) 50%
Course Project 50%

Course Topics and Schedule

Week	Date	Topic
1	1/17 – 1/20	Introduction
2	1/23 – 1/27	Vehicle Crash Kinematics
3	1/30 – 2/03	Analysis of Occupant Response in Crash Tests
4	2/06 – 2/10	Vehicle Impact Modeling - I
5	2/13 – 2/17	Vehicle Impact Modeling - II
6	2/20 – 2/24	Occupant Impact Response
7	2/27 – 3/03	Biomechanical Injury Criteria
8	3/06 – 3/10	Spring Break
9	3/13 – 3/17	Anthropomorphic Crash Test Dummies
10	3/20 – 3/24	Injury Severity Scales: AIS and alternative metrics
11	3/27 – 3/31	Occupant Modeling - I
12	4/03 – 4/07	Occupant Modeling - II
13	4/10 – 4/14	Occupant Restraint Design
14	4./17 – 4/21	Restraint Systems
15	4/24 – 4/28	Smart Airbags and Emerging Restraint Technologies
16	5/01 – 5/05	Final Presentations
	5/08 – 5/12	Final Exam

COURSE POLICY:

- Late Assignments. Projects are due at the beginning of the class on the due date. No credit will be given for late assignments.
- Format. My preference is for all projects to prepared using Microsoft Office. Any portions which are handwritten should be submitted on Engineering Paper, and should be neatly written up in a clear and logical fashion. If I can't read it, I won't grade it.