

# BIOMECHANICS OF CRASH INJURY PREVENTION

Fall Semester 2006  
TR 3:30pm-5:00pm, Hancock 220



**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%
Semester Project 1	25%
Semester Project 2	25%

## Course Topics and Schedule

Week	Date	Topic
1	8/22 – 8/24	Introduction
2	8/29 – 8/31	Vehicle Crash Kinematics
3	9/05 – 9/07	Analysis of Occupant Response in Crash Tests
4	9/12 – 9/14	Vehicle Impact Modeling - I
5	9/19 – 9/21	Vehicle Impact Modeling - II
6	9/26 – 9/28	Occupant Impact Response
7	10/03 – 10/05	Biomechanical Injury Criteria
8	10/10 – 10/12	Anthropomorphic Crash Test Dummies
9	10/17 – 10/19	Injury Severity Scales: AIS and alternative metrics
10	10/24 – 10/26	Occupant Modeling - I
11	10/31 – 11/02	Occupant Modeling - II
12	11/07 – 11/09	Occupant Restraint Design
13	11/14 – 11/16	Smart Airbags and Emerging Restraint Technologies
14	11/21 – 11/23	Thanksgiving
15	11/28 – 11/30	Crash Compatibility
16	12/05 – 12/07	Final Presentations

### 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 be 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.