## Syllabus v1.1, T&AM 203, Spring 1997

Also see the Course information sheet and the course WEB page: http://www.msc.cornell.edu/sdh4/203/203.html.

### Lecture Dates  | Topics  | Text Sections (or pages)  | Homework problems*  
|------------|---------|--------------------------|----------------------|
| Tu 1/21    | Intro. to COMPUTER.  
Th 1/23    | Course Summary.  
Th 1/28    | FBDs.  
Th 1/30    | FBD’s and statics  
Tu 2/4     | Position, velocity, & acceleration; 1D mechanics  
Th 2/6     | Harmonic oscillator, springs, dashpots and many masses  
Tu 2/11    | Particles in 2D and 3D, numerical solutions  
Th 2/20    | Center of mass, constrained 1D motion, ropes and pulleys  
Tu 2/25    | Pulleys (cont’), 2D forces in 1D motion  
Th 3/4     | 3D forces in 1D motion, circular motion kinematics  
Tu 3/11    | mechanics of circular motion, simple pendulum  
Th 3/13    | Constant \( \mathbf{u} \) kinematics and mechanics (rigid bodies)  
Tu 4/1     | Moment of Inertia, \( \mathbf{I} \)  
Th 4/10    | Mechanics using \( \mathbf{I} \)  
Tu 4/22    | Polar coordinates  
Th 4/24    | General 2D rigid body motion, rolling  
Th 4/29    | Velocity, CH1, CH2.1.  
Matlab: 15-37, 147-152, 39-54, 55-58,73-87  
Tu 1/21    | [do MATLAB tuts!], [1.32-1.155]  
Tu 1/28    | [2.1 - 2.80], 1) 2.69 w/ gravity (mass & strings), 2) 2.78 (spool), 3) Use WM to redo (1) or (2)  
Tu 2/25    | [3.1-16], 1) 3.2 (circles, \( \mathbf{u} \) vs \( v \) etc), 2) 3.8abc (1 hp bicyclist), 3) 3.14 (\( F = \sin t \))  
Tu 3/4     | [4.2-4.19], [all 2D probs in section 4.3]  
Tu 4/1     | [5.32-87], 1) 5.46(3D \( \mathbf{u} \) kinematics), 2) 5.70 (gears), 3) 5.87 (rod on shaft)  
Tu 4/22    | [5.88-5.111], [all 2D probs in Ch 6], 1) 5.103 (find \( \mathbf{I} \) matrix), 2) 6.18 (pulley w/ mass)  
Tu 4/25    | [5.112-129], [6.1-66], 1) 5.87 (again, using \( \mathbf{I} \)), 2) 5.118 (disk & shaft), 3) 6.55 (3D skewer pend.)  
Th 4/3     | 5.1, 6.1, 5.2, 6.2 (pendulum parts)  
Tu 3/25    | [5.31-33, 7.5-28, 7.51acfi], 7.52bc  
Tu 3/27    | 1) 3.32 (canon ball in air), 2) 7.53 ( missile)  
Tu 4/1     | 5.14 (springy mass in tube), 2) 6.47 (simple pendulum, optional: compare with WM)  
Tu 4/8     | 4.2-4.19, [all 2D probs in section 4.3]  
Tu 4/10    | 4.19 (messy pulley), 2) 4.31 (block on cart), 3) 4.53 (car braking, front vs rear. Optional: compare with WM simulation.)  
Tu 4/15    | 4.20-61, [5.1-17], 1) 4.37 (3D guyed shelf), 2) 4.54 (3D car braking), 3) 6.5 (kinematics of circular motion)  
Th 4/17    | 5.1, 5.2, 6.1, 6.4, 6.5  
Tu 4/22    | [5.1-31 & all particle probs in Ch 6]  
Tu 4/24    | 5.14 (springy mass in tube), 2) 6.47 (simple pendulum, optional: compare with WM), 3) 5.23 (≈fly ball governor)  
Th 5/1     | all of Ch 7 but path coord], 1) 7.11 (pick apart accel. formula), 2) 7.38 (rusty wrist gun, also plot trajectory)  
Th 5/1     | all 2D probs in Ch 8, 1) 8.11 (force on stick in space) 2) 8.75 (race of rollers), 3) 8.79 (standing. Optional+: plot motion, show it isn’t sinusoidal)  

* [ ] These are problems you should know how to do but should not hand in.

**Please follow these homework directions to ease the work of sorting and grading.**

- Write the following on the upper right hand corner of your homework (making appropriate substitutions):
  Yourfirstname Lastname, TAM 203, Homework n, due: due date, Section m, section time, TA name
- At the top of your homework acknowledge help from TAs, faculty, friends, relatives, enemies, texts or notes.
- Define all signs and directions with sketches and/or words. Use correct units and vector notation. Reasonable justification should be given for all work. Draw a free body diagram or write the phrase ‘FBD not relevant’ for each mechanics problem.
- If a problem seems ambiguous, clearly state the reasonable assumptions you use. Define all variables.
- Box in your answers.

  **If you can do the problems only immediately after looking something up or getting help you are not learning what you should.**

Updated March 12, 1997