

In total we have 14 lectures and 8 tutorials. Each lecture & tutorial can be divided into two 45 min. units with 15 min. gap between them. I want to mix the tutorials and lectures so please attend all of them. We may often have lectures for the first 45 min. and problem solving sessions for the next 45 min.

There will also be in-class quizzes. They will also contribute to your final grade. If you miss classes you miss them.

I suggest the following breakup for the final grade :

homework 40%

in-class quizzes 10%

final exam 50%

To pass, you have to score at least 50% in the final exam. I am open to discussing the relative weights.

As an approximate plan for the Lectures are given below.

Each unit below is for 45 min. There are a total 44 units.

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## Week 1

1. Introduction to soft-matter. Solids, liquids, gasses and things in-between. (Ch 1)
2. Recap of notions you already know
  - a. vectors, index notation.
  - b. Cartesian Tensors
  - c. Gradient-Divergence-Curls
  - d. Stat-mech and Thermodynamics
3. Strain (Ch 2)
4. Strain as a tensor (Ch. 3)
5. Problem Solving
6. Problem Solving, Homework set 1.

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## Week 2

7. Stress (Ch 4)
8. Elastic Free Energy (Ch. 5)
9. Navier--Cauchy equation (Ch. 6)

- 10. Problem solving
  - 11. Green's function & Contact Mechanics (Ch. 7)
  - 12. Problem Solving, Homework set 2
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#### Week 3

- 13. Bent Plates (Ch. 8)
  - 14. Plates and Shells (Ch. 9)
  - 15. Filaments (Ch. 10)
  - 16. Problem solving
  - 17. Problem solving
  - 18. Problem solving, Homework set 3
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#### Week 4

- 19. Flow of Dry Water : principles (Ch. 11)
  - 20. Flow of Dry water: consequences (Ch. 12)
  - 21. Viscosity (Ch. 13)
  - 22. Steady viscous flows (Ch. 14)
  - 23. Problem solving
  - 24. Problem solving, Homework set 4
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#### Week 5

- 25. Creeping flows in two dimensions (Ch. 16)
  - 26. Creeping flows contd. (Ch. 17)
  - 27. Boundary Layer
  - 28. Boundary Layer contd.
  - 29. Problem solving
  - 30. Problem solving, Homework set 5
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#### Week 6

- 31. Waves & Instabilities
- 32. Waves & Instabilities contd.

- 33. Waves & Instabilities contd.
  - 34. Waves & Instabilities contd.
  - 35. Problem solving
  - 36. Problem solving, Homework set 6
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#### Week 7

- 37. Surface Tension
- 38. Surface Tension contd.
- 39. Problem Solving
- 40. Problem Solving
- 41. Revision
- 42. Revision, Homework set 7

Unless otherwise stated, homework problems must be returned in one week.