Introduction (1L, Prof AA Seshia)
Overview of MEMS technology
- Scaling laws
- Principles of MEMS Design

Transducers in MEMS technology (2L, Prof AA Seshia)
- Energy-conserving transducers
- Transduction of deformation

Microfluidics (2L, Prof AA Seshia)
- Microscale fluid flow
- Damping
- Electrokinetic Flow

Microactuators and Microsensors (4L, Prof AA Seshia)
- Principles of Actuation
- Force and Pressure Sensors
- Accelerometers and Gyroscopes
- Resonators, oscillators and RF MEMS

Contact mechanics at the micro-scale (4L, Prof AA Seshia)
- Hertzian point contacts between elastic solids
- Surface energy and adhesion - JKR and DMT
- Condensation and meniscus effects

Coursework
The coursework will investigate the design and modeling of a MEMS electrostatic actuator subject to voltage control.

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<tr>
<th>Coursework</th>
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<th>Due date &amp; marks</th>
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<tr>
<td>Learning objectives:</td>
<td>Individual Report anonymously marked</td>
<td>Wed week 9 [15/60]</td>
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1. To design a linear electrostatic microactuator for a hard disk drive application.
2. To explore MEMS design optimisation subject to manufacturing constraints.

Booklists
Please refer to the Booklist for Part IIB Courses for references to this module, this can be found on the associated Moodle course.

Examination Guidelines
Please refer to Form & conduct of the examinations [2].

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