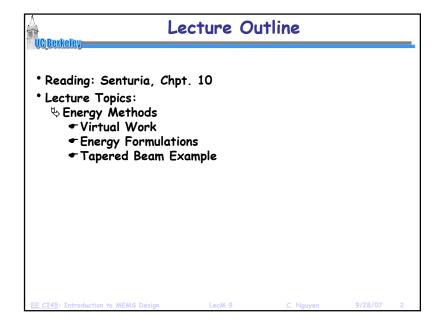
Lec15m2: Energy Methods

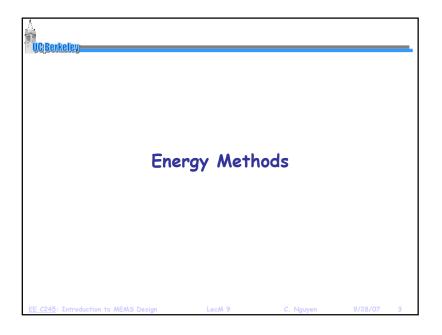
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Introduction to MEMS Design
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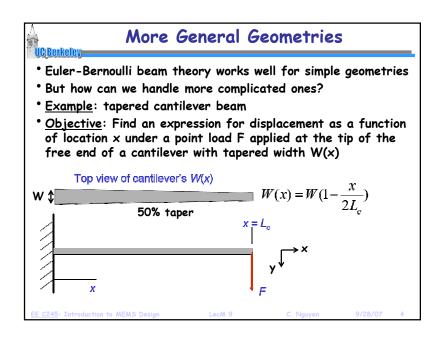
Prof. Clark T.-C. Nguyen

Dept. of Electrical Engineering & Computer Sciences
University of California at Berkeley
Berkeley, CA 94720

Lecture Module 9: Energy Methods







Lec15m2: Energy Methods

Solution: Use Principle of Virtual Work

- In an energy-conserving system (i.e., elastic materials), the energy stored in a body due to the quasi-static (i.e., slow) action of surface and body forces is equal to the work done by these forces ...
- <u>Implication</u>: if we can formulate <u>stored energy</u> as a function of the deformation of a mechanical object, then we can determine how an object responds to a force by determining the shape the object must take in order to <u>minimize</u> the <u>difference</u> U between the stored energy and the work done by the forces:

U = Stored Energy - Work Done

 <u>Key idea</u>: we don't have to reach U = 0 to produce a very useful, approximate analytical result for load-deflection

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