

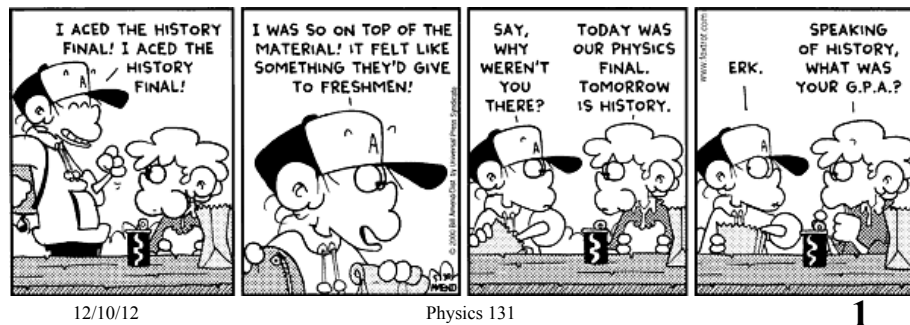
December 10, 2012      Physics 131      Prof. E. F. Redish

■ **Theme Music: Count Basie & his Orchestra**

*The Party's Over*

**Cartoon: Bill Amend**

*FoxTrot*



## Equations

- Total energy of a system  
(a set of macroscopic objects)

$$E = KE + PE + U$$

Internal energy

- Exchanges of energy between the system and the rest of the universe

$$\Delta E = Q - W$$

Work done by the system on "them"

- Exchanges of energy between the system and the rest of the universe ignoring coherent mechanical energy

$$\Delta U = Q - W$$

12/7/12

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