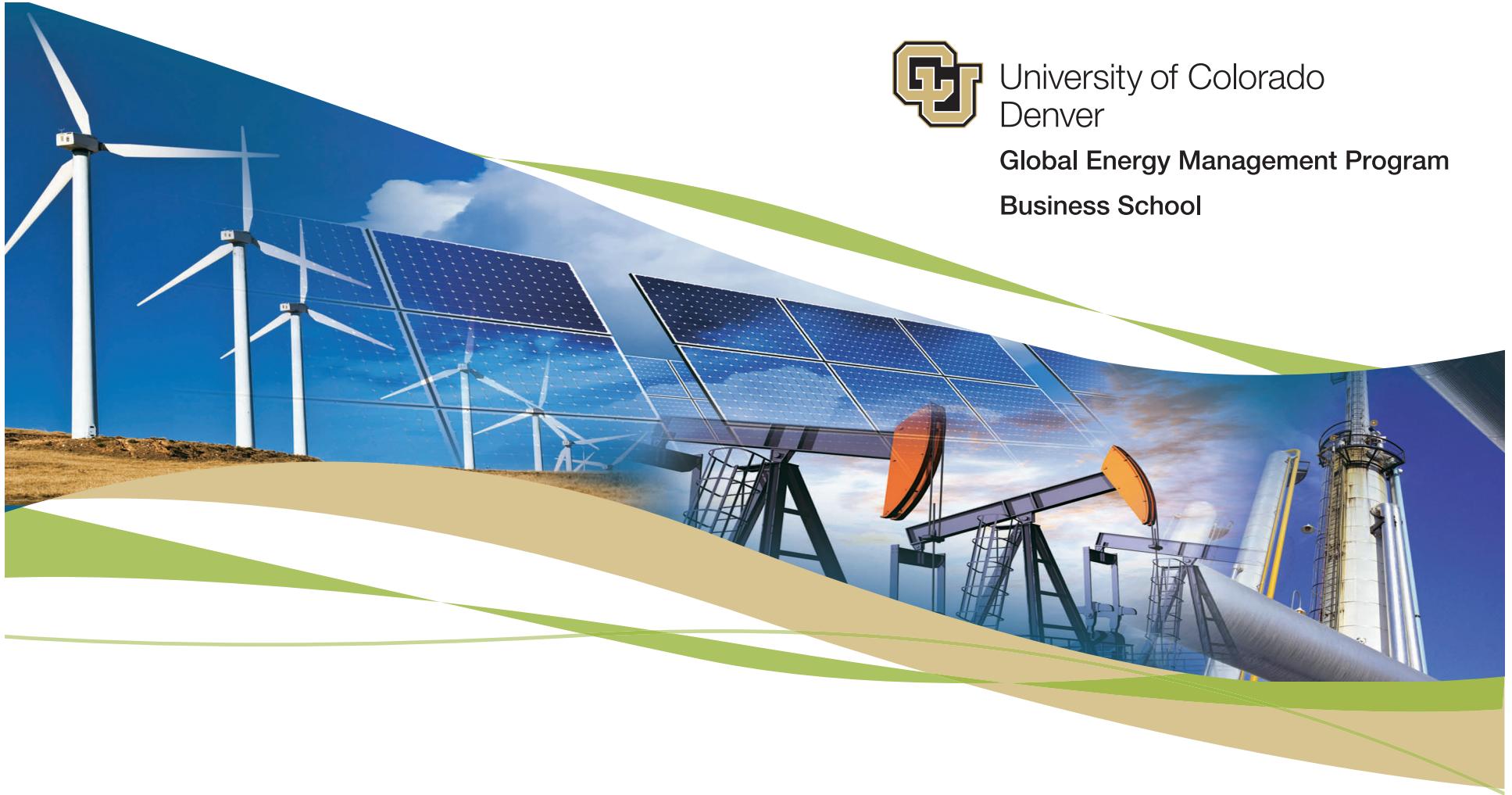




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# Fundamentals of Global Energy Business

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week 1: Demand for Energy

video 2: What is energy? And why do we need it?



# Definition

- Energy = capacity to do work



# Definition

- Energy = capacity to do work
- Kinds of work:
  - Mechanical work
  - Thermal work
  - Electrical work



# Definition

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- Kinds of work:
  - Mechanical work = displacement of mass



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displacement of mass = force x distance

force x distance = (mass x acceleration) x distance

e.g.  $(\text{kg} \times \text{m/s}^2) \times \text{m} = \text{Newton} \times \text{meter} = \text{joule}$

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atoms become agitated (i.e. move) when heat is applied

e.g. 1 calorie = energy req'd to increase temp of 1 gram of water by 1°C

1 calorie = 4.19 joules  $\Leftrightarrow$  1 joule = approx 0.25 calories

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electrons may be induced by a magnetic field to travel through a circuit

e.g. 1 joule can induce 1 amp through 1 ohm of resistance for 1 second



# Units of Energy

- joule
- (mechanical)
  - foot-pound
  - horsepower-hour
- (thermal)
  - British Thermal Unit (BTU)
  - therm
  - calorie
- (electrical)
  - kilowatt-hour

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