Accounting for Long Lived Assets

- The matching principle in action
  - What dollar amount to capitalize?
  - Over what time period should the asset be depreciated?
  - At what rate should the asset be depreciated?

- Formulas
  - $PPE_{EB} = PPE_{BB} + \text{Acquisitions} - \text{Disposals}$
  - $\text{AccDep}_{EB} = \text{AccDep}_{BB} + \text{Depreciation} - \text{AccDep}_{\text{Disposal}}$
  - Proceeds from sale (cash) = Net Book Value + gain/loss
Time value of money

- Cash flows arrive at different time periods. We cannot add cash flows today to cash flows tomorrow.

- Key tool to add cash flows: The interest rate, also called discount rate, cost of capital or opportunity cost.

- Interest rate is a convenient (standardized) way of expressing the cost of borrowing or profit of lending on a per-dollar and per unit of time basis.
Future value

- Intuition: A dollar today is worth more than a dollar tomorrow. Why?

- Suppose you can invest at 10%:
  - In one year $1 will become $1.10.
  - Future value in one year of $P$ invested today at rate of return $r$: $P + rP = P(1 + r)$

- Future value = initial payment + accumulated interest

- In general the future value in $n$ years of $P$ invested today is: $FV = P(1 + r)...(1 + r) = P(1 + r)^n$
  $(1 + r)^n$ is called the future value factor.
Future value

- **Example 1**: Bank pays 8% interest on 5-year CD and you deposit $10,000. What will it be worth in 5 years?
  \[ $10,000 \times (1 + 8\%)^5 = $14,693 \]

- **Example 2**: Which would you rather be given? \((r = 8\%)\) (a) $100 today; (b) $125 one year from today.
  Calculate the future value of (a):
  \[ $100 \times (1+8\%) = 108 \]
Present value

- What is the value today of $100 received a year from now?

- How much would I need to save today in order to get $100 in one year?

- Consider saving $P$ today. One year from now you receive: $P \times (1+r) = 100$

- The present value of $100 received one year from now is: $\frac{100}{1+r}$
Present value

☐ With an interest rate of 6%, what is the PV of $100 received one year from now?
  ■ PV = $100 / 1.06 = 94.34

☐ What is the PV if $r=10\%$?
  ■ PV = $100 / 1.1 = 90.91$
Present value

- With an interest rate of 10%, what is the PV of $100 received two years from now?

\[ PV = \frac{100}{(1 + 10\%)^2} \]

- In general the present value of \( F \) received \( n \) years from now is: \[ PV = \frac{F}{(1 + r)^n} \]

- The term \( \frac{1}{(1 + r)^n} \) is called present value factor.

- The higher the \( r \), the longer the time horizon, the lower the present value.