# IEM 3503 Review

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# Section 1

- Definitions: Time Value of Money (TVOM), inflation, discounted cash flow,
- The four DCF Rules:
  1. Money has a time value.
  2. Quantities of money cannot be added or subtracted unless they occur at the same point in time.
  3. To move money forward one time unit, multiply by 1 plus the discount or interest rate.
  4. To move money backward one time unit, divide by 1 plus the discount or interest rate.

# Section 2

The 10 Engineering Economy Principles:

1. Money has a time value.
2. Make investments that are economically justified.
3. Choose the mutually exclusive investment alternative that maximizes economic worth.
4. Two investment alternatives are equivalent if they have the same economic worth.
5. Marginal revenue must exceed marginal cost.
6. Continue to invest as long as each additional increment of investment yields a return that is greater than the investor's TVOM.

# Section 2

7. Consider only differences in cash flows among investment alternatives.
8. Compare investment alternatives over a common period of time.
9. Risks and returns tend to be positively correlated.
10. Past costs are irrelevant in engineering economic analyses, unless they impact future costs.

The following 7-step systematic economic analysis technique (SEAT):

1. Identify the investment alternatives.
2. Define the planning horizon.
3. Specify the discount rate.
4. Estimate the cash flows.
5. Compare the alternatives.
6. Perform supplementary analyses.
7. Select the preferred investment.

# Chapter 2

- Cash Flow Diagram
- Interest: Simple vs Compound
- Single Cash Flow: present worth and future worth.
- Multiple Cash flows: Irregular cash flows.
- Uniform Series of Cash Flows
- Gradient Series of Cash Flows
- Geometric Series of Cash Flows
- Compounding Frequency

# Chapter 3

- Equivalence
- Loan
- Principal payment and interest payment
- Immediate payment loan
- Deferred payment loan
- Bond: face value, maturity, bond rate, purchase price, sales price, yield rate.
- Variable interest rates

# Chapter 4

- Comparing alternatives
- The eight DCF methods in comparing investment alternatives
- Before-Tax vs After-Tax analysis
- A single alternative
- Present worth