

HM321 Engineering Economics

Fall 2024 – Lecture 15

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Bring Calculator Always

- Always bring your calculator with you in lectures
- Without practice you will not be able to do the calculations in your exams



Chapter 5

ANNUAL WORTH ANALYSIS

Advantage of AW Analysis

- Advantage: You need to calculate annual worth for only one life cycle
- Assumptions:
 - Services needed for at least the LCM of lives of alternatives
 - Selected alternative will be repeated in succeeding life cycles in same manner as for the first life cycle
 - All cash flows will be same in every life cycle (i.e., will change by only inflation or deflation rate)

Calculation of Annual Worth

- Annual worth of one life cycle is the same for all life cycles
- Example: An asset has a first cost of \$20,000, an annual operating cost of \$8000 and a salvage value of \$5000 after 3 years. Calculate the AW for one and two life cycles at $i = 10\%$

$$\begin{aligned} AW_{\text{one}} &= -20,000(A/P, 10\%, 3) - 8000 + 5000(A/F, 10\%, 3) \\ &= \$-14,532 \end{aligned}$$

$$\begin{aligned} AW_{\text{two}} &= -20,000(A/P, 10\%, 6) - 8000 - \\ &\quad 15,000(P/F, 10\%, 3)(A/P, 10\%, 6) + 5000(A/F, 10\%, 6) \\ &= \$-14,532 \end{aligned}$$

Reference

- Basics of Engineering Economy by Leland Blank and Anthony Tarquin, 2nd edition, McGraw-Hill