CTC/MTC 374 Test Review: Midterm 1 (Lectures 1-7); Midterm 2 (Lectures 7-13); Final (Lectures 14-21)

1. Single Sums (equation and/or factor form)

Equation: F=P(1+i)^n

a. Find F given P (move single cash flow to the future)

b. Find P given F (move single cash flow back in time)

c. Find the interest rate (i) or time period (n)

2. Cash Flow Patterns (Shortcuts of multiple cash flows that show a pattern)

a. Uniform Series (where A is a uniform cash flow of n periods)

P/A (P occurs 1 time period before first A; n=number of cash flows)

F/A (F occurs at the same time as the last A; n=number of cash flows)

A/P (Find a uniform series given a single sum one year before the first cash flow A)

A/F (Find a uniform series given a single sum at the end of the last cash flow A

b. Gradient Series (cash flows differ by a constant amount)

c. Geometric Series (cash flows differ by a constant percentage)

3. Rates (all three must match: 5% per year compounded yearly; time period-years)

a. Sometimes you can just change time period (usually P/F or F/P)

b. Change interest rate to match the cash flow period (any type of series)

c. Determining interest and principal (equity)

d. Continuous Compounding (ieff=e^r-1)

4. Methods for Determining Economic Feasibility (MARR is minimum attractive rate-of-return)

a. Present Worth (PW)-Move all cash flows to period 0; PW>0

b. Future Worth (FW)-Move all cash flows to the future; FW>0

c. Annual Worth (AW)-Find A/P or find A/F; FW>0

d. IRR-Set PW/AW or FW=0 and solve for IRR; IRR>MARR

e. ERR-Set FW of negative Cash Flow(s) @ ERR equal to FW of positive cash flows @ MARR (or e that is different than MARR); ERR>MARR

f. SIR or B/C-PW of positive cash flows/PW of negative cash flows (B/C>1)

g. PBP (non-discounted or discounted)-how many time periods until you get your investment back (not equivalent to a-f)

h. Capitalized Worth (often AW/MARR but not necessarily equivalent to a-f)

5. Bonds

a. I=V*(b/c) ---I does not change; it is fixed when bond is issued

b. Present Worth=I (P/A i,n) + V (P/F i,n)---i can change if the bond is not purchased and/or sold at par

6. Comparing alternatives

a. Ranking (works for PW, AW, FW)

b. Incremental (must use for IRR, ERR or B/C)

7. Replacement Problems (defender vs challenger; outside viewpoint)

8. Inflation

9. Cost Estimating/Accounting/Breakeven-Present Economy

a. Cost Estimating (Indices: time, place, size) Units (per sq ft), Factor (complete breakdown)

b. Balance Sheet; Income Sheet

c. Present Economy (determine which machine should be used)

d. Linear/Nonlinear Breakeven (equations for costs, revenue and net profit)

10. Depreciation

a. Methods (SL, DB, SOYD, MACRS)

b. Book value; Depreciation

11. Convert Before-Tax Cash Flow (BTCF) to After-Tax Cash Flow (ATCF)

12. Methods to help evaluate Uncertainty

a. Breakeven

b. OMP (optimistic, most probably, pessimistic)

c. Spider-Graph (evaluate range of values)

d. Monte-Carlo simulations (define probabilities, make many runs