

TIE2140 Engineering Economy
Assignment #5
Due: 5 April 2024, 9 pm

You may use Excel or any computing tools for your calculations, but you must explain or show relevant formulas or equations in your solutions. Submit your completed assignment anytime into the Drop Box outside the ISEM Department Office at E1A-06-25, or to the professor at the end of the lecture.

Assignment #3 Revisited

Consider again the Surveillance System Project in Assignment 3. After a preliminary before-tax cash flow analysis of the alternatives, the project team decides to eliminate Alternative *A* from further consideration. Relevant data for the two remaining alternatives are reproduced below:

	Alternative <i>B</i>	Alternative <i>C</i>
Initial Cost	\$150,000	\$192,000
Useful Life	12 years	18 years
Annual O&M Cost	Year 1 to 6: \$9,600 Year 7 to 12: \$14,400	Year 1 to 6: \$6,000 Year 7 to 12: \$12,000 Year 13 to 18: \$18,000
Market value at EoY 6	\$48,000	\$72,000
Market value at EoY 12	\$24,000	\$30,000
Market value at EoY 18	--	\$18,000

The after-tax *MARR* for this project is **5%**.

- (a) If the study period is 12 years what are the after-tax *PW* of the two alternatives? Which alternative should be chosen? State the main assumptions made. (10 marks)
- (b) If the study period is 18 years, what are the after-tax *PW* of the two alternatives? Which alternative should be chosen? State the main assumptions made. (10 marks)