University of Diyala

Engineering Economy

Lecture 1

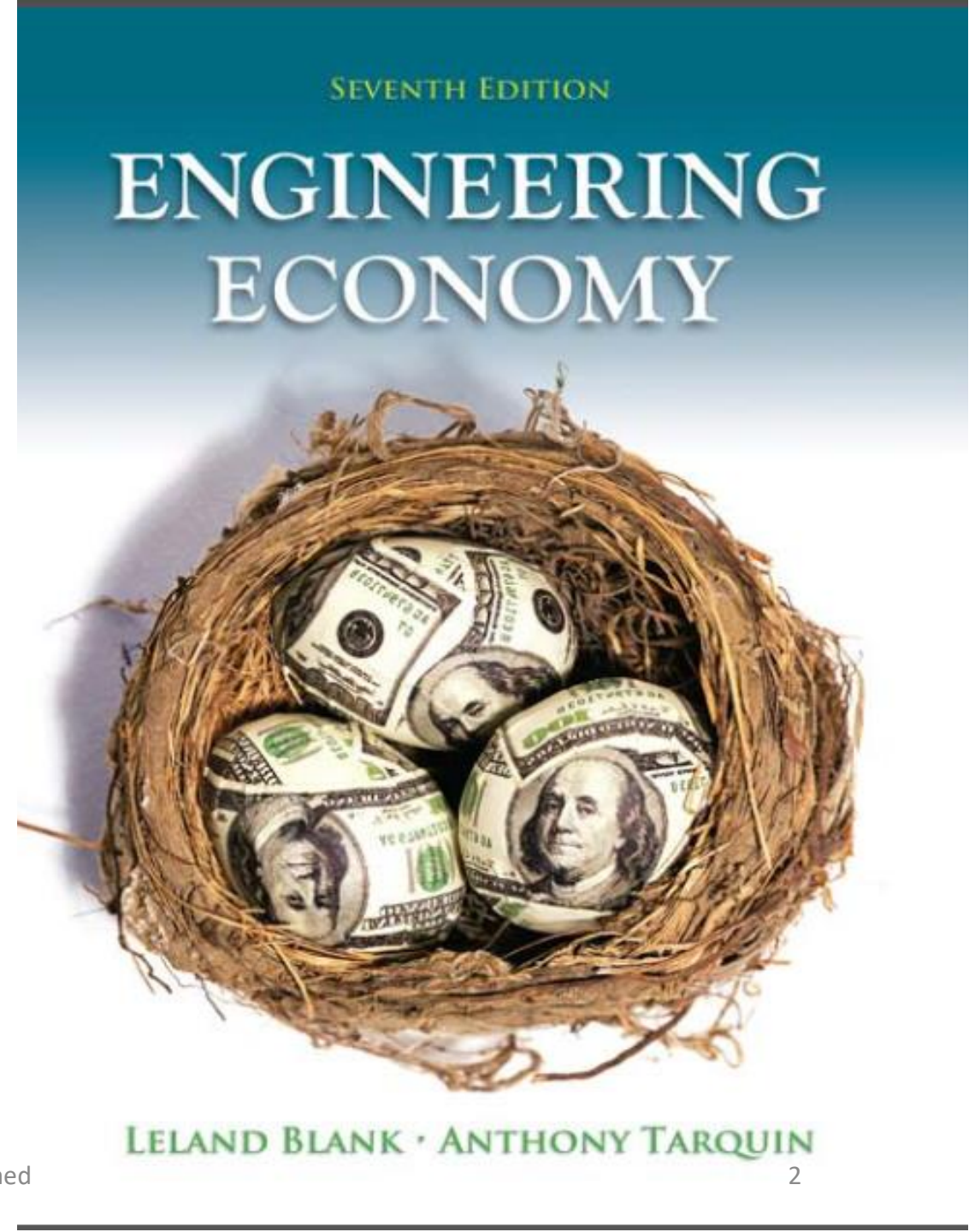
3rd Stage

Communication department / Engineering collage

Lecturer Marwa Mohammed

Textbook :

“ ENGINEERING ECONOMY "7th edition ,
LETAND BLANK AND ANTHONY TARQUIN



ENGINEERING ECONOMY

Introduction to Engineering Economy

Definition of Engineering Economy

Engineering Economy is a subset of economics for application to engineering projects. Engineers seek solutions to problems, and the economic viability of each potential solution is normally considered along with the technical aspects.

Objectives of Engineering Economy

1. Finding the suitable and efficient projects
2. Using the available local resources
3. Developing the technical staff
4. Maintenance and cost decreasing
5. Reduction of operating costs with maintaining the quality
6. Best use of capital

Engineering economic analysis can play a role in many types of situations

- Choosing the best design for a high-efficiency gas furnace.
- Selecting the most suitable robot for a welding operation on an automotive assembly line.
- Making a recommendation about whether jet airplanes for an overnight delivery service should be purchased or leased.
- Determining the optimal staffing plan for a computer help desk.

Principles of Engineering Economy

1. Develop the Alternatives
2. Focus on the Differences
3. Use a Consistent Viewpoint
4. Use a Common Unit of Measure
5. Consider All Relevant Criteria
6. Make Uncertainty Explicit
7. Revisit Your Decisions

Principles of Engineering Economy

1. Develop the Alternatives The final choice (decision) is among alternatives. The alternatives need to be identified and then defined for subsequent analysis.

2. Focus on the Differences Only the differences in expected future outcomes among the alternatives are relevant to their comparison and should be considered in the decision

3. Use a Consistent Viewpoint The prospective outcomes of the alternatives, economic and other, should be consistently developed from a defined viewpoint (perspective).

4. Use a Common Unit of Measure Using a common unit of measurement to enumerate as many of the prospective outcomes as possible will make easier the analysis and comparison of alternatives.

Principles of Engineering Economy

5. Consider All Relevant Criteria Selection of a preferred alternative (decision making) requires the use of a criterion (or several criteria).

6. Make Uncertainty Explicit Uncertainty is inherent in projecting (or estimating) the future outcomes of the alternatives and should be recognized in their analysis and comparison.

7. Revisit Your Decisions Improved decision making results from an adaptive process; to the extent practicable, the initial projected outcomes of the selected alternative should be subsequently compared with actual results achieved.

ENGINEERING ECONOMY AND THE DESIGN PROCESS

An engineering economy study is accomplished using a structured procedure and mathematical modelling techniques. The economic results are then used in a decision situation that involves two or more alternatives and normally includes other engineering knowledge and input.

ENGINEERING ECONOMIC ANALYSIS PROCEDURE

1. Problem recognition, definition, and evaluation
2. Define the goal or objectives
3. Define the feasible alternatives
4. Collect all relevant data/information
5. Evaluate each alternative
6. Select the “best” alternative
7. Implement and monitor the decision