## Faculty of Engineering & Technology

## Engineering Economics

**Information :**

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| **Course Code :** | MAN 381 | **Level :** | Undergraduate | **Course Hours :** | 2.00- Hours |

**Department :** Department of Electrical Engineering

**Instructor Information :**

| Title | Name | Office hours |
|---|---|---|
| Lecturer | HOSAM MOSTAFA MAHMOUD EID HEGAZY | 1 |
| Assistant Lecturer | Ahmed Amr Kadry Ahmed Shaheen | |
| Teaching Assistant | Mahmoud Mohamed Khalaf Ahmed | |
| Teaching Assistant | Sarah Salah Sayed Hussein Aly Elsheshtawy | |

**Area Of Study :**

Develop the students' knowledge about the present worth, the future worth and the annual worth for a given plant.
Acquire students with basics that enable him to draw the cash flow diagram
Train students to apply methods of economic selection among alternatives.
Prepare students to be able to share ideas and work in a team or a group

**Description :**

Introductory finance: time value of money, cash flow analysis, and Investment evaluation methods: present worth, annual worth and internal rate of return, Depreciation models and asset replacement analysis, the impact of inflation, Bonds and Breakeven analysis.

**Course outcomes :**

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| **a.Knowledge and Understanding: :** | |
| 1 - | Define different items and quantities used in engineering economy. |
| 2 - | Summarize the evaluation methods of a single project. |
| 3 - | Demonstrate understanding of the breakeven concept and its governing relations. |
| 4 - | Explain the methods used in depreciation calculations. |
| 5 - | Define terminologies describing and dealing with bonds. |
| 6 - | Compare different methods used for economical selection between alternatives. |
| 7 - | Demonstrate the governing methods of depreciation. |
| 8 - | Describe specific steps for economical selection among offered alternatives (projects). |
| **b.Intellectual Skills: :** | |
| 1 - | Deduce the relations between economical items such as present value, future value, and annual value. |
| 2 - | Evaluate the salvage value for an equipment for a certain period. |
| 3 - | Calculate the book value for an equipment at the end of a certain year. |
| 4 - | Determine the depreciation for a specific device. |

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| 5 - | Find the present value paid for a bond under specific properties. |
| 6 - | Evaluate the breakeven value and maximum profit of a product considering the variable market conditions. |
| 7 - | Implement correct steps to evaluate the economical critical values of a given cash flow diagram such as present worth, annual worth, and future values. |
| **c.Professional and Practical Skills: :** | |
| 1 - | Apply an economical evaluation method to select between offered alternatives. |
| **d.General and Transferable Skills: :** | |
| 1 - | Collaborate effectively within multidisciplinary team. |
| 2 - | Communicate effectively |

**Course Topic And Contents :**

| Topic | No. of hours | Lecture | Tutorial / Practical |
|---|---|---|---|
| Introductory Finance: time value of money | 3 | 2 | 1 |
| Cash Flow Analysis | 8 | 6 | 2 |
| Investment evaluation methods: present worth, annual worth and internal rate of return | 9 | 6 | 3 |
| Depreciation models and asset replacement analysis | 6 | 4 | 2 |
| Bonds study | 4 | 2 | 2 |
| The impact of inflation, taxation, uncertainty and risk on investment decisions | 6 | 4 | 2 |
| Annual cost comparison of both equal- life and different- life alternatives. | 3 | 2 | 1 |
| Concepts of breakeven and maximum profits | 6 | 4 | 2 |

**Teaching And Learning Methodologies :**

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| Interactive Lecture |
| Small Groups Discussion |
| Problem-based Learning |
| Report |

**Course Assessment :**

| Methods of assessment | Relative weight % | Week No | Assess What |
|---|---|---|---|
| Assignments | 5.00 | | |
| Final Exam | 40.00 | | |
| Mid- Exam I | 15.00 | | |
| Mid- Exam II | 15.00 | | |
| Performance | 5.00 | | |
| Quizzes | 10.00 | | |
| Reports | 10.00 | | |

**Course Notes :**

No course notes are required

**Recommended books :**

1. William G. Sullivan, Elin M. Wicks C. Patrick, and Koelling, "Engineering Economyǫ Pearson, 17th edition, 2018.
2. Leland Blank and Anthony Tarquin, " Engineering Economyǫ McGraw-Hill Education, 8th edition, 2018.