

Academic Course Description

BHARATH UNIVERSITY Faculty of Engineering and Technology Department of Electrical and Electronics Engineering BBA007& Engineering Economics and Cost Analysis Eighth Semester, (Even Semester)

Course (catalog) description

To know about engineering economics and cost analysis.

Compulsory/Elective course: Elective for EEE students

Credit hours : 3 & 45

Course Coordinator : Dr.R.Ramamoorthy

Instructors : Dr.R.Ramamoorthy

Name of the instructor	Class handling	Office location	Office phone	Email (domain:@bharathuniv.ac.in)	Consultation
Dr.R.Ramamoorthy	Final year EEE	KS 304	-	ramamoorthy0071@gmail.com	9.00-9.50 AM

Relationship to other courses:

Pre –requisites : Professional Courses

Assumed knowledge : Knowledge based on Engineering Economics and Cost Analysis

Syllabus Contents

UNIT I INTRODUCTION TO ECONOMICS 8

Introduction to Economics- Flow in an economy, Law of supply and demand, Concept of Engineering Economics – Engineering efficiency, Economic efficiency, Scope of engineering economics- Element of costs, Marginal cost, Marginal Revenue, Sunk cost, Opportunity cost, Break-even analysis- V ratio, Elementary economic Analysis – Material selection for product Design selection for a product, Process planning.

UNIT II VALUE ENGINEERING 10

Make or buy decision, Value engineering – Function, aims, Value engineering procedure. Interest formulae and their applications –Time value of money, Single payment compound amount factor, Single payment present worth factor, Equal payment series sinking fund factor, Equal payment series payment Present worth factor- equal payment series capital recovery factor-Uniform gradient series annual equivalent factor, Effective interest rate, Examples in all the methods.

UNIT III CASH FLOW**9**

Methods of comparison of alternatives – present worth method (Revenue dominated cash flow diagram), Future worth method (Revenue dominated cash flow diagram, cost dominated cash flow diagram), Annual equivalent method (Revenue dominated cash flow diagram, cost dominated cash flow diagram), rate of return method, Examples in all the methods.

UNIT IV REPLACEMENT AND MAINTENANCE ANALYSIS**9**

Replacement and Maintenance analysis – Types of maintenance, types of replacement problem, determination of economic life of an asset, Replacement of an asset with a new asset – capital recovery with return and concept of challenger and defender, Simple probabilistic model for items which fail completely.

UNIT V DEPRECIATION**9**

Depreciation- Introduction, Straight line method of depreciation, declining balance method of depreciation- Sum of the years digits method of depreciation, sinking fund method of depreciation/ Annuity method of depreciation, service output method of depreciation-Evaluation of public

Text book(s) and/or required materials

T1. PanneerSelvam, R, Engineering Economics, Prentice Hall of India Ltd, New Delhi, 2001.

Reference Books:

R1. Chan S.Park, Contemporary Engineering Economics, Prentice Hall of India, 2002.

R2Donald.G. Newman, Jerome.P.Lavelle, “Engineering Economics and analysis” Engg. Press, Texas, 2002

R3. Degarmo, E.P., Sullivan, W.G and Canada, J.R, Engineering Economy, Macmillan, New York, 1984

R3. Grant.E.L.,Ireson.W.G., and Leavenworth, R.S, Principles of Engineering Economy, Ronald Press, New York,1976.

Smith, G.W., Engineering Economy, Iowa State Press, Iowa, 1973

Professional component

General	-	0%
Basic Sciences	-	0%
Engineering sciences & Technical arts	-	0%
Professional subject	-	0%
Open elective	-	100%

Test Schedule

S. No.	Test	Tentative Date	Portions	Duration
1	Cycle Test-1	FEBRUARY 2 ND WEEK	Session 1 to 18	2 Periods
2	Cycle Test-2	MARCH 2 ND WEEK	Session 19 to 34	2 Periods
3	Model Test	APRIL 3 RD WEEK	Session 1 to 45	3 Hrs
4	University Examination	TBA	All sessions / Units	3 Hrs.

Mapping of Instructional Objectives with Program Outcome

To know about engineering economics and cost analysis.	Correlates to program outcome		
	H	M	L
To learn about the introduction to economics	c	G,k	
To learn about the value engineering	E	H,l	
To learn about the cash flow	b	F,i	
To learn about the Replacement and Maintenance analysis	g	l	
To learn about the depreciation and Evaluation of public alternatives	i	A	

H: high correlation, M: medium correlation, L: low correlation

Draft Lecture Schedule

S.NO	Topics	Problem solving (Yes/No)	Text / Chapter
UNIT I INTRODUCTION TO ECONOMICS			
1.	Introduction to Economics	NO	[T1],[R2]
2.	Flow in an economy	NO	
3.	Law of supply and demand	NO	
4.	Concept of Engineering Economics	NO	
5.	Engineering efficiency	NO	
6.	Element of costs, Marginal cost, Marginal Revenue, Sunk cost	NO	
7.	Opportunity cost, Break-even analysis- V ratio, Elementary economic Analysis – Material selection for product	NO	
8.	Design selection for a product, Process planning	NO	
9.	TEST	NO	
UNIT II VALUE ENGINEERING			
10.	Make or buy decision	NO	[R1],[R4]
11.	Value engineering – Function, aims, Value engineering procedure	NO	
12.	Interest formulae and their applications –Time value of money, Single payment compound amount factor	NO	
13.	Single payment present worth factor	NO	
14.	Equal payment series sinking fund factor	NO	
15.	Equal payment series payment Present worth factor- equal payment series capital recovery factor-Uniform gradient	NO	
16.	equal payment series capital recovery factor-Uniform gradient series annual equivalent factor	NO	
17.	Effective interest rate, Examples in all the methods.	NO	
18.	TEST	NO	
UNIT III CASH FLOW			
19.	Methods of comparison of alternatives	NO	[R3],[R2]
20.	present worth method	NO	
21.	Future worth method	NO	
22.	Annual equivalent method	NO	
23.	rate of return method	NO	
24.	Examples in all the methods	NO	

UNIT IV REPLACEMENT AND MAINTENANCE ANALYSIS			
25.	Replacement and Maintenance, determination of economic life of an asset	NO	[R1],[R4]
26.	Types of maintenance	NO	
27.	analysis types of replacement problem	YES	
28.	Replacement of an asset with a new asset	NO	
29.	capital recovery with return and concept of challenger	NO	
30.	Simple probabilistic model for items which fail completely.	NO	
31.	TEST	NO	
32.	TEST	NO	
33.	TEST	NO	
34.	TEST	NO	
UNIT V DEPRECIATION			
35.	Depreciation- Introductio	NO	[T1],[R3]
36.	Straight line method of depreciation	NO	
37.	declining balance method of depreciation	NO	
38.	Sum of the years digits method of depreciation	NO	
39.	sinking fund method of depreciation	NO	
40.	Annuity method of depreciation	NO	
41.	TEST	NO	
42.	TEST	NO	
43.	TEST	NO	
44.	TEST	NO	
45.	service output method of depreciationEvaluation of public	NO	

Teaching Strategies

The teaching in this course aims at establishing a good fundamental understanding of the areas covered using:

- Formal face-to-face lectures
- Tutorials, which allow for exercises in problem solving and allow time for students to resolve problems in understanding of lecture material.
- Laboratory sessions, which support the formal lecture material and also provide the student with practical construction, measurement and debugging skills.
- Small periodic quizzes, to enable you to assess your understanding of the concepts.

Evaluation Strategies

Cycle Test – I	-	5%
Cycle Test – II	-	5%
Model Test	-	10%
Assignment	-	5%
Attendance	-	5%
Final exam	-	70%

Addendum

ABET Outcomes expected of graduates of B.Tech / EEE / program by the time that they graduate:

- a) An ability to apply knowledge of mathematics, science, and engineering fundamentals.
- b) An ability to identify, formulate, and solve engineering problems.
- c) An ability to design a system, component, or process to meet the desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
- d) An ability to design and conduct experiments, as well as to analyze and interpret data.
- e) An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.
- f) An ability to apply reasoning informed by the knowledge of contemporary issues.
- g) An ability to broaden the education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
- h) An ability to understand professional and ethical responsibility and apply them in engineering practices.
- i) An ability to function on multidisciplinary teams.
- j) An ability to communicate effectively with the engineering community and with society at large.
- k) An ability in understanding of the engineering and management principles and apply them in project and finance management as a leader and a member in a team.
- l) An ability to recognize the need for, and an ability to engage in life-long learning.

Program Educational Objectives

PEO1: PREPARATION

Electrical Engineering Graduates are in position with the knowledge of Basic Sciences in general and Electrical Engineering in particular so as to impart the necessary skill to analyze and synthesize electrical circuits, algorithms and complex apparatus.

PEO2: CORE COMPETENCE

Electrical Engineering Graduates have competence to provide technical knowledge, skill and also to identify, comprehend and solve problems in industry, research and academics related to power, information and electronics hardware.

PEO3: PROFESSIONALISM

Electrical Engineering Graduates are successfully work in various Industrial and Government organizations, both at the National and International level, with professional competence and ethical administrative acumen so as to be able to handle critical situations and meet deadlines.

PEO4: SKILL

Electrical Engineering Graduates have better opportunity to become a future researchers/ scientists with good communication skills so that they may be both good team-members and leaders with innovative ideas for a sustainable development.

PEO5: ETHICS

Electrical Engineering Graduates are framed to improve their technical and intellectual capabilities through life-long learning process with ethical feeling so as to become good teachers, either in a class or to juniors in industry.

Course Teacher	Signature
Dr.R.Ramamoorthy	

Course Coordinator
(Dr.R.Ramamoorthy)

HOD/EEE
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