Far Western University
Faculty of Engineering
Bachelor of Computer Engineering
Course of Study 2075

Course Title: Engineering Economics	**Credit: 2**
Course Code.:	**Number of lecture/week: 2**
Nature of the Course: Theory	**Tutorial/week: 1**
Year/Semester: Third/Sixth	**Total hours: 30**

1. Course Introduction:

The main aim of this course is to provide a basic knowledge to the students to understand the fundamentals of engineering economic analysis.At the end of this course, students will be able to evaluate engineering projects and make project investment decisions.

2. Course Objectives:

At the end of this course the student should be able to:

- understand the basic knowledge of engineering economic analysis
- evaluate engineering projects on the basis of economic merits from the alternative projects.
- make project investment decisions.

3. Specific Objectives and Contents:

Specific Objectives	Contents
• Understand necessity, meaning and scope • Understand Role of Engineering Economics • Understand Principles of Engineering Economics • Understand Cash Flow Diagram	**UNIT 1: Introduction (2hrs)** 1.1Origin of Engineering Economy 1.2 Definition of Engineering Economics 1.3 Principles of Engineering Economy 1.4 Role of Engineers in Decision Making 1.5 Scope of the Subject 1.5 Cash Flow Diagram
• Understand the time value of money • Understandrate of interest and interest formulae	**UNIT 2: Interest and Time Value of Money (4hrs)** 2.1 Concept of Time Value of Money 2.2 Simple Interest and Compound Interest 2.3 Economic Equivalence 2.4 Nominal Rate of Interest 2.5 Effective Rate of Interest 2.6 Continuous Compounding 2.7 Five Types of Cash Flows: Single Cash Flow, Uneven Payment Series, Equal Payment Series, Linear Gradient Series, Geometric Gradient Series 2.8 Development of Interest Formule

• Understand Minimum Attractive Rate of Return • Understand equivalent worth • Be able to determine InternalRate of Return (IRR) and External Rate of Return (ERR) • Understand Benefit Cost Ratio	**UNIT 3: Basic Methods of Engineering Economic Analysis (5hrs)** 3.1 Minimum Attractive Rate of Return (MARR) 3.2 Payback Period Method 3.3 Equivalent Worth Method: Present Worth Method, Future Worth Method, Annual Worth Method 3.4 Rate of Return Methods: Internal Rate of Return (IRR), External Rate of Return (ERR) 3.5 Public Sector Economic Analysis (Benefit Cost Ratio Method)
• Understand the comparative analysis of alternatives having same useful life and different useful life • Understand the repeatability assumption, Co-terminated assumption and capitalized worth method	**UNIT 4: Comparative Analysis of Alternatives (4hrs)** 4.1 Comparing Mutually Exclusive Alternatives having Same Useful Life by: Equivalent Worth method, Rate of Return method, and Benefit Cost Ratio method. 4.2 Comparing Mutually Exclusive Alternatives having Different Useful Life by: Repeatability Assumption, Co-terminated Assumption, and Capitalized Worth Method 4.3 Comparing Combinations of Mutually Exclusive, Contingent and Independent Projects.
• Understand the sources of project risks • Understand the sensitivity analysis, breakeven analysis, and scenario analysis • Understand the probabilityconcept of economic analysis • Be able to understand decision tree and sequential investment decision	**UNIT 5: Risk Analysis (4 hrs)** 5.1 Introduction 5.2 Sources of Project Risks 5.3 Methods of Project Risks: Sensitivity Analysis, Breakeven Analysis, Scenario Analysis 5.4 Probability Concept of Economic Analysis 5.5 Decision Tree and Sequential Investment Decision
• Understand Replacement Concepts and importance of replacement • Understand economic service life • Understand relacend analysis under the infinite and finite planning horizon	**UNIT 6: Replacement Analysis(5 hrs)** 6.1 Fundamentals of Replacement Analysis 6.1.1 Basic Concepts, and Terminology 6.1.2 Approaches for Comparing Defender and Challenger 6.2 Economic Service Life of Challenger and Defender 6.3 Replacement Analysis When Required Service Life is Long 6.3.1 Required Assumptions and Decision Framework 6.3.2 Replacement Analysis under the Infinite Planning Horizon 6.3.3 Replacement Analysis under the Finite. Planning Horizon

• Understand the concept of depreciation Understand the methods of depreciation • Understand the concept of taxation, VAT, and After Tax cash flow estimate	**UNIT 7: Depreciation and Corporate Income taxes (4 hrs)** 7.1 Concept and Terminologies of Depreciation 7.2 Methods of Depreciation: Straight Line Method, Sinking Fund Method, Sum of the Year Digit Method, Declining Balance Method, Modified Accelerated Cost Recovery System (MACRS) 7.3 Introduction to Corporate Income Tax, Property tax, Sales Tax, Excise Tax, Types of Taxes: Direct Tax, Indirect Tax, and Value Added Tax 7.4 After Tax Cash Flow Estimate 7.5 General Procedure for making After Tax Economic Analysis
• Understand the concept of inflation	**UNIT 8: Inflation (2 hrs)** 8.1 Introduction to concept of Inflation 8.2 Measuring Inflation 8.3 Equivalence Calculation under Infalation 8.4 Impact of Inflation on Economic Evaluation

Evaluation System

Undergraduate Programs				
External Evaluation	**Marks**	**Internal Evaluation**	**Weight age**	**Marks**
End semester examination (Details are given in the separate table at the end)	60	Assignments	25%	10
		Quizzes		
		Presentation		
		Group work		
		Mid-Term Exam	75%	30
Total External	60	Total Internal	100%	40

External evaluation

End semester examination

It is a written examination at the end of the semester. The questions will be asked covering all the units of the course. The question model, full marks, time and others will be as per the following grid.

Full Marks: 100, Pass Marks: 45, Time: 3 Hrs

Nature of question	Total questions to be asked	Total questions to be answered	Total marks
Group A: multiple choice*	20	20	20×1 = 20
Group B: Short answer type questions	8	6	6×8 = 48
Group C: Long answer type question	3	2	2×16 =32
			100

Each student must secure at least 45% marks in internal evaluation in order to appear in the end semester examination. Failed student will not be eligible to appear in the end semester examinations.

Internal evaluation

Assignment: Each student must submit the assignment individually. The stipulated time for submission of the assignment will be seriously taken.

Quizzes: Unannounced and announced quizzes/tests will be taken by the respective subject teachers. Such quizzes/tests will be conducted twice per semester. The students will be evaluated accordingly.

Attendance in class: Students should regularly attend and participate in class discussion. Eighty percent class attendance is mandatory for the students to enable them to appear in the end semester examination. Below 80% attendance in the class will signify NOT QUALIFIED (NQ) to attend the end semester examination.

Presentation: Students will be divided into groups and each group will be provided with a topic for presentation. It will be evaluated individually as well as group-wise. Individual students have to make presentations on the given topics.

Mid-term & Pre-board examination: These are written examination and the questions will be asked covering all the topics in the session of the course.

Discussion and participation: Students will be evaluated on the basis of their active participation in the classroom discussions.

Instructional Techniques: All topics are discussed with emphasis on real-world application. List of instructional techniques is as follows:

- Lecture and Discussion

- Group work and Individual work
- Assignments
- Presentation by Students
- Term Paper writing
- Case study
- Quizzes
- Guest Lecture

Students are advised to attend all the classes and complete all the assignments within the specified time period. If a student does not attend the class(es), it is his/her sole responsibility to cover the topic(s) taught during that period.

References:

1. *"Contemporary Engineering Economics";* Chain S. Park; Prientice Hall of India Pvt. Ltd.
2. *"Engineering Economy"*;E. Paul De Garmo, William G. Sullivan, and James A. Bontadelli; Pearson Education Asia.
3. *"Engineering Economics";* James L. Riggs, David D. Bedworth and Sabah U. Randhawa; Tata Mc Graw Hill Education Private Limited.
4. Engineering Economic Analysis Donald G. Newnan, Ted G. Eschenbach, and Jerome P. Lavelle

Far Western University
Faculty of Engineering
Bachelor in Computer Engineering
(Course of Study)

Course Title: Database Management system **Credit: 3**
Course Code: CT364 **Number of lecture/week: 3**
Year/Semester: Third/Second **Tutorial/week: 1**
Level: Bachelor of Engineering (Computer) **Total hours: 45**

Course Objective:

To acquaint students with different aspects of DBMS like database design, query languages, query processing, database security, backup and recovery, access control and transaction control.

Course Outline:

Specific Objectives	Contents (UNIT/CHAPTER)	Duration
	1. Introduction 1.1. Concept and applications 1.2. Needs of DBMS 1.3. Data abstraction 1.4. Data independence 1.5. Schema and Instances 1.6. Concept of DDL, DML and DCL 1.7. Database Manager and users.	**(4 Hours)**
	2. **Data Models** 2.1. Logical, Physical and Conceptual Model 2.2. E-R Model 2.3. Network Data Model 2.4. Hierarchical Data Model	**(4 Hours)**
	3. **Relational Model** 3.1. Definitions and terminology 3.2. Structure of relational databases 3.3. The relational algebra 3.4. The relational calculus 3.5. Schemas and Views	**(4 Hours)**
	4. **Relational languages** 4.1. SQL	**(5 Hours)**

	4.2. DDL 4.3. DML 4.4. DCL 4.5. QBE.	
	5. **Relational Database Design** 5.1. Introduction 5.2. Integrity constraints 5.3. Referential Integrity 5.4. Normalization 5.5. Normal Forms 5.6. Multivalued and Join Dependencies 5.7. User schema or views design 5.8. Decomposition of relation schemes	**(6 Hours)**
	6. **Security** 6.1. Needs of security 6.2. Security and integrity violations 6.3. Access control 6.4. Authorization 6.5. Security and Views 6.6. Encryption and decryption.	**(3 Hours)**
	7. **Query Processing** 7.1. Introduction to query processing 7.2. Query interpretation 7.3. Equivalence of expressions 7.4. Query Optimization 7.5. Join strategies 7.6. Query decomposition.	**(3 Hours)**
	8. **File organization and indexing** 8.1. Needs of filing 8.2. Overview of storage devices 8.3. Organization of records into blocks 8.4. File organizations 8.5. B+Tree 8.6. Hashing and hash function 8.7. Data Dictionary storage 8.8. Buffer Management.	**(5 Hours)**
	9. **Crash Recovery** 9.1. Introduction to crash recovery and its importance 9.2. Failure classification 9.3. Backup-recovery	**(4 Hours)**

	9.4. Storage hierarchy 9.5. Transaction model 9.6. Log-based recovery 9.7. Shadow paging	
	10. **Transaction Processing and Concurrency Control** 10.1. Introduction 10.2. Transaction and Transaction processing 10.3. ACID properties of transaction 10.4. Scheduling and Serializability 10.5. Locking and Lock based protocols 10.6. Time-stamping-based protocols 10.7. Deadlock handling	**(4 Hours)**
	11. **Advanced Database concepts** 11.1. Extended Relational Model 11.2. Object-Oriented Model 11.3. Object-Relational Model (ORM) 11.4. Distributed databases.	**(3 Hours)**

Project work:

An individual project should be given to each student. 10% of sessional marks should be allocated for evaluation.

Tutorials:

A number of tutorial assignments can be given for fluency in Database design and query languages.

Practical:

There shall be 12 laboratory exercises based on some RDBMS (like ORACLE, MS-SQL server, MySQL, etc) to cover theoretical part studied.

Reference Books:

1. H.F. Korth and A. Silberschatz, *Database System Concepts*, McGraw Hill.
2. A.K Majumdar and P. Bhattacharaya, *Database Management Systems*, Tata McGraw Hill, India.
3. R.E. Mani and S.C Nevathe, *Fundamentals of Database Systems*, Benjamin/Cummings Publishing Co. Inc.
4. G.C Everest, *Database Management*, McGraw Hill.

Evaluation scheme:

The questions will cover all the chapters in the syllabus. The evaluation scheme will be as possible as indicated in the table below:

Unit / Chapter	Hours	Marks Distribution* (Tentative)
1	4	4
2	4	5
3	4	5
4	5	8
5	6	10
6	3	4
7	3	4
8	5	6
9	4	5
10	4	5
11	3	4

* There may be minor variation in marks distribution.

Internal Evaluation (Marks Weightage)		Final Exam (Marks Weightage)	Total	Remarks
Assessment/Class Performance/Attendance/Quizzes/ Tutorials/Presentation	Practical			
20	20	60	100	Internal marks will be of 20 if there are practicals in the course (20 marks will be allocated for Practicals)

Far Western University
Faculty of Engineering
Mahendranagar, Kanchanpur

Course Title: Research Methodology **Credit: 2**
Course No: **Number of period per week: 2**
Nature of the Course: Theory **Total hours: 30**
Year: III, Semester: II
Level: B.E.
Degree: Bachelor's Degree in Computer Engineering

1. Course Introduction

This course introduces and discusses the basic concepts of research, approaches, strategies, and data collection methods relating to research with references to engineering. Students will consider how to select the appropriate methodology for use in a study to be performed. Finally, students will learn to write a comprehensive research proposal that may be conducted in the future.

2. Objectives

After successfully completing the course activities, the student will be able to:

- understand what research is and what is not.
- understand the concept of research problem
- evaluate literature, form a variety of sources, pertinent to the research objectives.
- identify and justify the basic components of the research framework, relevant to the tackled research problem.
- explain and justify how researchers will collect research data.
- put forward a credible research proposal

3. Specific Objectives and Contents

Specific Objectives	Contents
• To understand the basic concept of research and its significance in engineering.	**Unit I: Introduction (5 hrs)** 1.1 The meaning of research 1.2Significance of research in Engineering 1.3 Objectives 1.4 Level of research 1.5 Types of research

• To be familiar with the research problem and research process. • To be familiar with goals and characteristics of research. • To be familiar with measurements and variables. • To be able to differentiate theory and hypothesis. • To be familiar with research design and its elements. • To learn about the data and information for research. • To be able to differentiate between different types of data. • To learn about the concept of sampling and its types. • To learn about the concept of data organization, processing and analysis. • To be able to prepare and write a research proposal.	**Unit II: The Research Process (4 hrs)** 2.1 The context of research 2.2 Research problems 2.3 Steps in Research Process 2.4 The characteristics of research 2.5 Goals of research **Unit III: The Theoretical Framework (3 hrs)** 3.1 Measurements and scales 3.2 Variables and their types 3.3 Theory 3.4 Hypothesis and its types **Unit IV: The Research Design (4 hrs)** 4.1 Introduction of Research design 4.2 Elements of research design 4.3 Types of research design **Unit VI: Data Collection in Research (6 hrs)** 6.1 Types of data: secondary and primary data, observational data, and experimental data 6.2 Sampling, steps and its types 6.3 Primary and Secondary data collection methods and techniques 6.4 Survey and Case Study 6.5 Data Organization and Processing 6.6 Data Analysis **Unit VII: Writing a Research Proposal (5 hrs)** 7.1 Components of a research proposal 7.2 Selection of a research topic 7.3 Literature review 7.4 Research methods 7.5 Bibliography

• To learn about the concept of journal paper and its organization.	**Unit VIII: Paper Review and Presentation (3 hrs)** In this unit, students will review at least one journal paper related to their field and present it.

Prescribed Text

- *"Research in Education*": John W Best, Prentice Hall of India, New Delhi.
- *"Social Science Research and Thesis Writing":* Pant, Prem R Pant, Buddha Academic Publishers and Distributors, 2012.

References

1. *"Handbook of Research Design and Social Measurement",* Miller, Delbert C., New York: Sage Publication.
2. *"Research Methodology (Research Methods and Techniques)":* C.R. Kothari, New Age International Publishers.
3. *"Research Methodology":* Dr. C. Rajendra Kumar, APH Publishing, Latest Edition

Far Western University

Faculty of Engineering

Bachelor in computer engineering

(Course of Study)

Course title: **Artificial Intelligence**	**Credit: 3**
Course Code: CT 363	**Number of lecture/week: 3**
Year/Semester: Third/Sixth	**Tutorial/week: 1** **Practical: 1.5 hours/week**
Level: Bachelor of Engineering (Computer)	**Total hours: 45**

Course Objectives:

This course will introduce the basic principles in artificial intelligence. It will cover simple representation schemes, problem solving paradigms, constraint satisfaction problems, and search strategies. Areas of application such as knowledge representation, natural language processing, expert systems, and artificial neural network will be explored. On completion of the course students will be able to: understand the various searching techniques, constraint satisfaction problem and example problems- game playing techniques, and apply these techniques in applications which involve perception, reasoning and learning.

Specific Objectives	Contents (UNIT/CHAPTER)	Duration (Time allocated)
	1. Introduction to AI **1.1. Definition of Artificial Intelligence** **1.2. The Foundations of Artificial Intelligence** **1.3. The history of Artificial Intelligence** **1.4. Applications of Artificial Intelligence** **1.5. Intelligent Agents** 1.5.1. Agents and Environments 1.5.2. Good Behavior: The Concept of Rationality 1.5.3. The Nature of Environments 1.5.4. The Structure of Agents	**[4 Hours]**

	2. Problem Solving **2.1 Introduction to Problem solving** **2.2 Problem formulation** **2.3 State Space Search:** Definition and Examples - Water Jug Problem; 8- Puzzle Problem; Farmer, wolf, Goat, and Corn Problem; Eight Queens Problem etc. **2.4 Constraints Satisfaction Problem**	**[4 Hours]**
	3. Search Techniques **3.1 Introduction:** Definition and Application of Searching **3.2 Well-defined problems** **3.3 Evaluation of Search Strategies** **3.4 Uninformed Search**: Breadth-first Search, Uniform cost Search, Depth-first Search, Depth-limited Search, Iterative Deepening Depth-first search, and Bidirectional Search. **3.5 Informed Search:** Greedy best-first search, and A* search **3.6 Local Search Algorithms**: Hill-climbing search, and Simulated annealing **3.7 Adversarial Search**: The minimax algorithm, and Alpha–beta pruning	**[8 Hours]**
	4. Knowledge, Inference and Reasoning **4.1 Definition and importance of Knowledge** **4.2 Propositional logic:** Connectives, truth tables, syntax, semantics, tautology, validity, and Inference Rule of Propositional logic **4.3 First Order predicate Logic (FOPL):** Syntax and Semantics of FOPL, Sentences in FOPL, Quantifiers, Quantifier Scope, Inference rule in FOPL **4.4 Conjunctive Normal Form (CNF), and Resolution Refutation System** **4.5 Well-formed formula, and Horn clauses** **4.6 Rule-based Systems:** Forward Chaining and Backward Chaining **4.7 Statistical Reasoning-** Probability and Bayes' theorem and causal networks, reasoning in belief network	**7 Hours**

	5. Structured Knowledge Representation **5.1 Knowledge Representation** **5.2 Knowledge Mappings** **5.3 Approaches to Knowledge Representation** **5.4 Issues in Knowledge Representation** **5.5 Knowledge Based Agent** **5.6 Semantic Networks and Frames** **5.7 Converting between Semantic Networks and Frames**	**[4 Hours]**
	6. Machine Learning and Machine Vision **6.1 Introduction to Machine Learning and Examples of ML** **6.2 Application of ML** **6.3 Types of Learning:** Supervised, Unsupervised, Reinforced, and Semi-supervised **6.4 Rote Learning, Explanation Based Learning and Learning by Analogy** **6.5 Decision Tree (ID3)** **6.6 Learning Framework** **6.7 Genetic Algorithm** **6.8 Fuzzy Learning:** Fuzzy Inferences System and Fuzzy Inference Methods **6.9 Introduction:** Definition and Application of Machine Vision **6.10 Stages of Machine Vision**	**6 Hours**
	7. Neural Network and Expert System **7.1 Introduction:** Definition, Advantages, Limitation, Applications and Characteristics of Expert System **7.2 Components of an Expert System** **7.3 Categories of Knowledge:** Declarative Knowledge, Procedural Knowledge , and Meta knowledge **7.4 Development of Expert Systems** **7.5 Expert System Examples:** MYCIN and DENDRAL **7.6 Basic Components of Biological Neurons** **7.7 Introduction:** Definition and Application of Neural Networks **7.8 Artificial Neuron- Basic Elements and Activation Function** **7.9 Structures of Neural Network** **7.10 Perceptron, Multilayer Perceptron, and**	**[9 hours]**

	Backpropagation Algorithm **7.11 Hopfield Neural Network** **7.12 The Kohonen network**	
	8. Natural Languages Processing (NLP) **8.1 Introduction to NLP** **8.2 Basic Terminology:** Phonology, Morphology, Syntax, Semantic, Pragmatics **8.3 Component to NLP:** Natural Language Understanding, and Natural Language Generation **8.4 Steps involved in NLP** **8.5 Applications and Problems of NLP**	**[3 hours]**

Practical: Laboratory exercises should be conducted in either LISP or PROLOG. Laboratory exercises must cover the fundamental search techniques, simple question answering, inference and reasoning.

References

1) Stuart Russell, Peter Norvig - Artificial Intelligence - A Modern Approach-Prentice Hall 2010
2) E. Rich and Knight, Artificial Intelligence, McGraw Hill, 2009
3) D. W. Patterson, Artificial Intelligence and Expert Systems, Prentice Hall, 2010
4) P. H. Winston, Artificial Intelligence, Addison Wesley, 2008
5) Ronald Brachman, Hector Levesque - Knowledge Representation and Reasoning-Morgan Kaufmann 2004

Evaluation Scheme

The questions will cover all the chapters of syllabus. The evaluation scheme will be as indicated in the table below:

SN.	***Chapter***	***Hours***	***Marks Distribution****
1	Chapter-1	4	5
2	Chapter-2	4	5
3	Chapter-3	7	10
4	Chapter-4	8	10
5	Chapter-5	4	5
6	Chapter-6	6	8
7	Chapter-7	9	12
8	Chapter-8	3	5
Total		***45***	***60***

****There could be a minor deviation in the marks distribution.***

Internal Evaluation (Marks Weightage)		Final Exam (Marks Weightage)	Total	Remarks
Assessment/Class Performance/Attendance/Quizzes/ Tutorials/Presentation	Practical			
20	20	60	100	Internal marks will be of 20 if there are practicals in the course (20 marks will be allocated for Practicals)

Far Western University

Faculty of Engineering

Bachelor in Computer Engineering

(Course of Study)

Course Title: Communication Systems | Credit: 3

Course Code: EX 365 | Number of lecture/week: 3

Year/Semester: Third/Sixth | Tutorial/week: 1

Level: Bachelor of Engineering (Computer) | Total hours: 45

1. Course Introduction: This course deals with basic principles of electric communication

2. Course Objectives: To familiarize the students with the principles and basic building blocks of analog and digital communication systems

3. Course Outline:

Specific Objectives	Contents (Unit/Chapter)	Duration
	1. Introduction 1.1 Analog and Digital Communication Systems: sources, transmitters, transmission channels and receivers 1.2 Noises, interferences and distortions. 1.3 Types and reasons for Modulation	2
	2. Review of signals and systems 2.1 Types of signals: Deterministic and random; discrete and continuous; real, imaginary and complex; harmonic, unit step (impulse), ramp , energy and power types. 2.2 Types of Systems: Linear/non-linear, time variant/invariant, low /band/high pass, properties 2.3 Impulse response and transfer functions 2.4 Fourier transform, power and energy spectrum, power spectral density function, autocorrelation function	4
	3. Angle Modulation 3.1 Frequency and Phase modulation, time domain and frequency domain expression for single tone modulation 3.2 Bandwidth of FM, types of FM – WBFM, NBFM 3.3 Generation of FM- direct and Armstrong's method 3.4 Demodulation of FM: Coherent (PLL) and limiter – discriminator methods 3.5 Stereo FM	8
	4. Digital communication systems 4.1 Basic principles, sources, transmitters and receivers 4.2 Source coding techniques- Shannon Fano and Huffman coding	5

	techniques 4.3 Sampling theory 4.4 Quantization and encoding	
	5. Pulse Modulation Systems 5.1 Pulse amplitude, pulse duration and pulse position modulation techniques- principles, generation and detection. 5.2 Pulse code modulation 5.3 Quantization noise in PCM, Signal to quantization noise ratio 5.4 Data rate and bandwidth requirements in PCM transmission 5.5 Companding techniques 5.6 Differential PCM, delta modulation 5.7 Parametric speech coding, vocoders	8
	6. Baseband data communication systems 6.1 Introduction to information theory- measure of information, source entropy, symbol rate and data (information) rates 6.2 Shannon Hartley channel capacity theorem, implications and limitations 6.3 Line codes- types, properties and comparison 6.4 Baseband data communication structure, inter-symbol interference (ISI) 6.5 Pulse shaping techniques for zero ISI – raised cosine, duo-binary (correlative) encoding techniques 6.6 M-ary signaling, comparison with binary signaling 6.7 Eye Diagram	8
	7. Bandpass (modulated) data communication systems 7.1 Binary digital carrier modulation techniques: ASK, FSK, PSK, DPSK, QPSK, GMPSK- implementation, properties and comparison 7.2 M-ary digital carrier modulation techniques 7.3 Demodulation techniques	4
	8. Multiplexing techniques 8.1 Frequency Division Multiplexing (FDM)- principles, FDM telephone hierarchy 8.2 Time Division Multiplexing (TDM)- principles, TDM telephone hierarchy	2
	9. Error control coding techniques 9.1 Basic principles and definitions 9.2 Linear block codes 9.3 Binary cyclic codes 9.4 Convolution codes	4

4. Project work: NA

5. Tutorials: Numerical exercises in different chapters

6. Practical:

a. Generation and demodulation of DSB-FC, SSB

b. Generation and demodulation of FM

c. Operation of PLL for demodulation of AM and FM

d. Study of line codes

e. Study of PCM, DPCM and DM signals

f. Study of ASK, FSK and PSK signals

g. Study of Eye pattern

7. References:

1. S. Haykin, Analog and Digital Communication Systems, latest edition

2. B.P. Lathi, Analog and Digital Communication Systems, latest edition

3. D. Sharma and S. Sharma, Digital Communication, latest edition

8. Evaluation scheme

The questions will cover all the chapters in the syllabus. The evaluation scheme will be as possible as indicated in the table below:

Chapters	Hours	Marks distribution* (Tentative) percent of total
1	2	5
2	4	5
3	8	20
4	5	10
5	8	20
6	8	20
7	4	10
8	2	Any one from chapter 1 or 8
9	4	10

* There may be minor variation in marks distribution

Internal Evaluation (Marks Weightage)		Final Exam (Marks Weightage)	Total	Remarks
Assessment/Class Performance/Attendance/Quizzes/ Tutorials/Presentation	Practical			
20	20	60	100	

Far Western University
Faculty of Engineering
Mahendranagar, Kanchanpur

Course Title: Minor Project **Credit: 3**
Course No: **Number of period per week:**
Nature of the Course: Practical **Total hours:**
Year: III, Semester: II
Level: B.E.
Degree: Bachelor's Degree in Computer Engineering

1. Course Introduction

The Minor Project aims to provide the practical knowledge of project undertaking by focusing on planning, requirements elicitation, design, development and implementation of a project.

2. Objectives

After successfully completing the course activities, the student will be able to:

- Get acquainted with knowledge of programming tools currently used in the market by carrying out a project.
- Acquire knowledge to formulate project documentation and oral presentation of project related activities.
- learn working as a team and basic collaboration and project management skills.
- learn about formulating project documentations.

Course Contents:

1. **Procedures**

   The project course requires students to get themselves involved in a group consisting of generally 3-4 members and work jointly in a team, on a proposed task under the direct supervision of the faculty members of their respective department. The project may be done using any programming language or any platform and it may be any type of application e.g. Scientific Applications, Information Systems, Web Application, Games, Simulations etc. but it must find its practical usage in daily life and it should be relevant, as possible, to the local industry environment and its demands.

   The project must be started at the beginning of the semester, span throughout the semester and finished by the end of that very semester. Oral examination will be conducted by internal and external examiners as appointed by the college.

2. **Project Work Phases**

   The entire project work shall be divided into three phases and evaluation shall be done accordingly.

2.1 Phase I: The students are required to form a group of 3-4 team members and defend their proposal of their project work and present in front of an examiner in a formal presentation lasting for about 10 minutes. 30% of the marks shall be based on the following criteria:

2.1.1 Evaluation Criteria:

Task Accomplished (20%)

- Feasibility study
- Requirements Analysis and Specification
- Project Plan
- Creativity, Innovativeness and Usefulness of the Idea

2.1.2 Documentation (10%)

- Proposal Report
- Estimations
- Time Line

2.2 Phase II: The students are required to show the progress of their work and the work done so far must be justifiable. Students are supposed to finish the design phase including the overall system/architectural design and validation scheme. 50% of total mark shall be based on the following criteria:

2.2.1 Evaluation Criteria:

Task Accomplished (40%)

- System. Architectural Design
- Depth of project work
- Progress
- Level of achievement
- Group/Team Effort
- Ability to propose solutions

2.2.2 Documentation (10%)

- Report organization
- Completeness and consistency of the report
- Validation Criteria
- Organization and analysis of data and results

2.3 Phase III: All students are required to finish all phases of their project work including requirements analysis, design, coding and testing by the time they come for the final project presentation. Students must have a visible output of the product that they have developed and perform an oral defense of their work in the presence of an external examiner (external to the department or

from industries). The final presentation should be conducted on the last week of final semester term as far as practicable.:

2.3.1 Evaluation Criteria (20%)

- Presentation
- Completeness, Consistency and Final Output of the Project
- Viva
- Final Project Report

Evaluation may be done on continued basis by the department.

Far Western University

Faculty of Engineering

Bachelor in Computer Engineering

(Course of Study)

Course Title: Project and Organization Management
Course Code: CT 361
Year/Semester: Fourth/Eight
Level: Bachelor of Engineering (Computer)

Credit: 3
Number of lecture/week: 3
Tutorial/week: 1
Total hours: 45

1. Course Introduction:

This course guides students through fundamental project management concepts and organization managements skills needed to successfully launch, lead, and realize benefits from projects in profit and nonprofit organizations. Successful project managers skillfully manage their resources, schedules, risks, and scope to produce a desired outcome. In this course, students explore project management as well as organization management skills with a practical, hands-on approach through case studies and class exercises. A key and often overlooked challenge for project managers and organization managers is the ability to manage without influence to gain the support of stakeholders and access to resources not directly under their control. The course reviews causes of project failure and how to mitigate risks through proper planning in the early phases of a new initiative.

2. Course Objectives:

This course focuses on project management methodology and organization management skills that will allow students to initiate and manage projects and organization efficiently and effectively. The student will learn key project management skills and strategies, and you will have the opportunity to apply this knowledge through assignments. Upon completion of the course, students should be able to:

- Understand project management design, development, and deployment
- Use project management tools, techniques, and skills
- Employ strategies to address the ubiquitous issue of resistance to change
- Align critical resources for effective project implementation
- Understand the implications, challenges, and opportunities of organizational dynamics in project management
- Define the management functions and business processes that create value for an organization
- Identify management policies, practices, and procedures that influence group and individual dynamics in organizations.
- Describe situations where management decision-making should incorporate ethical reasoning, multiculturalism, and internal inter-group behavior.
- Explain how decisions are made in an organization, including types of decisions to be made, problem definition, and various approaches to decision making.

3. Course Outline:

The concepts in this course will be taught using a combination of lecture, discussion, and dialogue around cases, with emphasis on active learning. A case is a comprehensive exposition of a real managerial situation describing a set of problems and requiring a plan of action. The case method provides a pragmatic framework for the learning process. Its success depends on student preparation and active participation in class discussions. By exploring the four pillars of management: planning, organizing, leading, and controlling organizations leverage their scarce resources to achieve their goals. The objective of this course is to provide students an overview of the field of management, and insights into the concept of organizational structure as well as effective project management.

Specific Objectives	Contents (UNIT/CHAPTER)	Duration (Time allocated)
The specific objectives of first unit is to get familiarity with project management and organization management and to get knowledge on project management principles and practices as well as to investigate reasons for project success and failure.	**UNIT 1:** **CHAPTER ONE: Introduction of Project Management and Organization Management** - Project Management Overview - Projects in the Business Environment - Project Definition - Project Estimates and Planning - Project Execution - Project Monitoring & Control - Project Quality	6 Hours
	CHAPTER TWO: Project Management Principle and Practices - Leadership in Projects - Projects' Success And Failure - Project Closure and Audit - Strategic Excellence in Project Management - Project Activation Management System (PAMS) Process for Project Management - The Start-Up Process. Introduction to PAMS Process for Project Management - Implement PAMS Process for Project Management - Project Management Case study	10 Hours
	CHAPTER THREE: Effective Project Management - Role of Project Manager - Seven Traits of Good Project Manager - Integration Management - Project Scope Management	8 Hours

	- Project Human Resource management - Project Communication Management - Project Life Cycle - Project Risk Management - Work Breakdown Structures and Project Network Diagrams - Project Design Management - Software Project Management - Project Management Business Case	
The specific objectives of Unit 2 is to get understanding with effective organization management, principles of management such as planning, controlling and leadership in organization.	**UNIT 2:** **CHAPTER FOUR: Overview of Organization Management** - The Nature of Management - Social Responsibility and Managerial Ethics - International Management and Globalization - Organizational Structure - Decision Making - Personnel and Performance Management - Managing Conflict - Organizational Culture and Communication - External Forces and Relationship	8 Hours
	CHAPTER FIVE: Planning and Organization - Individual and Group Decision Making - Strategic Management - Planning - Organizational Structure and Design - Organizational Change	5 Hours
	CHAPTER SIX: Leadership and Controlling - Managing Diverse Human Resources - Leadership and Motivation - Group and Teams - Communication and Negotiation - Operations Management - Control - Organizational Change and Development - Business Case Studies on Organization Management	8 Hours

4. **Project work:** Submit at the end of semester with report (in group).
5. **Tutorials:** One hour every week.

6. **Assignments:** Three assignments in semester
7. **References**

1. Wysocki, R.K.. Effective Project Management; 7th Edition. Traditional, Agile, Extreme, Wiley, 2013.

2. Project Management: A Systems Approach to Planning, Scheduling, and Controlling, 12th Edition. Harold Kerzner. ISBN: 978-1-119-16535-4. Apr 2017.

3. Peter Stokes, Neil Moore, Simon M. Smith, Caroline Rowland. Organizational Management: Approaches and Solutions. Kogan Page Publishers, 2016.

4. Management (3rd Edition) Michael Hitt, Stewart Black, and Lyman W Porter Prentice Hall 2011.

8. Evaluation scheme

The questions will cover all the chapters in the syllabus. The evaluation scheme will be as possible as indicated in the table below:

Chapters	Hours	Marks distribution* (Tentative)	
1	6	10	
2	10	12	
3	8	10	
4	8	10	
5	5	6	
6	8	12	Total: 60 Marks

*** There may be minor variation in marks distribution**

Internal Evaluation (Marks Weightage)		Final Exam (Marks Weightage)	Total	Remarks
Assessment/Class Performance/Attendance/Quizzes/ Tutorials/Presentation	**Practical**			
40		**60**	**100**	**Internal marks will be of 40 if there are no practical works in the course**
20	**20**	**60**	**100**	**Internal marks will be of 20 if there are practicals in the course (20 marks will be allocated for Practicals)**