### B.E.MBA integrated in ELECTRICAL & ELECTRONICS
#### VII SEMESTER

<table>
<thead>
<tr>
<th>Ref No.</th>
<th>Subject</th>
<th>SCHEDULE OF TEACHING</th>
<th>SCHEME OF EXAMINATION</th>
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<td>EE-711</td>
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<td>Entrepreneurship and Project Management</td>
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**EE-711**

**NON – CONVENTIONAL ENERGY SOURCES**

External: 100  
Sessional: 50

**Note:** Examiner shall set eight questions, four from Part-A and four from Part-B of the syllabus. Candidate will be required to attempt any five questions selecting at least two questions from Part A and two from Part B.

**Part-A**

**INTRODUCTION:** Limitation of conventional energy sources, need and growth of alternative energy source, basic scheme and application of direct energy conservation.

**MHD GENERATORS:** Basic principles, gaseous, conduction and hall effect, generator and motor effect, different types of MHD generator, types of MHD material, conversion effectiveness, analysis of constant area MHD generator, practical MHD generator, application and economic aspects.

**THERMO-ELECTRIC GENERATORS:** Thermoelectric effects, Seeback effect, Peltier effect, Thomson effect, thermoelectric converters, figures of merit, properties of thermoelectric material, brief description of the construction of thermoelectric generators, application and economic aspect.

**PHOTO VOLTAIC EFFECT AND SOLAR ENERGY:** Photovoltaic effect, different types of photovoltaic cells, cell fabrication, characteristics of photovoltaic cells, conversion efficiency, solar batteries, application, solar radiation analysis, solar energy in India, solar collectors, solar furnaces and applications.

**Part-B**

**FUEL CELLS:** Principle of action, Gibb's free energy, general description of fuel cells, types, construction, operational characteristics and application.

**MISCELLANEOUS SOURCES:** Geothermal system, characteristic of geothermal resources, choice of generator set, electric equipment precautions low hydro-plants, definition of low head hydrometer, choice of site, choice of turbine wind power, history of wind power, wind machines, theory of wind power, characteristic of suitable wind power site, tidal energy, idea of tidal energy, tidal electric generator.

**Recommended Books:**

EC-712
Communication Engineering

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External: 100
Sessional: 50

Note: Examiner shall set eight questions, four from Part-A and four from Part-B of the syllabus. Candidate will be required to attempt any five questions selecting at least two questions from Part A and two from Part B.

Course Duration: 45 Lectures of one hour each.

Part-A

Amplitude Modulation & Demodulation and Systems

Frequency Modulation
Principles and generation of FM and PM signals, Reactance Modulator method, Armstrong Method, noise consideration in FM and PM system.

Part-B

Frequency Demodulation and Systems
detection of FM and PM signals, Foster Discriminator, ratio and PLL detectors, FM Transmitter(Block Diagram), FM receiver (Block Diagram), Pre-emphasis and de-emphasis circuit.

Pulse Modulation & Demodulation
Principles, generation and detection of PAM, PWM, PPM & PCM signals, noise in pulse modulation system, band width consideration, companding, delta modulation, adaptive delta modulation systems. TDM & FDM

Books Recommended:

External: 25
Sessional: 50

List of experiments:-

1. To measure the modulation index of AM signals using the trapezoidal method
2. To study DSB/ SC AM signal and its demodulation using product Detector Circuit.
3. To study the voltages and waveforms of various stages of super-heterodyne receiver
4. To measure the sensitivity and selectivity of a super heterodyne radio receiver
5. To study the voltages and waveforms of various stages of FM Receiver
6. To study the pulse code modulation and de-modulation circuit
7. To study the Time division multiplexing and demultiplexing circuit
8. To study delta modulation and demodulation circuits.
9. To study sigma delta modulation and demodulation circuits.
EC-713
Digital Signal Processing

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Course duration: 45 lectures of one hour duration each
Note: Examiner shall set eight questions, four from Part-A and four from Part-B of the syllabus. Candidate will be required to attempt any five questions selecting at least two questions from Part A and two from Part B.

PART A

CONTINUOUS TIME SIGNALS (04)
Review of Fourier series and Fourier Transform, Sampling of Continuous Time signals.

DISCRETE TIME SIGNALS (08)
Discrete time Signals & Systems, Linear Time Invariant systems, Stability and Causality, Solution of Linear constant coefficient difference equations, Convolution, Correlation, Z- Transform and its properties, Inverse Z transform.

FREQUENCY DOMAIN REPRESENTATION OF SIGNALS & SYSTEMS (10)

PART B

DIGITAL FILTERS (10)
Ideal Filter vs. Practical Filters, General Specifications and Design Steps, Comparison of FIR & IIR Filters.
Design of FIR Filters: Window technique, Frequency sampling technique.
Design of IIR Filters: Impulse Invariance technique, Bilinear Transformation, Design of IIR Filters using Butterworth, Chebyshev and Elliptic filter, Digital frequency transformation.

IMPLEMENTATION OF DISCRETE TIME SYSTEMS (05)
Block diagrams and signal flow graphs for FIR and IIR systems. Direct form, Cascade and Frequency Sampling Structures for FIR systems, Direct forms, Cascade and Parallel form realization of IIR systems, Finite Word Length Effects.

DSP PROCESSORS (08)
Introduction to fixed point and floating point processors and their architecture, TMS320C5X Architecture, Memory, Addressing Modes, Interrupts and Assembly Language Programming

Recommended Books:
2. “Digital Signal Processing” by E C Ifeather and B W Jervis
EC-763
Digital Signal Processing Lab

List of Experiments:
1. Generating & Plotting Discrete time signals using MATLAB.
2. Use of basic multi-signal processing signals of MATLAB.
3. To perform different operations - addition, multiplication, scaling, folding, and shifting using MATLAB.
4. Convolution of Causal & Non Causal sequences in MATLAB.
5. Auto & Cross-Correlation in MATLAB.
7. DFT & IDFT of two sequences.
8. FFT of two Sequences.
9. FIR Filter Design using Window Method in MATLAB.
10. IIR Filter Design using Bilinear Transformation in MATLAB.
11. IIR Filter Design using Impulse Invariance in MATLAB.
12. Butterworth and Chebyshev Digital IIR Filters in MATLAB.
13. Implementation of Filter Structures in MATLAB.
15. System Design based on DSP kits.
IBM 701
Entrepreneurship and Project Management

External: 100
Sessional: 50

Course duration: 45 lecturers of one hour duration each

Note: Examiner shall set eight questions, four from Part-A and four from Part-B of the syllabus. Candidate will be required to attempt any five questions selecting at least two questions from Part A and two from Part B.

Objectives: To understand the concept and importance of entrepreneurship and its role in business life for individual, corporate growth and development.

Part – A

Introduction: Definition, Need, Classification, Process, Scope and Nature of Entrepreneurship, Difference between entrepreneur, entrepreneurship, enterprise and entrepreneurial.

Concepts of Entrepreneurship: Factors affecting entrepreneurship, Functions of entrepreneurship, Culture of modern entrepreneurship, Competencies and traits of entrepreneurship, Entrepreneurial ventures in India.

Types of entrepreneurship: Role of mitigation in entrepreneurship, Myths of entrepreneurship, Role of family structure in entrepreneurship. Women entrepreneurs, Internet Entrepreneurship, Case Study.

Part – B

Project Management: Meaning, Concept, Characteristics, Types, Importance, and Steps in Project Identification, Concept of Project Management, Forms of Project Organization.

Project system: Life cycle of system; Project Manager: Attributes;


Internal Assessment:
Sessionals 15+15 marks
Quiz/Project/Assignment: 20 marks

Text Books:

Reference Books:
IBM 702
Industrial Relations

External: 100
Sessional: 50

Course duration: 45 lectures of one hour duration each
Note: Examiner shall set eight questions, four from Part-A and four from Part-B of the syllabus. Candidate will be required to attempt any five questions selecting at least two questions from Part A and two from Part B.

Objective: The objective of this course is to make the students familiar with various industrial relations approaches and procedure to resolve industrial dispute and with various industrial relations legislations

Part A

Industrial Relations - Concepts & Definitions - Impact of Industrial Revolution on Industrial Relations - Indian Industrial Workers- Work Culture - wages and industrial relations - Objectives of Industrial Relations. 6hrs

Four Actors in Industrial Relations – The Workers – management – Government – Society & their Importance in maintaining Industrial Relations. 4hrs


 Strikes – Types of strikes 2hrs

Part B

Trade Union – Definition structure – features – Functions of trade Union – Trade Union Security – Types of Trade Unions – Reformist trade union 4hrs


Industrial Democracy and Workers’ participation in Management -Role of workers and management in the industry. 3hrs

Employees’ grievance – Meaning – Causes – Grievance redressal procedures. 2hrs

Industrial Relations Legislations:
 a) Trade Union Act,1926
 b) Industrial Disputed Act, 1947
    (Tripartite and Bipartite bodies : Resolution of Industrial Disputes by conciliation , Arbitration, Ad-judications, Prohibition of strikes – Lockout – Layoff – Retrenchment – Closure etc. )
 c) Industrial Employment (Standing Orders) Act, 1946
    (Terms and Conditions of employment and disciplinary procedure) 6hrs

Other Legislations
Payments of Wages Act,1936
Minimum Wages Act,1948
The Factories Act,1948 6hrs
**Suggested Readings:**

1. Industrial Law – P.L. Malik, Eastern Book Co. Lucknow