

ECE07 Analog and Digital Communication**3L:1T:2P****5 CREDITS**

Basic tools for communication, Review of Fourier Transform and Its Properties, Convolution and Convolution with impulse Function, Energy and Power Signal, Energy and Power Spectral Density, Parsevals Relation, Impulse Response of LTI System, Distortion less system and its impulse response, Types of Distortion in communication System, Hilbert Transform and its Properties.

Amplitude Modulation (AM), Spectrum of AM, Envelope Detection, Power Efficiency, Modulation Index, Double Sideband Suppressed Carrier (DSB-SC) Modulation, Quadrature Carrier Multiplexing (QCM), Demodulation, Costas Receiver, Single Sideband Modulation (SSB), Complex Pre-envelope/ Envelope, Demodulation of SSB, Vestigial Sideband Modulation (VSB), Modulation Index, Transmission efficiency.

Angle Modulation, Frequency Modulation (FM), Phase Modulation (PM), Modulation Index, Instantaneous Frequency, Spectrum of FM Signals, Carsons Rule for FM Bandwidth, Narrowband FM Generation, Wideband FM Generation via Indirect Method, FM Demodulation: Foster seelay Discriminator. Ratio Detector, Pre-emphasis and De-emphasis circuits.

Noise, Sources and types of noise and their power density, Multiple noise source for Linear Systems, Super Position of Power Spectrum, Bandwidth, Noise Figure, and Equivalent Noise Temperature, their Relationship, Noise Performance of Communication System, Band Pass Noise Representation in Terms of Low Pass, Figure of Merit, Gaussian and white noise characteristics, Noise Performance in amplitude modulation systems, Noise in Frequency modulation systems, Figure of Merit for FM.

Introduction to Sampling, Spectrum of Sampled Signal, Aliasing, Aperture Effect, Nyquist Criterion, Signal Reconstruction from Sampled Signal, Types of Sampling, Pulse Modulation (PAM, PWM, PP.), Time and Frequency Division Multiplexing, Channel Bandwidth of PAM-TDM System. Quantization, Uniform Quantizers – Midrise and Midtread, Quantization noise, Lloyd Max Quantization Algorithm, Non uniform Quantizers.

BOOKS AND REFERENCES

1. Simon Haykin, Communications Systems, 4th Edition. John Wiley and Sons, Inc
2. Fundamentals of Wireless Communication by David Tse
3. B.P. Lathi : Modern Analog and Digital Communication System, Wiley Eastern limited
4. Taub and Schilling : Principles of communication Systems, TMH
5. Singh and Sapre : Communication Systems, TMH

Prepared by:

D Sharma

(Subject Teacher)

ATCET के Modular विषय (इस विषय) में Syllabus में
20% लक्ष्य का परिवर्तन हुआ है



ECE09	Analog circuits	3L:1T:2P	5 credits
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Diode Circuits, Amplifier models: Voltage amplifier, current amplifier, trans-conductance amplifier and trans-resistance amplifier. Biasing schemes for BJT and FET amplifiers, bias stability, various configurations (such as CE/CS, CB/CG, CC/CD) and their features, small signal analysis, low frequency transistor models, estimation of voltage gain, input resistance, output resistance etc., design procedure for particular specifications, low frequency analysis of multistage amplifiers.

High frequency transistor models, frequency response of single stage and multistage amplifiers, cascode amplifier. Various classes of operation (Class A, B, AB, C etc.), their power efficiency and linearity issues. Feedback topologies: Voltage series, current series, voltage shunt, current shunt, effect of feedback on gain, bandwidth etc., calculation with practical circuits, concept of stability, gain margin and phase margin.

Oscillators: Review of the basic concept, Barkhausen criterion, RC oscillators (phase shift, Wien bridge etc.), LC oscillators (Hartley, Colpitt, Clapp etc.), non-sinusoidal oscillators.

Current mirror: Basic topology and its variants, V-I characteristics, output resistance and minimum sustainable voltage (V_{ON}), maximum usable load. Differential amplifier: Basic structure and principle of operation, calculation of differential gain, common mode gain, CMRR and ICMR. OP-AMP design: design of differential amplifier for a given specification, design of gain stages and output stages, compensation.

OP-AMP applications: review of inverting and non-inverting amplifiers, integrator and differentiator, summing amplifier, precision rectifier, Schmitt trigger and its applications. Active filters: Low pass, high pass, band pass and band stop, design guidelines.

Digital-to-analog converters (DAC): Weighted resistor, R-2R ladder, resistor string etc. Analog-to-digital converters (ADC): Single slope, dual slope, successive approximation, flash etc.

Department of Electronics and Communication Engineering

Ujjain Engineering College, Ujjain

B. Tech. IV Sem

Branch Electronics and Communication Engineering

Course Contents

Category of Course	Course Title	Course Code	Credits- 6C			Theory Papers (ES)
EC	Microcontroller and Microprocessor	EC 4303	L	T	P	Max. Marks -70 Min. Marks- 30 Duration- 3 Hrs.
			3	1	2	

Unit -I

Overview of microcomputer systems and their building blocks, memory interfacing, concepts of interrupts and Direct Memory Access, instruction sets of microprocessors (with examples of 8085 and 8086);

Unit -II

Interfacing with peripherals - timer, serial I/O, parallel I/O, A/D and D/A converters;

Unit -III

Arithmetic Coprocessors; System level interfacing design; Concepts of virtual memory, Cache memory,

Unit -IV

Advanced coprocessor Architectures- 286, 486, Pentium; Microcontrollers: 8051 systems,

Unit -V

Introduction to RISC processors; ARM microcontrollers interface designs.

Text/Reference Books:

1. R. S. Gaonkar, Microprocessor Architecture: Programming and Applications with the 8085/8080A, Penram International Publishing, 1996.
2. D A Patterson and J H Hennessy, "Computer Organization and Design The hardware and software interface. Morgan Kaufman Publishers.
3. Douglas Hall, Microprocessors Interfacing, Tata McGraw Hill, 1991.
4. Kenneth J. Ayala, The 8051 Microcontroller, Penram International Publishing, 1996.

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Course Contents

EC 4304

Category of Course	Course Title	Course Code	Credits- 4C			Theory Papers (ES)
Engineering Science - ES13	Energy Environment Engineering & Science	EC 4304	L	T	P	Max. Marks -70 Min. Marks- 30 Duration- 3 Hrs.
			3	1	0	

Unit –I

Introduction of energy scenario, Conventional and non-conventional resources of energy, utility and waste management of thermal, hydal energy. General idea of solar, Wind, Bio-mass. Geothermal, Tidal and Wave energy, Sources and waste management of nuclear power energy. Electromagnetic energy, radio frequency and microwaves, its biological effects.

Unit –II

Global warming, depletion of ozone layer" human activity and meteorology. Genetic and plant bio-diversity, EL-Nino phenomenon and its effects. Solid waste, waste disposal methods, recycling of solid waste and its management.

Unit –III

Atmosphere - introduction. Structure of the atmosphere. Chemical and Photochemical reactions in the atmosphere, primary air pollutants - Sources, control and harmful effects of CO, NO_x, SO_x, HC, particulars, sampling techniques, Air pollution from automobiles, Photochemical smog, Acid rain some case studies of air pollution.

Unit –IV

Hydrosphere - Aquatic environment, organic and inorganic water pollutants, Domestic and Industrial waste water treatment, -Aerobic and anaerobic treatment processes, sampling and preservation, some case studies of water pollution.

Unit –V

Lithosphere and Noise Pollution - introduction of Land and Soil pollution. Control and disposal, harmful effects. General introduction of noise pollution and its effects. Sound unwanted form of noise, changes, and traffic noise. Prediction and control.

References:

1. Environmental Engineering - Howand S. Peavy, Rowe, Mc.Graw Hill.
2. Environmental Protection - Emil T. Chanlett.
3. E, Environmental Chernistry - A.K. Dey. Wiley Eastern Ltd.
4. Environmental Science - Cumingham, Saigo, Mc.Graw Hill.
5. Ecology Concepts and Application - Manuel C. Mrnoller, Jr.-Mc.Graw Hill.
6. Environmental Chemistry and Pollution Control - S. S. Dora, S.Chand & co.

13/3/2020

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Course Contents

Category of Course	Course Title	Course Code	Credits- 4C			Theory Papers (ES)
			L	T	P	
HS -4305	Engineering Economics and Management	HS 4305	3	1	0	Max. Marks -70 Min. Marks- 30 Duration- 3 Hrs.

Unit -I

Introduction to Economics: Definitions, Nature, Scope, Difference between Microeconomics and Macroeconomics. **Theory of Demand and Supply:** meaning, determinants, laws of demand, law of supply, equilibrium between demand and supply. **Elasticity:** elasticity of demand, price elasticity, income elasticity, cross elasticity. **Markets:** meaning, types of market and their characteristics (perfect competition, monopoly, monopolistic competition, and oligopoly). **National income:** meaning, stock and flow concept, NI at current price, NI at constant price, GNP, GDP, NNP, NDP, personal income, disposal income..

Unit -II

Basic economic problems: poverty- meaning, absolute and relative poverty, causes, measure to reduce. **Unemployment:** meaning, types, causes, remedies. **Inflation:** meaning, types, causes, measure to control. **Money:** meaning, types, functions, monetary policy- meaning, objectives, tools, fiscal policy- meaning, objectives, tools. **Banking:** Meaning, types, functions, central bank- RBI; its function, concepts, CRR, bank rate, repo rate, reverse repo rate, SLR.

Unit -III

Introduction to management: definitions, nature, scope. Management and administration, skill, types and roles of managers. **Management principles:** scientific principles, administrative principles, Maslow's hierarchy of needs theory. **Functions of management:** planning, organizing, staffing, directing, controlling (meaning, nature and importance). **Organizational structures:** meaning, principles of organization, type s -formal and informal, line, line and staff, matrix, hybrid (explanation with merits and demerits), span of control, departmentalization.

Unit -IV

Theory of production: production function, meaning, f-actors of production (meaning and characteristics of land labor, Capital and entrepreneur), Law of variable proportion and law of return to scale. **Cost:** meaning, short run and long run cost, fixed cost, variable cost, total cost, average cost, marginal cost, opportunity cost. **Break even analysis:** meaning, explanation, numerical.

Introduction to production management: definition, objectives, functions, plant layout-types and factors affecting it, plant location-factors affecting it.

Introduction to human resource of management: definitions, objectives of manpower planning, process, source of recruitment, process of selection.

Unit –V

Introduction to marketing management: marketing mix, concepts of marketing, demand forecasting and methods, market segmentation. **Introduction to finance management:** meaning, scope, source, function. Introduction to corporate social responsibility; meaning, importance business ethics; meaning, importance.

Text/Reference Books:

1. Engineering Economics, R. Paneerselvam, PHI publication.
2. Fundamentals of Management: Essential concepts and Applications, Pearson Education, Robbins S.P. and Decenzo David A.
3. Economics: Principles of Economics, N Gregory Mankiw, Cengage Learning.
4. Principles and Practices of Management by L.M. Prasad.
5. Principles of management by Tripathy and Reddy.
6. Modern Economics Theory. by Dr. K.K. Dewett and M.H. Navalur" S. Chand publications