VELTECH MULTI TECH

Dr RANGARAJAN Dr. SAKUNTHALA ENGINEERING COLLEGE

(Owned by Vel Trust 1997)

(An ISO 9001: 2008 Certified Institution)

Accredited By NAAC with 'A' Grade and NBA Accredited Institution

(Approved by AICTE New Delhi and Govt. of Tamil Nadu, Affiliated to Anna University Chennai)

SYLLABUS

WEEKLY SCHEDULE

III SEMESTER 2017-18

DEPARTMENT OF EEE

IV YEAR DEGREE COURSE

#42, Avadi – Vel Tech Road,
Avadi
Chennai – 600062
Telefax – 044-26841061
E-mail: emailto@veltechmultitech.org
Website :www.veltechmultitech.org

VISION OF THE INSTITUTE

Elevating well being of humanity by augmenting human resource potential through quality technical education and training.

MISSION OF THE INSTITUTE

- To effectuate supremacy in technical education through articulation of research and industry practices for social relevance.
- To inculcate the habit of lifelong learning.
- To exhibit professional ethics, commitment and leadership qualities

VISION OF THE DEPARTMENT

To emerge as a centre of academic excellence in Electrical and Electronics Engineering and related fields through knowledge acquisition and propagation meeting global practices

MISSION OF THE DEPARTMENT

• To nurture the talent and to facilitate the students with research ambience in Electrical and Electronics Engineering

•To propagate lifelong learning

• To impart the right proportion of knowledge, attitudes and ethics in students, to enable them take up positions of responsibility in the society and make significant contributions

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

- To prepare graduates to have successful and flourishing career in the electrical and electronics industry.
- To make students able to excel in their career with ethical values and managerial skills to solve real life technical problems.
- To make students capable of solving problems in electrical and electronics engineering which are found in utilities and industries
- To help students to engage in quest for self-learning and life-long learning.

PROGRAM OUTCOMES OF EEE

PO1: Engineering knowledge: Enables to apply the knowledge of differential equations, integrals, matrix theory, Laplace, Fourier and z-transformation for engineering problems.

PO2: Problem analysis: Enables to define Basic science, Circuit theory, Electromagnetic Field theory, Control theory and to apply them to analyze complex engineering problems.

PO3: Design/development of solutions: Enables to configure and apply solutions to transmission and distribution networks, electrical apparatus and to handle the engineering aspects of Electrical Energy Generation and Utilization.

PO4: Use research-based knowledge: Enable to analysis, synthesis and interpretate the data to provide valid conclusions.

PO5: Modern tool usage: Enables to design, implement and evaluate computer-based system/tools to meet the desired needs.

PO6: The engineer and society: Enables to apply the knowledge gained to assess societal, health, legal and cultural issues, and consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability: Enables to understand the impact of the Electrical engineering solutions in societal and environmental contexts and demonstrates the knowledge of and need for sustainable development.

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work: Enables to function effectively on teams to full-fill the goals.

PO10: Communication: Enables to express the dynamic solutions to fit-into the engineer community.

PO11: Project management and finance: Demonstrate knowledge and understanding of engineering and management principles, and apply these to one's own work, as a member or a leader in a team.

PO12: Life-long learning: Enables to recognize the need for, and have the preparation to engage in continuing professional development.

WEEK DETAILS

SL.NO.	WEEK	FROM	TO
1	**WEEK1**	**24.06.17**	**-**
2	**WEEK2**	**26.07.17**	**01.07.17**
3	**WEEK3**	**03.07.17**	**08.07.17**
4	**WEEK4**	**10.07.17**	**15.07.17**
5	**WEEK5**	**17.07.17**	**22.07.17**
6	**WEEK6**	**24.07.17**	**29.07.17**
7	**WEEK7**	**31.07.17**	**05.08.17**
8	**WEEK8**	**07.08.17**	**12.08.17**
9	**WEEK9**	**14.08.17**	**19.08.17**
10	**WEEK10**	**21.08.17**	**26.08.17**
11	**WEEK11**	**28.08.17**	**02.09.17**
12	**WEEK12**	**04.09.17**	**09.09.17**
13	**WEEK13**	**11.09.17**	**16.09.17**
14	**WEEK14**	**18.09.17**	**23.09.17**
15	**WEEK15**	**25.09.17**	**30.09.17**
16	**WEEK16**	**02.10.17**	**07.10.17**
17	**WEEK17**	**09.10.17**	**13.10.17**

SUBJECT CONTENTS

SL.NO	SUBJECT CODE	SUBJECT NAME
THEORY		
1	MA6351	Transforms and Partial Differential Equations
2	EE6301	Digital Logic Circuits
3	EE6302	Electromagnetic Theory
4	GE6351	Environmental Science and Engineering
5	EC6202	Electronic Devices and Circuits
6	EE6303	Linear Integrated Circuits and Applications
PRACTICAL		
7	EC6361	Electronics Laboratory
8	EE6311	Linear and Digital Integrated Circuits Laboratory

TEST / EXAM SCHEDULE

SL.NO	SUBJECT CODE	SUBJECT NAME	UNIT TEST I	UNIT TEST II	PRE MODEL EXAM	UNIT TEST IV
1	MA6351	Transforms and Partial Differential Equations	10.07.2017 (FN)	27.07.2017 (FN)	16.08.2017	07.09.17 (FN)
2	EE6301	Digital Logic Circuits	10.07.2017 (AN)	27.07.2017 (AN)	17.08.2017	07.09.17 (AN)
3	EE6302	Electromagnetic Theory	11.07.2017 (FN)	28.07.2017 (FN)	18.08.2017	08.09.17 (FN)
4	GE6351	Environmental Science and Engineering	11.07.2017 (AN)	28.07.2017 (AN)	19.08.2017	08.09.17 (AN)
5	EC6202	Electronic Devices and Circuits	12.07.2017 (FN)	29.07.2017 (FN)	21.08.2017	09.09.17 (FN)
6	EE6303	Linear Integrated Circuits and Applications	12.07.2017 (FN)	29.07.2017 (FN)	22.08.2017	09.09.17 (AN)

SL.NO	SUBJECT CODE	SUBJECT NAME	MODEL EXAM
1	MA6351	Transforms and Partial Differential Equations	28.09.2017
2	EE6301	Digital Logic Circuits	04.10.2017
3	EE6302	Electromagnetic Theory	06.10.2017
4	GE6351	Environmental Science and Engineering	09.10.2017
5	EC6202	Electronic Devices and Circuits	11.10.2017
6	EE6303	Linear Integrated Circuits and Applications	13.10.2017

SL.NO	SUBJECT CODE	SUBJECT NAME	MODEL LAB
1	EC6361	Electronics Laboratory	25.09.2017
2	EE6311	Linear and Digital Integrated Circuits Laboratory	26.09.2017

MA6351 TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS

WEEK: 1 Introduction

WEEK :2 UNIT I PARTIAL DIFFERENTIAL EQUATIONS

Formation of partial differential equations – Singular integrals -- Solutions of standard types of first order partial differential equations Lagrange's linear equation -- Linear partial differential equations of second

WEEK: 3 Higher order with constant coefficients of both homogeneous and non-homogeneous types.

WEEK 4: UNIT TEST-I

UNIT II FOURIER SERIES

Dirichlet's conditions – General Fourier series

WEEK 5: Odd and even functions – Half range sine series –Half range cosine series – Complex form of Fourier series

WEEK 6: Parseval's identity – Harmonic analysis, **UNIT TEST-II**

WEEK 7: UNIT III APPLICATIONS OF PARTIAL DIFFERENTIAL EQUATIONS

Classification of PDE, Method of separation of variables - Solutions of one dimensional wave equation

WEEK 8 : One dimensional equation of heat conduction

WEEK 9: Steady state solution of two dimensional equation of heat conduction (excluding insulated edges), PRE MODEL EXAM

WEEK 10: PRE MODEL EXAM

UNIT IV FOURIER TRANSFORMS

Statement of Fourier integral theorem – Fourier transform pair – Fourier sine and cosine transforms

WEEK 11: Properties – Transforms of simple functions – Convolution theorem

WEEK 12: Parseval's identity, UNIT TEST-IV

WEEK 13: UNIT V Z - TRANSFORMS AND DIFFERENCE EQUATIONS

Z- transforms - Elementary properties – Inverse Z - transform (using partial fraction and residues) Convolution theorem

WEEK14: Formation of difference equations, Solution of difference equations using Z- transform

WEEK 15: MODEL PRACTICAL EXAM, MODEL EXAM

WEEK 16: MODEL EXAM

WEEK 17: MODEL EXAM

TEXT BOOK:

1. Veerarajan T., "Transforms and Partial Differential Equations", Tata McGraw Hill Education Pvt. Ltd., New Delhi, Second reprint, 2012.
2. Grewal B.S., "Higher Engineering Mathematics", 42nd Edition, Khanna Publishers, Delhi,2012.

3. Narayanan S., Manicavachagom Pillay.T.K and Ramanaiah.G "Advanced Mathematics forEngineering Students" Vol. II & III, S.Viswanathan Publishers Pvt Ltd. 199

REFERENCES:

1. Bali. N.P and Manish Goyal, "A Textbook of Engineering Mathematics", 7th Edition, Laxmi Publications Pvt Ltd, 2007.
2. Ramana. B.V., "Higher Engineering Mathematics", Tata McGraw Hill Publishing Company Limited, New Delhi, 2008.
3. Glyn James, "Advanced Modern Engineering Mathematics", 3rd Edition, Pearson Education,2007.
4. Erwin Kreyszig, "Advanced Engineering Mathematics", 8th Edition, Wiley India, 2007.
5. Ray Wylie C and Barrett.L.C, "Advanced Engineering Mathematics" Tata McGraw Hill Education Pvt Ltd, Sixth Edition, New Delhi, 2012.
6. Datta K.B., "Mathematical Methods of Science and Engineering", Cengage Learning India Pvt Ltd, Delhi, 2013..

EE6301 DIGITAL LOGIC CIRCUITS

WEEK 1: Introduction

WEEK 2: UNIT I NUMBER SYSTEMS AND DIGITAL LOGIC FAMILIES

Review of number systems, binary codes, error detection and correction codes (Parity and Hamming code0; Digital Logic Families, comparison of RTL, DTL, TTL, ECL and MOS families Operation

WEEK 3: Characteristics of digital logic family

WEEK 4: UNIT TEST-I

UNIT II COMBINATIONAL CIRCUITS

Combinational logic - representation of logic functions-SOP and POS forms,

WEEK 5: K-map representations minimization using K maps - simplification and implementation of combinational logic – multiplexers and demultiplexers

WEEK 6: code converters, adders, subtractors, UNIT TEST-II

WEEK 7: UNIT III - SYNCHRONOUS SEQUENTIAL CIRCUITS

Sequential logic- SR, JK, D and T flip flops - level triggering and edge triggering - counters -asynchronous and synchronous type.

WEEK 8: Modulo counters - Shift registers - design of synchronous sequential circuits -Moore and Melay models-

WEEK 9: Counters, state diagram; state reduction; state assignment.

PRE MODEL EXAM

WEEK 10: PRE MODEL EXAM

UNIT IV ASYNCHRONOUS SEQUENTIAL CIRCUITS AND PROGRAMMABLELOGIC DEVICES

Asynchronous sequential logic circuits-Transition table, flow table-

WEEK 11: race conditions, hazards &errors in digital circuits;

Analysis of asynchronous sequential logic circuits

Introduction to Programmable Logic Devices

WEEK 12: PROM – PLA –PAL**, UNIT TEST-IV**

WEEK 13: UNIT V - VHDL

RTL Design Combinational logic – Sequential circuit

Operators – Introduction to Packages, Subprograms – Test bench

WEEK 14: Simulation /Tutorial Examples: adders, counters, flip flops, FSM, Multiplexers Demultiplexers

WEEK 15: MODEL PRACTICAL EXAM, MODEL EXAM

WEEK 16: MODEL EXAM

WEEK 17: MODEL EXAM

TEXT BOOK:

1. Raj Kamal, ' Digital systems-Principles and Design', Pearson Education 2nd edition, 2007.

2. M. Morris Mano, 'Digital Design with an introduction to the VHDL', Pearson Education, 2013.

3. Comer "Digital Logic & State Machine Design, Oxford, 2012

REFERENCES:

1. Mandal "Digital Electronics Principles & Application, McGraw Hill Edu,2013.

2. William Keitz, Digital Electronics-A Practical Approach with VHDL,Pearson,2013.

3. Floyd and Jain, 'Digital Fundamentals', 8th edition, Pearson Education, 2003.

4. Anand Kumar, Fundamentals of Digital Circuits,PHI,2013.

5. Charles H.Roth,Jr,Lizy Lizy Kurian John, 'Digital System Design using VHDL, Cengage, 2013.

6. John M.Yarbrough, 'Digital Logic, Application & Design', Thomson, 2002.

7. Gaganpreet Kaur, VHDL Basics to Programming, Pearson, 2013.

8. Botros, HDL Programming Fundamental, VHDL& Verilog,Cengage, 2013

EE6302 ELECTROMAGNETIC THEORY

WEEK I: Introduction

WEEK 2 UNIT I ELECTROSTATICS – I

Sources and effects of electromagnetic fields – Coordinate Systems – Vector fields –Gradient Theorems and applications - Coulomb's Law – Electric field intensity

WEEK 3:

Field due to discrete and continuous charges – Gauss's law and applications

WEEK 4: UNIT TEST-I

UNIT II ELECTROSTATICS – II

Electric potential – Electric field and equipotential plots, Uniform and Non-Uniform field, Utilization factor

WEEK 5:

Electric field in free space, conductors, dielectrics - Dielectric polarization – Dielectric Strength, Electric field in multiple dielectrics – Boundary conditions, Poisson's and laplace's equations

WEEK 6: Capacitance, Energy density, Applications, UNIT TEST-II

WEEK 7: UNIT III: MAGNETOSTATICS

Lorentz force, magnetic field intensity (H) – Biot–Savart's Law - Ampere's Circuit Law – H due to straight conductors, circular loop,

WEEK 8: Infinite sheet of current, Magnetic flux density (B) – B in free space, conductor, magnetic materials Magnetization, Magnetic field in multiple media – Boundary conditions, scalar and vector potential, Poisson's Equation Magnetic force,

WEEK 9: Torque, Inductance, Energy density, Applications**, PRE MODEL EXAM**

WEEK 10: PRE MODEL EXAM

UNIT IV ELECTRODYNAMIC FIELDS

Magnetic Circuits - Faraday's law – Transformer and motional EMF Displacement current -Maxwell's equations (differential and integral form)

WEEK 11: Relation between field theory and circuit theory

WEEK 12: Applications, **UNIT TEST-IV**

WEEK13: UNIT V ELECTROMAGNETIC WAVES

Electromagnetic wave generation and equations – Wave parameters; velocity, intrinsic impedance, propagation constant, Waves in free space, lossy and lossless dielectrics and conductors

WEEK 14: skin depth -Poynting vector, Plane wave reflection and refraction, Standing Wave – Applications.

WEEK 15: MODEL PRACTICAL EXAM, MODEL EXAM

WEEK 16: MODEL EXAM

WEEK 17: MODEL EXAM

TEXT BOOKS:

1. Mathew N. O. Sadiku, 'Principles of Electromagnetics', 4 th Edition ,Oxford University Press Inc. First India edition, 2009.

2. Ashutosh Pramanik, 'Electromagnetism – Theory and Applications', PHI Learning Private Limited, New Delhi, Second Edition-2009.

3. K.A. Gangadhar, P.M. Ramanthan ' Electromagnetic Field Theory (including Antennaes and wave propagation', 16th Edition, Khanna Publications, 2007**.**

REFERENCES:

1. Joseph. A.Edminister, 'Schaum's Outline of Electromagnetics, Third Edition (Schaum's OutlineSeries), Tata McGraw Hill, 2010

2. William H. Hayt and John A. Buck, 'Engineering Electromagnetics', Tata McGraw Hill 8th Revised edition, 2011.

3. Kraus and Fleish, 'Electromagnetics with Applications', McGraw Hill International Editions, FifthEdition, 2010.

4. Bhag Singh Guru and Hüseyin R. Hiziroglu "Electromagnetic field theory Fundamentals",Cambridge University Press; Second Revised Edition, 2009.

GE6351 ENVIRONMENTAL SCIENCE AND ENGINEERING

WEEK 1: Introduction

WEEK 2: UNIT I ENVIRONMENT, ECOSYSTEMS AND BIODIVERSITY

Definition, scope and importance of Risk and hazards; Chemical hazards, Physical hazards, Biological hazards in the environment – concept of an ecosystem – structure and function of an ecosystem – producers, consumers and decomposers-Oxygen cycle and Nitrogen cycle – energy flow in the ecosystem – ecological succession processes – Introduction, types, characteristic features, structure and function of the (a) forest ecosystem (b) grassland ecosystem (c) desert ecosystem (d) aquatic ecosystems Introduction to biodiversity definition: genetic, species and ecosystem diversity – bio geographical classification of India – value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values.

WEEK 3: Biodiversity at global, national and local levels – India as a mega-diversity nation – hot-spots of biodiversity – threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts – endangered and endemic species of India – conservation of biodiversity: In-situ and ex-situ conservation of biodiversity. Field study of common plants, insects, birds Field study of simple ecosystems – pond, river, hill slopes, etc.,

WEEK 4: UNIT TEST-I

UNIT II ENVIRONMENTAL POLLUTION

Definition – causes, effects and control measures of: (a) Air pollution (Atmospheric chemistry-Chemical composition of the atmosphere; Chemical and photochemical reactions in the atmosphere - formation of smog, PAN, acid rain, oxygen and ozone chemistry

WEEK 5: Mitigation procedures- Control of particulate and gaseous emission, Control of SO2, NOX, CO and HC) (b) Water pollution: Physical

and chemical properties of terrestrial and marine water and their environmental significance; Waterquality parameters – physical, chemical and biological; absorption of heavy metals

WEEK 6: Water treatment processes. (c) Soil pollution - soil waste management: causes, effects and control measures of municipal solid wastes – (d) Marine pollution (e) Noise pollution (f) Thermal pollution (g) Nuclear hazards–role of an individual in prevention of pollution – pollution case studies –Field study of local polluted site – Urban / Rural / Industrial / Agricultural. **UNIT TEST-II**

WEEK 7: UNIT III: NATURAL RESOURCES

Forest resources: Use and over-exploitation, deforestation, case studies- timber extraction, mining, dams and their effects on forests and tribal people – Water resources: Use and overutilization of surface and ground water, dams-benefits and problems – Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies – Food resources:

World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture.

WEEK 8:

fertilizer-pesticide problems, water logging, salinity, case studies – Energy resources: Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources. Energy Conversion processes – Biogas – production and uses, anaerobic digestion; case studies – Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification – role of an individual in conservation of natural resources

WEEK 9:

Equitable use of resources for sustainable lifestyles. Introduction to Environmental Biochemistry: Proteins –Biochemical degradation of pollutants, Bioconversion of pollutants. Field study of local area to document environmental assets – river / forest / grassland / hill / mountain. **PRE MODEL EXAM**

WEEK 10: PRE MODEL EXAM

UNIT IV SOCIAL ISSUES AND THE ENVIRONMENT

From unsustainable to sustainable development – urban problems related to energy – water conservation, rain water harvesting, watershed management – resettlement and rehabilitation of people; its problems and concerns, case studies – role of non-governmental organization environmental ethics:

WEEK 11: Issues and possible solutions – 12 Principles of green chemistry- nuclear accidents and holocaust, case studies. – wasteland reclamation – consumerism and waste products – environment production act – Air act – Water act – Wildlife protection act – Forest conservation act – The Biomedical Waste (Management and Handling) Rules.

WEEK 12:

1998 and amendments- scheme of labeling of environmentally friendly products (Ecomark). enforcement machinery involved in environmental legislation- central and state pollution control boards- disaster management: floods, earthquake, cyclone and landslides. Public awareness. **UNIT TEST-IV**

WEEK 13: UNIT V HUMAN POPULATION AND THE ENVIRONMENT

Population growth, variation among nations – population explosion – family welfare programme – environment and human health

human rights – value education – HIV / AIDS – women and child welfare –Environmental impact analysis (EIA)

WEEK 14:GIS-remote sensing-role of information technology in environment and human health,Case studies.

WEEK 15: MODEL PRACTICAL EXAM, MODEL EXAM

WEEK 16: MODEL EXAM

WEEK 17: MODEL EXAM

TEXT BOOKS:

1. Gilbert M.Masters, 'Introduction to Environmental Engineering and Science', 2nd edition,
Pearson Education, 2004.
2. Benny Joseph, 'Environmental Science and Engineering', Tata McGraw-Hill, New Delhi,
2006.

REFERENCES :

1. R.K. Trivedi, 'Handbook of Environmental Laws, Rules, Guidelines, Compliances andStandards', Vol. I and II, Enviro Media.
2. Cunningham, W.P. Cooper, T.H. Gorhani, 'Environmental Encyclopedia', Jaico Publ.,House, Mumbai, 2001.
3. Dharmendra S. Sengar, 'Environmental law', Prentice hall of India PVT LTD, New Delhi, 2007.
4. Rajagopalan, R, 'Environmental Studies-From Crisis to Cure', Oxford University Press 2005.

EC6202 ELECTRONIC DEVICES AND CIRCUITS

WEEK 1: Introduction

WEEK 2: UNIT I PN JUNCTION DEVICES

PN junction diode –structure, operation and V-I characteristics, diffusion and transient capacitance Rectifiers – Half Wave and Full Wave Rectifier

WEEK 3: Display devices- LED, Laser diodes- Zener diode characteristics-Zener Reverse characteristics – Zener as regulator

WEEK 4: UNIT TEST-I

UNIT II TRANSISTORS

BJT, JFET, - structure, operation, characteristics

WEEK 5: MOSFET, Biasing UJT

WEEK 6: Thyristor and IGBT – Structure and characteristics, **UNIT TEST-II**

WEEK 7: UNIT III AMPLIFIERS

BJT small signal model – Analysis of CE, CB, CC amplifiers- Gain and frequency response

WEEK 8:

MOSFET small signal model– Analysis of CS and Source follower, Gain and frequency response

WEEK 9: High frequency analysis, **PRE MODEL EXAM**

WEEK 10: PRE MODEL EXAM

UNIT IV MULTISTAGE AMPLIFIERS AND DIFFERENTIAL AMPLIFIER

BIMOS cascade amplifier, Differential amplifier – Common mode and Difference mode analysis – FET input stages,

WEEK 11: Single tuned amplifiers – Gain and frequency response, Neutralization methods

WEEK 12: power amplifiers –Types (Qualitative analysis).

UNIT TEST-IV

WEEK 13: UNIT V FEEDBACK AMPLIFIERS AND OSCILLATORS

Advantages of negative feedback – voltage / current, series Shunt feedback –positive feedback –Condition for oscillations, phase shift

WEEK 14: Wien bridge, Hartley, Colpitts and Crystal oscillators

WEEK 15: MODEL PRACTICAL EXAM, MODEL EXAM

WEEK 16: MODEL EXAM

WEEK 17: MODEL EXAM

TEXT BOOKS:

1. David A. Bell ,"Electronic Devices and Circuits", Prentice Hall of India, 2004.

2. Sedra and smith, "Microelectronic Circuits " Oxford University Press, 2004.

REFERENCES:

1. Rashid, "Micro Electronic Circuits" Thomson publications, 1999.

2. Floyd, "Electron Devices" Pearson Asia 5th Edition, 2001.

3. Donald A Neamen, "Electronic Circuit Analysis and Design" Tata McGraw Hill, 3rd Edition, 2003.

4. Robert L.Boylestad, "Electronic Devices and Circuit theory", 2002.

5. Robert B. Northrop, "Analysis and Application of Analog Electronic Circuits to Biomedical Instrumentation", CRC Press, 2004.

EE6303 LINEAR INTEGRATED CIRCUITS AND APPLICATIONS

WEEK 1: Introduction

WEEK 2: UNIT I IC FABRICATION

IC classification, fundamental of monolithic IC technology, epitaxial growth,masking and etching,diffusion of impurities. Realisation of monolithic ICs and packaging.

WEEK 3: Fabrication of diodes, capacitance, resistance and FETs.

WEEK 4: UNIT TEST-I

UNIT II CHARACTERISTICS OF OPAMP

Ideal OP-AMP characteristics, DC characteristics, AC characteristics,, differential amplifier; frequencyresponse of OP-AMP

WEEK 5: Basic applications of op-amp – Inverting and Non inverting Amplifiers,V/I & I/V converters

WEEK 6:,summer, differentiator and integrator. **UNIT TEST-II**

WEEK 7: UNIT III: APPLICATIONS OF OPAMP

Instrumentation amplifier, Log and Antilog Amplifiers, first and second order active filters, comparators, multivibrators

WEEK 8: waveform generators, clippers, clampers, peak detector

S/H circuit, D/A converter (R- 2R ladder and weighted resistor types),

WEEK 9: A/D converters using opamps. **PRE MODEL EXAM**

WEEK 10: UNIT IV. **SPECIAL ICs**

Functional block, characteristics & application circuits with 555 Timer Ic

WEEK 11: 566 voltage controlled oscillator Ic, 565-phase lock loop Ic ,

WEEK 12: Analog multiplier ICs.**UNIT TEST-IV**

WEEK 13:UNIT V APPLICATION ICs

79XX Fixed voltage regulators, LM317, 723 Variable voltage regulators, switching regulator- SMPS

WEEK 14: LM 380 power amplifier- ICL 8038 function generator IC.

WEEK 15: MODEL PRACTICAL EXAM, MODEL EXAM

WEEK 16: MODEL EXAM

WEEK 17: MODEL EXAM

TEXT BOOKS:

1. David A.Bell, 'Op-amp & Linear ICs', Oxford, 2013.

2. D.Roy Choudhary, Sheil B.Jani, 'Linear Integrated Circuits', II edition, New Age, 2003.

3. Ramakant A.Gayakward, 'Op-amps and Linear Integrated Circuits', IV edition, Pearson Education, 2003 / PHI. 2000.

REFERENCES:

1. Fiore,"Opamps & Linear Integrated Circuits Concepts & Applications",Cengage,2010.

2. Floyd ,Buchla,"Fundamentals of Analog Circuits, Pearson, 2013.

3. Jacob Millman, Christos C.Halkias, 'Integrated Electronics - Analog and Digital circuits system',Tata McGraw Hill, 2003.

4. Robert F.Coughlin, Fredrick F. Driscoll, 'Op-amp and Linear ICs', PHI Learning, 6th edition,2012.

EC6361 ELECTRONICS LABORATORY

1. Characteristics of Semi conductor diode and Zener diode
2. Characteristics of a NPN Transistor under common emitter , common collector and common base configurations
3. Characteristics of JFET(Draw the equivalent circuit)
4. Characteristics of UJT and generation of saw tooth waveforms
5. Design and Frequency response characteristics of a Common Emitter amplifier
7. Characteristics of photo diode & photo transistor, Study of light activated relay circuit
8. Design and testing of RC phase shift, LC oscillators
9. Single Phase half-wave and full wave rectifiers with inductive and capacitive filters
10. Differential amplifiers using FET
11. Study of CRO for frequency and phase measurements
12. Astable and Monostable multivibrators
13. Realization of passive filters

EE6311 LINEAR AND DIGITAL INTEGRATED CIRCUITS LABORATORY

1. Implementation of Boolean Functions, Adder/ Subtractor circuits.

2. Code converters: Excess-3 to BCD and Binary to Gray code converter and vice-versa

3. Parity generator and parity checking

4. Encoders and Decoders

5. Counters: Design and implementation of 4-bit modulo counters as synchronous and

Asynchronous types using FF IC's and specific counter IC.

6. Shift Registers: Design and implementation of 4-bit shift registers in SISO, SIPO, PISO,

PIPO modes using suitable IC's.

7. Study of multiplexer and demultiplexer

8 Timer IC application: Study of NE/SE 555 timer in Astable, Monostable operation.

9. Application of Op-Amp: inverting and non-inverting amplifier, Adder, comparator, Integrator and Differentiator.

10. Study of VCO and PLL ICs:

i. Voltage to frequency characteristics of NE/ SE 566 IC.

ii. Frequency multiplication using NE/SE 565 PLL IC.

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