



VEL TECH MULTITECH

Dr RANGARAJAN Dr.SAKUNTHALA

ENGINEERING COLLEGE

(An ISO 9001: 2008 Certified Institution)

(Owned by Vel Trust)

(Approved by Govt. of Tamil Nadu and affiliated to Anna University and
Accredited by NBA, New Delhi)



SYLLABUS

WEEKLY SCHEDULE

V SEMESTER 2014 - 2015

DEPARTMENT OF EEE

IV YEAR DEGREE COURSE

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WEEK DETAILS

SL.NO.	WEEK	FROM	TO
1	WEEK1	24-06-2014	27-06-2014
2	WEEK2	30-06-2014	04-07-2014
3	WEEK3	07-07-2014	11-07-2014
4	WEEK4	14-07-2014	18-07-2014
5	WEEK5	21-07-2014	25-07-2014
6	WEEK6	28-07-2014	01-08-2014
7	WEEK7	04-08-2014	08-08-2014
8	WEEK8	11-08-2014	14-08-2014
9	WEEK9	18-08-2014	22-08-2014
10	WEEK10	25-08-2014	28-08-2014
11	WEEK11	01-09-2014	05-09-2014
12	WEEK12	08-09-2014	12-09-2014
13	WEEK13	15-09-2014	19-09-2014
14	WEEK14	22-09-2014	26-09-2014
15	WEEK15	29-09-2014	01-10-2014
16	WEEK16	06-10-2014	10-10-2014
17	WEEK17	13-10-2014	17-10-2014
18	WEEK18	20-10-2014	24-10-2014
19	WEEK19	27-10-2014	31-10-2014

SUBJECT CONTENTS

SL.NO	SUBJECT CODE	SUBJECT NAME
THEORY		
1	EC2311	Communication Engineering
2	EC2312	Digital Signal Processing
3	CS2311	Object Oriented Programming
4	EE2301	Power Electronics
5	EE 2302	Electrical Machines - II
6	EE2303	Transmission And Distribution
PRACTICAL		
7	CS2312	Object- Oriented Programming Lab
8	GE2321	Communication Skills Laboratory
9	EE2304	Power Electronics Laboratory
10	EE 2305	Electrical Machines II Laboratory

TEST / EXAM SCHEDULE

SL.NO	SUBJECT CODE	SUBJECT NAME	UNIT TEST I	UNIT TEST II	UNIT TEST III	UNIT TEST IV	UNIT TEST V
1	EC2311	Communication Engineering	08/07/14 FN	30/07/14 FN	20/08/14 FN	09/09/14 FN	29/09/14 FN
2	EC2312	Digital Signal Processing	08/07/14 AN	30/07/14 AN	20/08/14 AN	09/09/14 AN	29/09/14 AN
3	CS2311	Object Oriented Programming	09/07/14 FN	31/07/14 FN	21/08/14 FN	10/09/14 FN	30/09/14 FN
4	EE2301	Power Electronics	09/07/14 AN	31/07/14 AN	21/08/14 AN	10/09/14 AN	30/09/14 AN
5	EE 2302	Electrical Machines - II	10/07/14 FN	01/08/14 FN	22/08/14 FN	11/09/14 FN	01/10/14 FN
6	EE2303	Transmission and Distribution	10/07/14 AN	01/08/14 AN	22/08/14 AN	11/09/14 AN	01/10/14 AN

SL.NO	SUBJECT CODE	SUBJECT NAME	MODEL EXAM
1	EC2311	Communication Engineering	13-10-2014
2	EC2312	Digital Signal Processing	14-10-2014
3	CS2311	Object Oriented Programming	15-10-2014
4	EE2301	Power Electronics	16-10-2014
5	EE 2302	Electrical Machines - II	17-10-2014
6	EE2303	Transmission and Distribution	20-10-2014

EC2311 COMMUNICATION ENGINEERING

WEEK 1:

UNIT I ANALOG COMMUNICATION

AM – Frequency spectrum – vector representation - power relations

WEEK 2:

Generation of AM– DSB, DSB/SC, SSB, VSB AM Transmitter & Receiver FM and PM – frequency spectrum

WEEK 3

Power relations: NBFM & WBFM, Generation of FM and DM, Amstrong method & Reactance modulations: FM & PM frequency

WEEK 4: UNIT TEST-I

UNIT II DIGITAL COMMUNICATION

Pulse modulations – concepts of sampling and sampling theormes, PAM, PWM, PPM,PTM, quantization and coding

WEEK 5:

DCM, DM, slope overload error. ADM, DPCM, OOK systems

WEEK 6:

ASK, FSK, PSK, BSK, QPSK, QAM, MSK, GMSK,applications of Datacommunication.

WEEK 7: UNIT TEST-II

UNIT III SOURCE CODES, LINE CODES & ERROR CONTROL (Qualitative only)

Primary communication – entropy, properties, BSC, BEC, source coding : Shaum, Fao, Huffman coding

WEEK 8:

noiseless coding theorem, BW – SNR trade off codes: NRZ, RZ, AMI, HDBP, ABQ, MBnB codes

WEEK 9:

Efficiency of transmissions, convolutions & block codes.

WEEK 10: UNIT TEST-III

UNIT IV MULTIPLE ACCESS TECHNIQUES

TDMA, CDMA, error control codes and applications:

WEEK 11:

SDMA application in wire and wireless communication : Advantages (merits) :

WEEK 12:

UNIT V SATELLITE, OPTICAL FIBER POWERLINE, SCADA

Orbits : types of satellites : frequency used link establishment

WEEK 13: UNIT TEST-IV

MA techniques used in satellite communication, earth station;

WEEK 14:

aperture actuators used in satellite – Intelsat and Insat fibers – types: sources

WEEK 15:

detectors used, digital filters, optical link: power line carrier communications: SCADA

WEEK 16: UNIT TEST-V

WEEK 17: MODEL EXAM

WEEK 18: MODEL PRACTICAL EXAM

TEXT BOOK:

1. Taub & Schilling “Principles of communication systems” Tata McGraw hill 2007
2. J.Das “Principles of digital communication” New Age International, 1986

REFERENCES:

1. Kennedy and Davis “Electronic communication systems” Tata McGraw hill, 4th edition, 1993.
2. Sklar “Digital communication fundamentals and applications“ Pearson Education, 2001
3. Bary le, Memuschmidt, digital Communication, Kluwer Publication, 2004.
4. B.P.Lathi “Modern digital and analog communication systems” Oxford University Press, 1998.

EC2312 DIGITAL SIGNAL PROCESSING

WEEK 1:

UNIT I INTRODUCTION

Classification of systems: Continuous, discrete, linear, causal, stable, dynamic, recursive, time variance classification of signals: continuous and discrete, energy and power;

WEEK 2:

mathematical representation of signals ,spectral density; sampling techniques, quantization, quantization error, Nyquist rate, aliasing effect. Digital signal representation

WEEK 3: UNIT TEST-I

UNIT II

Z-transform and its properties, inverse z-transforms; difference equation – Solution by z-transform

WEEK 4:

application to discrete systems - Stability analysis, frequency response –Convolution, Fourier transform of discrete sequence – Discrete Fourier series.

WEEK 5:

UNIT III

DFT properties, magnitude and phase representation - Computation of DFT using FFTalgorithm

WEEK 6:

DIT & DIF - FFT using radix 2 – Butterfly structure

WEEK 7:

UNIT TEST-II

UNIT IV

FIR & IIR filter realization – Parallel & cascade forms. FIR design: Windowing Techniques – Need and choice of windows

WEEK 8:

Linear phase characteristics. IIR design:Analog filter design - Butterworth and Chebyshev approximations

WEEK 9: UNIT TEST-III

digital design using impulse invariant and bilinear transformation ,

WEEK 10:

Warping, prewarping – Frequency transformation

WEEK 11: UNIT TEST-IV

UNIT V

Introduction – Architecture – Features

WEEK 12:

Addressing Formats

WEEK 13:

CYCLE TEST - II

Functional modes - Introduction to Commercial Processors

WEEK 14:

Investments - Risks and return evaluation of investment decision.

WEEK 15:

Average rate of return - Payback Period - Net Present Value - Internal rate of return.

WEEK 16: UNIT TEST-V

WEEK 17: MODEL EXAM

WEEK 18: MODEL PRACTICAL EXAM

CS2311 OBJECT ORIENTED PROGRAMMING

WEEK 1:

UNIT I Object oriented programming concepts – objects-classes-

WEEK 2:

methods and messages abstraction and encapsulation-inheritance- abstract classes-

WEEK 3:

polymorphism. Introduction to C++- objects-classes-constructors and destructors

WEEK 4: UNIT TEST-I

UNIT II

Operator overloading - friend functions

WEEK 5:

type conversions- templates - Inheritance

WEEK 6:

virtual functions- runtime polymorphism.

UNIT III:

Exception handling - Streams and formatted I/O

WEEK 7:

UNIT TEST-II

file handling – namespaces – String Objects

WEEK 8:

standard template library.

WEEK 9: UNIT TEST-III

UNIT IV

Introduction to JAVA , bytecode, virtual machines

WEEK 10:

objects – classes – Javadoc

WEEK 11:

packages – Arrays - Strings

WEEK 12:

UNIT V

Inheritance – interfaces and inner classes

WEEK 13:

UNIT TEST-IV

exception handling – threads

WEEK 14:

Streams

WEEK 15:

I/O\

WEEK 16: UNIT TEST-V**WEEK 17: MODEL EXAM****WEEK 18: MODEL PRACTICAL EXAM****TEXT BOOKS**

1. B. Trivedi, "Programming with ANSI C++", Oxford University Press, 2007.
2. Cay S. Horstmann, Gary Cornell, "Core JAVA volume 1", Eighth Edition, Pearson Education, 2008.

REFERENCES

1. ISRD Group, "Introduction to Object-oriented Programming and C++", Tata McGraw-Hill Publishing Company Ltd., 2007.
2. ISRD Group, "Introduction to Object-oriented programming through Java", Tata McGraw-Hill Publishing Company Ltd., 2007.
3. S. B. Lippman, Josee Lajoie, Barbara E. Moo, "C++ Premier", Fourth Edition, Pearson Education, 2005.
4. D. S. Malik, "C++ Programming: From Problem Analysis to Program Design", Third Edition, Thomson Course Technology, 2007.
5. K. Arnold and J. Gosling, "The JAVA programming language", Third edition, Pearson Education, 2000.
6. C. Thomas Wu, "An introduction to Object-oriented programming with Java", Fourth Edition, Tata McGraw-Hill Publishing Company Ltd., 2006.

EE2301 POWER ELECTRONICS**WEEK 1:****UNIT I**

Study of switching devices, - Frame, Driver

WEEK 2: snubber circuit of SCR, TRIAC, BJT,

IGBT, MOSFET

WEEK 3: Turn-on and turn-off characteristics, switching losses, Commutation circuits for SCR,

WEEK 4: UNIT TEST-I**UNIT II**

2-pulse, 3-pulse and 6-pulse converters

WEEK 5:

Effect of source inductance – performanceParameters

WEEK 6:

Reactive power control of converters – Dual converters - Battery charger.

WEEK 7:**UNIT TEST-II****UNIT III:**

Step-down and step-up chopper - Time ratio control and current limit control

WEEK 8:

Buck, boost, buck-boost converter,

WEEK 9:

concept of Resonant switching - SMPS.

WEEK 10: UNIT TEST-III**UNIT IV**

Single phase and three phase (both 1200 mode and 1800 mode) inverters

WEEK 11:

PWM techniques: Sinusoidal PWM, modified sinusoidal PWM - multiple PWM

WEEK 12:

Introduction to space vector modulations - Voltage and harmonic control - Series resonant inverter - Current source inverter.

UNIT V

Single phase AC voltage controllers – Multistage sequence control

WEEK 13:**UNIT TEST-IV**

single and three phase cycloconverters –

WEEK 14:

Introduction to Integral cycle control,

WEEK 15:

Power factor control and Matrix converters.

WEEK 16: UNIT TEST-V**WEEK 17: MODEL EXAM****WEEK 18: MODEL PRACTICAL EXAM****TEXT BOOKS**

1. M.H. Rashid, 'Power Electronics: Circuits, Devices and Applications', Pearson Education, PHI Third edition, New Delhi 2004.

2. Philip T.Krein, "Elements of Power Electronics" Oxford University Press, 2004 Edition.

REFERENCES

1. Ashfaq Ahmed Power Electronics for Technology Pearson Education, Indian reprint,2003.2. P.S.Bimbra "Power Electronics" Khanna Publishers, third Edition 2003.
2. Ned Mohan, Tore.M.Undeland, William.P.Robbins, 'Power Electronics: Converters, Applications and Design', John Wiley and sons, third edition, 2003

EE2302 ELECTRICAL MACHINES – II

WEEK 1 :

UNIT I

Constructional details – Types of rotors – emf equation – Synchronous reactance – Armature reaction – Voltage regulation

WEEK 2:

EMF, MMF, ZPF and A.S.A methods – Synchronizing and parallel operation – Synchronizing torque -

WEEK 3:

Change of excitation and mechanical input – Two reaction theory – Determination of direct and quadrature axis synchronous reactance using slip test – Operating characteristics - Capability curves

WEEK 4: UNIT TEST-I

UNIT II

Principle of operation – Torque equation – Operation on infinite bus bars - V-curves –

WEEK 5:

Power input and power developed equations – Starting methods

WEEK 6:

Current loci for constant power input, constant excitation and constant power developed.

WEEK 7:

UNIT TEST-II

UNIT III

Constructional details – Types of rotors – Principle of operation – Slip – Equivalent circuit

WEEK 8:

Slip-torque characteristics - Condition for maximum torque – Losses and efficiency

WEEK 9:

Load test - No load and blocked rotor tests - Circle diagram – Separation of no load losses – Double cage rotors – Induction generator – Synchronous induction motor.

WEEK 10: UNIT TEST-III

UNIT IV

Need for starting – Types of starters – Rotor resistance,

WEEK 11:

Autotransformer and Star-delta starters – Speed control – Change of voltage, torque,

WEEK 12:

number of poles and slip – Cascaded connection – Slip power recovery scheme.

UNIT V

Constructional details of single phase induction motor – Double revolving field theory and operation

WEEK 13:

UNIT TEST-IV

Equivalent circuit – No load and blocked rotor test – Performance Analysis

WEEK 14:

Starting methods of single-phase induction motors - Shaded pole induction motor –

WEEK 15:

Linear reluctance motor - Repulsion motor - Hysteresis motor - AC series motor.

WEEK 16:

WEEK 16: UNIT TEST-V

WEEK 17: MODEL EXAM

WEEK 18: MODEL PRACTICAL EXAM

TEXT BOOKS

1. D.P. Kothari and I.J. Nagrath, 'Electric Machines', Tata McGraw Hill Publishing Company Ltd, 2002.
2. P.S. Bhimbhra, 'Electrical Machinery', Khanna Publishers, 2003.

REFERENCES

1. A.E. Fitzgerald, Charles Kingsley, Stephen.D.Umans, 'Electric Machinery', Tata McGraw Hill publishing Company Ltd, 2003.
2. J.B. Gupta, 'Theory and Performance of Electrical Machines', S.K.Kataria and Sons, 2002.
3. K. Murugesh Kumar, 'Electric Machines', Vikas Publishing House Pvt Ltd, 2002.

EE2303 TRANSMISSION AND DISTRIBUTION

UNIT I

WEEK 1: Structure of electric power system - different operating voltages of generation,

WEEK 2: transmission and distribution-advantage of higher operating voltage for AC transmission. An introduction to EHV AC transmission, HVDC transmission and FACTS.

WEEK 3: Mechanical design of transmission line between towers – sag and tension calculations using approximate equations taking into account the effect of ice and wind.,

WEEK 4: UNIT TEST-I

UNIT II

Parameters of resistance, inductance and capacitance calculations - single and three phase transmission lines - single and double circuits

WEEK 5: solid, stranded and bundled conductors - symmetrical and unsymmetrical spacing – transposition of lines – concepts

WEEK 6: solid, stranded and bundled conductors - symmetrical and unsymmetrical spacing

WEEK 7:

interference with neighbouring communication circuits. Corona discharge characteristics – critical voltage and loss.

WEEK 8:

UNIT TEST-II

UNIT III:

Transmission line classification - short line, medium line and long line – equivalent circuits voltage regulation and

WEEK 9:

transmission efficiency - real and reactive power flow in lines – power circle diagrams – shunt and series compensation

WEEK 10: UNIT TEST-III

An introduction to power angle diagram - surge-impedance loading, loadability limits

WEEK 11:

UNIT IV.

Classification of insulators for transmission and distribution purpose – voltage distribution in insulator string and grading - improvement of string efficiency

WEEK 12: Underground cables - constructional features of LT and HT cables – insulation resistance, capacitance, dielectric stress and grading – $\tan \delta$ and power loss – thermal characteristics.

WEEK 13: UNIT TEST-IV

UNIT V

Classification, functions and major components of substations. Bus-bar arrangements - substation bus schemes - single bus, double bus with double breaker, double bus with single breaker

WEEK 14:

earthing practises in substations. Feeders, distributors and service mains. DC distributor – 2-wire and 3-wire, radial and ring main distribution.

WEEK 15:

AC distribution– single phase and three phase 4-wire distribution

WEEK 16: UNIT TEST-V

WEEK 17: MODEL EXAM

WEEK 18: MODEL PRACTICAL EXAM

TEXT BOOKS

1. B.R.Gupta, 'Power System Analysis and Design', S. Chand, New Delhi, 2003.
2. S.N. Singh, 'Electric Power Generation, Transmission and Distribution', Prentice Hall of India Pvt. Ltd, New Delhi, 2002.

REFERENCES

1. Luces M. Fualkenberry, Walter Coffey, 'Electrical Power Distribution and Transmission', Pearson Education, 1996.
2. Hadi Saadat, 'Power System Analysis,' Tata McGraw Hill Publishing Company', 2003.
3. Central Electricity Authority (CEA), 'Guidelines for Transmission System Planning', New Delhi.
4. 'Tamil Nadu Electricity Board Handbook', 2003

CS2312 OBJECT- ORIENTED PROGRAMMING LAB (Using C)

1. Function overloading, default arguments in C++
2. Simple class design in C++, namespaces, objects creations
3. Class design in C++ using dynamic memory allocation, destructor, copy constructor
4. Operator overloading, friend functions
5. Overloading assignment operator, type conversions
6. Inheritance, run-time polymorphism
7. Template design in C++
8. I/O, Throwing and Catching exceptions

9. Program development using STL
10. Simple class designs in Java with Javadoc
11. Designing Packages with Javadoc comments
12. Interfaces and Inheritance in Java
13. Exceptions handling in Java
14. Java I/O
15. Design of multi-threaded programs in Java

EE 2305 ELECTRICAL MACHINES II LABORATORY

1. Regulation of three phase alternator by emf and mmf methods.
2. Regulation of three phase alternator by ZPF and ASA methods.
3. Regulation of three phase salient pole alternator by slip test.
4. Measurements of negative sequence and zero sequence impedance of alternators.
5. V and Inverted V curves of Three Phase Synchronous Motor.
6. Load test on three-phase induction motor.
7. No load and blocked rotor test on three-phase induction motor.
8. Separation of No-load losses of three-phase induction motor.
9. Load test on single-phase induction motor.
10. No load and blocked rotor test on single-phase induction

EE2304 POWER ELECTRONICS LABORATORY

1. Characteristics of SCR
2. Characteristics of TRIAC
3. Characteristics of MOSFET and IGBT
4. Transient characteristics of SCR and MOSFET
5. AC to DC fully controlled converter
6. AC to DC half-controlled converter
7. Step down and step up MOSFET based choppers
8. IGBT based single-phase PWM inverter
9. IGBT based three-phase PWM inverter
10. Resonant dc-to-dc converter

A. ENGLISH LANGUAGE LAB

1. LISTENING COMPREHENSION:

Listening and typing – Listening and sequencing of sentences – Filling in the blanks - Listening and answering questions.

2. READING COMPREHENSION:

Filling in the blanks - Close exercises – Vocabulary building - Reading and answering questions.

Globalisation has brought in numerous opportunities for the teeming millions, with more focus on the students' overall capability apart from academic competence. Many students, particularly those from non-English medium schools, find that they are not preferred due to their inadequacy of communication skills and soft skills, despite possessing sound knowledge in their subject area along with technical capability.

Keeping in view their pre-employment needs and career requirements, this course on Communication Skills Laboratory will prepare students to adapt themselves with ease to the industry environment, thus rendering them as prospective assets to industries. The course will equip the students with the necessary communication skills that would go a long way in helping them in their profession.

OBJECTIVES:

- To equip students of engineering and technology with effective speaking and listening skills in English.
- To help them develop their soft skills and interpersonal skills, which will make the transition from college to workplace smoother and help them excel in their job.
- To enhance the performance of students at Placement Interviews, Group Discussions and other recruitment exercises.

3. SPEAKING:

Phonetics: Intonation – Ear training - Correct Pronunciation – Sound recognition exercises – Common Errors in English.

Conversations: Face to Face Conversation – Telephone conversation – Role play activities (Students take on roles and engage in conversation)

B. DISCUSSION OF AUDIO-VISUAL MATERIALS

1. RESUME / REPORT PREPARATION / LETTER WRITING

Structuring the resume / report - Letter writing / Email Communication - Samples.

2. PRESENTATION SKILLS:

Elements of effective presentation – Structure of presentation – Presentation tools – Voice Modulation – Audience analysis - Body language – Video samples

3. SOFT SKILLS:

Time management – Articulateness – Assertiveness – Psychometrics – Innovation and Creativity - Stress Management & Poise - Video Samples

4. GROUP DISCUSSION:

Why is GD part of selection process - Structure of GD – Moderator – led and other GDs - Strategies in GD – Team work - Body Language - Mock GD –Video samples

5. INTERVIEW SKILLS:

Kinds of interviews – Required Key Skills – Corporate culture – Mock interviews- Video samples.

1. Resume / Report Preparation / Letter writing: Students prepare their own resume and report.

2. **Presentation Skills:** Students make presentations on given topics.

3. **Group Discussion:** Students participate in group discussions.

4. **Interview Skills:** Students participate in Mock Interviews

REFERENCES:

1. Anderson, P.V, **Technical Communication**, Thomson Wadsworth, Sixth Edition, New Delhi, 2007.
2. Prakash, P, **Verbal and Non-Verbal Reasoning**, Macmillan India Ltd., Second Edition, New Delhi, 2004.
3. John Seely, **The Oxford Guide to Writing and Speaking**, Oxford University Press, New Delhi, 2004.
4. Evans, D, **Decisionmaker**, Cambridge University Press, 1997.
5. Thorpe, E, and Thorpe, S, **Objective English**, Pearson Education, Second Edition, New Delhi, 2007.
6. Turton, N.D and Heaton, J.B, **Dictionary of Common Errors**, Addison Wesley Longman Ltd., Indian reprint 1998.
