



**VEL TECH MULTI TECH
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 INFORMATION
TECHNOLOGY**

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	08-04-2014
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	IT2301	Java Programming
2	MG2452	Engineering Economics & Financial Accounting
3	CS 2304	System Software
4	CS 2302	Computer Networks
5	CS2403	Digital Signal Processing
6	IT2302	Information Theory and Coding
PRACTICAL		
7	CS2308	System software lab
8	IT2305	Java Programming Lab
9	GE2321	Communication Skills Lab

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	IT2301	Java Programming	08/07/14 FN	30/07/14 FN	20/08/14 FN	09/09/14 FN	29/09/14 FN
2	MG2452	Engineering Economics & Financial Accounting	08/07/14 AN	30/07/14 AN	20/08/14 AN	09/09/14 AN	29/09/14 AN
3	CS 2304	System Software	09/07/14 FN	31/07/14 FN	21/08/14 FN	10/09/14 FN	30/09/14 FN
4	CS 2302	Computer Networks	09/07/14 AN	31/07/14 AN	21/08/14 AN	10/09/14 AN	30/09/14 AN
5	CS2403	Digital Signal Processing	10/07/14 FN	01/08/14 FN	22/08/14 FN	11/09/14 FN	01/10/14 FN
6	IT2302	Information Theory and Coding	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	IT2301	Java Programming	13-10-2014
2	MG2452	Engineering Economics & Financial Accounting	14-10-2014
3	CS 2304	System Software	15-10-2014
4	CS 2302	Computer Networks	16-10-2014
5	CS2403	Digital Signal Processing	17-10-2014
6	IT2302	Information Theory and Coding	20-10-2014

IT2301 JAVA PROGRAMMING

WEEK 1: UNIT I

Object oriented programming concepts - objects - classes

WEEK 2:

Methods and messages - abstraction and encapsulation – inheritance – abstract classes - polymorphism

WEEK 3

Objects and classes in java – defining classes – methods – access specifies. Static members- constructors – finalize method

WEEK 4: UNIT TEST-I

UNIT II

Arrays – Strings – Packages – Java-doc Comments.

WEEK 5:

Inheritance – class hierarchy - polymorphism - Dynamic binding – final keyword – abstract classes

WEEK 6: UNIT TEST-II

WEEK 7: UNIT III

The Object class – Reflection – interfaces – object cloning

WEEK 8:

Inner classes – proxies – I/O Streams – Graphics Programming – Frame.

WEEK 9:

Components – Working with 2D shapes

WEEK 10: UNIT TEST-III

UNIT IV

Basics of event handling – event handlers – adapter classes - actions- Mouse events – AWT event hierarchy – introduction to Swing.

WEEK 11:

Model-View-Controller design pattern - Buttons – layout management - Swing components –

WEEK 12:

exception handling - exception hierarchy – throwing and catching exceptions

WEEK 13: UNIT TEST-IV**WEEK 14: REVISION (UNIT I-IV)****WEEK 15: UNIT V**

Motivation for generic programming – generic classes – generic methods – generic code and virtual machine- inheritance and generics – reflection and generics

WEEK 16:

Multi-threaded programming -interrupting threads – thread states – thread properties – thread synchronization – Executors – synchronizers

WEEK 17: UNIT TEST-V**WEEK 18: MODEL EXAM****WEEK 19:****ICD CLASSES & MODEL PRACTICAL EXAM****TEXT BOOK:**

1. Cay S. Horstmann and Gary Cornell, “Core Java: Volume I – Fundamentals”, Eighth Edition, Sun Microsystems Press, 2008.

REFERENCES:

1. K. Arnold and J. Gosling, “The JAVA programming language”, Third edition, Pearson Education, 2000.

2. Timothy Budd, “Understanding Object-oriented programming with Java”, Updated Edition, Pearson Education, 2000.
3. C. Thomas Wu, “An introduction to Object-oriented programming with Java”, Fourth Edition, Tata McGraw-Hill Publishing company Ltd., 2006.

MG2452 ENGINEERING ECONOMICS AND FINANCIAL ACCOUNTING

WEEK 1: UNIT I

Introduction - Managerial Economics - Relationship with other disciplines

WEEK 2:

Firms: Types, objectives and goals Managerial decisions

WEEK 3:

Decision analysis.

WEEK 4: UNIT TEST-I

UNIT II

Demand & Supply Analysis - Demand - Types of demand - Determinants of demand - Demand function

WEEK 5:

Demand elasticity - Demand forecasting – Supply. Determinants of supply - Supply function - Supply elasticity.

WEEK 6: UNIT TEST-II

WEEK 7: UNIT III

Production and cost analysis - Production function - Returns to scale

WEEK 8:

Production optimization - Least cost input – Isoquants - Managerial uses of production function. Cost Concepts - Cost function

WEEK 9:

Types of Cost - Determinants of cost - Short run and Long run cost curves - Cost Output Decision - Estimation of Cost.

WEEK 10: UNIT TEST-III

UNIT IV

Pricing – Determinants of Price

WEEK 11:

Pricing under different objectives

WEEK 12:

different market structures.

WEEK 13: UNIT TEST-IV

WEEK 14: REVISION (UNIT I-IV)

WEEK 15: UNIT V

Financial accounting (elementary treatment) - Balance sheet and related -Concepts - Profit & Loss Statement and related concepts

WEEK 16:

Financial Ratio Analysis - Cash flow analysis - Funds flow analysis- Comparative financial statements - Analysis & Interpretation of financial statements.

WEEK 17:

Investments - Risks and return evaluation of investment decision- Average rate of return - Payback Period - Net Present Value - Internal rate of return.

UNIT TEST-V

WEEK 18: MODEL EXAM

WEEK 19:

ICD CLASSES & MODEL PRACTICAL EXAM

TEXT BOOKS:

1. McGuigan, Moyer and Harris, 'Managerial Economics; Applications, Strategy and Tactics', Thomson South Western, 10th Edition, 2005.
2. Prasanna Chandra. 'Fundamentals of Financial anagement', Tata Mcgraw Hill Publishing Ltd., 4th edition, 2005.

REFERENCES:

1. Samuelson. Paul A and Nordhaus W.D., 'Economics', Tata Mcgraw Hill Publishing Company Limited, New Delhi, 2004.
2. Paresh Shah, 'Basic Financial Accounting for Management', Oxford University Press, New Delhi, 2007.
3. Salvatore Dominick, 'Managerial Economics in a global economy'. Thomson South Western, 4th Edition, 2001

CS2304 SYSTEM SOFTWARE

WEEK 1: UNIT I

Introduction - System software and machine architecture – The Simplified Instructional Computer (SIC) - Machine architecture.

WEEK 2:

Data and instruction formats - addressing modes - instruction sets - I/O and programming.

WEEK 3: UNIT TEST-I

UNIT II

ASSEMBLERS - Basic assembler functions - A simple SIC assembler – Assembler algorithm and data structures - Machine dependent assembler features

WEEK 4:

Instruction formats and addressing modes – Program relocation - Machine independent assembler features - Literals Symbol-defining statements

WEEK 5:

Expressions - One pass assemblers and Multi pass assemblers -
Implementation example - MASM assembler

WEEK 6: UNIT TEST-II

WEEK 7: UNIT III

LOADERS AND LINKERS - Basic loader functions - Design of an
Absolute Loader – A Simple Bootstrap Loader Machine dependent
loader features - Relocation – Program Linking – Algorithm and Data
Structures for Linking Loader -

WEEK 8:

Machine-independent loader features – Automatic Library Search -
Loader Options - Loader design options - Linkage Editors

WEEK 9:

Dynamic Linking – Bootstrap Loaders - Implementation example -
MSDOS linker.

WEEK 10: UNIT TEST-III

UNIT IV

MACRO PROCESSORS - Basic macro processor functions - Macro
Definition and Expansion – Macro Processor Algorithm and data
structures

WEEK 11:

Machine-independent macro processor features - Concatenation of
Macro Parameters – Generation of Unique Labels

WEEK 12:

Conditional Macro Expansion – Keyword Macro Parameters-Macro
within Macro-Implementation example -MASM Macro Processor-
ANSI C Macro language

WEEK 13: UNIT TEST-IV

WEEK 14: REVISION (UNIT -I-IV)

WEEK 15: UNIT V

SYSTEM SOFTWARE TOOLS - Text editors - Overview of the Editing Process-User Interface – Editor Structure. -Interactive debugging systems

WEEK 16:

Debugging functions and capabilities -Relationship with other parts of the system – User-Interface Criteria.

WEEK 17: UNIT TEST-V**WEEK 18: MODEL EXAM****WEEK 19:****ICD CLASSES & MODEL PRACTICAL EXAM****TEXT BOOK:**

1. Leland L. Beck, “System Software – An Introduction to Systems Programming”, 3rd Edition, Pearson Education Asia, 2000.

REFERENCES:

1. D. M. Dhamdhere, “Systems Programming and Operating Systems”, Second Revised Edition, Tata McGraw-Hill, 1999.
2. John J. Donovan “Systems Programming”, Tata McGraw-Hill Edition, 1972.
3. John R. Levine, Linkers & Loaders – Harcourt India Pvt. Ltd., Morgan Kaufmann Publishers, 2000.

CS2302 COMPUTER NETWORKS**WEEK 1: UNIT I**

Network architecture – layers

WEEK 2:

Physical links – Channel access on links – Hybrid multiple access techniques

WEEK 3:

Issues in the data link layer - Framing – Error correction and detection
- Link-level Flow Control

WEEK 4: UNIT TEST-I

UNIT II

Medium access – CSMA – Ethernet

WEEK 5:

Email (SMTP, MIME, IMAP, POP3) – HTTP

WEEK 6: UNIT TEST-II

WEEK 7: UNIT III

Circuit switching vs. packet switching / Packet switched networks-IP
– ARP – RARP –DHCP – ICMP

WEEK 8:

Queueing discipline – Routing algorithms – RIP – OSPF –
Subnetting– CIDR.

WEEK 9:

Interdomain routing – BGP – Ipv6 – Multicasting – Congestion
avoidance in network layer

WEEK 10: UNIT TEST-III

UNIT IV

UDP – TCP – Adaptive Flow Control

WEEK 11:

Token ring – FDDI - Wireless LAN – Bridges and Switches-Adaptive
Retransmission - Congestion control

WEEK 12:

Congestion avoidance – QoS

WEEK 13: UNIT TEST-IV

WEEK 14: REVISION UNIT I-V

WEEK 15: UNIT V

Email (SMTP, MIME, IMAP, POP3) – HTTP

DNS- SNMP – Telnet

WEEK 16:

FTP – Security – PGP – SSH

WEEK 17: UNIT TEST-V

WEEK 18: MODEL EXAM

WEEK 19:

ICD CLASSES & MODEL PRACTICAL EXAM

TEXT BOOK:

1. Larry L. Peterson, Bruce S. Davie, “Computer Networks: A Systems Approach”, Fourth Edition, Morgan Kauffmann Publishers Inc., 2009, Elsevier.

REFERENCES:

1. James F. Kuross, Keith W. Ross, “Computer Networking, A Top-Down Approach Featuring the Internet”, Third Edition, Addison Wesley, 2004.
2. Nader F. Mir, “Computer and Communication Networks”, Pearson Education, 2007
3. Comer, “Computer Networks and Internets with Internet Applications”, Fourth Edition, Pearson Education, 2005.
4. Andrew S. Tanenbaum, “Computer Networks”, Sixth Edition, 2003, PHI Learning
5. William Stallings, “Data and Computer Communication”, Sixth Edition, Pearson Education, 2000.

CS2403 DIGITAL SIGNAL PROCESSING

WEEK 1: UNIT I

Signals and systems - Basic elements of DSP – concepts of frequency in Analog and Digital Signals.

WEEK 2:

Sampling theorem – Discrete – time signals, systems

WEEK 3:

Analysis of discrete time LTI systems – Z transform – Convolution (linear and circular) – Correlation.

WEEK 4: UNIT TEST-I

UNIT II

Frequency transformations - Introduction to DFT – Properties of DFT – Filtering methods based on DFT-FFT Algorithms Decimation – in – time Algorithms.

WEEK 5:

Decimation – in – frequency Algorithms – Use of FFT in Linear Filtering – DCT.

WEEK 6: UNIT TEST-II

WEEK 7: UNIT III

IIR filter design - Structures of IIR – Analog filter design – Discrete time IIR filter from analog filter .

WEEK 8:

IIR filter design by Impulse Invariance, Bilinear transformation Approximation of derivatives

WEEK 9:

(HPF, BPF, BRF) filter design using frequency translation

WEEK 10: UNIT TEST-III

UNIT IV

FIR filter design - Structures of FIR – Linear phase FIR filter.

WEEK 11:

Filter design using windowing techniques - Frequency sampling techniques.

WEEK 12:

Finite word length effects in digital Filters.

WEEK 13: UNIT TEST-IV**WEEK 14: REVISION UNIT I-V****WEEK 15: UNIT V**

Applications - Multirate signal processing.

WEEK 16:

Speech compression – Adaptive filter- Musical sound processing – Image enhancement

WEEK 17: UNIT TEST-V**WEEK 18 : MODEL EXAM****WEEK 19:****ICD CLASSES & MODEL PRACTICAL EXAM****TEXT BOOKS:**

1. John G. Proakis & Dimitris G.Manolakis, “Digital Signal Processing – Principles, Algorithms & Applications”, Fourth edition, Pearson education / Prentice Hall, 2007.
2. Emmanuel C..Ifeachor, & Barrie.W.Jervis, “Digital Signal Processing”, Second edition, Pearson Education / Prentice Hall, 2002.

IT2302 INFORMATION THEORY AND CODING**WEEK 1: UNIT I**

Information theory - Information – Entropy, Information rate, classification of codes, Kraft McMillan inequality, Source coding theorem.

WEEK 2:

Shannon-Fano coding, Huffman coding, Extended Huffman Coding

WEEK 3:

Joint and conditional entropies, Mutual information - Discrete memoryless channels - BSC, BEC – Channel capacity, Shannon limit.

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

Source coding: text, audio and speech - Text: Adaptive Huffman Coding, Arithmetic Coding, LZW algorithm-Audio: Perceptual coding, Masking techniques, psychoacoustic model.

WEEK 5:

MEG Audio layers I,II,III, Dolby AC3 - Speech: Channel Vocoder, Linear Predictive Coding

WEEK 6: UNIT TEST-II**WEEK 7: UNIT III**

Source coding: image and video - Image and Video Formats – GIF, TIFF, SIF, CIF, QCIF

WEEK 8:

Image compression: READ, JPEG – Video Compression: Principles-I,B,P frames.

WEEK 9:

Motion estimation, Motion compensation, H.261, MPEG standard.

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

Error control coding: block codes - Definitions and Principles: Hamming weight, Hamming distance.

WEEK 11:

Minimum distance decoding - Single parity codes, Hamming codes, Repetition codes.

WEEK 12:

Linear block codes, Cyclic codes - Syndrome calculation, Encoder and decoder – CRC.

WEEK 13: UNIT TEST-IV**WEEK 14: REVISION (UNIT -I-IV)****WEEK 15: UNIT V**

Error control coding: convolutional codes - Convolutional codes – code tree, trellis- State diagram - Encoding

WEEK 16:

Decoding- Sequential search and Viterbi algorithm – Principle of Turbo coding.

WEEK 17: UNIT TEST-V**WEEK 18: MODEL EXAM****WEEK 19:****ICD CLASSES & MODEL PRACTICAL EXAM****TEXT BOOKS:**

1. R Bose, “Information Theory, Coding and Crptography”, TMH 2007
2. Fred Halsall, “Multimedia Communications: Applications, Networks, Protocols and Standards”, Perason Education Asia, 2002

REFERENCES:

1. K Sayood, “Introduction to Data Compression” 3/e, Elsevier 2006
2. S Gravano, “Introduction to Error Control Codes”, Oxford University Press 2007
3. Amitabha Bhattacharya, “Digital Communication”, TMH 2006

CS2308 SYSTEM SOFTWARE LAB

(Using C)

1. Implement a symbol table with functions to create, insert, modify, search, and display.
2. Implement pass one of a two pass assembler.
3. Implement pass two of a two pass assembler.
4. Implement a single pass assembler.
5. Implement a two pass macro processor
6. Implement a single pass macro processor.
7. Implement an absolute loader.
8. Implement a relocating loader.
9. Implement pass one of a direct-linking loader.
10. Implement pass two of a direct-linking loader.
11. Implement a simple text editor with features like insertion / deletion of a character, word, and sentence.
12. Implement a symbol table with suitable hashing (For loader exercises, output the snap shot of the main memory as it would be, after the loading has taken place)

IT2305 JAVA PROGRAMMING LAB

1. Develop a Java package with simple Stack and Queue classes. Use JavaDoc comments for documentation.
2. Design a class for Complex numbers in Java. In addition to methods for basic operations on complex numbers, provide a method to return the number of active objects created.
3. Design a Date class similar to the one provided in the java.util package.

4. Develop with suitable hierarchy, classes for Point, Shape, Rectangle, Square, Circle, Ellipse, Triangle, Polygon, etc. Design a simple test application to demonstrate dynamic polymorphism.
5. Design a Java interface for ADT Stack. Develop two different classes that implement this interface, one using array and the other using linked-list. Provide necessary exception handling in both the implementations.
6. Write a Java program to read a file that contains DNA sequences of arbitrary length one per line (note that each DNA sequence is just a String). Your program should sort the sequences in descending order with respect to the number of 'TATA' subsequences present. Finally write the sequences in sorted order into another file.
7. Develop a simple paint-like program that can draw basic graphical primitives in different dimensions and colors. Use appropriate menu and buttons.
8. Develop a scientific calculator using even-driven programming paradigm of Java.
9. Develop a template for linked-list class along with its methods in Java.
10. Design a thread-safe implementation of Queue class. Write a multi-threaded producer-consumer application that uses this Queue class.
11. Write a multi-threaded Java program to print all numbers below 100,000 that are both prime and fibonacci number (some examples are 2, 3, 5, 13, etc.). Design a thread that generates prime numbers below 100,000 and writes them into a pipe. Design another thread that generates fibonacci numbers and writes them to another pipe. The main thread should read both the pipes to identify numbers common to both.
12. Develop a multi-threaded GUI application of your choice.

GE2321 COMMUNICATION SKILLS LAB

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.

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.

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)

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