

DEVI AHILYA VISHWAVIDYALAYA, INDORE



FACULTY OF ENGINEERING

**SCHEME OF EXAMINATION
&
COURSE OF CONTENTS**

**BE II Year Programme
(INFORMATION TECHNOLOGY)**

INSTITUTE OF ENGINEERING & TECHNOLOGY
(www.iet.dauniv.ac.in)

Scheme for B.E. II (**Information Technology Engineering**) effective from July 2007

DEVI AHILYA VISHWAVIDYALAYA, INDORE
INSTITUTE OF ENGINEERING & TECHNOLOGY

SCHEMES OF EXAMINATION FOR BE PROGRAMME
(Subject to Revision)

B. E. II YEAR INFORMATION TECHNOLOGY
Th- Theory, CW – Class Work, SW – Sessional Work, Pr – Practical

Semester III

Maximum Marks										
SNo	Sub Code	Subject	L	T	P	Th	CW	SW	Pr	TOTAL
1.	2AM401	Applied Mathematics-III	4	-	-	100	50	-	-	150
2.	2IT402	Data Structures	4	-	2	100	50	50	50	250
3.	2IT403	Business Data Processing	4	-	2	100	50	50	50	250
4.	2EI404	Digital Electronics	4	-	2	100	50	50	50	250
5.	2IT405	Digital Computer Organization	4	-	-	100	50	-	-	150
6.	2IT406	IT Workshop	-	-	2	-	-	50	50	100
7.	2SS057	Engineering Economics	2	-	-	-	50	-	-	50
TOTAL			22	8	8	500	300	200	200	1200

Semester IV

SNo	Sub Code	Subject	L	T	P	Th	CW	SW	Pr	TOTAL
1.	2IT451	Discrete Structures	4	-	-	100	50	-	-	150
2.	2IT452	Computer Graphics	4	-	2	100	50	50	50	250
3.	2IT453	System Programming	4	-	2	100	50	50	50	250
4.	2IT454	Object Oriented Programming	4	-	2	100	50	50	50	250
5.	2ET455	Microprocessor & Assembly Language Programming	4	-	2	100	50	50	50	250
6.	2SS007	Effective Communication Skills	2	-	-	-	50	-	-	50
TOTAL			22	8	8	500	300	200	200	1200

Devi Ahilya University, Indore, India Institute of Engineering & Technology				BE II Year (Information Technology) Semester III						
Subject Code & Name		Instructions per Week		Hours		Marks				
2AM401 Applied Mathematics-III		L	T	P		TH	CW	SW	PR	Total
Duration of Theory Paper: 3 Hours		4	-	-	Max	100	50	-	-	150
					Min	35	25	-	-	60

Course Objectives: The course aims at making the students familiar about Special Mathematical Functions and basic Numerical Methods helpful in solving problem of Engineering and Science.

Prerequisite(s): Basic knowledge of determinants, matrices, differentiation and integration of functions and differential equation.

COURSE OF CONTENTS

Unit-I

Numerical solutions of algebraic and transcendental equations: Bisection method, Regula-Falsi method, Newton-Raphson method, Direct iterative method, Giraffe's root squaring method. Solution of system of linear algebraic equation: Matrix inversion method, Gauss- elimination Method, Jordan's method, Crout's method. Gauss-Seidel and Gauss Jacobi's iterative method.

Unit-II

Difference equation: Definition of difference equations, formation of difference equation. Solution of difference equations: Solution of Homogeneous and non-homogeneous difference equation with constant and variable coefficients using Boole's operator method and generating functions. Simultaneous difference equation.

Unit-III

Interpolation: Finite difference operator, Interpolation formula with equal and unequal intervals. Divided differences and central differences. Numerical differentiation and integration: Differentiation using forward, backward and divided difference General quadrature formula, Trapezoidal rule, Simpson's 1/3rd rule, Simpson's 3/8th rule, Weddle's rule.

Unit-IV

Numerical solution of I order ordinary differential equation: solution by Euler's, method Euler' Modified method Taylor's series. Picard's successive approximation, Runge-kutta method. Milne's Predictors and Correctors method. Differential equation of second order: Numerov's methods.

Unit-V

Series solution of ordinary differential equations: Method of Frobenius. Series solution of Bessel and Legendre's differential equations. Special function: Bessel's functions and Legendre's polynomials. Their recurrence relations, generating functions and orthogonal properties, Beta and Gamma Function.

BOOKS RECOMMENDED

- [1] Francis J. Scheid, *Schaum's Outline of Numerical Analysis*, McGraw-Hill, New York, 1989.
- [2] Gupta P.P. & Malik G.S., *Calculus of Finite Differences and Numerical Analysis*, Krishna Prakashan Mandir, Meerut, 21/e, 2006.
- [3] B.S.Grewal, *Engineering Mathematics*, Khanna Publishers, 12/e, 2006.
- [4] S. S. Sastry, *Engineering Mathematics*, Vol I, II Prentice Hall Publication, 3/e, 2004.
- [5] C.Ray Wylie & Louis C. Barretle, *Advanced Engineering Mathematics*, Tata McGraw Hill Publishing Co. Ltd., 6/e, 2003.

Devi Ahilya University, Indore, India Institute of Engineering & Technology				BE II Year (Information Technology) Semester III					
Subject Code & Name	Instructions per Week		Hours	Marks					
2IT402 Data Structures	L	T	P		TH	CW	SW	PR	Total
Duration of Theory Paper: 3 Hours	4	-	2	Max	100	50	50	50	250
				Min	35	25	25	25	110

Course Objectives: To gain the knowledge of useful data structures, their implementations, and associated algorithms

Prerequisite(s): Computer Programming

COURSE OF CONTENTS

Unit-I

Array and Link list: Array: Definition, Representation, Address Calculations; Searching: Linear search, Binary search, Hash Search; Sorting: Bubble sort, Insertion sort, Selection sort, Heap sort, Quick sort, Merge sort, Link List: Introduction, Single Link list, Single Circular link List, Doubly link list, Doubly Circular link list, Applications of link list.

Unit-II

Stack: Definition, Representations: static and dynamic, Infix, Prefix, and Postfix expressions, Conversion of Infix to Postfix, Evaluation of Postfix expression, Implementation of recursion, removal of recursion.

Unit-III

Queue: Definition, Representations: Static and dynamic, Circular Queue, Double ended Queue, Priority Queue, Implementation of Priority Queue using Heap data structure, applications of queues.

Unit-IV

Tree: Definition, Basic terminology, Binary tree, Complete Binary Tree, Full Binary Tree ; representations: Static and dynamic, Traversing in binary tree, Heap tree, Binary Search tree, AVL tree, M-way search trees, B-tree, B⁺tree, B*tree; Applications of tree.

Unit-V

Graph: Definition, Basic terminology, Directed and Undirected graph, Connected and Disconnected Graph, Weighted graph, Representations: static, dynamic and mix; Searching in graphs, finding shortest path in a weighted graph, Applications of graph.

BOOKS RECOMMENDED

- [1] E Horowitz & Sahni, *Fundamental Data Structure*, Galgotia Book Source, 1983.
- [2] A Tannenbaum, *Data Structure Using C*, Pearson Education.
- [3] Kruz, *Data Structure and Programming Design*, 1987.
- [4] N. Wirth, *Algorithms +Data Structure = Program*, Prentice Hall of India, 1979.
- [5] A V Aho, J E Hopcroft & J D Ullman, *The Design and Analysis of Computer Algorithms*, Addison Wesley, 1974.

Devi Ahilya University, Indore, India Institute of Engineering & Technology				BE II Year (Information Technology) Semester III					
Subject Code & Name	Instructions per Week		Hours	Marks					
2IT403 Business Data Processing	L	T	P		TH	CW	SW	PR	Total
	4	-	2	Max	100	50	50	50	250
Duration of Theory Paper: 3 Hours				Min	35	25	25	25	110

Course Objectives: Learn the fundamentals of analysis, design and implementation of Business Information Systems.

Prerequisite(s): Computer Programming

COURSE OF CONTENTS

Unit-I

Business Organization: Introduction & Concepts

Business organization fundamentals; Organization as a system; Business requirements and goals; Management functions; MIS; e-Business; System boundary and interface; Communications and network concepts; Business transactions; Data, Information & Knowledge; Transaction processing- batch, online and real time applications.

Unit-II

COBOL Programming

Elements of COBOL Programming; Data Definition; COBOL Program layout; Problem solving, Arithmetic and Logical operations; Algorithm development- flow chart, decision tables, stored program logic.

Unit-III

File Concepts and Programming

Elementary and group items; Various levels for variables declarations; Records, Arrays and Table manipulation; Master file and transaction files; Screen section/report writer features of COBOL; Page formatting; Data management functions, storage/retrieval of data RENAME, REDEFINE, PERFORM statements.

Sequential files- matching of two or more sequential files; File Updation; SORT, MERGE, SEARCH statements; Operations and organizations of direct access files such as indexed access, relative access.

Unit-IV

Systems Analysis & Design Concepts

Introduction; Roles of the Systems Analyst; The Systems Development Life Cycle; CASE Tools; Object-Oriented Systems Analysis and Design; Need for Structured Analysis & Design; Alternative Methodologies

Unit-V

System Modeling Techniques

Introduction to system, process & data modeling; Importance & use of ER diagrams; Data flow diagrams modeling of data dictionary, decision table, decision tree, structured English etc. An overview of UML.

BOOKS RECOMMENDED

- [1] N Stern, R A Stern & J P Ley, *Structured COBOL Programming for 21st Century*, 11/e, Wiley Publications, 2005.
- [2] J L Whitten, L D Bentley, K C Dittman, *Systems Analysis & Design Methods*, 6/e, Tata McGraw Hill, 2004.
- [3] Alan Dennis, Barbara Haley Wixom, Roberta M. Roth, *Systems Analysis and Design*, 3/e, Wiley Publications, 2005.

Devi Ahilya University, Indore, India Institute of Engineering & Technology				BE II Year (Information Technology) Semester III					
Subject Code & Name	Instructions per Week		Hours	Marks					
2EI404 Digital Electronics	L	T	P		TH	CW	SW	PR	Total
	4	-	2	Max	100	50	50	50	250
Duration of Theory Paper: 3 Hours				Min	35	25	25	25	110

Course Objectives: Get acquainted with different number systems, their Interconversion and operations. Familiarized with different logic families & relative performance Ability to design various combinational circuits by solving & reducing Boolean equations Ability to synthesis, design and analysis of sequential circuits using Xilinx tools. Understandability of converting analog signal to digital and vice versa. Synchronization and frequency division circuits. Ability to test digital circuits and estimating reliability.

Prerequisite(s): Knowledge of Transistor, Diodes, Switching property, Boolean algebra.

COURSE OF CONTENTS

Unit –I

Data Representation: Introduction to Binary System: Number System, Number base conversion, Binary Arithmetic, Various Binary codes, Logic Families: - RTL, DTL, ECL, IIL, TTL & CMOS families

Unit-II

Combinational Circuits: Combinations Logic, Design principles, Analysis and Synthesis Tools & Techniques, Combinational logic design practices like, combinational PLDs, Decoders, Encoders, 3-state Devices, Arithmetic Circuits like Adder, Subtractor, Multiplier, Divider, Comparators for signed and unsigned numbers Practical Designing of combinations circuits design using EDA Software

Unit-III

Sequential Circuits: Sequential Logic Design Practices: Latches and Flip-Flops, Sequential PLDs, Counters, Shift Registers. Sequential Design Methodology, Impediments to Synchronous Design, Synchronizer Failure and Met stability. Sequential Circuit Design Examples Using EDA Software

Unit-IV

Registers: Shift Registers, Universal Shift Registers, Shift-Register Counter, Sequence Generators. Memory Devices: Classifications, Static and Dynamic RAM, ROM, Memory Decoding & Expansion CPLDs and FPGAs: Xilinx family, function-block architecture, programmable interconnects.

Unit-V

Digital Circuits: Digital to Analog Conversions: using Pulse width Modulator, Oversampling DAC, Binary Weighted DAC, R-2R Ladder, Thermometer Coded DAC, Segmented DAC, Hybrid DAC.

Analog to Digital Conversions: using Direct Conversions, Successive Approximations, Delta Encoded, Ramp Compare, Pipeline Method, Sigma Delta methods.

Counting and Timing Circuits: Using decade counters with & without feedback, vernier counting Synchronization and Frequency division circuits: using sweep circuits, stable & Monostable Relaxation circuits, study of sine wave synchronization.

Monostable, Bistable & Astable multivibrators: using 555, transistor Testing of Digital Circuits: Tools, Design of Testability, Estimating Digital system Reliability, Transmission lines, reflections and termination.

BOOKS RECOMMENDED

- [1] John F. Wakerly, *Digital Design: Principles & Practices*, Low Price Edition, Pearson Education. 2003
- [2] Richard F. Tinker, *Engineering Digital Design*, 2/e, Harcourt India Private Ltd., 2001
- [3] William I. Fletcher, *An Engineering Approach to Digital Design*, Pearson Education
- [4] William H. Gothmann, *Digital Electronics: An Introduction to Theory and Practice*, Eastern Economy Edition, Prentice-Hall of India Private Limited, New Delhi., 2001
- [5] Jacob Millman & Herbert Taub, *Pulse, Digital and Switching Waveforms*, 13th Reprint, Tata McGraw Hill Publishing Company Ltd., New Delhi, 1999

Devi Ahilya University, Indore, India Institute of Engineering & Technology				BE II Year (Information Technology) Semester III					
Subject Code & Name	Instructions Hours per Week			Marks					
2IT405 Digital Computer Organization	L	T	P		TH	CW	SW	PR	Total
Duration of Theory Paper: 3 Hours	4	-	-	Max	100	50	-	-	150
				Min	35	25	-	-	60

Course Objectives: Familiarize with the internal working of modern computer systems

Prerequisite(s): Computer Programming

COURSE OF CONTENTS

Unit-I

Computer Structure Overview, Addressing Methods & Program Sequencing

Overview, Operational Concepts, Von-Neuman model, Bus Structures, Software, Performance, Addressing Methods – Memory locations, Addresses & Encoding of Information, Main Memory Operations. Instruction Sequencing – Straight line Sequencing, Branching. Addressing Modes, Basic I/O Operations, Stack and Queues, Subroutines etc.

Unit-II

The Processing Unit

Processor Organization, Operational Concepts, Instruction Execution, Hardwired Control, Microprogram Control- Microinstructions, Microprogram Sequencing etc. Performance Considerations etc.

Unit-III

Input-Output Organization

I/O Device Access Methods, Interrupt Handling, Device Handling, Exception Handling, Direct Memory Access, I/O Hardware – Processor Bus, Interface circuit etc. I/O Interfaces – SCSI Bus etc .

Unit-IV

Memory System

Introduction, Types of Memory - RAM, ROM etc. Operational Concepts, Cache Memory - Mapping, Replacement Algorithms, Types. Performance Considerations etc.

Unit-V

Arithmetic Operations and Pipelining

Number Representation, Addition, Multiplication of Positive Numbers, Signed-Operand Addition and Multiplication, Adder Design, Floating-Point Numbers- Arithmetic Operations, Implementation etc. Pipelining – Introduction, Operational Concepts, Data Dependency etc.

BOOKS RECOMMENDED

- [1] V. Hamacher, S. Zaky, *Computer Organization*, Mcgraw Hill International, Fifth Edition.
- [2] William Stallings, *Computer Organization and Architecture*, Prentice Hall of India, Sixth Edition.
- [3] A. Tannenbaum, *Structured Computer Organization*, Pearson Education, 2002.
- [4] Patterson & Hennessy, *Computer Organization and Design*, Morgan Kaufmann,

Devi Ahilya University, Indore, India Institute of Engineering & Technology				BE II Year (Information Technology) Semester III					
Subject Code & Name	Instructions per Week		Hours	Marks					
2IT406 IT Workshop	L	T	P		TH	CW	SW	PR	Total
	-	-	2	Max	-	-	50	50	100
				Min	-	-	25	25	50

Course Objectives: To build up the skills for effective application development.

Prerequisite(s): Basic programming skills.

COURSE OF CONTENTS

Unit I

Introduction to MATLAB & Fundamentals

Introduction to MATLAB Environment, Defining Matrices, Matrix Manipulation, Data Structures, Working with MATLAB variables, String Manipulation, M-file Programming, Flow Control, File Input and Output, Basic Plotting and Visualization, 2-D Graphics, Creating MATLAB functions etc.

Unit II

Application of MATLAB in Mathematics

Matrices and Linear Algebra, Polynomials and Interpolation, Ordinary Differential Equations, Writing MATLAB Application etc.

Unit III

Introduction to Application Development Using Visual Basic & Fundamentals

Features of Visual Basic, Working in the development environment, Creating a program in Visual Basic, Introduction to objects, Properties, methods, and events, Working with forms, Basic controls, Advance Controls – Text Boxes, Check Boxes, and Radio Buttons etc., Coding for the Controls etc.

Unit IV

Controlling Program Execution and Advance User Interface

Overview of variables, Declaring variables, User-defined data types, Working with procedures. Comparison and logical operators, Using If...Then, Select Case, For...Next statements, Overview of looping structures, Using Do...Loop structures, Working with dates and times, Advance UI – Menus, Sub procedures and Functions etc.

Unit V

Using Databases and Presenting Data

Data Access using ADO Control – Overview of ActiveX data objects, Define Database, table, Use the ADO control to view, add, delete, find and modify records, Shaping and Organizing Data, Presenting On-Screen Data, Printed Reports etc.

Note : *Students have to make one minor project in Visual Basic and one in MATLAB.*

RECOMMENDED BOOKS

- [1] Rudra Pratap, *Getting Started with MATLAB*, Oxford University Press, 2002.
- [2] Matthews, John H., *Numerical Methods using MATLAB*, Pearson Education, 2005.
- [3] Warner Scott, *Teach Yourself Visual Basic 6*, Tata Mcgraw Hill.
- [4] Deitel & Deitel, Nieto, T. R., *Visual Basic 6 : How to Program*, Pearson Education
- [5] Reselman Bob, *Using Visual Basic 6*, Prentice Hall of India

Devi Ahilya University, Indore, India Institute of Engineering & Technology				BE II Year (Information Technology) Semester III						
Subject Code & Name	Instructions per Week			Hours	Marks					
2SS456 Engineering Economics	L	T	P		TH	CW	SW	PR	Total	
	2	-	-		Max	-	50	-	-	50
Duration of Theory Paper: Only Internal Tests					Min	-	25	-	-	25

Course Objectives: To make fundamentally strong base for decision making skills by applying the concepts of economics and accounting to cope up with the current dynamic business environment

Prerequisite(s): nil

COURSE OF CONTENTS

Unit-I

Engineering Economics: Economic Decision: Role of Engineering in Business; Concept, Nature and Scope of Economics & Business Economics; Types of Business Organizations.

Cost, Revenue and Profit Analysis: Cost Classifications for Predicting Cost Behavior; Concept of Profit, Gross Profit and Net Profit; Break Even Point (BEP).

Unit-II

National Income: Meaning and Concept of National Income: GNP/GNI, NNP/NNI, Personal Income and Disposable Income; Methods of Computing National Income -Production Method, Income Method, Expenditure Method.

Unit-III

Consumer Demand: Consumer Demand Analysis: Meaning, Features and Determinants of demand; Law of Demand and its Exceptions; Reasons for Law of Demand; Importance of Law of Demand; Elasticity of Demand.

Unit-IV

Production Supply: Production Supply Analysis: Meaning, Supply Function, Law of Supply, Determinants of Supply, Fluctuation of supply; Elasticity of supply and its measurement.

Unit-V

Liberalization: Liberalization, Globalization & Privatization: Concept & Characteristics; Evaluation of New Liberal Economic, Policy of India; Economy through Globalization.

BOOKS RECOMMENDED

[1] C S Park, *Contemporary Engineering Economics*, Pearson Education, 2002

[2] J S Chandan, *Statistics for Business and Economics*,

[3] C Dislis, JH Dick, I D Dear & AP Ambler, *Test Economics and Design for Testability*,

[4] S Damodaran, *Managerial Economics*,

Devi Ahilya University, Indore, India Institute of Engineering & Technology				BE II Year (Information Technology) Semester IV					
Subject Code & Name	Instructions per Week		Hours	Marks					
2IT451 Discrete Structures	L	T	P		TH	CW	SW	PR	Total
	4	-	-	Max	100	50	-	-	150
	Duration of Theory Paper: 3 Hours			Min	35	25	-	-	60

Course Objectives: To provide the fundamentals of formal techniques for solving the problems in computational domain and algorithm development

Prerequisite(s): nil

COURSE OF CONTENTS

Unit-I

Set Theory & Logic

Set theory: Set representation; Set operations and Algebra; Principle of Inclusion-Exclusion.

Mathematical induction: Strong induction; Well-ordering; Recursive definitions.

Propositional Logic: Representation; Logic connectives; Truth tables; Deduction; Syllogism; Arguments.

Unit-II

Counting: Fundamental laws of product and sum; Permutations & Combinations. Other counting techniques; Combinatorics.

Relations: Relations and their properties; n -ary relation and their applications; Representing binary relations; Closures of relations; Equivalence, Partial ordered and Compatible relations.

Function: Types of functions; Hashing; Pigeon-hole principle.

Unit-III

Graph Theory: Terminology; Graph Representation; Graph isomorphism; Connectedness; Various graph properties; Euler & Hamiltonian graph; Shortest paths algorithms.

Trees: Terminology; Tree traversals; prefix codes; Spanning trees; Minimum spanning trees.

Unit-IV

Overview of the topics: Automata & Grammar; Analysis of algorithms; Generating functions; Recurrence Relations; Fuzzy logic.

Unit-V

Algebraic system-I: Groups & Group Codes; Rings, Fields & Integral domains.

Algebraic system-II Lattices and Boolean algebra: Gate Algebra; Logic Algebra; Switching Algebra.

BOOKS RECOMMENDED

[1] C L Liu, *Introduction to Discrete Mathematics*, McGrawHill, 1986 (Reprint by Tata McGraw Hill, 2007).

[2] K Rosen, *Discrete Mathematics and its Applications*, 6/e (Special Indian Edition), Tata McGraw-Hill, 2007.

[3] B Kilman, R Busby, S Ross, N Rehman, *Discrete Mathematical Structures*, 5/e, Pearson Education, 2006.

Devi Ahilya University, Indore, India Institute of Engineering & Technology				BE II Year (Information Technology) Semester IV					
Subject Code & Name	Instructions per Week			Hours	Marks				
	L	T	P	Max	TH	CW	SW	PR	TOTAL
2IT452 Computer Graphics	4	-	2	100	100	50	50	50	250
Duration of Theory Paper: 3 Hours	4	-	2	35	25	25	25	110	

Course Objectives: To familiarize with the basics of theory and practice of computer Graphics.

Prerequisite(s): Computer Programming; knowledge of programming language: C/C++/JAVA

COURSE OF CONTENTS

Unit-I

Introduction: Application of Computer Graphics, Raster Graphics Fundamentals: Scan conversion, Pixel, Frame Buffer. Graphics Primitives; Line algorithms Circle algorithms, Ellipse, Character generation, Polygon Representation, inside test, Polygon filling algorithms, Antialiasing.

Unit-II

Devices: Display devices: Random scan and Raster scan monitors, Colors CRT monitor, Plasma Panel; Hard Copy devices: Printers and Plotters; Input devices: Joysticks, Mouse, Digitizer, Scanner, and Camera; Input Techniques;

Unit-III

Windowing and clipping: 2D Transformation, Raster method of Transformation, Window, View port, Viewing, Window to View port Transformation, Line clipping algorithms, Polygon clipping algorithms.

Unit-IV

Three Dimensions: 3D Modeling techniques, 3D Display Techniques, 3D Transformation, Viewing Parameters, Hidden Surface and back face removal algorithms. 3D Curves & Surfaces: Bezier, Bspline.

Unit-V

Shading and color Models: Diffuse illumination, Point source illumination, Reflection, Refraction, Transparency, Shadows, Polygon rendering algorithms, Dithering, Half toning, Color Models and applications.

BOOKS RECOMMENDED

- [1] Hearn Donald and Baker M.Pauling, *Computer Graphics*, 2/e, Prentice Hall of India.
- [2] Hearn Donald and Baker M.Pauling, *Computer Graphics with OpenGL*, 3/e, Prentice Hall, 2004.
- [3] David F. Rogers, *Procedural Element of computer Graphics*, McGraw Hill International.
- [4] William M. Newman Robert F. Sproull, *Principles of Interactive Computer Graphics*, McGraw Hill.
- [5] J.D. Foley, A. van Dam, S.K. Feiner, J.F. Hughes, and R.L. Philips, *Introduction to ComputerGraphics*, Addison-Wesley, 1994.
- [6] Zhigang Xiang and Roy Plastock, *Computer Graphics*, Tata McGraw Hill Publications.

Devi Ahilya University, Indore, India Institute of Engineering & Technology				BE II Year (Information Technology) Semester IV					
Subject Code & Name	Instructions Hours per Week			Marks					
2IT453 System Programming	L	T	P		TH	CW	SW	PR	Total
	4	-	2	Max	100	50	50	50	250
Duration of Theory Paper: 3 Hours				Min	35	25	25	25	110

Course Objectives: To familiarize with the fundamentals of design and implementation of system software.

Prerequisite(s): Computer Programming, Data Structures

COURSE OF CONTENTS

Unit-I

Introduction : Need of System Program, distinction with Application program, language processors, language processing- Fundamentals, principles of programming languages, Data structures for language processing search and allocation type, , language specification, system software- editors, debuggers, assembler, compiler, interpreter.

Unit-II

Assembler: Overview of assembly language program, Design of Assembler-pass structure, intermediate code, Macros and Macro processors-macro definition, processing, design.

Unit-III

Compiler – Introduction & Parsing Techniques: Compiler and Translators, pass structure of compiler, design of lexical analyzer, Basic Parsing Techniques: top down approach- recursive descent parsing predictive parsing, Bottom-up approach-Shift-reduce parser, operator precedence parser, LR parser, Syntax -Directed translation, parser generators.

Unit-IV

Compiler Code Generation & Optimization: Intermediate code generation, memory allocation, compilation of expressions and control structures, code optimization.

Unit-V

Loader & Linker Design Issues: Interpreters, Linker & Loader- concepts, program relocation schemes, overlays, Shared libraries, dynamic linking and loading.

BOOKS RECOMMENDED

- [1] D.M. Dhamdhere – *Systems Programming and operating System*, 2nd ed rev., Tata McGraw-Hill, 2005
- [2] L.L. Beck, *System Software An Introduction to Systems Programming*, Pearson Education, 2003
- [3] A.V. Aho, R.Sethi, J.D. Ullman – *Compilers Principles, Techniques and Tools*, Pearson Education, 1999.
- [4] David Galles, *Modern Compiler Design*, Pearson Education, 2007
- [5] John R. Levine, *Linkers & Loaders*, Morgan Kaufmann Publisher

Devi Ahilya University, Indore, India Institute of Engineering & Technology				BE II Year (Information Technology) Semester IV					
Subject Code & Name	Instructions Hours per Week			Marks					
2IT454 Object Oriented Programming	L	T	P		TH	CW	SW	PR	Total
Duration of Theory Paper: 3 Hours	4	-	2	Max	100	50	50	50	250
				Min	35	25	25	25	110

Course Objectives: To familiarize with the Object oriented concepts through Java programming.

Prerequisite(s): Computer Programming

COURSE OF CONTENTS

Unit-I

Introduction to Object Oriented Programming:

Object Oriented Concepts, Merits of Object Oriented Technology. Abstraction, Encapsulation, Information Hiding. Object Model: definition, State, behavior, Identity and messages. Concept of object initialization, constructors, constructor overloading. Access modifiers: Class attributes and methods. Introduction to object model of software development.

Unit-II

Introduction to Java classes and objects:

Java features: Java syntax, data types, data type conversions, control statements, operators and their precedence. Introduction to Class: Instance members and member functions. String Handling, Wrapper classes: Arrays and Vectors.

Unit-III

Inheritance and Polymorphism :

Class relationships: Inheritance and its types, Merits and Demerits. Association. Association inheritance, Polymorphism: Dynamic method dispatch, Runtime polymorphism, Abstract classes, Interfaces and packages.

Unit-IV

Exception Handling and Multithreading:

Exceptions: Need for exceptions, Checked Vs Unchecked exceptions, creating exceptions. Multithreading: Introduction, Priorities and scheduling, Thread Synchronization and its life cycle.

Unit-V

Java I/O, Applets and Event Handling:

Basic concept of streams I/O stream & reader-writer classes. File handling. Applet and its Life Cycle, Basic GUI elements, Event Delegation Model and event handling

BOOKS RECOMMENDED

- [1] Cay S.Horstmann, *Core JAVA Vol-I*, Pearson Education.
- [2] Herbert Schildt, *The complete Reference*, Tata McGraw Hill
- [3] Scott W Amber, *The Object Primer*, Cambridge
- [4] Timothy, Budd, *Object Oriented Programming*, Pearson Education.
- [5] Kathy Sierra, Bert Bates, *Head First Java*, 2nd Edition, Oreilly

Devi Ahilya University, Indore, India Institute of Engineering & Technology				BE II Year (Information Technology) Semester IV					
Subject Code & Name 2ET455 Microprocessor & Assembly Language Programming	Instructions per Week			Hours			Marks		
	L	T	P		TH	CW	SW	PR	Total
Duration of Theory Paper: 3 Hours	4	-	2	Max	100	50	50	50	250
				Min	35	25	25	25	110

Course Objectives: To provide the fundamentals of microprocessor 8085, its assembly language programming and the concept of Interfacing, peripheral chips.

Prerequisite(s): Knowledge of following concepts is required, Number Systems (binary, octal, and hexadecimal) and their conversions. Boolean algebra, logic gates, flip-flops, and registers. Concepts in combinational and sequential logic.

COURSE OF CONTENTS

Unit-I

Comparison among microprocessor microcontroller and computer. Introduction to 8085 microprocessor: Pin diagram, architecture , programming model , instruction set , classification of instruction set , instruction and data format , timing diagram of instructions. Basic concept of programming

Unit-II

Addressing modes. Counters and time delay. Stack and subroutine. Code conversion, BCD arithmetic , and 16 bit data operation. Programming Techniques. Basic interfacing concept, memory interfacing. Memory mapped and peripheral mapped I/O techniques.

Unit-III

The 8085 Interrupts, Input /output interfacing, interfacing data converters, 8259 interrupt controller.

Unit-IV

Programmable interfacing devices, 8155 multipurpose programmable device, The 8255 programmable peripheral interface, The 8253/8254 programmable interval timer.

Unit-V

8237/8257 DMA controller. 8279 keyboard/display interface. Serial I/O and data communication using RS-232C serial I/O standard. The 8251 (USART) programmable communication interface.

BOOKS RECOMMENDED

- [1] Ramesh S. Gaonkar, *Microprocessor, Architecture, Programming, and Applications with the 8085*, Penram International Publication, 5/e.
- [2] P.K. Ghosh and P. R. Sridhar, *0000 to 8085 Introduction to microprocessor for Engineers and Scientists*, PHI, 2/e
- [3] Douglas v. hall, *Microprocessor and interfacing programming and Hardware*, Tata McGraw Hall, 2/e
- [4] N.K. Srinath , *8085 Microprocessor Programming and Interface*, PHI, 2005.
- [5] M. Rafiauzzaman , *Microprocessor Theory and application :Intel and Motorola*, PHI, Revised Edition.

Devi Ahilya University, Indore, India Institute of Engineering & Technology				BE II Year (Common to All Branches) Semester IV					
Subject Code & Name 2SS406 Effective Communication Skills	Instructions Hours per Week			Marks					
	L	T	P		TH	CW	SW	PR	Total
Duration of Theory Paper: Only Internal Tests	2	-	-	Max	-	50	-	-	50
				Min	-	25	-	-	25

Course Objectives: To develop effective communication skills in engineers for expressing the technical ideas and for discussing the technical issues with confidence.

Prerequisite(s): Technical English

COURSE OF CONTENTS

Unit-I

Fundamentals of Communication: The Importance of Communication; the Basic forms of Communication; The Process of Communication; Why Communication is necessary?; Art of Communication.

Unit-II

Inter-personal skills: Building Positive Relationships; Giving Praise; Dealing with Criticism; Managing Conflicts; Telephone speaking skills and Cross-cultural communication skills

Unit-III

Listening- The importance of listening; Barriers to Effective Listening; Approaches to Listening; How to be a Better Listener; What speakers can do to ensure better listening.

Unit-IV

Interviews: Points to be remembered as an interviewer or an interviewee; Commonly asked questions; Types of interviews; Do's and Don'ts.

Unit-V

Making Presentations: Speech Purpose- General and Specific; Methods of Speaking; Analyzing the Audience; Non-verbal Dimensions of Presentation, Group Discussions: Importance; Process; Points to be kept in mind while participating; Do's and don'ts.

Note: There shall be seminars and practice sessions by students.

BOOKS RECOMMENDED

- [1] P D Chaturvedi, P.D. & M Chaturvedi, *Business Communication: Concepts, Cases and Applications*, Pearson Education, Singapore Pvt. Ltd, 2004.
- [2] ICMR, *Business Communication*, Feb 2001.
- [3] J Davies, *Communication Skills: A Guide for Engineering and Applied Science Students*, 2/e Pearson Education, 2006.
- [4] Lecture material given by the course teacher.