BHAVNAGAR UNIVERSITY
B.E. SEM III(IT)

IT –301 APPLIED MATHEMATICS

In force-2006

TEACHING SCHEME			EXAMINATION SCHEME				TOTAL MARKS
THEORY HOURS	TUT. HOURS	PRACT. HOURS	THEORY		PRA/ORAL MARKS	T/W MARKS	
			MARKS	HOURS			
3	0	0	100	3	00	00	100

(1) ORDINARY DIFFERENTIAL EQUATION OF HIGHER ORDER: definition, complete solution, operator d, complementary function, inverse operator, rules for finding particular integral, cauchy's & legendre's linear equation, simultaneous linear equations with constant coefficients, application to engineering problems such as forced damped oscillations, electrical circuits etc.

(2) FOURIER SERIES: Euler's formula, dirichlet's conditions, functions having points of discontinuity, change of interval, expansion of odd or even periodic functions, half range series & fourier transformation.

(3) LAPLACE TRANSFORM: introduction, transform of elementary functions, properties of L.T., existence conditions, inverse transform, transform of derivatives, transform of integrals, multiplication by tn, division by t, convolution theorem, application to solution of differential equation.

(4) INTEGRAL TRANSFORM: introduction, definition, fourier integral ,fourier transform, convolution theorem for F-transform, parsvel's identity, relation between fourier transform & laplace transform, f-transform of the derivative of a function, application of transform to boundary value problems.

(5) Z-TRANSFORM

(6) PARTIAL DIFFERENTIAL EQUATION WITH APLICATION :formation of p.d.e., particular and complete integral, equation solvable by direct integration, linear equation of first order, non-linear equation of first order, homogeneous linear equation with constant co-efficients, method of seperation of variables , boundary value problems, solution of wave equation, one dimensional heat flow problems, solution of laplace's equation(two dimension)

BOOKS:

- Higher engineering Mathematics by B.S.GREWAL
- A text book of Applied Mathematics by P.N.WARTICAR/J.N.WARTICAR
- Engg. Mathematics by G.V.KUMBHOJKAR II/III
- Advance Engg. Mathematics by CHANDRIKA PRASAD

* Term work/Practical shall be based on above syllabus

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IT-302 OBJECT ORIENTED PROGRAMMING

TEACHING SCHEME			EXAMINATION SCHEME				TOTAL MARKS
THEORY HOURS	TUT. HOURS	PRACT. HOURS	THEORY		PRA/ORAL MARKS	T/W MARKS	
			MARKS	HOUR			
4	0	2	100	3	25	25	150

1. Principles of OOPs: A look at procedure oriented programming language, oop paradigm, benefits of oop, application of oop.
2. Introduction to C++: Applications of c++ program, More c++ statements, Structure of C++ program, Creating the Source code, Compiling and Linking.
3. Tokens, Expressions and Control Structures : Introduction, Tokens, Keywords, Identifiers, Basic Data Types, User defined Data Types, Derived Data Types, Symbolic Constants, Type Compatibility, Declaration of Variables, Dynamic Initialization of Variables, Reference Variables, Operators in C++, Scope Resolution Operator, Member Dereferencing operators, Memory Management Operators, Manipulators, Type Cast Operator, Expression and Implicit Conversion, Operator Overloading, Operator Precedence, Control Structures.
4. Functions in C++ : Introduction, The Main Function, Function Prototyping, Call by Reference, Return by Reference, Inline Functions, Default Arguments, const Arguments, Function Overloading, Friend and Virtual Functions.
5. Classes and Objects : Introduction, C Structure Revisited, Specifying a Class, Defining Member Functions, A C++ Program with Class, Making an Outside Function Inline, Nesting of Member Functions, Private Members Functions, Arrays Within a Class, Memory Allocations for Objects, Static Data Members, Static Member Functions, Arrays of Objects, Objects as Function Arguments, Friendly Functions, Returning Objects, const Member Functions, Pointers to Members.
6. Constructors and Destructors : Introduction, Constructors, Parameterized Constructors, Multiple Constructors in a Class, Constructors with Default Arguments, Dynamic Initialization of Objects, Copy Constructor, Dynamic Constructors, Constructing Two- Dimensional Arrays, Destructors.
7. Operator overloading and Type Conversions : Introduction, Defining Operator Overloading, Overloading Unary Operators, Overloading Binary Operators, Overloading Binary Operators Using Friends, Manipulation of Strings Using Operators, Rules for Overloading Operators, Type Conversions.
8. Inheritance: Extending Classes : Introduction, Defining Derived Classes, Single Inheritance, Making a Private member Inheritable, Multilevel Inheritance, Multiple Inheritance, Hierarchical Inheritance, Hybrid Inheritance, Virtual base Classes, Abstract Classes, Constructors in Derived Classes, Member Classes : Nesting of Classes.
9. Pointers, Virtual Functions and Polymorphism : Introduction, Pointers to Objects, this Pointer, Pointers to Derived Classes, Virtual Functions, Pure Virtual Functions.
10. Managing console I/O Operations : Introduction, C++ Streams, C++ Stream Classes, unformatted I/O Operations, Formatted Console I/O Operations, Managing Output with Manipulators.
11. Working with Files : Introduction, Classes for File Stream Operations, Opening and Closing a File, Detecting End-of-File, More About Open() : File Modes, File Pointers and Their Manipulations, Sequential Input and Output Operations, updating a File :Random Access, Error handling During File Operations, Command-Line Arguments.
12. Object- Oriented System Development : Introduction, Procedure-oriented Paradigms, Procedure-Oriented Development Tools, Object-Oriented Paradigm, Object-Oriented Notations and Graphs, Steps in Object Oriented Analysis, Steps in Object-Oriented Design, Implementation, Prototyping Paradigm, Wrapping Up.

Text Books: Object Oriented Programming with C++ By E. Balagurusamy
Ref. Books: OOPs By: Robert Lafore

* Term work/Practical shall be based on above syllabus.

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IT-303 FUNDAMENTALS OF DIGITAL ELECTRONICS

TEACHING SCHEME			EXAMINATION SCHEME				TOTAL MARKS
THEORY HOURS	TUT. HOURS	PRACT. HOURS	THEORY		PRA/ORAL MARKS	T/W MARKS	
			MARKS	HOUR			
3	0	2	100	3	25	25	150

1. BINARY SYSTEM
   Digital computer and digital systems, Binary numbers, Number base conversion , Octal and hexadecimal Numbers, Complements, Binary codes, Binary storage and registers, Binary logic.

2. BOOLEAN ALGIBRA AND LOGIN GATES.
   Basic definition , Axiomatic definition of Boolean algebra, Basic theorems and properties of Boolean algebra, Boolean function, Canonical and standard forms, Other logic operations, Digital login gates, IC digital logic families.

3. SIMPLIFICATION OF BOOLEAN FUNCTION
   The map method, Two and three variable maps, Four variable map, Five and six variable maps, Product of sums simplification, NAND and NOR implementation, Other two level implementation, Don't care conditions, The tabulation method, Determination of prime implicates , Selection of prime implicates.

4. COMBINATIONAL LOGIC
   Introduction, Design procedure, Adders, Sub tractors , Code conversion, Analysis procedure , Multilevel NAND circuits, Multilevel NOR circuits, Exclusive-or and equivalence function.

5. COMBINATIONAL LOGIC WITH MSI AND LSI
   Introduction, Binary parallel adders, Decimal adder, Magnitude comparator, Decoders, Multiplexor, ROM, Programmable logic array.

6. SEQUENCIAL LOGIC
   Introduction, Flip-flops, Triggering of Flip flops, Analysis of clocked sequential circuits. State reduction and assignment, Flip flop excitation tables, Design procedure, Design of counters.

7. REGISTERS, COUNTERS AND THE MEMORY UNIT
   Introduction, Registers, Shift registers, Ripple counter, Synchronous counter, Timing sequences, The memory unit, example of random access memories.

8. DIGITAL INTEGRATED CIRCUITS
   Introduction, Bipolar transistor characteristics , RTL and DTL circuits, Integrated injection logic (IIL), Transistor- Transistor logic (TTL), Emitter coupled logic (ECL), Metal oxide semiconductor (MOS), Complementary MOS (CMOS)

BOOKS:-

1. DIGITAL LOGIC AND COMPUTER DESIGN - M MORRIS MANO (PHI PUBLICATION)
2. DIGITAL PRINCIPAL AND APPLICATION - MALVINO AND LEACH
3. DIGITAL ELECTRONICS - W H GOTHMAN
4. INTEGRATED ELECTRONICS - MILLMAN AND HALKIES
5. DIGITAL COMPUTER FUNDAMENTAL - BARTEE

* Term work/Practical shall be based on above syllabus.

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IT –304 FUNDAMETALS OF INTERNET & WEB DESIGNING

TEACHING SCHEME			EXAMINATION SCHEME				TOTAL MARKS
THEORY HOURS	TUT. HOURS	PRACT. HOURS	THEORY		PRA/ORAL MARKS	T/W MARKS	
			MARKS	HOUR			
3	0	4	100	3	25	25	150

INTERNET:

1. The Internet
   Introduction, Internet defined, Internet History, The way Internet works, Prepare to connect Internet, Connect to your service provider, Configure your TCP/IP Software.
2. Browsing The Web
   Introduction, Types of Web Browser, Browser Terminology, Web Terminology, URL.
3. Fundamentals Of Electronic Mail
   E-mail Introduction, User's id, passwords , E-mail Addresses, Message Component & Composition, Mailer Futures, E-mail inner working, E-mail management.
4. Fundamental of World Wide Web & Searching the Web
   Introduction, Web writing styles, Web Presentation & Registration, Searching the Web, Search Fundamentals & Strategies, How does the Search engine work?
5. Telnet and FTP
   Introduction, Telnet and Remote Login, File Transfer, Computer Viruses.

WEB PROGRAMMING:

1. Basic HTML
   Introduction, Headers and Footers, Lists, Tables, Debugging
2. Web Graphics
   Introduction, Popular Image Formats, GIF Features, Image Tag Revisited, Image Maps, Scanners, Miscellaneous Graphics Topics.
3. Advance HTML
   Introduction, Frames, HTML Forms, CGI Scripts, Dynamics Documents, HTML Tools, Next Generation HTML.
4. Multimedia
   Introduction, Important Multimedia Issues, Audio, Movies & Video, Virtual Reality & 3D Modeling, Multimedia & HTML Documents.
5. Privacy and Security Topics.
   Introduction, Known Information, Software Complexity, Encryption Schemes, Secure Web Documents, Digital Signature, Firewalls.

Practical and term work shall be based on the above topics, giving due weight age to the above topics

Text Book:
Fundamentals of the Internet and the World Wide Web by Raymond Greenlaw & Ellen Hepp - TMH

Reference Books:
1. The Big Basics Book of The Internet by Joe Habraken - PHI
2. The ABCs of the Internet by Christian Crunlish - BPB

* Term work/Practical shall be based on above syllabus.

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IT –305 QUANTITATIVE ANALYSIS FOR BUSINESS APPLICATION

TEACHING SCHEME			EXAMINATION SCHEME				TOTAL MARKS
THEORY HOURS	TUT. HOURS	PRACT. HOURS	THEORY		PRA/ORAL MARKS	T/W MARKS	
			MARKS	HOURS			
4	0	0	100	3			100

1. Quantitative Decision making – Overview (IGNOU)
   - ❖ Meaning of Quantitative Technique
   - ❖ Statistics and Operation Research
   - ❖ Classification of statistical methods
   - ❖ Models in O.R.
   - ❖ Various statistical methods
   - ❖ Advantages of O.T.
   - ❖ Q T in Business and Management
2. Decision making models (QTCA)
   - ❖ Process of Decision Making
   - ❖ Management Science approach to decision making
   - ❖ Planning, Organizing and controlling operation by modeling
   - ❖ Industrial dynamics – introduction and use of elementary models in long range planning
3. Data collection and analysis
   - ❖ Collection and Presentation of data (MS-8)
   - ❖ Measures of control tendency
   - ❖ Measures of variation and skew ness
4. Probability Distribution and statistics (MS-8 + OTCA)
   - ❖ Normal, Binomial and Poisson distribution their properties and application
   - ❖ Basic concepts of probability
   - ❖ Discrete probability distribution
   - ❖ Continuous probability distribution
   - ❖ Decision theory
   - ❖ Probability density function
   - ❖ Standard error of means and variance
   - ❖ Test of significance – T.F. and chi test
   - ❖ ANOVA
   - ❖ Curve fitting, Goodness of fit
   - ❖ Correction and regression analysis
   - ❖ Introduction to design of experiments
5. Business Forecasting
   - ❖ Time Series analysis and other models
   - ❖ Correlation and regression
6. Business Financials
   - ❖ Marginal coasting
   - ❖ Activity Based costing
   - ❖ Capital investment
   - ❖ Budgetary control
   - ❖ Present policy
   - ❖ Inventory management
7. Acceptance Sampling
   - ❖ Sampling Methods
   - ❖ Sampling distribution and their application
   - ❖ Testing of hypotheses

TEXTS/REFERENCES:

1. Gupta S.P. and Gupta, M.P. , Business Statistics, Sultanchand & Sons New Delhi 1987
2. Loomba, M.P. Management – A Quantitative Perspective, McMillan Pub Co. New York, 1978
3. Shenoy, G.V, Srevastava,U.K., Sharma,S.C. Quantitative Techniques managerial decision making Wilay Eastern, New Delhi
4. Levin, R Statistics for Management Prentice Hall Inc., New York, 1984
5. Parzen, E, Modern Probability Theory and Its applications, wilay Eastern New York.
6. Buffa, E.S. Modern Production Management
7. Emory,C.W., Business Research Methods, Richard S. Irwin, Inc., Homewood.
8. Montgomery, D.C. & Johnson, L.A. Forecasting and Time Series Analysis, McGraw Hill, New York.

* Term work/Practical shall be based on above syllabus.

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IT-306 COMMUNICATION SKILLS & WEB DESIGNING TOOLS

TEACHING SCHEME			EXAMINATION SCHEME				TOTAL MARKS
THEORY HOURS	TUT. HOURS	PRACT. HOURS	THEORY		PRA/ORAL MARKS	T/W MARKS	
			MARKS	HOUR			
0	0	4	0	0	50	50	100

PART- A: COMMUNICATION SKILLS

Introduction:

Significance of communication skills in our life, Communication codes and signs

Non verbal communication signs(kinesics, proxemics; manners market management

Important of communication, One way and two way communication, Essentials of good communication, Effective presentation, persuasive presentation, body language, timing and duration of speech, visual aids, others

The uses of tenses:

(a) The present indefinite or simple present, present continuous, present perfect, present perfect continuous
(b) The past indefinite or simple past, past continues us, past perfect continuous.
(c) The future indefinite or simple future, future continuous, future, perfect, future perfect continuous

The common erros in English:

Common errors in the use of articles, adjectives, tenses, pronouns, prepositions etc. errors arising due to loose participle, incongruous, construction, confused constructions, shifted constructions and rule of proximity, miscellaneous errors.

Increasing vocabulary:

Single words for phrases and sentences, words denoting numbers, words denoting places, words denoting professions or trades, words connected with various branches of science and art, synonyms and antonyms, pairs of words often confused, figurative expressions and their explanations proverbs, abbreviations.

Group discussions:

Oral communications, importance of objectivity, cool headedness, poise etc,

Students should be encouraged to participate in group discussions on various topics such as day to day burning questions, topics of typical importance, on social political, cultural and technical aspects etc..

Public speaking and discussion skills:

Public speaking, importance, salient features of public speaking, listening in public speaking, l9istening in public speaking, presenting the discussion, tips for speakers.

Letter-writing and report writing::

Lay out of business letters, various types of business letters.(inquiry, order, complaint, adjustment to complaint etc.) report writing, structure of report writing, types of reports..

Reading and comprehension skills:

Importance, eye movements, fixations, regression and visual wandering, significance of reading for professionalism, kinds of reading, labeling, skimming, scanning, sampling, studying..

PART-B

Introduction to web designing and scripting tools and latest Application packages.

Practical/Oral: The practical and term work shall be based on the syllabus.

Note: Each part have equal weight age of marks and practical hours.

BOOKS FOR REFERENCE :

1. Effective communication made simple by Eyre, E.C.
2. The art of speaking made simple by Gondin W. R.
3. Roget's English thesaurus
4. Word power made easy by Norman Lewis.
5. English Idioms by James Main Dixon
6. Chambers's 21str century dictionary of English
7. English Grammer and compostion By wren & Martin.
8. English conversation for all occasions sndha publications Pvt.Ltd.New Delhi.
9. Group discussion at a glance sndha publicaton New Delhi.
10. Common errors in English language IIMs publication New Delhi.

English vocabulary for all IIMs Publications.