

# **SWAMI VIVEKANAND UNIVERSITY, SIRONJA, SAGAR (M.P.)**



## **SYLLABUS**

**For**

**B.Tech. in Information Technology  
(New Scheme)**

**Semester - III**

**Swami Vivekanand University, Sironja Sagar  
2013-2014**

# Swami Vivekanand University, Sironja Sagar (M.P.)

## Swami Vivekanand University, Sagar Scheme of Examination

Course Name :- Bachelor of Technology

Branch :- Information Technology

Semester :- 3<sup>rd</sup>

S. No.	Subject Code	Subject Name	Periods Per Week				Maximum Marks (Theory Block)			Maximum Marks (Practical Block)		Total Marks
			Lectures	Tutorials	Practical	Credits	End Sem Exam.	Mid Sem Test	Total	End Sem Practical/ Viva-Voce	Practical Record/ Assignments Quiz	
1.	BTIT-301	Mathematics-III	3	1	-	4	80	20	100	-	-	100
2.	BTIT-302	Fundamentals of IT	3	1	-	4	80	20	100	-	-	100
3.	BTIT-303	OOPS Methodology	3	1	2	6	80	20	100	50	50	200
4.	BTIT-304	Database Management System	3	1	2	6	80	20	100	50	50	200
5.	BTIT-305	Basic Electronics	3	1	2	6	80	20	100	50	50	200
6.	BTIT-306	CP-III (C/C++)	-	-	2	2	-	-	-	50	50	100
7.	BTIT-307	Seminar/GD/Lang Lab	-	-	2	2	-	-	-	-	50	50
8.	BTIT-308	Project Work - III	-	-	2	2	-	-	-	-	50	50
<b>Total</b>			<b>15</b>	<b>5</b>	<b>12</b>	<b>32</b>	<b>400</b>	<b>100</b>	<b>500</b>	<b>200</b>	<b>300</b>	<b>1000</b>

## BTIT - 301 MATHEMATICS-III

### Course Content

Course Code	Course Title	Credits-4C		
BTIT - 301	MATHEMATICS - III	L	T	P
		3	1	-

#### Unit - I

##### **Function of Complex variable**

Analytic function, C-R equations, Cauchy's integral theorem, Cauchy's integral formula for derivatives of analytic function, Taylor's and Laurent's series, singularities, Residue theorem, Evaluation of real integrals.

#### Unit - II

##### **Statistical Techniques - I**

Moments, Moment generating functions, Skewness, Kurtosis, Curve fitting, Method of least squares, Fitting of straight lines, Polynomials, Exponential curves etc., Correlation, Linear, non-linear and multiple regression analysis, Probability theory.

#### Unit - III

##### **Statistical Techniques - II**

Binomial, Poisson and Normal distributions, Sampling theory (small and large), Tests of significations: Chi-square test, t-test, Analysis of variance (one way), Application to engineering, medicine, agriculture etc. Time series and forecasting (moving and semi-averages), Statistical quality control methods, Control charts, R, p, np, and c charts.

#### Unit - IV

##### **Numerical Techniques - I**

Zeros of transcendental and polynomial equation using Bisection method, Regula-falsi method and Newton-Raphson method, Rate of convergence of above methods. Interpolation: Finite differences, difference tables, Newton's forward and backward interpolation, Lagrange's and Newton's divided difference formula for unequal intervals.

#### Unit - V

##### **Numerical Techniques -II**

Solution of system of linear equations, Gauss-Seidal method, Crout method. Numerical differentiation, Numerical integration, Trapezoidal, Simpson's one third and three-eighth rules, Solution of ordinary differential (first order, second order and simultaneous) equations by Euler's, Picard's and fourth-order Runge-Kutta methods.

#### **Test Books :-**

1. Peter V. O'Neil, Advance Engineering Mathematics Thomson (Cengage) Learning, 2007.
2. Jain, Iyenger & Jain, Numerical Methods for Scientific and Engineering Computation, New Age International, New Delhi, 2003.
3. J.N. Kapur, Mathematical Statistics, S. Chand & company Ltd., 2000

#### **Reference Books :-**

1. R.K. Jain & S.R.K. Iyenger, Advance Engineering Mathematics, Narosa Publication House, 2002.
2. Chandrika Prasad, Advanced Mathematics for Engineers, Prasad Mudralaya, 1996.
3. E. Kreysig, Advanced Engineering Mathematics, John Wiley & Sons, 2005.
4. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 2005.
5. Devi Prasad, An introduction to Numerical Analysis, Narosa Publication house, New Delhi 2006

## BTIT - 302 FUNDAMENTALS OF IT

### Course Content

Course Code	Course Title	Credits-4C		
		L	T	P
BTIT - 302	FUNDAMENTALS OF IT	3	1	-

#### Unit I

Computer Fundamentals : Brief History of Computers, Technical Evolution of Computers, Computer Pioneers, Categories/Types of Computers, Computer Hardware, Computer Software, CPU and its components; Mother board, Microprocessor, Expansion slots, Input/Output Ports, Memory; Types of Computer Memory, Memory modules viz. SIMM, DIMM, EDO, RDRAM, SDRAM, DDRAM, etc. Communication Pathways, Computer Registers; Data representation : Decimal System, Binary system, Octal system, Hexadecimal system; How does a Computer store data ? (Bit...Database); Encoding systems : BCD, ASCII, and EBCDIC; Binary calculations, Conversion of - decimal system to other systems, Binary system to other systems.

#### Unit II

Input, Hard/Soft copy Devices, Storage Devices : Input Concepts, Input Devices viz. Keyboard, Mouse, Joystick, Track Ball, Touch Screen, Light pen, MICR, OMR, OCR, Voice Input, Smart Cards, Bar Code readers, Digitizer, Scanner, etc. Graphic Display Devices : DVST, Graphical input devices, Three dimensional input devices; Voice output systems. Hard copy Devices viz. Printer, Types of printers, Features of printers; Plotter, Types of plotters, Features of plotters; Soft copy devices viz VDU and it's types, Types of Cards (brief) viz. CGA, MGA/MDA, EGA, VGA, SVGA, etc. Storage devices viz. Fixed Disk or Hard Disk, Floppy Diskette, Data Retrieval and Characteristics; Optical Technology; CD-ROM, CD-ROM operation, CD-ROM standards, Origins of CD-ROM; Hard Disk Drive, Floppy disk drive, CD-Drive, DVD-Drive, Tape drive, Zip drive, Jaz Drive, Pen drive, etc.

#### Unit III

Operating Systems and MS-DOS : Custom made software, Pre-written software, Computer processing techniques, Functions of operating system (only list), Compiler, Assembler, Interpreter, Debugger, Loader, and Linker; Machine language, Assembly language, High level languages, Fourth generation languages; Booting process(with BIOS & POST), Auto executing programs, Setting parameters of config.sys; Internal and External commands of MS-DOS along with their syntax and different options.

#### Unit IV

Windows Operating System and Internet : Advantages, Logging on and Shutting down Windows, Start button and Task bar, Starting and Quitting a program, Opening a document, Getting help, Finding files or folders, Changing system settings, Run command, What's on your computer, Organizing files and folders, Working within documents, Saving work, Setting up a printer, Installing Software and Hardware, Copying and moving files quickly, Putting a shortcut on the Desktop, Starting programs automatically, Network neighborhood, Configuring computer to a Network, Sharing folders or printers, Using resources located on other computers, Using dial-up networking, Connecting to the Internet, Having fun, Optimizing computer, Communicating with the world, Paint, Wordpad, Internet Explorer, TV viewer, Frontpad, System Information utility, System file checker, Windows Tuneup Wizard.

# Swami Vivekanand University, Sironja Sagar (M.P.)

## Unit V

Software Packages : Electronic Spreadsheet, Word processing software, Other pre-written software packages, Data communication packages, Desktop publishing.

### Text Books :

- 1) Information Technology Today, S. Jaiswal, Revised Edition , Galgotia.
- 2) Computers Today, S. K. Basandra, Updated Edition, Galgotia.

### Reference Books:

- 1) ISTE Learning Material, Computer Installation and Trouble Shooting, M. Radhakrishnan, D.Balasubramaniam
- 2) CHIP Special, Basics in Computing, [www.chip-india.com](http://www.chip-india.com)
- 3) Microsoft MS-DOS User's guide(manual), Version 6.2 or above.  
Getting started Microsoft Windows(manual), 98 or higher version.

## BTIT - 303 OOPS METHODOLOGY

### Course Content

Course Code	Course Title	Credits-6C		
		L	T	P
BTIT - 303	OOPS METHODOLOGY	3	1	2

#### Unit I

Introduction, Object Oriented Programming Concepts, Flow chart, Objects, Objects as software modules, Objects interaction, Classes, Method lookup, Hierarchies of classes, Inheritance, Polymorphism, Abstract classes.

#### Unit II

Identifying objects and classes, Representation of objects, Modeling, objects and classes, Relationships. Association between objects, aggregate components of objects. Storage Management :Memory allocation, Dynamic allocation.

#### Unit III

Object oriented programming languages, Class declarations, Object declarations, Mandatory profiles, Message sending, Association, Recursive association, Many to many association, Argument passing.

#### Unit IV

Inherited methods, Redefined methods, The protected interface, Abstract base classes, Public and protected properties, Private operations, Disinheritance, Multiple inheritance.

#### Unit V

Study of C++ as object oriented programming language.

#### References:

1. Object oriented programming in C++ by Robert Lafore.
2. J. Rumbaugh, Object-Oriented Modeling and Design using UML, Pearson Education.
3. Balagurusamy; Object oriented programming with C++; TMH
4. Rajesh K Shukla, Object Oriented Programming by C++, Wiley, India
5. Kahate A; Object oriented analysis and design; TMH
6. Ken Barclay, Object oriented design with C++.
7. Kamthane, "Object Oriented Programming using Turbo C++", Pearson Education
8. Josuttis, Object Oriented Programming With C++, Wiley, India

## BTIT - 304 DATABASE MANAGEMENT SYSTEMS

### Course Content

Course Code	Course Title	Credits-6C		
		L	T	P
BTIT - 304	DATABASE MANAGEMENT SYSTEMS	3	1	2

#### Unit 1

**Basic Concepts:** DBMS Concepts and architecture Introduction, Review of file organization techniques, Database approach v/s Traditional file accessing approach, Advantages of database systems, Data models, Schemas and instances, Data independence, Functions of DBA and designer. Entities and attributes, Entity types, Value, Sets, Key attributes, Relationships, Defining the E-R diagram of database,

#### Unit 2:

**Data models and Relational Databases** Various data models, Basic concepts of Hierarchical data model, Network data model, and Relational data model, Comparison between the three types of models, Relational Data models: Domains, Tuples, Attributes, Relations, Characteristics of relations, Keys, Key attributes of relation, Relational database, Schemas, Integrity constraints, Intension and Extension.

#### Unit 3:

**Structured Query Language** Relational Query languages: Relational algebra and relational calculus, Relational algebra operations like select, Project, Join, Division, outer union. **SQL:** Data definition in SQL, update statements and views in SQL QUEL & QBE: Data storage and definitions, Data retrieval queries and update statements.

#### Unit 4:

**Database Design** Data Base Design: Introduction to normalization, Normal forms, Functional dependency, Decomposition, Dependency preservation and lossless join, problems with null valued and dangling tuples, multi-valued dependencies.

#### Unit 5:

**Advance Concepts:** Introduction to: Distributed databases, protection, security and integrity constraints, concurrent operation on databases, recovery and transaction processing, basic concepts of object oriented data base system and design.

#### References:

1. Elmasri, Navathe, "Fundamentals Of Database Systems", Addison Wesley
2. Korth, Silbertz, Sudarshan, "Database Concepts", McGraw Hill
3. Toledo; Data base management systems;TMH
4. Panneeselvam "Database Management System" PHI
5. Date C J, "An Introduction To Database System", Addison Wesley
6. Majumdar ; DBMS; TMH
7. Fundamental of Data Base Management System by Leon & Leon, TMH
8. Oracle 9i Database Administration fundamental – I, volume 1, Oracle Press.

## BTIT - 305 BASIC ELECTRONICS

### Course Content

Course Code	Course Title	Credits-6C		
		L	T	P
BTIT - 305	BASIC ELECTRONICS	3	1	2

#### Unit - I

Introduction, Transport Phenomena in semiconductor, Formation of P-N Junction, Properties of P-N Junction, P-N Junction Diodes; Semiconductor Diodes, V-I Characteristics, Effect of Temperature on V-I Characteristics, Ideal Diode, Diode equation, Diode Resistance, Diode Capacitance: Transition and Diffusion Capacitance.

#### Unit - II

Rectifying circuits and DC Power Supplies: Load line analysis of diode circuit, Half wave rectifier: Voltage regulation, Ripple factor, ratio of rectification, Transformer Utilization factor. Full wave rectifier, Bridge rectifier. Filter circuits for power supply: Inductor filter, Capacitor filter, LC filter, Multiple LC filter, CLC or  $\pi$  filter. Zener diode: Break down mechanism, Characteristics, Specifications, Voltage regulator circuit using zener diode.

#### Unit - III

Transistor: Introduction, Construction, Types: npn and pnp, Current components. Transistor as an amplifier, Transistor Characteristics, Transistor Circuit Configuration: Common Base (CB) Configuration, Common Emitter (CE) Configuration, Common Collector Configuration (CC), Early Effect. Ebers-Moll Model, Maximum Voltage Ratings.

#### Unit - IV

Transistor Biasing and Thermal stabilization: The operating point, Bias stability, Stability factor, Emitter bias, Collector - to- base bias, Voltage divider bias with emitter bias, Emitter bypass capacitor. Bias compensation.

#### Unit - V

Field Effect Transistor (FET): Introduction, Construction, Operation, V-I Characteristics, Transfer Characteristics, Drain Characteristics, Small-Signal Model. Metal Oxide Semiconductor Field Effect Transistor (MOSFET): Introduction, Construction, Operation and characteristics, Depletion MOSFET, Enhancement MOSFET.

#### Text Books:

1. Integrated Electronics: Analog & Digital Circuit Systems – Jacob Millman & Halkias, TMH
2. Electronic Devices & Circuits – Allen Mottershead, PHI.

#### Reference Books:

1. Electronic Devices and Circuit Theory – Boylestad & Nashelsky, 8<sup>th</sup> Ed. PHI.
2. Electronic Devices & Circuit Analysis – K. Lal Kishore, BS Publications