JAI HIND COLLEGE AUTONOMOUS

Syllabus for FYBSc

Course   : Information Technology

Semester   : II

Credit Based Semester & Grading System

With effect from Academic Year 2018-19

List of Courses

Course: Information Technology　　　　　　**Semester: II**

SR. NO.	COURSE CODE	COURSE TITLE	NO. OF LECTURES / WEEK	NO. OF CREDITS
FYBSc				
1	SBIT201	Object Oriented Programming	5	2
2	SBIT202	Microprocessor Architecture	5	2
3	SBIT203	Web Programming	5	2
4	SBIT204	Applied Mathematics	5	2
5	SBIT205	Green Computing	5	2
6	SBIT201 PR	Object Oriented Programming Practical	3	2
7	SBIT202PR	Microprocessor Architecture Practical	3	2
8	SBIT203 PR	Web Programming Practical	3	2
9	SBIT204 PR	Android App Development Practical	3	2
10	SBIT205 PR	Green Computing Practical	3	2

Course: SBIT201	**Object Oriented Programming (Credits : 02 Lectures/Week: 05)**	
	Objectives: ➢ **Understand the features of C++ supporting object oriented programming** ➢ **Understand how to apply the major object-oriented concepts to implement object oriented programs in C++, encapsulation and polymorphism** ➢ **Understand advanced features of C++ specifically stream I/O, templates and operator overloading** ➢ **Analyze the usefulness of Inheritance paradigm. To identify Inheritance relationship in any problem statement** ➢ **Ability to handle possible errors during program execution.** **Outcomes:** ➢ **Designed to introduce the student to the various programming concepts of the C++ and python language.** ➢ **Students are introduced to these programming language elements including fundamental data types, flow control, and standard function libraries.** ➢ **Thorough treatment is given to the topics of dynamic memory allocation, standard I/O, macro definition** ➢ **The course explains the use of file handling, exception handling so the students can practice extensively in the hands on labs.**	
Unit I	**Object Oriented Methodology:** Introduction, Advantages and Disadvantages of Procedure Oriented Language, what is Object Oriented? What is Object Oriented Development?, Object Oriented Themes, Benefits and Application of OOPS **Principles of OOPS:** OOPS Paradigm, Objects, Classes, Data Abstraction and Data Encapsulation, Inheritance, Polymorphism, Dynamic Binding, Message Passing **Classes and Objects:** Simple classes (Class specification, class members accessing), Defining member functions, passing object as an argument, Returning object from functions, friend classes, Pointer to object , Array of pointer to object	15 L
Unit II	**Constructors and Destructors:** Introduction, Default Constructor, Parameterized Constructor and examples, Destructors **Polymorphism:** Concept of function overloading, overloaded operators, overloading unary and binary operators, overloading comparison operator, overloading arithmetic assignment operator, Data Conversion between objects and basic types **Virtual Functions:** Introduction and need, Pure Virtual Functions, Static Functions, this Pointer, abstract classes, virtual destructors	15 L

	Program development using Inheritance:	15 L
Unit III	Introduction, understanding inheritance, Advantages provided by inheritance, choosing the access specifier, Derived class declaration, derived class constructors, class hierarchies, multiple inheritance, multilevel inheritance, containership, hybrid inheritance	
	Exception Handling:	
	Introduction, Exception Handling Mechanism, Concept of throw & catch with example	
	Templates:	
	Introduction, Function Template and examples, Class Template and examples	
Unit IV	**Working with Files:**	15 L
	Introduction, File Operations, Various File Modes, File Pointer and their Manipulation	
	Classes and Objects in python:	
	Class Definition, Creating Objects, Instances as Arguments, Instances as return values, Built-in Class Attributes, Inheritance, Method Overriding, Data Encapsulation, Data Hiding	

Textbooks:
1. E. Balagurusamy. Object Oriented Programming with C++:Tata McGraw Hill
2. Timothy Budd(2012).Object Oriented Analysis and Design: Tata McGraw Hill

Evaluation Scheme

[A] Evaluation scheme for Theory courses

I. Continuous Assessment (C.A.) - 40 Marks

   (i) C.A.-I :Test – 20 Marks of 40 mins. duration

   (ii) C.A.-II : Mini Project – 20 Marks

II. Semester End Examination (SEE)- 60 Marks

Q.1 Answer any two   -10 Marks
Q.2 Answer any two   -10 Marks
Q.3 Answer any two   -10 Marks
Q.4 Answer any two   -10 Marks
Q.5 Answer any four   -20 Marks

[B] Evaluation scheme for Practical courses

   (i) Internal Practical – 20 marks
   (ii) External Practical – 30 marks

Course: SBIT202	Microprocessor Architecture (Credits :02 Lectures/Week: 05)	
	Objectives: ➢ **To understand basic architecture of 16 bit and 32 bit microprocessors.** ➢ **To understand interfacing of 16 bit microprocessor with memory and peripheral chips involving system design.** ➢ **To understand techniques for faster execution of instructions and improve speed of operation and performance of microprocessors.** ➢ **To understand RISC and CISC based microprocessors.** ➢ **To understand concept of multi core processors.** **Outcomes:** ➢ **To apply their knowledge and skills to be employed and excel in IT professional careers and/or to continue their education in IT and/or related post graduate programmes.**	
Unit I	**Microprocessor, microcomputers, and Assembly Language:** Microprocessor, Microprocessor Instruction Set and Computer Languages, From Large Computers to Single-Chip Microcontrollers, Applications. **Microprocessor Architecture and Microcomputer System:** Microprocessor Architecture and its operation's, Memory, I/O Devices, Microcomputer System, Logic Devices and Interfacing, Microprocessor-Based System Application. **8085 Microprocessor Architecture and Memory Interface:** Introduction, 8085 Microprocessor unit, 8085-Based Microcomputer, Memory Interfacing, Interfacing the 8155 Memory Segment, Illustrative Example: Designing Memory for the MCTS Project, Testing and Troubleshooting Memory Interfacing Circuit, 8085-Based Single-Board microcomputer.	15 L
Unit II	**Interfacing of I/O Devices** Basic Interfacing concepts, Interfacing Output Displays, Interfacing Input Devices, Memory Mapped I/O, Testing and Troubleshooting I/O Interfacing Circuits. **Introduction to 8085 Assembly Language Programming:** The 8085 Programming Model, Instruction Classification, Instruction, Data and Storage, Writing assembling and Execution of a simple program, Overview of 8085 Instruction Set, Writing and Assembling Program. **Introduction to 8085 Instructions:** Data Transfer Operations, Arithmetic Operations, Logic Operation, Branch Operation, Writing Assembly Languages Programs, Debugging a Program.	15 L
Unit III	**Programming Techniques With Additional Instructions:** Programming Techniques: Looping, Counting and Indexing, Additional Data Transfer and 16-Bit Arithmetic Instructions, Arithmetic Instruction Related to Memory, Logic Operations: Rotate, Logics Operations: Compare, Dynamic Debugging. **Counters and Time Delays:** Counters and Time Delays, Illustrative Program: Hexadecimal Counter, Illustrative Program: zero-to-nine (Modulo Ten) Counter, Generating Pulse Waveforms, Debugging Counter and Time-Delay Programs.	15 L

	Stacks and Sub-Routines: Stack, Subroutine, Restart, Conditional Call, Return Instructions, Advanced Subroutine concepts. **Code Conversion, BCD Arithmetic, and 16-Bit Data Operations:** BCD-to-Binary Conversion, Binary-to-BCD Conversion, BCD-to-Seven- Segment-LED Code Conversion, Binary-to-ASCII and ASCII-to-Binary Code Conversion, BCD Addition, BCD Subtraction, Introduction To Advanced Instructions and Applications, Multiplication, Subtraction With Carry.	
Unit IV	**Software Development System and Assemblers:** Microprocessors-Based Software Development system, Operating System and Programming Tools, Assemblers and Cross-Assemblers, Writing Program Using Cross Assemblers. **Interrupts:** The 8085 Interrupt, 8085 Vectored Interrupts, Restart as S/W Instructions, Additional I/O Concepts and processes. **The Pentium and Pentium Pro microprocessors:** Introduction, Special Pentium registers, Memory management, Pentium instructions, Pentium Pro microprocessor, Special Pentium Pro features. **Core 2 and later Microprocessors:** Introduction, Pentium II software changes, Pentium IV and Core 2, i3, i5 and i7. **SUN SPARC Microprocessor:** Architecture, Register file, data types and instruction format	**15 L**

Textbook:

1. Microprocessor Architecture and Programming and Applications with the 8085, R.S. Gaonkar, PRI (6th Edition)

Evaluation Scheme

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      (i)   **C.A.-I :Test – 20 Marks of 40 mins. duration**
      (ii)   **C.A.-II :Assignment – 20 Marks**
II. Semester End Examination (SEE)- 60 Marks

Q.1	**Answer any two**	**-10 Marks**
Q.2	**Answer any two**	**-10 Marks**
Q.3	**Answer any two**	**-10 Marks**
Q.4	**Answer any two**	**-10 Marks**
Q.5	**Answer any four**	**-20 Marks**

[B] Evaluation scheme for Practical courses

    (i) Internal Practical – 20 marks
    (ii) Externl Practical – 30 marks

Course: SBIT203	Web Programming (Credits :02 Lectures/Week: 05)	
	Objectives: ➢ **To design valid, well-formed, scalable, and meaningful pages using emerging technologies.** ➢ **To develop and implement client-side and server-side scripting language programs.** ➢ **To develop and implement Database Driven Websites.** ➢ **Design and apply XML to create a markup language for data and document centric applications.** ➢ **To develop web applications based on the CMS Wordpress.** **Outcomes:** ➢ **This course would help students to learn about writing, markup and coding involved in Web development, which includes Web content, Web client and server scripting.It would give interdisciplinary knowledge on the application area, client and server scripting, and database technology used in web development**.	
Unit I	**Internet and the World Wide Web:** What is Internet? Introduction to internet and its applications, E-mail, telnet, FTP, e-commerce, video conferencing, e-business. Internet service providers, domain name server, internet address, World Wide Web (WWW): World Wide Web and its evolution, uniform resource locator (URL), browsers – internet explorer, Netscape navigator, opera, Firefox, chrome, Mozilla. search engine, web saver – apache, IIS, proxy server, HTTP protocol **HTML5:** Introduction, Why HTML5? Formatting text by using tags, using lists and backgrounds, Creating hyperlinks and anchors. Style sheets, CSS formatting text using style sheets, formatting paragraphs using style sheets.	15 L
Unit II	**HTML5 Page layout and navigation:** Creating navigational aids: planning site organization, creating text based navigation bar, creating graphics based navigation bar, creating graphical navigation bar, creating image map, redirecting to another URL, creating division based layouts: HTML5 semantic tags, creating divisions, creating HTML5 semantic layout, positioning and formatting divisions. **HTML5 Tables, Forms and Media:** Creating tables: creating simple table, specifying the size of the table, specifying the width of the column, merging table cells, using tables for page layout, formatting tables: applying table borders, applying background and foreground fills, changing cell padding, spacing and alignment, creating user forms: creating basic form, using check boxes and option buttons, creating lists, additional input types in HTML5, Incorporating sound and video: audio and video in HTML5, HTML multimedia basics, embedding video clips, incorporating audio on web page.	15 L

Unit III	**Java Script:** Introduction, Client-Side JavaScript, Server-Side JavaScript, JavaScript Objects, JavaScript Security, **Operators**: Assignment Operators, Comparison Operators, Arithmetic Operators, % (Modulus), ++(Increment), --(Decrement), -(Unary Negation), Logical Operators, Short-Circuit Evaluation, String Operators, Special Operators, ?: (Conditional operator), , (Comma operator), delete, new, this, void **Statements:** Break, comment, continue, delete, do...while, export, for, for...in, function, if...else, import, labelled, return, switch, var, while, with, **Core JavaScript (Properties and Methods of Each) :** Array, Boolean, Date, Function, Math, Number, Object, String, regExp **Document and its associated objects:** document, Link, Area, Anchor, Image, Applet, Layer **Events and Event Handlers :** General Information about Events, Defining Event Handlers, event, onAbort, onBlur, onChange, onClick, onDblClick, onDragDrop, onError, onFocus, onKeyDown, onKeyPress, onKeyUp, onLoad, onMouseDown, onMouseMove, onMouseOut, onMouseOver, onMouseUp, onMove, onReset, onResize, onSelect, onSubmit, onUnload **jQuery:**Introduction, Syntax,Selectors,Event ,Effects	**15 L**
Unit IV	**PHP:** Why PHP and MySQL? Server-side scripting, PHP syntax and variables, comments, types, control structures, branching, looping, termination, functions, passing information with PHP, GET, POST, formatting form variables, superglobal arrays, strings and string functions, arrays, number handling, basic PHP errors/problems **Advanced PHP and MySQL :** PHP/MySQL Functions, Integrating web forms and databases, Displaying queries in tables, Building Forms from queries, Regular Expressions, Sessions, Cookies and HTTP, E-Mail	**15 L**

Textbook:
1. Thomas Powell ,(-) *Web Design The Complete Reference*,Tata McGraw Hill
2. Faithe Wempen ,(2011).*HTML5 Step by Step*,Microsoft Press
2. Ivan Bayross Sharanam Shah,(2013).*PHP 5.1 for Beginners*,SPD
3. SharanamShah, Vaishali Shah,(2015).*PHP Project for Beginners*,SPD
4. Steve Suehring, Tim Converse, Joyce Park,(2009).*PHP 6 and MySQL Bible*,Wiley
5. Eric Freeman,(2013).*Head First HTML 5 programming*,O'Reilly
6. Thomas Powell and Fritz Schneider,(-).*JavaScript 2.0: The Complete Reference*,Tata McGraw Hill

Additional References:

1. HTML 5 Black Book, Covers CSS 3, JavaScript, XML, XHTML, AJAX, PHP and jQuery, 2ed, Dreamtech Press
2. *WordPress For Dummies*, Lisa Sabin-Wilson

Evaluation Scheme

[A] Evaluation scheme for Theory courses

I. Continuous Assessment (C.A.) - 40 Marks

    (iii)   **C.A.-I :Test – 20 Marks of 40 mins. duration**

    (iv) C.A.-II :Mini Project – 20 marks

II. Semester End Examination (SEE)- 60 Marks

Q.1	**Answer any two**	**-10 Marks**
Q.2	**Answer any two**	**-10 Marks**
Q.3	**Answer any two**	**-10 Marks**
Q.4	**Answer any two**	**-10 Marks**
Q.5	**Answer any four**	**-20 Marks**

[B] Evaluation scheme for Practical courses

    (i) Internal Practical – 20 marks
    (ii) Externl Practical – 30 marks

Course: SBIT204	Applied Mathematics (Credits :02 Lectures/Week: 05)	
	Objectives: ➢ **Apply mathematical concepts and principles to perform computations** ➢ **Apply mathematics to solve problems** ➢ **Create, use and analyze graphical representations of mathematical relationships** ➢ **Apply technology tools to solve problems** ➢ **Perform abstract mathematical reasoning** **Outcomes:** ➢ **This is a class designed to provide additional enrichment applications for students. systems of linear equations, quadratic equations, literal equations, word problems and their solutions, vectors. Students will take leadership roles in this class to work on advanced problems**	
Unit I	**Matrices:** Inverse of a matrix, Properties of matrices, Elementary Transformation, Rank of Matrix, Echelon or Normal Matrix, Inverse of matrix, Linear equations,Linear dependence and linear independence of vectors, Linear transformation, Characteristics roots and characteristics vectors, Properties of characteristic vectors, Caley-Hamilton Theorem, Similarity of matrices, Reduction of matrix to a diagonal matrix which has elements as characteristics values. **Complex Numbers:** Complex number, Equality of complex numbers,Graphical representation of complex number(Argand's Diagram), Polar form of complex numbers, Polar form of x+iy for different signs of x,y, Exponential form of complex numbers, Mathematical operation with complex numbers and their representation on Argand's Diagram, Circular functions of complex angles, Definition of hyperbolic function, Relations between circular and hyperbolic functions	15 L
Unit II	**Equation of the first order and of the first degree:** Separation of variables, Equations homogeneous in x and y, Non-homogeneous linear equations, Exact differential **Differential equation of the first order of a degree higher than the first:**Introduction, Solvable for p (or the method of factors),Solve for y, Solve for x, Methods of Substitution,	15 L
Unit III	**The Laplace Transform:** Introduction,Definition of the Laplace Transform, Table of Elementary Laplace Transforms, Theorems on Important Properties of Laplace Transformation, First Shifting Theorem, Second Shifting Theorem, The Convolution Theorem, Laplace Transform of an Integral, Laplace Transform of Derivatives,Laplace Transformation of Special Function, Periodic Functions, Heaviside Unit Step Function, Dirac-delta Function(Unit Impulse Function) **Inverse Laplace Transform:** Shifting Theorem, Partial fraction Methods, Use of Convolution Theorem, Solution of Ordinary Linear Differential Equations with Constant Coefficients	15 L

	Multiple Integrals: Double Integral, Triple IntegralChange of the order of the integration,Double integral in polar co-ordinates	**15 L**
Unit IV	**Applications of Integral:** area ,Volume	
	Beta and Gamma Functions: Definitions, Properties and Problems , Duplication formula.	

Textbook:
1. P. N. Wartikar and J. N. Wartikar , (1984).*A text book of Applied Mathematics Vol I* Pune Vidyarth Griha Prka, Pune
2. P. N. Wartikar and J. N. Wartikar , (1984).*A text book of Applied Mathematics Vol II*Pune Vidyarth Griha Prka, Pune

Evaluation Scheme

[A] Evaluation scheme for Theory courses

I. Continuous Assessment (C.A.) - 40 Marks

    (v) C.A.-I :Test – 20 Marks of 40 mins. duration

    (vi)C.A.-II :Assignment – 20 Marks

II. Semester End Examination (SEE)- 60 Marks

Q.1	Answer any two	-10 Marks
Q.2	Answer any two	-10 Marks
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[B] Evaluation scheme for Practical courses

    (i) Internal Practical – 20 marks
    (ii) External Practical – 30 marks

Course: SBIT205	Green Computing(Credits :02 Lectures/Week: 05)	
	Objectives: ➢ **Innovative way to converge technology and ecology.** ➢ **Security Concerns & Social Problems** ➢ **Practice of efficient and eco-friendly computing resources** **Outcomes:** ➢ **Reducing the environmental impact**.	
Unit I	**Overview and Issues:** Problems: Toxins, Power Consumption, Equipment Disposal, Company's Carbon Footprint: Measuring, Details, reasons to bother, Plan for the Future Cost Savings: Hardware, Power. **Initiatives and Standards:** Global Initiatives: United Nations,Basel Action Network,Basel Convention,North America: The United States, Canada, Australia, Europe, WEEE Directive, RoHS,National Adoption Asia: Japan, China, Korea.	15 L
Unit II	**Minimizing Power Usage:** Power Problems,Monitoring Power Usage Servers, Low-Cost Options, Reducing Power Use, Data De-Duplication, Virtualization, Management, Bigger Drives, Involving the Utility Company, LowPower Computers, PCs, Linux, Components, Servers, Computer Settings, Storage, Monitors, Power Supplies, Wireless Devices, Software. **Cooling:** Cooling Costs, Power Cost, Causes of Cost, Calculating Cooling Needs, Reducing Cooling Costs, Economizers, On-Demand Cooling, HP's Solution, Optimizing Airflow, Hot Aisle/Cold Aisle, Raised Floors, Cable Management, Vapour Seal, Prevent Recirculation of Equipment Exhaust, Supply Air Directly to Heat Sources, Fans, Humidity, Adding Cooling, Fluid Considerations, System Design, Datacentre Design, Centralized Control, Design for Your Needs, Put Everything Together. **Datacenter Design and Redesign:** Energy Consumption Design Upgrading Servers, Server consolidation, Virtualization. **Changing the Way of Work:** Old Behaviours, starting at the Top Process Reengineering with Green in Mind Analysing the Global Impact of Local Actions Steps: Water, Recycling, Energy, Pollutants, Teleworkers and Outsourcing,Telecommuting, Outsourcing, how to Outsource, Artificial photosynthesis	15 L
Unit III	**Going Paperless:** Paper Problems, The Environment, Costs: Paper and Office, Practicality, Storage, Destruction, Organizational Realities, Changing Over, Paperless Billing, Handheld Computers vs. the Clipboard, Unified Communications, Intranets,What to Include, Building an Intranet, Microsoft Office SharePoint Server 2007, Electronic Data Interchange (EDI), Nuts and Bolts, Value Added Networks, Advantages, Obstacles. **Recycling:** Problems, China, Africa, Materials, Means of Disposal Recycling, Refurbishing, Make the Decision Life Cycle, from beginning to end, Life, Cost, Green Design, Recycling Companies, Finding the Best One, Checklist, Certifications. Hard Drive Recycling: Consequences, cleaning a Hard Drive, Pros and cons of each method, CDs and DVDs, good and bad about CD and DVDs disposal, Change the mind-set, David vs. America Online. **Hardware Considerations:** Certification Programs, EPEAT, RoHS,	15 L

	Energy Star, Computers, Monitors, Printers, Scanners, All-in-Ones, Thin Clients, Servers, Blade Servers, Consolidation, Products, Hardware considerations, Planned Obsolescence, Packaging, Toxins, Other Factors. Remote Desktop, Using Remote Desktop, Establishing a Connection, In Practice.	
Unit IV	**Greening Your Information Systems:** Initial Improvement Calculations, Selecting Metrics, Tracking Progress, Change Business Processes, Customer Interaction, Paper Reduction, Green Supply Chain, Improve Technology Infrastructure, Reduce PCs and Servers, Shared Services, Hardware Costs, Cooling. **Staying Green:** Organizational Check-ups, Chief Green Officer, Evolution, Sell the CEO, SMART Goals, Equipment Check-ups, Gather Data, Tracking the data, Baseline Data, Benchmarking, Analyse Data, Conduct Audits, Certifications, Benefits, Realities, Helpful Organizations.	**15 L**

Textbook:
1. Toby Velte, Anthony Velte, Robert Elsenpeter (2008). *Green IT: Reduce Your Information System's Environmental Impact* McGraw Hill

Additional References:
1. Alvin Galea, Michael Schaefer, Mike Ebbers.(2011) *Green Data Center: Steps for the Journey.* Shroff Publishers and Distributers
2. Bud E. Smith. (2014). *Green Computing Tools and Techniques for Saving Energy, Money and Resources* CRC Press

Evaluation Scheme

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I. Continuous Assessment (C.A.) - 40 Marks

  1. **C.A.-I :Test – 20 Marks of 40 mins. duration**

  2. **C.A.-II :Presentation – 20 Marks**

II. Semester End Examination (SEE)- 60 Marks

Q.1	**Answer any two**	**-10 Marks**
Q.2	**Answer any two**	**-10 Marks**
Q.3	**Answer any two**	**-10 Marks**
Q.4	**Answer any two**	**-10 Marks**
Q.5	**Answer any four**	**-20 Marks**

[B] Evaluation scheme for Practical courses

  (i) **Internal Practical – 20 marks**
  (ii) **External Practical – 30 marks**

Course: SBIT201PR	**Object Oriented Programming Practical(Credits :02** **Practicals/Week:01)**
	1. Classes and methods a) Design an employee class for reading and displaying the employee information, the getInfo() and displayInfo() methods will be used repectively. Where getInfo() will be private method b) Design the class student containing getData() and displayData() as two of its methods which will be used for reading and displaying the student information respectively.WheregetData() will be private method c) Design the class Demo which will contain the following methods: readNo(), factorial() for calculating the factorial of a number, reverseNo() will reverse the given number, isPalindrome() will check the given number is palindrome, isArmstrong() which will calculate the given number is armStrong or not.WherereadNo() will be private method. d) Write a program to demonstrate function definition outside class and accessing class members in function definition. **2. Using friend functions.** a) Write a friend function for adding the two complex numbers, using a single class b) Write a friend function for adding the two different distances and display its sum, using two classes. c) Write a friend function for adding the two matrix from two different classes and display its sum **3. Constructors and method overloading.** a) Design a class Complex for adding the two complex numbers and also show the use of constructor. b) Design a class Geometry containing the methods area() and volume() and also overload the area() function c) Design a class StaticDemo to show the implementation of static variable and static function **4. Operator Overloading** a) Overload the operator unary(-) for demonstrating operator overloading b) Overload the operator + for adding the timings of two clocks, And also pass objects as an argument. c) Overload the + for concatenating the two strings. For e.g "Py" + "thon" = Python **5. Virtual functions and abstract classes** a) Implement the concept of method overriding. b) Show the use of virtual function c) Show the implementation of abstract class. **6. Inheritance** a) Design a class for single level inheritance using public and private type derivation. b) Design a class for multiple inheritance. c) Implement the hierarchical inheritance.

7. String handling

a) String operations for string length , string concatenation
b) String operations for string reverse, string comparison
c) Console formatting functions.

8. Exception handling

a) Show the implementation of exception handling
b) Show the implementation for exception handling for strings
c) Show the implementation of exception handling for using the pointers.

9. Templates

a) Show the implementation of template class library for swap function.
b) Design the template class library for sorting ascending to descending and vice-versa

10. File handling

a) Design a class FileDemo open a file in read mode and display the total number of words and lines in the file.
b) Design a class to handle multiple files and file operations
c) Design a editor for appending and editing the files

11. Classes and methods in python

a) Design a class that store the information of student and display the same
b) Implement the concept of inheritance using python
c) Create a class called Numbers, which has a single class attribute called MULTIPLIER, and a constructor which takes the parameters x and y (these should all be numbers).

i. Write a method called add which returns the sum of the attributes x and y.

ii. Write a class method called multiply, which takes a single number parameter a and returns the product of a and MULTIPLIER.

iii. Write a static method called subtract, which takes two number parameters, b and c, and returns b - c.

iv. Write a method called value which returns a tuple containing the values of x and y. Make this method into a property, and write a setter and a deleter for manipulating the values of x and y.

Course:	Microprocessor Architecture Practical (Credits :02Practicals/Week:01)
SBIT202 PR	**1.** Perform the following Operations related to memory locations. a) Store the data byte 32H into memory location 4000H. b) Exchange the contents of memory locations 2000H and 4000H **2. Simple assembly language programs.** a) Subtract the contents of memory location 4001H from the memory location 2000H and place the result in memory location 4002H. b) Subtract two 8-bit numbers. c) Add the 16-bit number in memory locations 4000H and 4001H to the 16-bit number in memory locations 4002H and 4003H. The most significant eight bits of the two numbers to be added are in memory locations 4001H and 4003H. Store the result in memory locations 4004H and 4005H with the most significant byte in memory location 4005H. d) Add the contents of memory locations 40001H and 4001H and place the result in the memory locations 4002Hand 4003H. e) Subtract the 16-bit number in memory locations 4002H and 4003H from the 16-bit number in memory locations 4000H and 4001H. The most significant eight bits of the two numbers are in memory locations 4001H and 4003H. Store the result in memory locations 4004H and 4005H with the most significant byte in memory location 4005H. f) Find the l's complement of the number stored at memory location 4400H and store the complemented number at memory location 4300H. g) Find the 2's complement of the number stored at memory location 4200H and store the complemented number at memory location 4300H. **3. Packing and unpacking operations.** a) Pack the two unpacked BCD numbers stored in memory locations 4200H and 4201H and store result in memory location 4300H. Assume the least significant digit is stored at 4200H. b) Two digit BCD number is stored in memory location 4200H. Unpack the BCD number and store the two digits in memory locations 4300H and 4301H such that memory location 4300H will have lower BCD digit. **4. Register Operations.** a) Write a program to shift an eight bit data four bits right. Assume that data is in register C. b) Program to shift a 16-bit data 1 bit left. Assume data is in the HL register pair c) Write a set of instructions to alter the contents of flag register in 8085. d) Write a program to count number of l's in the contents of D register and store the count in the B register. **5. Multiple memory locations.** a) Calculate the sum of series of numbers. The length of the series is in memory location 4200H and the series begins from memory location 4201H. a. Consider the sum to be 8 bit number. So, ignore carries. Store the sum at memory location 4300H. b. Consider the sum to be 16 bit number. Store the sum at memory locations 4300H and 4301H b) Multiply two 8-bit numbers stored in memory locations 2200H and 2201H by repetitive addition and store the result in memory locations

2300H and 2301H.

c) Divide 16 bit number stored in memory locations 2200H and 2201H by the 8 bit number stored at memory location 2202H. Store the quotient in memory locations 2300H and 2301H and remainder in memory locations 2302H and 2303H.

d) Find the number of negative elements (most significant bit 1) in a block of data. The length of the block is in memory location 2200H and the block itself begins in memory location 2201H. Store the number of negative elements in memory location 2300H

e) Find the largest number in a block of data. The length of the block is in memory location 2200H and the block itself starts from memory location 2201H. Store the maximum number in memory location 2300H. Assume that the numbers in the block are all 8 bit unsigned binary numbers.

6. Calculations with respect to memory locations.

a) Write a program to sort given 10 numbers from memory location 2200H in the ascending order.

b) Calculate the sum of series of even numbers from the list of numbers. The length of the list is in memory location 2200H and the series itself begins from memory location 2201H. Assume the sum to be 8 bit number so you can ignore carries and store the sum at memory location 2Sample problem:

c) Calculate the sum of series of odd numbers from the list of numbers. The length of the list is in memory location 2200H and the series itself begins from memory location 2201H. Assume the sum to be 16-bit. Store the sum at memory locations 2300H and 2301H.

d) Find the square of the given numbers from memory location 6100H and store the result from memory location 7000H

e) Search the given byte in the list of 50 numbers stored in the consecutive memory locations and store the address of memory location in the memory locations 2200H and 2201H. Assume byte is in the C register and starting address of the list is 2000H. If byte is not found store 00 at 2200H and 2201H

f) Two decimal numbers six digits each, are stored in BCD package form. Each number occupies a sequence of byte in the memory. The starting address of first number is 6000H Write an assembly language program that adds these two numbers and stores the sum in the same format starting from memory location 6200H

g) Add 2 arrays having ten 8-bit numbers each and generate a third array of result. It is necessary to add the first element of array 1 with the first element of array-2 and so on. The starting addresses of array l, array2 and array3 are 2200H, 2300H and 2400H, respectively

7. Assembly programs on memory locations.

a) Write an assembly language program to separate even numbers from the given list of 50 numbers and store them in the another list starting from 2300H. Assume starting address of 50 number list is 2200H

b) Write assembly language program with proper comments for the following:

c) A block of data consisting of 256 bytes is stored in memory starting at 3000H. This block is to be shifted (relocated) in memory from 3050H onwards. Do not shift the block or part of the block anywhere else in the memory.

d) Add even parity to a string of 7-bit ASCII characters. The length of the string is in memory location 2040H and the string itself begins in memory location 2041H. Place even parity in the most significant bit of each character.

e) A list of 50 numbers is stored in memory, starting at 6000H. Find number of negative, zero and positive numbers from this list and store these results in memory locations 7000H, 7001H, and 7002H respectively

f) Write an assembly language program to generate fibonacci number.

g) Program to calculate the factorial of a number between 0 to 8.

8. String operations in assembly programs.

a) Write an 8085 assembly language program to insert a string of four characters from the tenth location in the given array of 50 characters

b) Write an 8085 assembly language program to delete a string of 4 characters from the tenth location in the given array of 50 characters.

c) Multiply the 8-bit unsigned number in memory location 2200H by the 8-bit unsigned number in memory location 2201H. Store the 8 least significant bits of the result in memory location 2300H and the 8 most significant bits in memory location 2301H.

d) Divide the 16-bit unsigned number in memory locations 2200H and 2201H (most significant bits in 2201H) by the B-bit unsigned number in memory location 2300H store the quotient in memory location 2400H and remainder in 2401H

e) DAA instruction is not present. Write a sub routine which will perform the same task as DAA.

9. Calculations on memory locations.

a) To test RAM by writing '1' and reading it back and later writing '0' (zero) and reading it back. RAM addresses to be checked are 40FFH to 40FFH. In case of any error, it is indicated by writing 01H at port 10

b) Arrange an array of 8 bit unsigned no in descending order

c) Transfer ten bytes of data from one memory to another memory block. Source memory block starts from memory location 2200H where as destination memory block starts from memory location 2300H

d) Write a program to find the Square Root of an 8 bit binary number. The binary number is stored in memory location 4200H and store the square root in 4201H.

e) Write a simple program to Split a HEX data into two nibbles and store it in memory

10. Operations on BCD numbers.

a) Add two 4 digit BCD numbers in HL and DE register pairs and store result in memory locations, 2300H and 2301H. Ignore carry after 16 bit.

b) Subtract the BCD number stored in E register from the number stored in the D register

c) Write an assembly language program to multiply 2 BCD numbers

Course:	**Web Programming Practical (Credits :02 Practicals/Week:01)**

SBIT203 PR	**1. Use of Basic Tags**
	a)Design a web page using different text formatting tags.
	b)Design a web page with links to different pages and allow navigation between web pages.
	c)Design a web page demonstrating all Style sheet types
	
	2. Image maps, Tables, Forms and Media
	    a)Design a web page with Imagemaps.
	    b)Design a web page demonstrating different semantics
	    c)Design a web page with different tables. Design a webpages using table so that the content appears well placed.
	    d)Design a web page with a form that uses all types of controls.
	    e)Design a web page embedding with multimedia features.
	
	3. Java Script
	    a)Using JavaScript design, a web page that prints factorial/Fibonacci series/any given series.
	    b)Design a form and validate all the controls placed on the form using Java Script.
	    c)Write a JavaScript program to display all the prime numbers between 1 and 100.
	    d)Write a JavaScript program to accept a number from the user and display the sum of its digits.
	    e)Write a program in JavaScript to accept a sentence from the user and display the number of words in it. (Do not use split () function).
	    f)Write a java script program to design simple calculator.
	
	4. Javascript Objects
	    a)Design a web page demonstrating different Core JavaScript references (Array, Boolean, Date, Function, Math, Number, Object, String, regExp).
	
	5. JQuery
	    a)Program based on JQuery
	
	6. Basic PHP
	    a)Write a PHP Program to accept a number from the user and print it factorial.
	    b)Write a PHP program to accept a number from the user and print whether it is prime or not.
	    c)Write a PHP code to find the greater of 2 numbers. Accept the no. from the user.
	
	    d)Write a PHP program to display the following Binary Pyramid:

```
0    1
1    0    1
0    1    0    1
```
e)Write a PHP program to demonstrate different string functions.
f)Write a PHP program to create one dimensional array.

7. **PHP and Database**
   a)Write a PHP code to create:
Create a database College
Create a table Department (Dname, Dno,Number_Of_faculty)
   b)Write a PHP program to create a database named "College".
Create a table named "Student" with following fields (sno, sname, percentage).
Insert 3 records of your choice. Display the names of the students whose
percentage is between 35 to 75 in a tabular format.
   c) Design a PHP page for authenticating a user.

8. **Email**
   Write a program to send email with attachment.

9. **Sessions and Cookies**
   Write a program to demonstrate use of sessions and cookies.

10. **Wordpress**
    Webpages based on wordpress

Course:	Android App Development Practical (Credits : 2 Practicals/Week:01)
SBIT204 PR	1. Install Android Studio and Run Hello World Program. 2. Create an android app with Interactive User Interface using Layouts 3. Create an android app that demonstrates working with TextView Elements 4. Create an android app that demonstrates Activity Lifecycle and Instance State 5. Create an android app that demonstrates the use of Keyboards, Input Controls, Alerts 6. Create an android app that demonstrates the use of an Options Menu 7. Create an android app that demonstrate Screen Navigation Using the App Bar and Tabs. 8. Create an android app to Connect to the Internet and use Broadcast Receiver. 9. Create an android app to show Notifications

Course:	Green Computing Practical (Credits : 02 Practicals/Week:01)
SBIT205 PR	**1. Phase 1** a) Case study on components on environment and environmental engineering. b) Study of environmental safety awareness and disaster management c) Using Latex for documentation (lab session) **2. Phase 2** a) Carbon Footprint report and calculation b) Activity: E-waste collection drive and survey for the project topic **3. Phase 3** a) Report writing and study of different directives associated with the project. **4. Phase 4** a) Calculating metrics, measurements, energy ratings associated to the project. b) Group Discussion and assessment of project outcome