January 2021	**UNIT I:** **Microprocessor, microcomputers, and Assembly Language:** Microprocessor, Microprocessor Instruction Set and Computer Languages, From Large Computers to Single-Chip Microcontrollers, Applications. **[Group Discussion]** Microprocessor Architecture and its operation's, Memory, I/O Devices, Microcomputer System, Logic **UNIT II:** Devices and Interfacing, Microprocessor-Based System Application. 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**.** **Introduction to 8085 Instructions:** Data Transfer Operations, Arithmetic Operations, Logic Operation**[Practical Demonstration]Introduction to 8085 Instructions:** Branch Operation, Writing Assembly Languages Programs, Debugging a Program. **[Practical Demonstration]**
February 2021	**UNIT II:**Basic Interfacing concepts, Interfacing Output Displays, Interfacing Input Devices, Memory Mapped I/O, Testing and Troubleshooting I/O Interfacing Circuits. 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**. [Practical Demonstration]** **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. **[Practical Demonstration]** **Stacks and Subroutines:** Stack, Subroutine, Restart, Conditional Call, Return Instructions, Advanced Subroutine concepts. **[Practical Demonstration]**
March 2021	**UNIT IV:** **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. **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. **UNIT V:** The Pentium and Pentium Pro microprocessors: Introduction, Special Pentium registers, Memory management, Pentium instructions, Pentium Pro microprocessor, Special Pentium Pro features**. [Group Discussion]** 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 **[Group Discussion]**

F.Y.B.Sc.IT-SEM II	
SUBJECT: Object Oriented Programming	
Month	**Topics to be Covered**
JANUARY	**UNIT I:** Object Oriented Methodology: Introduction, Advantages and Disadvantages of Procedure Oriented Languages, what is Object Oriented? What is Object Oriented Development? Object Oriented Themes, Benefits and Application of OOPS. Principles of OOPS: OOPS Paradigm, Basic Concepts of OOPS: Objects, Classes, Data Abstraction and Data Encapsulation, Inheritance, Polymorphism, Dynamic Binding, Message Passing **UNIT II:** 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. **[TM: LIVE (PRACTICAL) IMPLEMENTATION, PPT, VIDEO]**
FEBRUARY	**UNIT II:** Constructors and Destructors: Introduction, Default Constructor, Parameterized Constructor and examples, Destructors **UNIT III:**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. **[TM: LIVE (PRACTICAL) IMPLEMENTATION, PPT, VIDEO]**
MARCH	**UNIT IV:** Program development using Inheritance: 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. **UNIT V:** Templates: Introduction, Function Template and examples, Class Template and examples. Working with Files: Introduction, File Operations, Various File Modes, File Pointer and their Manipulation. **[TM: LIVE (PRACTICAL) IMPLEMENTATION, PPT, VIDEO]**

Course Outcome

OBJECT ORIENTED PROGRAMMING WITH C++ — [F.Y.B.Sc.IT SEM-II]

1. Designed meticulously to help students master the Object Oriented Programming skills in C++.
2. It covers basic topics like input/output streams, namespaces, classes and objects, constructors, function overloading, function overriding through to advanced topics such as Inheritance, Polymorphism, Templates, Exception handling, File handling etc,
3. It will be a stepping stone for learning other technologies like Java, Ios, Windows phone programming etc

Lesson Plan for 2020 -21 (EVEN SEM)	FYBSc-(IT)-Semester II- Web Pogramming
Unit I (Jan 2021)	**Internet and WWW:** What is the Internet? Introduction to the 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 **[Teaching Methodology: PPT, Flipped Classroom,]**
Unit II (Jan & Feb 2021)	**HTML and Graphics**: HTML Tag Reference, Global Attributes, Event Handlers, Document Structure Tags, Formatting Tags, Text Level formatting, Block Level formatting, List Tags, Hyperlink tags, Image and Image maps, Table tags, Form Tags, Frame Tags, Executable content tags. Imagemaps: What are Image Maps? Client-side Imagemaps, Server-side Image Maps, Using Server-side and Client-side Image maps together, alternative text for Imagemaps, Tables : Introduction to HTML tables and their structure, The table tags, Alignment, Aligning Entire Table, Alignment within a row, Alignment within a cell, Attributes, Content Summary, Background color, Adding a Caption, Setting the width, Adding a border, Spacing within a cell, Spacing between the cells, spanning multiple rows or columns, Elements that can be placed in a table, Table Sections and column properties, Tables as a design tool Frames : Introduction to Frames, Applications, Frames document, The tag, Nesting tag, Placing content in frames with the tag, Targeting named frames, Creating floating frames, Using Hidden frames. Forms: Creating Forms, <FORM> tag, Named Input fields, the <INPUT> tag, Multiple lines text windows, drop down and list boxes, Hidden, Text, Text Area, Password, File Upload, Button, Submit, Reset, Radio, Checkbox, Select, Option, Forms and Scripting, Action Buttons, Labelling input files, grouping related fields, Disabled and read-only fields, form field event handlers, Passing form data. Style Sheets: What are style sheets? Why are style sheets valuable? Different approaches to style sheets, Using Multiple approaches, linking to style information in s separate file, setting style information, Using the <LINK> tag, embedded style information Using **[Teaching Methodology: PPT, Practical Demonstration, Audio Visuals]**

Unit III **(March 2021)**	**JavaScript:** 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, on Abort, on Blur, on Change, on Click, on DblClick, on Drag Drop, on Error, on Focus, on Key Down, on Key Press, on Key Up, on Load, on Mouse Down, on Mouse Move, on Mouse Out, on Mouse Over, on Mouse Up, on Move, on Reset, on Resize, on Select, on Submit, on Unload. **[Teaching Methodology: PPT, Practical Demonstration, Audio Visuals]**
Unit IV **(March 2021)**	**PHP:** Why PHP and MySQL? Server-side web scripting, Installing PHP, Adding PHP to HTML, Syntax and Variables, Passing information between pages, Strings, Arrays and Array Functions, Numbers, Basic PHP errors / problems. **[Teaching Methodology: PPT, Practical Demonstration, Audio Visuals]**
Unit V **(March 2021)**	**Advanced PHP and MySQL:** PHP/MySQL Functions, displaying queries in tables, Building Forms from queries, String and Regular Expressions, Sessions, Cookies and HTTP, Type and Type Conversions, E-Mail **[Teaching Methodology: PPT, Practical Demonstration, Audio Visuals]**

F.Y.B.Sc.IT-SEM II	
SUBJECT: Green Computing	
Month	**Topics to be Covered**
JANUARY	**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 **[TM: PPT, VIDEO]**
FEBRUARY	**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. **UNIT III:** 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. Going Paperless: Paper Problems, The Environment, Costs: Paper and Office, Practicality, Storage, Destruction, Going Paperless, 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), Value Added Networks, Advantages, Obstacles.. **[TM: PPT, VIDEO]**
	UNIT IV: Recycling: Problems, China, Africa, Materials, Means of Disposal, Recycling, Refurbishing, Make the Decision, Life Cycle, from

MARCH	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, 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 V:** 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. **[TM: PPT, VIDEO]**

Course Outcome
GREEN COMPUTING — [F.Y.B.Sc.IT SEM-II]

1.   Understanding of e-waste and recycling
2.   Understanding of data center , virtualization and energy related issues
3.   Understanding of paperless office, telecommuting, CGO

Month	Topic to be covered
January	**Unit:1-** **Mathematical Modeling and Engineering Problem Solving:** A Simple Mathematical Model, Conservation Laws and Engineering Problems **Approximations and Round-Off Errors:** Significant Figures, Accuracy and Precision, Error Definitions, Round-Off Errors **Truncation Errors and the Taylor Series:** The Taylor Series, Error Propagation, Total Numerical Errors, Formulation Errors and Data Uncertainty. **(CHALK & TALK , PPT)** **Unit : 2-** **Solutions of Algebraic and Transcendental Equations:** The Bisection Method, The Newton-Raphson Method, The Regula-falsi method, The Secant Method.
February	**Interpolation:** Forward Difference, Backward Difference, Newton's Forward Difference Interpolation, Newton's Backward Difference Interpolation, Lagrange's Interpolation. **(CHALK & TALK , PPT)** **Unit 3: -** **Solution of simultaneous algebraic equations (linear) using iterative methods:** Gauss-Jordan Method, Gauss-Seidel Method. **Numerical differentiation and Integration:** Numberical differentiation, Numerical integration using Trapezoidal Rule, Simpson's $1/3$rd and $3/8$th rules. **Numerical solution of 1st and 2nd order differential equations:** Taylor series, Euler's Method, Modified Euler's Method, Runge-Kutta Method for 1st and 2nd Order Differential Equations. **(CHALK & TALK , PPT)**
March	**Unit:4 -** **Least-Squares Regression:** Linear Regression, Polynomial Regression, Multiple Linear Regression, General Linear Least Squares, Nonlinear Regression **Linear Programming:** Linear optimization problem, Formulation and Graphical solution, Basic solution and Feasible solution. . **(CHALK & TALK , PPT)** **Unit :5 -** **Random variables:** Discrete and Continuous random variables, Probability density function, Probability distribution of random variables, Expected value, Variance.
April	**Distributions:** Discrete distributions: Uniform, Binomial, Poisson, Bernoulli, Continuous distributions: uniform distributions, exponential, (derivation of mean and variance only and state other properties and discuss their applications) Normal distribution state all the properties and its applications. **(CHALK & TALK , PPT)**