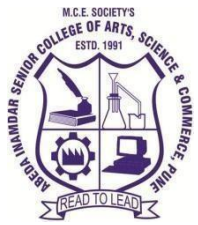

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AZAMCAMPUS,CAMP,PUNE –411001

Syllabus of B.C.A. (Science)

Applicable for the Autonomous College affiliated to

SavitribaiPhule Pune University

BCA(Science)Degree Course(Choice Based Credit System)

(2021Pattern)

With effect from June2022

Semester III(Second Year B.C.A(Science))

Course Type	Course Code	Course/ PaperTitle	Credits		Evaluation		
			T	P	CIE	SEE	Total
CC –I	21SBCA231	Object Oriented Programming using C++	4	-	40	60	100
CC– II	21SBCA232	Advanced Web Technology using PHP	4	-	40	60	100
CC–III	21SBCA233	Software Engineering	4	-	40	60	100
Core Practical	21SBCA234	LabI: Object Oriented C++ Programming	-	2	20	30	50
Core Practical	21SBCA235	Lab-II Advanced Web Technology using PHP	-	2	20	30	50
Core Practical	21SBCA236	LabIII: Software Testing Tools (Testing using Open source tools)	-	2	20	30	50
AECC–I	21SBHENT23	Health and Nutrition	2	-	20	30	50
AECC–II	21SBAEEL23	Language–I	2	-	20	30	50
Total			16	6	220	330	550

Note: Non CGPA course to be conducted in Semester III
21SBCM23SD: Certificate Course on Content Management System using WordPress

Semester IV(Second Year B.C.A(Science))

Course Type	Course Code	Course/ Paper Title	Credits		Evaluation		
			T	P	CIE	SEE	Total
CC –I	21SBCA241	Core JAVA Programming	4	-	40	60	100
CC– II	21SBCA242	Programming in Python	4	-	40	60	100
CC–III	21SBCA243	Programming in GO	4	-	40	60	100
Core Practical	21SBCA244	Lab I:CoreJAVA	-	2	20	30	50
Core Practical	21SBCA245	LabII: Programming in Python	-	2	20	30	50
Core Practical	21SBCA246	Lab-III: Programming in GO	-	2	20	30	50
AECC –I	21SBAEEV24	Environmental Science Awareness Course-II	2	-	20	30	50
AECC – II	21SBAEEL24	Language–II	2	-	20	30	50
Total			16	06	220	330	550

Semester V (Third Year B.C.A (Science))

Course Type	Course Code	Course / Paper Title	Credits		Evaluation		
			T	P	CIE	SEE	Total
DSCT1	21SBCA351	Advanced Java Programming	4	-	40	60	100
DSCT2	21SBCA352	Data Mining	4	-	40	60	100
DSCT3	21SBCA353	Computer Networks & Security	4	-	40	60	100
DSCP1	21SBCA354	Lab I: Advanced Java	-	2	20	30	50
DSCP2	21SBCA355	Lab II: Data Mining using open Source Tools	-	2	20	30	50
DSCP3	21SBCA356	Lab III: Project	-	2	20	30	50
SEC-1*	21SBCA357A	React JS	2	-	20	30	50
SEC-1*	21SBCA357B	Angular JS					
SEC-2*	21SBCA358A	C# .Net	2	-	20	30	50
SEC-2*	21SBCA358B	Objective C					
Total			16	06	220	330	550

Note: *: Choose one course from SEC1 and SEC2

Semester VI (Third Year B.C.A (Science))

Course Type	Course Code	Course / Paper Title	Credits		Evaluation		
			T	P	CIE	SEE	Total
DSCT1	21SBCA361	Introduction to Data Science and Machine Learning	4	-	40	60	100
DSCT2	21SBCA362	Android Programming	4	-	40	60	100
DSCT3	21SBCA363	Operating System	4	-	40	60	100
DSCP1	21SBCA364	Lab I: Data Science and Machine Learning using Python	-	2	20	30	50
DSCP2	21SBCA365	Lab II: Android Programming	-	2	20	30	50
DSCP3	21SBCA366	Lab III: Project	-	2	20	30	50
SEC-1*	21SBCA367A	Node JS	2	-	20	30	50
SEC-1*	21SBCA367B	Laravel Framework					
SEC-2*	21SBCA368A	ASP .Net	2	-	20	30	50
SEC-2*	21SBCA368B	MongoDB					
Total			16	06	220	330	550

Note: *: Choose one course from SEC1 and SEC2

SEMESTER – III

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S.Y.B.C.A (Science) Object Oriented Programming using C++

2022-23 (CBCS – Autonomy 21 Pattern)

Course/ Paper Title	**Object Oriented Programming using C++**
Course Code	**21SBCA231**
Semester	**III**
No. of Credits	**04**

Aims & Objectives of the Course

Sr. No.	Objectives
1.	Learn how to write code in a way that it is independent of any particular type
2.	Understanding the process of exposing the essential data to the outside of the world and hiding the low level data
3.	Be able to explain the difference between object oriented programming and procedural programming.
4.	Be able to program using more advanced C++ features such as composition of objects, operator overloads, dynamic memory allocation, inheritance and polymorphism, file I/O, exception handling, etc.
5.	Understanding the concept of data abstraction and encapsulation , how to designc++ classes for code reuse, how to implement copy constructors and class member functions, to overload functions and operators in c++.

Expected Course Specific Learning Outcome

Sr. No.	Learning Outcome
1.	Identify importance of object oriented programming and difference between structured oriented and object oriented programming features.
2.	Able to make use of objects and classes for developing programs.
3.	Implement programming techniques to solve problems in the C++ programming language.
4.	Apply the concepts and principles of the programming language to the real-world problems and solve the problems through project-based learning.
5.	Able to make the application based on c++ graphics.

Unit No	Title with Contents	No. of Lectures
Unit I	**Introduction to Object Oriented Concepts**	**3**
	1. Concept of Object OrientedProgramming, **2. Object oriented programming vs. procedure programming** **3. Characteristics of Object OrientedProgramming** i. Classes ii. Object iii. Abstraction iv. Inheritance v. Polymorphism vi. DataBinding vii. Encapsulation viii. MessagePassing	**1** **1** **1**
Unit II	**Programming Basics**	**10**
	1. Introduction to C++programming **2. C++ basicstructure** **3. Simple "Hello World"program** **4. Compiling, linking and running a C++program** **5. Managing Console I/O** **6. Data Types and typeconversion** **7. New operators and keywords** **8. Type casting inC++** **9. Referencevariables,** **10. Usage ofnamespace,** **11. Usage ofManipulators** i. endl ii. ws iii. ends iv. flush v. setw(val) vi. setfill(c) vii. setprecision(val)	**1** **1** **1** **1** **1** **1** **1** **1** **1** **1**
Unit III	**Classes and Objects**	**8**
	1. Introduction to Class and object **2. Defining data members and member functions** **3. Access Specifies of class** **4. Static data members & Static member functions** **5. Arrays and Array of objects** **6. Objects as function arguments** **7. Returning Objects**	**1** **1** **1** **1** **1** **2** **1**

Unit IV	**Functions**	**10**
	1. Passing argument and returning values from function **2. Call and return byreference** **3. Inlinefunctions** **4. Default and Const functionarguments** **5. FriendFunction** **6. Functionoverloading** **7. Constructors** i. Defaultconstructor ii. Parameterizedconstructor iii. Copyconstructor iv. Multipleconstructors v. Constructors with defaultarguments vi. Dynamicconstructor **8. Destructors** **9. Operatoroverloading** i. Rules foroverloading ii. Unary operatoroverloading iii. Binary operatoroverloading iv. Overloading using friendfunction	**1** **1** **1** **3** **1** **3**
Unit V	**Inheritance**	**12**
	1. Introduction toInheritance **2. Defining derived classes & Visibilitymodes** **3. Types ofinheritance** i. Single ii. Multilevel iii. Multiple iv. Hierarchical v. Hybridinheritance **4. Constructors and destructors in derivedclasses** 5. **Virtual base classes and Abstractclasses**	**1** **2** **5** **2** **2**
Unit VI	**Pointers, Virtual Functions and Polymorphism**	**6**
	1.Pointers **2. Pointers to objects & this pointer** **3. Pointers to derived classes** 4. **Virtual functions & Pure virtual functions**	**1** **1** **2** **2**
Unit VII	**Streams**	**6**
	1. Concept of Stream **2. File Stream Classes** **3. Opening and closing a file- File opening modes** **4. File pointers and their manipulations** **5. Sequential input and output operations**	**1** **1** **2** **1** **1**

Unit VIII	Introduction to C++ GRAPHICS	5
	1. Display Mode ii. C++ TextMode iii. C++ GraphicsMode **2. Initializing C++ Graphics Mode :initgraph (&driver, &mode,"path")** **3. The "cleardevice()" Function** **4. The "closegraph()"function** **5. Text in GraphicsMode** i. The "outtext"Function ii. The "moveto"Function iii. The "outtextxy"Function iv. The "settextstyle"Function v. The "setcolor"Function vi. The "setbkcolor"Function **6. Creating Objects in C++ GraphicsMode** i. The "circle"Function ii. The "arc"Function iii. The "line"Function iv. The "rectangle"Function v. The "setlinestyle"Function vi. The "bar"Function vii. The "bar3d"Function viii. The "getimage"Function ix. The "putimage"Function	**1** **2** **2**

References:

1. E Balagurusamy, "Object Oriented Programming with C++", Fifth edition 2011, Tata McGraw-Hill.
2. Robert Lafore, "Object Oriented Programming in Turbo C++" First Edition,Galgotia Publications.
3. Herbert Schildt, "Compete Reference C++", 4th Edition 2003, McGraw-HillPublication.
4. Ashok N. Kamthane, Object oriented Programming with ANSI & Turbo C++, FirstEdition, Pearson India
5. D Ravichandran, Programming with C++, Second edition, Tata McGraw-Hil

Website Reference Link:

1. Programiz:https://www.programiz.com/cpp-programming
2. Geeksforgeeks:https://www.geeksforgeeks.org/c-plus-plus/
3. Java Point:https://www.javatpoint.com/cpp-tutorial
4. Tutorialspoint :https://www.tutorialspoint.com/cplusplus/index.htm
5. Pdfdrive- c plus plus :https://www.pdfdrive.com/introduction-to-c-and-c-programming-e4331665.html
6. codecademy :https://www.codecademy.com/learn/learn-c-plus-plus
7. C++ Graphics :https://www.electroniclinic.com/c-graphics-with-example-codes-for-drawing-different-shapes-using-graphic-functions/#Example_how_to_use_initgraph_computer_display_into_C_graphics_mode

Best IDE Tools:

Sr.No	Name of IDE or Tools	Operating System
1	Turbo C++ 3.0 onwards	Window Operating System
2	Vi Editor/GEdit 8.2 onwards & C compiler	Red Hat /Linux / Ubuntu

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Advanced Web Technology using PHP 2022-23

(CBCS–Autonomy21 Pattern)

Course/Paper Title	**Advanced Web Technology using PHP**
Course Code	**21SBCA232**
Semester	**III**
No. of Credits	**04**

Aims &Objectives of the Course

Sr. No.	Objectives
1.	To introduce server-side programming concepts and terminology.
2.	To analyze the basic structure of a PHP web application and be able to install and maintain the web server, compile, and run a simple web application.
3.	To provide the necessary knowledge to design and develop dynamic, database-driven web applications using PHP
4.	To learn advanced concept of XML and AJAX for dynamic web site development.

Expected Course Specific Learning Outcome

Sr. No.	Learning Outcome
1.	Understand the PHP downloading, installation and configuring PHP process.
2.	Creation of web pages that includes verification and validation of web pages using different web technologies like cookies and sessions.
3.	Connect with database using operations like insert, delete, update and retrieve through PHP.
4.	Build proficient dynamic ,interactive website using AJAX and XML

Unit I	**Introduction to PHP**	**08**
	1. Introduction toPHP i. InstallingPHP **2. Languagebasics** i. andOperators ii. Flow-ControlStatements iii. Including Code Embedding PHP inWebPages	01 07
Unit II	**Functions and Strings**	**12**
	1. Functions in PHP i. Calling aFunction ii. Defining a Function iii. VariableScope iv. FunctionParameters v. ReturnValues vi. Variable Functions vii. AnonymousFunctions **2. Strings inPHP** i. QuotingString ii. Constants iii. PrintingStrings iv. Accessing IndividualCharacters v. CleaningStrings vi. Encoding andEscaping vii. ComparingStrings viii. Manipulating and SearchingStrings	06 06
Unit III	**Arrays in PHP**	**08**
	1. Indexed Versus Associative Arrays **2. Identifying Elements of an Array** **3. Storing Data in Arrays** **4. Multidimensional Arrays** **5. Extracting Multiple Values** **6. Converting Between Arrays and Variables** **7. Traversing Arrays** **8.Sorting** 9. **Acting on Entire Arrays**	01 01 01 01 01 02 01
Unit IV	**Object Oriented Programming**	**08**
	1.Classes **2.Objects** **3.Introspection** **4.Serialization** **5.Inheritance** **6. Interfaces and abstract class** 7.**Encapsulation**	01 01 01 02 02 01

Unit V	Web Techniques	10
	1. HTTP Basics	01
	2.Variables	01
	3. Server Information	01
	4. Processing Forms	01
	5. File uploading	02
	6. Setting Response Headers	01
	7. Maintaining State	03
Unit VI	**Databases , XML and AJAX**	**14**
	1. Using PHP to access a database	03
	2. Relational databases and SQL	
	3. PEAR DB basics	03
	4. Introduction to XML	02
	5. XML document Structure	
	6. PHP and XML	
	7. XML parser	01
	8. The document object model	01
	9. The simple XML extension	01
	10. Introduction to AJAX	01
	11. Understanding java scripts for AJAX	
	12. AJAX web application model	
	13. AJAX –PHP framework	
	14. Performing AJAX validation	01
	15. Handling XML data using php and AJAX	01

Reference Books:

1. "Programming PHP", RasmusLerdorf and Kevin Tatroe, O'Reilly publication, ISBN-13978-1565926103
2. "Beginning PHP5, Apache, and MySQL Web Development (Programmer to Programmer)", byElizabethNaramore,JasonGerner,YannLeScouarnec,JeremyStolz,MichaelK.Glass,Wrox;2nd edition (27 January 2005), SB - 3978-0764579660
3. "Beginning PHP 5. FOR BEGG ERS" By: Ivan Byross, Sharanam Shah Publisher: The Team (SPD) ISBN 10:81-8404-075-X
4. "Beginning PHP 5" by : Dave W. Mercer, Allent Kent, Steven D. Nowicki, David Mercer,Dan Squire, Wankyu Choi , Publisher: WROX (Wiley dreamTech), ISBN :81-265-0539

Ebooks –

1. The Complete Reference – Steven Holznerhttps://books.google.co.in/books?id=bGS4CmJY0I8C&printsec=frontcover&dq=PHP+ebook&hl=en&sa=X&ved=0ahUKEwjl4PuNoKLpAhURwTgGHXadDbYQ6AEIVTAF#v=onepage&q&f=false
2. Programming PHP – RasmusLerdorf , Kevin Tatroe and Peter Macintyrehttps://www.pdfdrive.com/programming-php-d38208381.html
3. Beginner to Intermediate PHP5 – MarioLurig https://books.google.co.in/books?id=noi76uKOJ5wC&printsec=frontcover&dq=PHP+ebook&hl=en&sa=X&

ved=0ahUKEwjl4PuNoKLpAhURwTgGHXadDbYQ6AEIMDAB#v=onepage&q&f=false

4. PHP MySQL, JavaScript & HTML5 – A ileyBrand

https://books.google.co.in/books?id=p9BuBgAAQBAJ&printsec=frontcover&dq=PHP+ebook&hl=en&sa=X&ved=0ahUKEwjl4PuNoKLpAhURwTgGHXadDbYQ6AEIQTAD#v=onepage&q&f=false

5. Beginning PHP5 Published by Wiley Publishing,Inc.

https://download.e-bookshelf.de/download/0000/5864/10/L-G-0000586410-0002361771.pdf

Website Reference Link:

1. PHP 7.4.22 :www.php.net
2. PHP Tutorial :https://www.w3schools.com/php/
3. Learn PHP:https://www.tutorialspoint.com/php/index.htm

Best IDE Tools:

Sr.No	Name of IDE or Tools	Operating System
1.	**XAMPP** Apache + MySQL + PHP + Perl (Version 7.3)	**Windows**-7/8/10
2.	**XAMPP** Apache + MySQL + PHP + Perl	**Linux** 7.3.29, 7.4.22 & 8.0.9

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S.Y.B.C.A (Science) Software Engineering

2022-23 (CBCS – Autonomy 21 Pattern)

Course/ Paper Title	**Software Engineering**
Course Code	**21SBCA233**
Semester	**III**
No. of Credits	**04**

Aims & Objectives of the Course

Sr. No.	Objectives
1.	To learn and understand the principles of System and Software Engineering
2.	To be acquainted with methods of capturing, specifying, visualizing and analyzing Software requirements.
3.	To learn design processes and software quality parameters

Expected Course Specific Learning Outcome

Sr. No.	Learning Outcome
1.	Compare and contrast various Software Engineering models
2.	Decide on appropriate process model for a developing a software project
3.	Classify software applications and Identify unique features of various domains
4.	Prepare System Requirement Specification (SRS) for the given problem
5.	Design and analyze Data Flow diagrams

Unit No	Title with Contents	No. of Lectures
Unit I	**Introduction to System Engineering**	**5**
	1. Definition of system	1
	2. Characteristic of a system	
	3. Basic Components	1
	4. Elements of the system	1
	5. Types Of System	2
	6. System Components	
Unit II	**Introduction to Software Engineering**	**10**
	1. Definition of Software	1
	2. Characteristics of Software i. Software is manufactured orEngineered ii. Software does not wearout iii. Most software is custombuilt	
	3. Software ApplicationDomain i. SystemSoftware ii. Applicationsoftware iii. Embeddedsoftware iv. Product linesoftware v. Webapplication vi. Artificial Intelligence software	1
	4. Definition of SoftwareEngineering	
	5. Layered Technology of SoftwareEngineering	
	6. Need for softwareEngineering	1
	7. Mc Call's Qualityfactors i. ProductOperation ii. ProductRevision iii. ProductTransition	1 2
	8. The SoftwareProcess ii. Software ProcessModel iii. Software Process FrameworkActivities iv. UmbrellaActivities	 2
	9. SoftwareProduct i. GenericProducts ii. CustomizedProducts	
	10. Software EngineeringPractice i. The Essence ofPractice ii. GeneralPrinciples	2
Unit III	**Software Process And Life CycleModels**	**10**
	1. Introduction	**2**
	2. Activities of SDLC i. SDLC life-CyclePhases ii. Advantages of SDLC	

	3. A Generic Process Model i. Activities of Generic processModel ii. Advantages of ProcessModel iii. ProcessFlow **4. Types of SDLC process Model** i. DescriptiveModel ii. PrescriptiveModel **5. Prescriptive Processmodels** i. WaterfallModel ii. Incremental ProcessModels iii. Evolutionary processModels a. Prototyping b. SpiralModel iv. ConcurrentModels	**2** **2** **4**
Unit IV	**Software Requirements**	**8**
	1. Introduction RequirementEngineering **2. Types of Requirements** i. Functional- non-functionalrequirements ii. DomainRequirements iii. Softwarerequirement a. Userrequirement b. Systemrequirements **3. Requirement EngineeringTasks** i. Inception ii. Elicitation iii. Elaboration iv. Negotiation v. Specification vi. Validation **4. Requirement Gathering** i. Collaborative RequirementGathering ii. Quality FunctionDeployment(QFD) iii. UsageScenarios iv. Elicitation WorkProducts **5. FeasibilityStudy** i. TechnicalFeasibility ii. OperationalFeasibility iii. EconomicFeasibility **6. Fact Finding Techniques** i. Interviews a. StructuredInterview b. UnstructuredInterview ii. Questionnaires iii. RecordView iv. Observation	**2** **1** **1** **2** **2**

Unit V	Analysis And Design Tools	10
	1. Introduction to Analysis andDesign **2. DecisionTree** **3. DecisionTable** i. Types of Table Entries in DecisionTables a. Limited EntryForm b. Extended EntryForm c. Mixed EntryForm d. ElseForm **4. Data FlowDiagram(DFDs)** i. Types OfDFDs ii. Levels ofDFDs **5. DataDictionary** i. Elements OfDD ii. Advantages and Disadvantages OfDD **6. Input and OutputDesign** i. InputDesign ii. OutputDesign **7. Pseudocode** **8. Casestudies**	 1 2 2 1 1 1 2
Unit VI	**Software Testing**	**8**
	1. Introduction i. Need/Necessity oftesting ii. TestingTerminology **2. Definition of SoftwareTesting** i. Life cycle Of SoftwareTesting ii. Types OfTesting a. ManualTesting b. AutomationTesting **3. Verification and Validation** **4. Black BoxTesting** **5. White BoxTesting**	2 2 2 1 1
Unit VII	**Agile Development**	**9**
	1. Introduction **2. Agility** **3. AgileProcess** i. Principles ii. The Politics Of AgileDevelopment iii. HumanFactors **4. Extreme Programming(XP)** **5. Adaptive SoftwareDevelopment(ASD)** **6. Scrum** **7. Dynamic System Development Model (DSDM)**	 2 2 1 2 2

Reference Books:

1. Software Engineering A Practitioner's Approach- Roger S. Pressman, McGrawhill
2. International Editions 2010(SeventhEdition)
3. Software Testing: A Craftsman's Approach, Third Edition by PaulJorgensen
4. System Analysis, Design and Introduction to Software Engineering (SADSE) –S. Parthsarthy,B.W.Khalkar
5. Analysis and Design of Information Systems(Second Edition) - James A. Senn, McGrawHill
6. System Analysis and Design- Elias Awad, Galgotia Publication, SecondEdition
7. Fundamentals of Software Engineering- Rajib Mall, PHI Publication, FourthEdition

Website Reference Link:

1. Open Source Initiative:https://opensource.org/
2. Software Engineering - Wikipedia, the free encyclopedia:http://en.wikipedia.org/
3. System Engineering:https://aaq.auburn.edu/node/9050/take
4. SOFTWARE PROCESS And Life Cycle Models:https://www.tutorialspoint.com/sdlc/index.htm
5. Agile Modeling (AM) Home Page:http://www.agilemodeling.com/.

Best IDE Tools:

Sr.No	Name of IDE or Tools	Operating System
1.	Turbo C++ 3.0 onwards, E-Draw(DFD) Manual: Github Tool Automation: Selenium IDE	Window Operating System
2.	Vi Editor/GEdit 8.2 onwards & C compiler E-Draw(DFD) Manual: Github Tool Automation: Selenium IDE	Red Hat /Linux / Ubuntu

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S.Y.B.C.A (Science) Lab I: Object OrientedC++ Programming

2022-23 (CBCS – Autonomy 21 Pattern)

Course/ Paper Title	**Lab I: Object Oriented C++ Programming**
Course Code	**21SBCA234**
Semester	**III**
No. of Credits	**2**

Aims & Objectives of the Course

Sr. No.	Objectives
1.	To learn the syntax and semantics of the C++ Programming language
2.	To learn the object oriented programming paradigm and use of classes along with the fundamental of object oriented design.
3.	To learn how inheritance and virtual functions implements dynamic binding with polymorphism.

Expected Course Specific Learning Outcome

Sr. No.	Learning Outcome
1.	Design object oriented solutions for small systems involving multiple objects.
2.	Apply object oriented software principles in problem solving
3.	Develop the application using object oriented programming language.

Assignment No	Assignment Name	No. Of Sessions
1	**Assignment on classes and method implementation**	02
2	**Assignment on Constructors and Destructor**	03
3	**Assignment on Functions**	02
4	**Assignment on Inheritance and polymorphism**	03
5	**Assignment on File Handling**	02
6	**Assignment on Graphics using c++**	02
	Total Number of Sessions	14

Guidelines for Student Journal

The laboratory assignments are to be submitted by students in the form of a journal. Journal consists of Certificate, table of contents, and **handwritten write-up** of each assignment (Title, Problem Statement, Outcomes, Date of Completion, Assessment grade/marks and assessor's sign Program codes with sample output of all performed assignments are to be submitted as softcopy.

Guidelines for Assessment

Continuous assessment of laboratory work is to be done based on the overall performance of students. For each lab assignment, the instructor will assign grade/marks based on parameters with appropriate weightage. Suggested parameters include- timely completion, performance, innovation, efficient codes, punctuality and neatness.

Best IDE Tools:

Sr.No	Name of IDE or Tools	Operating System
1	Turbo C++ 3.0 onwards	Window Operating System
2	Vi Editor/GEdit 8.2 onwards & C compiler	Red Hat /Linux / Ubuntu

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S.Y.B.C.A (Science) Lab-II Advanced Web Technology using PHP

2022-23(CBCS–Autonomy 2021 Pattern)

Course/Paper Title	**Lab-II Advanced Web Technology using PHP**
Course Code	**21SBCA235**
Semester	**III**
No. of Credits	**2**

Aims &Objectives of the Course

Sr.No.	Objectives
1.	To understand installation process
2.	To get familiar with basics of the Internet Programming.
3.	To acquire knowledge and skills for creation of web site using client and server side
4.	To understand process of developing responsive web applications

Expected Course Specific Learning Outcome

Sr.No.	Learning Outcome
1.	Design and implement static and dynamic websites using appropriate client side and server side technologies.
2.	Build Dynamic web site using PHP Programming and Database Connectivity.
3.	Build applications using AJAX and XML

Assignment No	Assignment Name	No. Of Sessions
1	**Basic loops in PHP**	01
2	**Use of Functions and Strings**	02
3	**Use of Arrays**	02
4	**Use Inheritance, Interfaces and Abstract class, Introspection**	03
5	**Form Processing, Use of Session and Cookies**	02
6	**Accessing Databases (PostgreSQL)**	02
7	**Use XML and AJAX**	02
	Total Number of Sessions	14

Guidelines for Student Journal

The laboratory assignments are to be submitted by students in the form of a journal. Journal consists of Certificate, table of contents, and **hand written write-up** of each assignment(Title, Problem Statement, Outcomes, Date of Completion, Assessment grade/marks and assessor's sign Program codes with sample output of all performed assignments are to be submitted as softcopy.

Guidelines for Assessment

Continuous assessment of laboratory work is to be done based on the overall performance of students. For each lab assignment, the instructor will assign grade/marks based on parameters with appropriate weightage. Suggested parameters include- timely completion, performance, innovation, efficient codes, punctuality and neatness.

Best IDE Tools:

Sr.No	Name of IDE or Tools	Operating System
1.	**XAMPP** Apache + MySQL +PHP + Perl (Version 7.3)	Windows-7/8/10
2.	**XAMPP** Apache + MySQL + PHP + Perl	**Linux** 7.3.29, 7.4.22 & 8.0.9

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S.Y.B.C.A (Science) Lab III: Software Testing Tools (Testing using open source tools)

2022-23(CBCS–Autonomy 2021 Pattern)

Course/ Paper Title	**Lab III: Software Testing Tools (Testing using open source tools)**
Course Code	**21SBCA236**
Semester	**III**
No. of Credits	**2**

Aims & Objectives of the Course

Sr. No.	Objectives
1.	To study fundamental concepts in software testing
2.	To study the execution of a program with the intent of finding an error.
3.	To identify the various requirement development activities viz. elicitation, analysis, specification and verification for the given scenarios.
4.	To apply various testing techniques, including domain, code, fault, usage and Model-based.
5.	Perform a complete testing process, taking into account practical considerations.

Expected Course Specific Learning Outcome

Sr. No.	Learning Outcome
1.	Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
2.	Various test processes and continuous quality improvement
3.	Types of errors and fault models
4.	The use of various test tools
5.	Understand software testing as a fundamental component of software life cycle

Assignment No	Assignment Name	No. Of Sessions
1.	**Assignment on Software Requirement Specification(SRS)**	2
2.	**Assignment On Manual Testing Using C language**	4
3.	**Assignment On Automation Testing Using Different Tools**	8
	Total Number of Sessions	14

Guidelines for Student Journal

The laboratory assignments are to be submitted by students in the form of a journal. Journal consists of Certificate, table of contents, and **handwritten write-up** of each assignment (Title, Problem Statement, Outcomes, Date of Completion, Assessment grade/marks and assessor's sign Program codes with sample output of all performed assignments are to be submitted as softcopy.

Guidelines for Assessment

Continuous assessment of laboratory work is to be done based on the overall performance of students. For each lab assignment, the instructor will assign grade/marks based on parameters with appropriate weightage. Suggested parameters include- timely completion, performance, innovation, efficient codes, punctuality and neatness.

Best IDE Tools:

Sr.No	Name of IDE or Tools	Operating System
1.	Turbo C++ 3.0 onwards, E-Draw(DFD) Manual: Github Tool Automation: Selenium IDE	Window Operating System
2.	Vi Editor/GEdit 8.2 onwards & C compiler E-Draw(DFD) Manual: Github Tool Automation: Selenium IDE	Red Hat /Linux / Ubuntu

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Course in Health & Nutrition (Autonomy)
For SYBSc, BCA (Science), SYBSc (Computer Science)
CGPA course (21SBHENT23)
Under
BOS in Life Sciences
Academic year: 2022-2023

Course Title	**Health & Nutrition**
Course Code	21SBHENT23
Semester	III
No. of Credits	2 (30 Lectures)

Aims & Objectives of the Course

Sr. No.	Objectives
1.	To enable students to understand and gain theory & practical knowledgeon different food groups and their nutritive value
2.	To enable students to understand and gain theory & practical knowledgeon importance of Balanced Diet and its components
3.	To enable the student to understand and gain theory & practical knowledge on Role of Vitamins in our daily diet.
4.	To enable the students to gain knowledge of the role of micro-organisms in health, mode of infection and diseases.
5.	To enable the students to gain knowledge of the role of therapeutic role of food

Expected Course Specific Learning Outcomes

Sr. No.	Learning Outcome
1.	Students will understand the importance of the subject in day todays life, thus understanding the basics of health and nutrition
2.	Students will be able to interpret and apply nutrition concepts to evaluate and improve the nutritional health of communities.
3.	Students will be able to integrate knowledge and skills in food and nutrition
4.	Students will be able to examine and evaluate the relationship between food and nutrition in health and/or illness

Course Syllabus:

Credit	Topics	Allotted Lectures
I)	**HEALTH** • **Concept of Health & Diseases**	**(18)**
	A) Health • Definition of health • Determinants of Health • Health graph	02
	B) Diseases • Concept of disease • Types of Diseases- Epidemic, Pandemic, Sporadic • Infection, Intoxication, Disorders	02
	C) Sources of Infection • Air • Food/ Water • Animals • Soil	03
	D) Mode of Transmission of Diseases	03

	• Contact • Inhalation • Inoculation • Vertical Transmission • Vector • Fomites • Carriers	
	E) Disease Control and Prevention Methods • Controlling Infectious Diseases Within Communities • Chemoprophylaxis • Immunopropylaxis	03
	F) Vaccination • History of vaccination • Types and of Vaccines • Significance of Vaccination • National Immunization Schedule	02
	G) Exercise & Health • Types of Exercises • Benefits of Exercise • Exercise as therapy	03
II)	**NUTRITION** • **Basic concepts in Food & Nutrition**	**(18)**
	A) Nutrition • Definition & Concept • Nutrition Pyramid • Understanding relationship between food, nutrition and health • Functions of food- Physiological, psychological and social	05
	B) Role of the following Nutrients • Carbohydrates, lipids and proteins	05

	• Fat soluble vitamins- A, D, E and K • Water soluble vitamins- Thiamin, Riboflavin, Niacin, Pyridoxine, Folate, Vitamin B12 and Vitamin C • Minerals- Calcium, Iron and Iodine • Micronutrients	
	C) Food Groups • Cereals • Pulses • Fruits and vegetables • Milk and milk products • Meat, poultry and Fish • Fats and Oils	05
	D) Food As Therapy • Foods with medicinal properties • Treating deficiency related disease • Healthy food choices	03
	Total Lectures	**36**

Examination:

Internal Assessment	20 marks
External proctored examination	30 marks

Internal Assessment methods:

- Internal paper (Objective)
- Assignments
- Project based on Diet charts for different health issues like Diabetes, Cancer patients,Blood Pressure etc.

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S.Y.BCA- English
2022 - 23 (CBCS – Autonomy 21 Pattern)

Course/ Paper Title	Language I
Course Code	21SBAEEL23
Semester	III
No. of Credits	2 (Each credit is equal to 15 hours)

Aims & Objectives of the Course

Sr. No.	Objectives
1.	To expose students to the best examples of literature in English and to contribute to their emotional quotient as well as independent thinking.
2.	To minimize the gap between the existing communicative skills of the students and the skills they require at a professional level
3.	To develop effective communication skills by developing the ability to use the right words in the right context.
4.	To enhance the job potential of students by improving their language skills.
5.	To develop competence among the students to appreciate and analyze short stories and poetry.

Expected Course Specific Learning Outcome

Sr. No.	Learning Outcome
1.	Students will become familiar with advanced writing skills in different contexts.
2.	The students will be equipped with nuances of language that includes proficiency in grammar, its effective usage in speaking and writing. It also develops their personality.

Syllabus

Unit No.	Title with Content	No. of Lectures
Unit I	**Literature**	**10**
	i. A Shadow - R.K. Narayan ii. Playing the English Gentleman- M.K. Gandhi iii. Where the Mind is Without Fear - Rabindranath Tagore iv. La Belle Dame Sans Merci - John Keats	
Unit II	**Conversational Skills**	**8**
	i. Introducing Yourself and Others ii. Asking, Giving and Refusing Permission iii. Describing Daily Routine iv. Complaining and Apologizing	
Unit III	**Interview Skills**	**10**
	i. Job Application Letter ii. Resume Writing iii. Group Discussion iv. Personal Interview **v.** Presentations	
Unit IV	**Vocabulary**	**8**
	i. Introduction ii. Collocation iii. Phrasal Verbs iv. One-word Substitutions v. Commonly Confused words	

References:

i. *Horizons: English in Multivalent Contexts.* Board of Editors. Orient BlackSwan. Hyderabad.
ii. Murphy, Raymond. *Intermediate English Grammar.* 2nd ed. Cambridge University Press.
iii. Tickoo, M.L, Subramaniam, A.E., and Subramaniam, P.R. *Intermediate Grammar Usage and Composition.* Orient Blackswan.

Unit Vocabulary:

i. *Literary Vistas: An Anthology of Prose and Poetry.* Board of Editors. Orient Blackswan.

Online Resources:

Playing The English Gentleman: https://www.mkgandhi.org/autobio/chap15.htm

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S.Y.B.C.A (Science) Core Java

2022-23 (CBCS – Autonomy 21 Pattern)

Course/ Paper Title	**Core Java**
Course Code	**21SBCA241**
Semester	**IV**
No. of Credits	**04**

Aims & Objectives of the Course

Sr. No.	Objectives
1.	To learn implementation of object-oriented concepts with Java.
2.	To understand collection classes and interfaces.
3.	To know the process of application development using Graphical User Interface (GUI).
4.	To acquire knowledge about handling databases using Java.
5.	To study web components for developing web applications.

Expected Course Specific Learning Outcome

Sr. No.	Learning Outcome
1.	Identify classes, objects, class members and relationships for a given problem.
2.	Design end to end applications using object oriented constructs.
3.	Apply collection classes for storing java objects.
4.	Use Java APIs for program development.
5.	Handle abnormal termination of a program using exception handling

Unit No	Title with Contents	No. of Lectures
Unit I	**Introducing Java**	**8**
	1. A Short History of Java	1
	2. Features of Java	1
	3. Java Environment – Compiler, Interpreter,JVM	1
	4. Simple javaprogram	1
	5. Types of Comments	1
	6. Declaring single and multi-dimensionalarrays	1
	7. Accepting input using Command linearguments	1
	8. Accepting input from console (UsingBufferedReader and Scannerclass)	1
Unit II	**Classes and Objects**	**8**
	1. Defining Your OwnClasses	1
	2. Access Specifiers (public, protected, private,default)	1
	3. Array of Objects	1
	4. Constructor,OverloadingConstructorsanduseof„this" Keyword	1
	5. static blocks, static Fields and staticmethods	1
	6. Predefined classes – Object class methods(equals(), toString(),hashcode())	1
	7. Inner Classe& itstypes	1
	8. Garbage Collection (finalize()Method)	1
Unit III	**Inheritance and Interface**	**10**
	1. Inheritance Basics (extends Keyword) and Typesof Inheritance	1
	2. Superclass, Subclass and use of SuperKeyword	1
	3. Method Overriding and runtimepolymorphism	1
	4. Use of final keyword related to variable, methodand class	1
	5. Use of abstract class and abstract methodsInterface	1
	6. Defining and ImplementingInterfaces	1
	7. Runtime polymorphism using interfacePackages	2
	8. Creating, Accessing and usingPackages	2
Unit IV	**Collections**	**10**
	1. Wrapper Classes	2
	2. Introduction to the Collection framework	
	3. List – ArrayList, LinkedList and Vector	2
	4. Set - HashSet, TreeSet, and LinkedHashSet	2

	5. Map – HashMap, LinkedHashMap, HashtableandTreeMap **6.** Interfaces such as Iterators, ListIterators,Enumerations	2 2
Unit V	**Exception Handling & I/O**	**12**
	1. Exception class, Checked and Uncheckedexception **2.** Catching exception and exception handling – try, catch, finally, throw and throws, multiple catch block **3.** Creating user definedexception **4.** String class(basic methods) , String Bufferclass **5.** Fileclass **6.** DataInputStream and DataOutputStreamclass	2 2 2 2 2 2
Unit VI	**User Interface with AWT and Swing**	**12**
	1. What isAWT? **2.** What isSwing? **3.** Difference between AWT andSwing **4.** The MVC Architecture AndSwing **5.** Layout Manager andLayouts, **6.** Components – JComponentJLabel, JButton, JTextBox, JTextArea, JCheckBox, JRadioButton, JList, JComboBox, JMenu and JPopupMenu Class,JMenuItem **7.** Dialogs (Message, confirmation, input),JFileChooser Event Handling: Event sources, Listeners – ActionListener,ItemListener **8.** Mouse and Keyboard EventHandling **9.** Adapters – MouseAdapter,KeyAdapter	1 1 2 2 1 2 2 1

References:

1. "Core Java Volume – Fundamentals", Author – Cay S. Horstmann, Latest Edition – 11th Edition, Publisher – PrenticeHall
2. "Effective Java", Author – Joshua Bloch, Latest Edition – 3rd Edition,Publisher – Addison Wesley
3. "Java - The Complete Reference", Author – Herbert Schildt, Latest Edition – 11th Edition, Publisher – McGraw Hill Education
4. "Head First Java", Author – Kathy Sierra & Bert Bates, Latest Edition – 2nd Edition Publisher –Shroff/O'Reilly

Website Reference Link:

1. Programiz :https://www.programiz.com/java-programming
2. Geeksforgeeks :https://www.geeksforgeeks.org/java/
3. Java Point:https://www.javatpoint.com/java-tutorial
4. Tutorialspoint :https://www.tutorialspoint.com/java/index.htm

Best IDE Tools:

Sr.No	Name of IDE or Tools	Operating System
1.	ECLIPSE, NETBEANS & JDK	Window Operating System
2.	NETBEANS, ECLIPSE & JDK	Red Hat /Linux / Ubuntu

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S.Y.B.C.A. (Science) Programming in Python

(CBCS – Autonomy 21 Pattern)

Course/ Paper Title	**Programming in Python**
Course Code	**21SBCA242**
Semester	**IV**
No. of Credits	**4**

Aims & Objectives of the Course

Sr.No.	Objectives
1.	The course is designed to provide Basic knowledge of Python.
2.	To understand the reading and writing data through file concept.
3.	Manipulate and output data using lists, loops, and operators.
4.	To introduce various concepts of programming to the students using Python

Expected Course Specific Learning Outcome

Sr. No.	Learning Outcome
1.	Solve the real-life problems using object-oriented concepts
2.	Problem solving and programming capability.
3.	Students Can Write, Test and Debug Python Programs.

Unit No	Title with Contents	No. of Lectures
Unit I	**Introduction to Python Programming**	**10**
	1. Introduction & Components of Python	1
	2. Understanding Python	**1**
	3. Role of Python in AI and Data science	1
	4. Installation and Working with Python	1
	5. The default graphical development environment for Python -IDLE	1
	6. Types and Operation	1
	7. Python identifiers and reserved words Lines and indentation, multi-line statements Comments Input/output with print and input functions	2 2
Unit II	**Basics of Python**	**10**
	1. Python Data Types i. Number, Strings, Lists, Dictionaries, Tuples, Files, ii. User Defined Classes iii. Understanding python blocks **2. Python Program Flow Control** i. Conditional blocks using if, else and elseif ii. Simple for loops in python **3. Python Program Loops** i. For loop using ranges, string, list and dictionaries ii. Use of while loops in python iii. Loop manipulation using pass, continue, break and else iv. Programming using Python conditional and loops block	2 4 4
Unit III	**Python Functions, Modules & Packages**	**10**
	1. Python Functions, Modules &Packages i. Function Basics-Scope, nested function, non-local statements ii. Built-in functions iii. Arguments Passing iv. Anonymous Function: lambda	5

	v. Decorators and Generators **2. Module basic usage, namespaces, reloading** i. Modules. – Math, random, date time etc. **3. Package: import basics** i. Python namespace packages ii. User defined modules and packages	3 2
Unit IV	**Python Object Oriented Programming**	**12**
	1. Python Object Oriented Programming i. Concept of class, object and instances, ii. method call Constructor, class attributes and destructors iii. Real time use of class in live projects **2. Inheritance, superclass** i. Overloading operators ii. static and class methods iii. Adding and retrieving dynamic attributes of classes **3. Programming using OOPS**	6 6
Unit V	**Files and Directories**	**08**
	1. **Files and Directories** i. Creating files Operations on files (open, close, read,write) ii. File object attributes, file positions,Listing Files in aDirectory iii. Testing File Types, Removing Files and Directories **2. Copying and Renaming Files** i. Splitting Pathnames ii. Creating and Moving to Directories iii. Traversing Directory Trees iv. Illustrative programs: word count, copy file	3 5
Unit VI	**Exception Handling and GUI programming in Python**	**10**
	1. Importance and Mechanism: i. An example of Try/Catch; Manually Raising Exception. ii. The Process Exception Handling: Try/Except; Raising Exceptions. **2. Python GUI Programming:** i. GUI operations using TKinter Module. ii. Buttons, Textboxes, Menu bar Message and extras, radio button, checkbox.	5 5

Reference Books:

1. Programming Python Mark LutzO'reilly
2. Core Python Programming Wesley J. Chun PrenticeHall

Website Reference Link:

1. All Units:**https://www.tutorialsteacher.com/pythonbn**
2. All Units:**https://www.tutorialspoint.com/python/index.htm**

Best IDE TOOLS for Python

Sr. No.	Name of IDE or Tools	Operating System
1	PyCharm Professional Edition	Windows
2	Python 3.8.10	Windows

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S.Y.B.C.A (Science) Programming in GO
2022-23 (CBCS–Autonomy21 Pattern)

Course/Paper Title	**Programming in GO**
Course Code	**21SBCA243**
Semester	**IV**
No. of Credits	**04**

Aims &Objectives of the Course

Sr. No.	Objectives
1.	To study various programming constructs in GO
2.	To understand salient features in GO
3.	To know advance features in GO

Expected Course Specific Learning Outcome

Sr. No.	Learning Outcome
1.	Describe the core features and concepts in Go
2.	Write simple Go programs using functions
3.	Apply defining methods and Go Interfaces
4.	Use Go routines and Channels.
5.	Explore Go Packages

Unit No	Title with Contents	No. of Lectures
Unit I	**Introduction**	**10**
	1. **Go Runtime and Compilations** 2. **Keywords and Identifiers** 3. **Constants and Variables** 4. **Operators and Expressions** 5. **Local Assignments** 6. **Booleans, Numeric , Characters** 7. **Pointers and Addresses** 8. **Strings** 9. **if-else, switch, for loop** 10. **Iterations** 11. **Using break and continue**	1 1 1 1 1 1 1 1 1 1
Unit II	**Functions**	**10**
	1. Parameters and Return Values **2. Call by Value and Reference** 3. **Named Return Variables** **4. Blank Identifiers** **5. Variable Argument Parameters** 6. **Using defer statements** **7. Recursive Functions** **8. Functions as Parameters**	1 1 1 1 1 1 2 1 1
Unit III	**Working with Data**	**8**
	1. **Array Literals** 2. **Multidimensional Arrays** 3. **Array Parameters** **4. Slices and Slice Parameters** **5. Multidimensional Slices** 6. **Structures and Structure Parameters**	2 2 2 1 1
Unit IV	**Methods and Interfaces**	**12**

	1. **Method Declarations** 2. **Functions vs. Methods** 3. **Pointer and Value Receivers** 4. **Method Values and Expressions** 5. **Interface Types and Values** 6. **Type Assertions and Type Switches** 7. **Method Sets with Interfaces** 8. **Embedded Interfaces** 9. **Empty Interfaces**	2 2 2 2 2 1 1
Unit V	**Goroutines and Channels**	**10**
	1. **Concurrency vs. Parallelism** 2. **Goroutine Functions and Lambdas** 3. **Wait Groups** 4. **Channels** 5. **Sending and Receiving** 6. **Unbuffered and Buffered Channels** 7. **Directional Channels** 8. **Multiplexing with select** 9. **Timers and Tickers**	1 1 1 1 1 1 2 1 1
Unit VI	**Packages and Files**	**10**
	1. **Packages and Workspaces** 2. **Exporting Package Names** 3. **Import Paths and Named Imports** 4. **Package Initializations** 5. **Blank Imports** 6. **Unit Testing with Test Functions** 7. **Table Tests and Random Tests** 8. **Benchmarking** 9. **Working with Files**	1 1 1 1 1 1 1 1 2

Reference Books:

1) Introducing Go, Caleb Doxey, Oreilly publication
2) Learning Go Programming: Build Scalable Next-Gen Web Application using Golang (English Edition), ShubhangiAgarwal, BPB publication

E-Books:

1) Introducing Go By Caleb Doxey, Released January 2016Publisher(s): O'Reilly Media, Inc. ISBN: 9781491941959https://www.oreilly.com/library/view/introducing-go/9781491941997/
2) Go Bootcamp by Matt Aimonettihttp://www.golangbootcamp.com/book

Website Reference Link:

1. GO TUTORIAL :https://www.tutorialspoint.com/go/index.htm
2. Developer Tutorial :https://developers.google.com/learn/topics/go

Best IDE Tools:

Sr.No	Name of IDE or Tools	Operating System
1.	**LiteIDE / GoLand/Eclipse with GoClipse**	Windows-7/8/10
2.	**LiteIDE / GoLand/Eclipse with GoClipse**	Linux 7.3.29, 7.4.22 & 8.0.9

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S.Y.B.C.A (Science) Lab I: Core Java

2022-23 (CBCS – Autonomy 21 Pattern)

Course/ Paper Title	**Lab I: Core Java**
Course Code	**21SBCA244**
Semester	**IV**
No. of Credits	**2**

Aims & Objectives of the Course

Sr. No.	Objectives
1.	To learn implementation of object-oriented concepts with Java.
2.	To understand collection classes and interfaces.
3.	To know the process of application development using Graphical User Interface (GUI).

Expected Course Specific Learning Outcome

Sr. No.	Learning Outcome
1.	Design end to end applications using object oriented constructs.
2.	Apply collection classes for storing java objects.
3.	Use Java APIs for program development.

Assignment No	Assignment Name	No. Of Sessions
1	**Assignment on classes and method implementation**	02
2	**Assignment on Inheritance and Interface**	03
3	**Assignment on Collections**	02
4	**Assignment on Exception Handling**	03
5	**Assignment on I/O**	02
6	**Assignment on Interface with AWT and Swing**	02
	Total Number of Sessions	14

Guidelines for Student Journal

The laboratory assignments are to be submitted by students in the form of a journal. Journal consists of Certificate, table of contents, and **handwritten write-up** of each assignment (Title, Problem Statement, Outcomes, Date of Completion, Assessment grade/marks and assessor's sign Program codes with sample output of all performed assignments are to be submitted as softcopy.

Guidelines for Assessment

Continuous assessment of laboratory work is to be done based on the overall performance of students. For each lab assignment, the instructor will assign grade/marks based on parameters with appropriate weight age. Suggested parameters include- timely completion, performance, innovation, efficient codes, punctuality and neatness.

Best IDE Tools:

Sr.No	Name of IDE or Tools	Operating System
1	Eclipse, Netbeans&Jdk	Window Operating System
2	Netbeans, Eclipse &Jdk	Red Hat /Linux / Ubuntu

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S.Y.B.C.A (Science) Lab-II Python Programming

2022-23(CBCS–Autonomy 2021 Pattern)

Course/Paper Title	**Lab-II Python Programming**
Course Code	**21SBCA245**
Semester	**IV**
No. of Credits	**2**

Aims &Objectives of the Course

Sr.No.	Objectives
1.	The course is designed to provide Basic knowledge of Python.
2.	To understand the reading and writing data through file concept.
3.	Manipulate and output data using lists, loops, and operators.
4.	To introduce various concepts of programming to the students using Python

Expected Course Specific Learning Outcome

Sr.No.	Learning Outcome
1.	Solve the real-life problems using object-oriented concepts
2.	Problem solving and programming capability.
3.	Students Can Write, Test and Debug Python Programs.

Assignment No	Assignment Name	No. Of Sessions
1	Python Data Types	02
2	Python Functions, Modules & Packages	02
3	Python Object Oriented Programming	02
4	Files and Directories	02
5	Exception Handling	02
6	GUI programming in Python	04
	Total Number of Sessions	14

Guidelines for Student Journal

The laboratory assignments are to be submitted by students in the form of a journal. Journal consists of Certificate, table of contents, and **hand written write-up** of each assignment (Title, Problem Statement, Outcomes, Date of Completion, Assessment grade/marks and assessor's sign Program codes with sample output of all performed assignments are to be submitted as softcopy.

Guidelines for Assessment

Continuous assessment of laboratory work is to be done based on the overall performance of students. For each lab assignment, the instructor will assign grade/marks based on parameters with appropriate weight age. Suggested parameters include- timely completion, performance, innovation, efficient codes, punctuality and neatness.

Best IDE Tools:

Sr.No	Name of IDE or Tools	Operating System
1.	PyCharm Professional Edition	Windows
2.	Python 3.8.10	Windows

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S.Y.B.C.A (Science) Lab-III: Programming in GO

2022-23(CBCS–Autonomy 2021 Pattern)

Course/Paper Title	**Lab-III: Programming in GO**
Course Code	**21SBCA246**
Semester	**IV**
No. of Credits	**2**

Aims &Objectives of the Course

Sr.No.	Objectives
1.	To introduce essential programming features in GO
2.	To become familiar with programming techniques in GO
3.	To understand the technique of building Packages and File handling

Expected Course Specific Learning Outcome

Sr.No.	Learning Outcome
1.	Write programs using features supported in GO
2.	Handle errors and utilize Go routines and Channels
3.	Compare and contrast features of GO with other object oriented languages

Assignment No	Assignment Name	No. Of Sessions
1	Introduction to Go Programming	02
2	Functions	02
3	Working with data	02
4	Methods and Interfaces	03
5	Go routines and channels	03
6	Packages and files	02
	Total Number of Sessions	14

Guidelines for Student Journal

The laboratory assignments are to be submitted by students in the form of a journal. Journal consists of Certificate, table of contents, and **hand written write-up** of each assignment(Title, Problem Statement, Outcomes, Date of Completion, Assessment grade/marks and assessor's sign Program codes with sample output of all performed assignments are to be submitted as softcopy.

Guidelines for Assessment

Continuous assessment of laboratory work is to be done based on the overall performance of students. For each lab assignment, the instructor will assign grade/marks based on parameters with appropriate weightage. Suggested parametersinclude- tim elycompletion, performance, innovation, efficient codes, punctuality and neatness.

Best IDE Tools:

Sr.No	Nameof IDE orTools	OperatingSystem
1.	**LiteIDE / GoLand/Eclipse with GoClipse**	Windows-7/8/10
2.	**LiteIDE / GoLand/Eclipse with GoClipse**	**Linux** 7.3.29, 7.4.22 &8.0.9

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FYBA, S.Y.B. Sc., S.Y.B.Sc. (Computer Science), SYBCA (Science), S.Y.B. Com, SYBBA (CA), SYBBA,

2021-22 (CBCS – Autonomy 21 Pattern)

Course/ Paper Title	Environmental Science/ Environmental Awareness
Course Code	21ABAEEV11- FYBA 21SBAEEV24- S.Y.B.Sc., S.Y.B.Sc. (Comp. Sci.), SYBCA (Scienc 21CBAEEV23- S.Y.B. Com, SYBBA and SYBBA(CA)
Semester	I (FYBA) III (S.Y.B.Com., SYBBA and SYBBA(CA)} IV (S.Y.B.Sc., S.Y.B.Sc. (Comp. Sci.), SYBCA (Science)
No. of Credits	2 (36 Lectures of 50 minutes)

Aims & Objectives of the Course

Sr. No.	Objectives
1.	To ensure 'well variedness' with the basic, scientific concepts of many of the current environmental issues & happenings
2.	To encourage incitation of a thought process & hence, development of a practical perspective amongst the students
3.	To bring sensitization towards the environment but also increase student competency & employability.
4.	To inculcate sense of Scientific Temperament
5.	To inculcate the laws of Nature and to maintain the harmonious relationship with it.

Expected Course Specific Learning Outcomes

Sr. No.	Learning Outcome
1.	Students will understand the multidisciplinary nature of the subject and thus the Scope of study
2.	Students will understand the importance of the subject in day todays life , thus understanding the basics of sustainability
3.	Students will understand the intricate relationship between all types life and the present trend of man – environment relationship
4.	Students will understand about how the subject knowledge helps in solving various social, economic and environment related problems
5.	Students of each faculty will be empowered with the knowledge of environment and sustainability, which they can implement in their daily life to achieve sustainable lifestyle

Syllabus

Unit No.	Title with Contents	No. of Lectures
I	**Introduction to Environmental Studies** 1. Multidisciplinary nature of Environmental Studies 2. Scope & Importance 3. Environmental ethics 4. Concept of sustainability and sustainable development	**03**
II	**Natural Resources** 1. Types of Resources-Exhaustible & Inexhaustible 2. Renewable & Non-Renewable-Forest-Mineral-Water-Land 3. Energy Resources 4. Usage 5. Reasons For Their Degradation-	**04**

	6. Deforestation: Causes and impacts due to mining, dam building on environment, forests, biodiversity and tribal populations i. Water: Use and over-exploitation of surface and ground water, floods, droughts, conflicts over water (international & inter-state). 7. Conservation of resources	
III	**Ecosystem** 1. Structure & Function 2. Energy Flow 3. Food Chain & Food Web 4. Pyramids of Ecosystem 5. Ecological Succession 6. Types of Ecosystems- Terrestrial (Forest, Grassland, Desert), Aquatic ((ponds, streams, lakes, rivers, oceans, estuaries)	**04**
IV	**Biodiversity & its Conservation** 1. Definition of Biodiversity 2. levels of Biodiversity (genetic, species and ecosystem diversity) 3. Biodiversity of India (Mega-diversed country) 4. Hotspots of Biodiversity 5. Endemic & Endangered species 6. Threats to biodiversity (Habitat loss, poaching of wildlife, man-wildlife conflicts, biological invasions) 7. Biodiversity Conservation- In-situ & Ex-situ 8. National parks of India	**06**
V	**Environmental Pollution** 1. Definition of Pollution 2. Pollutants	**06**

	3. Air Pollution 4. Water Pollution 5. Noise Pollution 6. Soil Pollution 7. Control measures of Pollution (choosing sustainable lifestyle) 8. Solid Waste Management 9. Case Studies	
VI	**Environmental Issues & Solutions** 1. Climate change, 2. Global warming, 3. Ozone layer depletion, 4. Introduction to Environment Laws: Environment Protection Act; Air (Prevention & Control of Pollution) Act; Water (Prevention and control of Pollution) Act; Wildlife Protection Act; Forest Conservation Act. 5. International agreements: Paris, Montreal and Kyoto protocols and Convention on Biological Diversity (CBD)	**06**
VII	**Human Communities and the Environment** 1. Human population growth: Impacts on environment, human health and welfare. 2. Concept of Disaster management: floods, earthquake, cyclones and landslides. 3. Environmental movements: Chipko, Silent valley, Bishnois of Rajasthan.	**06**
VIII	**Field Visit Report** Field Visit to Local Ecosystem Site/ Pollution site/ Solid Waste management site/ Pollution control lab	**01**

References:

1. Barrow, C.J., Environmental Management, 1999. Routledge, N.Y.

2. Boubel, R.W., Fundamentals of Air Pollution, 1991. Academic Press, N.Y
3. Botbin, D., and Keller, E., Environmental Science, 1995. John Wiley and Sons, USA.
4. Chadha, K.L. and Swaminathan, M.S., Environment and Agriculture. MalhotraPublishing House, 2006, New Delhi
5. Carson, R., Silent Spring,2002, , Houghton Mifflin Hartcourt
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7. Sharma, P.D. Ecology and Environment1994. Ashish Publications,
8. Wagner, K.D Environment Management1998. W.B. Saunders Co, Philidelphia, USA
9. Singh, G.B. and Sharma Fifty Years of Natural Resource Management Research B.R. 1998, Indian Council of Agriculture Research, New Delhi
10. Singh, N. and Sontakke, N.A. On Climatic fluctuations and Environment changes on Indo-Gangetic Plains, India. Springer, Feb, 2002
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12. World Commission on Environment and Development1987, Our Common Future. Oxford University Press.

M. C. E. Society's
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NAAC accredited 'A' Grade

S.Y.BCA - English
2022 - 23 (CBCS – Autonomy 21 Pattern)

Course/ Paper Title	Language II
Course Code	21SBAEEL24
Semester	IV
No. of Credits	2 (Each credit is equal to 15 hours)

Aims & Objectives of the Course

Sr. No.	Objectives
1.	To develop analytical skills and critical thinking through a close reading of literary texts.
2.	To revise and reinforce structures already learnt in the previous stages of learning.
3.	To enhance the job potential of students by improving their language skills.
4	To acquaint and familiarize the students with soft skills

Expected Course Specific Learning Outcome

Sr. No	Learning Outcomes
1.	Be able to analyse and interpret a text and learn to appreciate a work for its literary merits.
2.	Students will become familiar with advanced writing skills in different contexts.
3.	The students will be equipped with nuances of language that includes proficiency in grammar, its effective usage in speaking and writing.
4.	It also develops their personality.

Syllabus

Unit No	Title with Contents	No. of Lectures
Unit I	**Literature**	**10**
	i. My Lost Dollar- Stephen Leacock ii. The Necklace- Guy de Maupassant iii. The Bird Sanctuary- Sarojini Naidu iv. Stopping by Woods on a Snowy Evening- Robert Frost	
Unit II	**Writing Skills**	**10**
	i. Notices ii. Agenda iii. Minutes iv. Content Writing	
Unit III	**Grammar**	**10**
	i. Tenses ii. Active and Passive Voice iii. Simple, Compound and Complex Sentences	
Unit IV	**Soft Skills**	**06**
	i. Introduction to Soft Skills ii. Stress Management iii. SWOT Analysis iv. Goal Setting v. Project Management	

References:

1. *Horizons: English in Multivalent Contexts.* Board of Editors. Orient BlackSwan. Hyderabad.
2. Murphy, Raymond. *Intermediate English Grammar.* 2nd ed. Cambridge University Press. 3.
3. Tickoo, M.L, Subramaniam, A.E., and Subramaniam, P.R. *Intermediate Grammar Usage and Composition.* Orient Blackswan.

Online Resources:

The Necklace- https://americanliterature.com/author/guy-de-maupassant/short-story/the-necklace

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'A' Grade

Certificate Course on Content Management System using WordPress
2022-23 (CBCS – Autonomy 21 Pattern)

Course/ Paper Title	Content Management System using WordPress
Course Code	**21SBCM23SD**
Semester	**III**
No. of Credits	**02**

Aims & Objectives of the Course

Sr. No.	Objectives
1	This course aims to give students in depth understanding of the key technologies in content management system using web application.
2	To provide an overview of content management system and need of content management system for websites.
3	To know features, different components and functionality of web content management system.
4	To learn a variety of techniques of word press development for creating Web CMS.

Expected Course Specific Learning Outcome

Sr. No.	Learning Outcome
1	Demonstrate their ability to use CMS design techniques to create content, install CMS.
2	Use a custom developed theme , modules
3	Use some form to receive data in email.
4	Use a custom developed widget.
5	Use a custom developed plugin.

Unit No	Title with Contents	No. of Lectures
Unit I	**Introduction to Wordpress**	**6**
	1. Introduction to Content Management System. 2. WordPress - Overview 3. Word Press - Installation 4. WordPress - Dashboard 5. Using Images 6. Wrapping Text Around Images 7. Comments in WordPress	1 1 1 1 1 1
Unit II	**Feeds, Pages , Posts and Categories in Word Press**	**8**
	1. WordPress Categories- i. AddCategory,Edit Category,Delete Category,Arrange Categories **2. WordPress Posts-** i. Add Posts, Edit Posts,DeletePosts,PreviewPosts,Publish Posts **3. WordPress Pages-** i. Add Pages, Publish Pages, Edit Pages, Delete Pages **4. WordPress Tags-** i. Add Tags, Edit Tags, Delete Tags **5. WordPress Links-** i. Add Links, Edit Links, Delete Links	2 2 2 1 1
Unit III	**WordPress Appearance**	**8**
	1. WordPress - Theme Management 2. WordPress - Customize Theme 3. WordPress - Widget Management 4. WordPress - Background 5. Developing a Colour Scheme 6. Designing Headers 7. CSS Horizontal Menus 8. Dynamic Menu Highlighting 9. Good Navigation Links 10. Next and Previous Links 11. Styling for Print 12. Formatting Date and Time 13. Styling Lists with CSS 14. Designing Headings 15. Playing With Fonts 16. Using Images 17. Fun Character Entities 18. Comprehensive list of design articles	2 2 2 2

Unit IV	WordPress Advanced	6
	WordPress - Host Transfer WordPress - Version Update WordPress - Spam Protection WordPress - Backup & Restore WordPress – Optimization WordPress - Reset Password	1 1 1 1 1 1

References:

1. Brad Williams , David Damstra, Hal Stern ,"Professional WordPress: Design and Development", 2nd Edition,ISBN-13: 978-1118442272,WROX publication
2. WordPress All–in–One For Dummies, 2nd Edition, Lisa Sabin–Wilson
3. WordPress in easy steps: Web Development for Beginners - covers WordPress 4

   by Darryl Bartlett, Publisher In Easy Steps Limited, ISBN- 978-1840786347

https://www.pdfdrive.com/wordpress-for-web-developers-an-introduction-for-web-professionals-e13977636.html

Website Reference Link:

https://wordpress.org/download/
https://www.tutorialspoint.com/wordpress/index.htm
https://www.hostinger.in/tutorials/wordpress

Companion Course : online mooc courses

https://www.skillshare.com/classes/WordPress-Academy-Learn-WordPress-step-by-step/175609084
https://www.udemy.com/topic/wordpress/free/