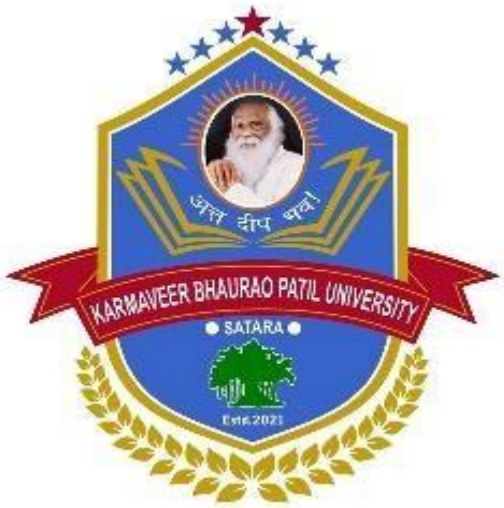

Karmaveer Bhaurao Patil University, Satara

Syllabus for

B. Sc. II Computer Application

Under

Faculty of Science and Technology

(As per NEP 2020)

With effect from Academic Year 2025-202

➢ Course Structure

Class	Level	Sem	Major		Minor		OE	VSC	SEC	AEC	IKS	VEC	Total
			T	P	T	P							
B.Sc. II	5.0	III	4 (2 Theory Papers)	2 (1 Practical Paper)	4 (2 Theory Papers Out of Four)	2 (1 Practical Papers)	2	2	2	2	2	-	22
		IV	4 (2 Theory Papers)	2 (1 Practical Paper)	4 (2 Theory Papers Out of Four)	2 (2 Practical Papers)	2	2	2	2	-	2	22

➢ Evaluation Structure

Type	Credit	CCE				ESE	Total
		CCE - I	CCE-II	Mid-term	Total		
Theory	2	5	5	10	20	30	50

Type	Credit	Journal	Vival	Stidents Performace	Exam	Total
Practical	2	10	5	5	30	50

Karmaveer Bhaurao Patil University, Satara

(A State Public University Est. u/s 3(6) of MPUA 2016)

Faculty of Science and Technology

Yashavantrao Chavan Institute of Science, Satara

Board of Studies in Computer Application

Programme: B.Sc.	**Semester** - III
Type: Major	**Marks:** 50
Credits: 2	**From:** A. Y. 2025-26

Name of the Course: BCAT 231 Computer Programming - II

Course Objectives:

1) To study the concept Object Oriented Programming
2) To understand the operators and control structure in C++
3) To study the constructors and destructors
4) To understand the concept of Inheritance, Polymorphism and its types

Course Outcomes:

1) Understand object-oriented programming and advanced C++ concept.
2) Apply the concepts of object, classes and constructor.
3) Design C++ Programs based on object, class, inheritance, abstraction, encapsulation, dynamic binding and polymorphism.
4) Implement concept of polymorphism in program.

Module	Title and Contents	Hrs.
Module -1:	**Module -1: Introduction to OOP** 1.1 Difference between POP & OOP, Structure of C++ Program 1.2 Basic Concepts of OOP – Objects, Classes, Data Abstraction and Data Encapsulation, Inheritance, Polymorphism, 1.3 Dynamic Binding, Message Passing, Benefits & Features of OOP 1.4 Data types, Keywords and Operators, 1.5 Control Structure – Conditional and Looping	8
Module -2:	**Module -2: Objects, Classes & Constructor** 2.1 Class Definition, Function Definition and Declaration 2.2 Arguments to a Function - Passing Arguments to a Function, Default Arguments, Calling Functions, Inline Functions 2.3 Scope Rules of Functions and Variables, Member Function Definition – Inside class and outside the class using scope Resolution Operator 2.4 Accessing Members from Object(S), Static Class Members - Static Data Member, Static Member Function 2.5 Declaration and Definition of a Constructor & Destructor	8
Module -3:	**Module -3: Inheritance** 3.1 Concept of Inheritance, Base Class & Derived Class 3.2 Types of Inheritance – Single, Multiple, Hierarchical, Multilevel, Hybrid Inheritance, Dynamic 3.3 Memory Allocation / Deallocation using New and Delete Operator	8

Module -4:	**Module -4: Polymorphism** 4.1 Concept of Polymorphism, Static Polymorphism & Dynamic (Compile time) Polymorphism 4.2 this pointer, Pointers to Derived Classes 4.3 Virtual Functions, Pure Virtual Function.	6

Reference Books: -

1) Lippman, Stanley B., Lajoie, Josée, Moo, Barbara E. "C++ Primer". Latest Edition: 2020.
2) Meyers, Scott. "Effective Modern C++: 42 Specific Ways to Improve Your Use of C++11 and C++14". Latest Edition: 2014.
3) Stroustrup, Bjarne. "The C++ Programming Language". Latest Edition: 2013.
4) Roth, Stephan "Clean C++: Sustainable Software Development Patterns and Best Practices with C++ 17." Latest Edition: 2017.
5) Koenig, Andrew, Moo, Barbara E. "Accelerated C++: Practical Programming by Example". Latest Edition: 2000.

Evaluation Pattern:

Total Marks: 50

Internal Continuous Evaluation (20 Marks):	**End Semester Examination (30 Marks):**
• CCE - I : 10 Marks: Objective • CCE - II: 10 Marks: Objective • Mid Semester Exam: 20 Marks: Subjective Note: Conversion of 40 marks of internal evaluation to 20 Marks	• Question -1: Solve the following questions (Five questions of 2 Marks) • Question -2: Attempt any two questions (Three questions of 10 Marks) • Question -3: Attempt any four questions (Five questions of 5 Marks) Note: Conversion of 50 marks of ESE evaluation to 30 Marks

Karmaveer Bhaurao Patil University, Satara

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Faculty of Science and Technology

Yashavantrao Chavan Institute of Science, Satara

Board of Studies in Computer Application

Programme: B.Sc.	**Semester** - III
Type: Major	**Marks:** 50
Credits: 2	**From:** A. Y. 2025-26

Name of the Course: BCAT 232 Web Designing

Course Objectives:

1) Understand HTML, CSS, Java script
2) Impart necessary ability to choose the appropriate web tools/languages for creating state-of-the art web sites.
3) Understand current trends and styles in web design and applications.
4) Understand how tools woks like Dream viewer

Course Outcomes:

1) Analyze Interface of Dream viewer.
2) Use Dream viewer to create HTML web pages
3) Use HTML Form elements.
4) Understand Input Attributes

Module	Title and Contents	Hrs.
Module -1:	**Module -1: Introduction To HTML** 1.1. Introduction to HTML Editors 1.2. Applications of HTML 1.3. Difference between HTML and XML 1.4. Basic HTML Elements, Headings HTML, Paragraphs, Image Formatting	7
Module -2:	**Module -2: Elements of HTML** 2.1 HTML Tags, Working with Text 2.2 Working with Lists 2.3 Tables and Frames 2.4 Working with Hyperlinks 2.5 Images and Multimedia, Working with Forms and controls	8
Module -3:	**Module -3: Concept of CSS** 3.1Creating Style Sheet, CSS Properties, CSS Styling (Background, Text Format, Controlling Fonts), 3.2 Working with block elements and objects, 3.3 Working with Lists and Tables, CSS Id and Class 3.4 Box Model (Introduction, Border properties, Padding, Margin properties)	8
Module -4:	**Module -4: CSS Advanced** 4.1 Grouping, Dimension, 4.2 Display, Positioning 4.3 Floating, Align, CSS Color 4.4 Creating page Layout and Site Designs.	8

Reference Books: -

1) Duckett, Jon. “HTML and CSS: Design and Build Websites”. 2011.
2) Robbins, Jennifer Niederst. “Learning Web Design: A Beginner's Guide to HTML, CSS, JavaScript, and Web Graphics”. 2018.

<table>
<tr><td colspan="2">3) McFarland, David Sawyer. “CSS: The Missing Manual”. 2015.
4) Robson, Elisabeth, Freeman, Eric. “Head First HTML and CSS: A Learner's Guide to Creating Standards-Based Web Pages”. 2012.
5) Beighley, Lynn, Morrison, Michael. “Head First HTML and CSS.” Latest Edition: 2012 (2nd Edition).</td></tr>
<tr><td colspan="2">Evaluation Pattern:</td></tr>
<tr><td colspan="2">Total Marks: 50</td></tr>
<tr><td>Internal Continuous Evaluation (20 Marks):
• CCE - I : 10 Marks: Objective
• CCE - II: 10 Marks: Objective
• Mid Semester Exam: 20 Marks: Subjective
Note: Conversion of 40 marks of internal evaluation to 20 Marks</td><td>End Semester Examination (30 Marks):
• Question -1: Solve the following questions (Five questions of 2 Marks)
• Question -2: Attempt any two questions (Three questions of 10 Marks)
• Question -3: Attempt any four questions (Five questions of 5 Marks)
Note: Conversion of 50 marks of ESE evaluation to 30 Marks</td></tr>
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Karmaveer Bhaurao Patil University, Satara

(A State Public University Est. u/s 3(6) of MPUA 2016)

Faculty of Science and Technology

Yashavantrao Chavan Institute of Science, Satara

Board of Studies in Computer Application

Programme: B.Sc.	**Semester** -III
Type: Major Practical	**Marks:** 50
Credits: 2	**From:** A. Y. 2025-26

Name of the Course: BCAP 233 Lab Course Based on BCAT 231 & BCAT 232

Course Objectives:

1) To study the concept Object Oriented Programming.
2) To understand the operators and control structure in C++.
3) To study the constructors and destructors, Inheritance, Polymorphism and its types.
4) Understand HTML, CSS, Java script.
5) Impart necessary ability to choose the appropriate web tools/languages for creating state-of-the art websites.
6) Understand current trends and styles in web design and applications.

Course Outcomes:

1) Use various control structures to improve programming logic, Design classes and objects.
2) Use constructor and destructor, operator overloading, inheritance, and polymorphism
3) Analyze Interface of Dream viewer.
4) Use Dream viewer to create HTML web pages
5) Use HTML Form elements.
6) Understand Input Attributes.

Module	Title and Contents	Module
Section I:	**List of Practical** 1) Write a C++ Program to display Names, Roll No., and grades of 3 students who have appeared in the examination. Declare the class of name, Roll No. and grade. Create an array of class objects. Read and display the contents of the array. 2) Write a C++ program to declare Struct. Initialize and display contents of member variables. 3) Write a C++ program to declare a class. Declare pointer to class. Initialize and display the contents of the class member. Program involving Method Over-riding, Method Over-loading 4) Given that an EMPLOYEE class contains following members: data members: Employee number, Employee name, Basic, DA, IT, Net Salary and print data members. 5) Write a C++ program to read the data of N employee and compute Net salary of each employee (DA=52% of Basic and Income Tax (IT) =30% of the gross salary). 6) Write a C++ to illustrate the concepts of console I/O operations. 7) Write a C++ program to use scope resolution operator. Display the various values of same. 8) Write a C++ program to allocate memory using new operator. 9) Write a C++ program to create multilevel inheritance. (Hint: Classes A1, A2, A3) 10) Write a C++ program to create an array of pointers. Invoke functions using array objects. Programs to demonstrate methods of string class 11) Write a C++ program to use pointer for both base and derived classes and call the member function. Use Virtual keyword.	**60**

Section II:	**List of Practical:** 1) Practicing basic HTML tags, text tags test styles, paragraph styles,headings, lists. 2) Practicing basic HTML tags, text tags test styles, paragraph styles,headings, lists. 3) Practicing basic HTML tags, text tags test styles, paragraph styles,headings, lists. 4) Tables in HTML, Frames in HTML, nested frames, Link and Anchor Tags Including graphics, video and sound in web pages Layers & Image Maps, Creating animated Gifs, Cascading Style sheets 5) Write an HTML code to illustrate the usage of the following: Ordered List, Unordered List, Definition List. 6) Write an HTML code to demonstrate the usage of inline CSS 7) Write an HTML code to demonstrate the usage of internal CSS. 8) Write an HTML code to demonstrate the usage of External CSS. 9) Write an HTML code to HTML forms and Fields. 10) Write a Java script to prompt for user's name and display it on the screen. 11) Design HTML form for keeping student record and validate it using Java script.	

Reference Books :-

1) Stroustrup, B. "The C++ Programming Language". 3rd Edition. Pearson Education.
2) Gaddis, T., Walters, J., Muganda, G. "OOP in C++". 3rd Edition. Wiley Dream Tech Press.
3) Lafore, R. "Object Oriented Programming in C++". 3rd Edition. Galgotia Publications Pvt Ltd.
4) Duckett, Jon. "HTML and CSS: Design and Build Websites". 2011.
5) Beighley, Lynn, Morrison, Michael. "Head First HTML and CSS." Latest Edition: 2012 (2nd Edition).

Evaluation Pattern:

Total Marks: 50

Journal, Students' Performance Viva, Project (20 Marks):	**Practical Exam Paper (30 Marks):**
• Journa1: 10 Marks • Students' Performance: 05 Marks • Viva: 05 Marks	Section I: Attempt any two questions (Four questions of 10+5 Marks) Section II: Attempt any two questions (Four questions of 10+5 Marks)

Karmaveer Bhaurao Patil University, Satara

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Faculty of Science and Technology

Yashavantrao Chavan Institute of Science, Satara

Board of Studies in Computer Application

Programme: B.Sc.	**Semester** - III
Type: Minor	**Marks:** 50
Credits: 2	**From:** A. Y. 2025-26

Name of the Course: BCAT 234 Instrumentation Techniques for Computing

Course Objectives:

1) Understand basic electronics principles.
2) Learn the essentials of communication systems.
3) Apply electronics and communication theories.

Course Outcomes:

1) Demonstrate proficiency in electronic component analysis
2) Design and analyze digital logic circuits.
3) Understand and apply key communication protocols
4) Integrate knowledge of electronics and communication systems

Module	Title and Contents	Hrs.
Module -1:	**Module -1: Fundamentals of Electronic Instrumentation and Signal Measurement** 1.1. Introduction to instrumentation systems 1.2. Types of electrical signals: analog vs. digital 1.3. Signal conditioning: amplification, filtering, and noise reduction 1.4. Measurement systems: accuracy, precision, resolution, and error analysis 1.5. Introduction to multimeters, oscilloscopes, function generators	8
Module -2:	**Module -2: Sensors and Transducers: Principles and Applications** 2.1 Definition and classification of sensors and transducers 2.2 Working principles of common sensors: temperature (RTD, thermocouple), pressure, light (LDR, photodiodes) 2.3 proximity, humidity, displacement Selection criteria and specifications 2.4 Signal conversion: resistive, capacitive, inductive, optical, piezoelectric transducers 2.5 Sensor interfacing basics (no programming)	8
Module -3:	**Module -3: Controllers and Industrial Communication Protocols (No Programming)** 3.1 Basics of controllers: concept of open-loop and closed-loop systems 3.2 Types of controllers: analog PID, PLC overview (conceptual) 3.3 Introduction to industrial communication: RS232, RS485 3.4 I2C, SPI (overview) CAN, MODBUS, PROFIBUS (conceptual use cases) 3.5 Importance of protocols in sensor and actuator interfacing 3.6 Wiring, signal integrity, and protocol limitations	8
Module -4:	**Module -4: Actuators and Data Acquisition Systems (DAQ)** 4.1 Types of actuators: electrical (motors, solenoids), hydraulic, pneumatic 4.2 Working principle and control methods (basic level, no coding) 4.3 Introduction to DAQ systems: components and architecture 4.4 Signal sampling, resolution, and conversion (ADC/DAC) 4.5 Integration of sensors, actuators, and DAQ in a measurement system	6

Reference Books: -

1) Gayakwad, Ramakant A. “OP-AMP and Linear Integrated Circuits”. Fourth Edition. PHI Learning Pvt. Ltd., New Delhi, 2014.
2) Kalsi, H.C. “Electronic Instrumentation”. 12th Edition. McGraw Hill Pvt. Ltd., New Delhi, 2014.
3) Murthy, D.V.S. “Transducer and Instrumentation”. Twelfth Edition. Prentice Hall of India Pvt. Ltd., New Delhi, 2005.
4) Proakis, John G. “Digital Communications”. Fifth Edition. McGraw-Hill Education, USA, 2008.
5) Rajput, R.K. “Electrical and Electronic Measurements and Instrumentation.” Latest Edition: 2015.

Evaluation Pattern:

Total Marks: 50

Internal Continuous Evaluation (20 Marks):	**End Semester Examination (30 Marks):**
• CCE - I : 10 Marks: Objective • CCE - II: 10 Marks: Objective • Mid Semester Exam: 20 Marks: Subjective Note: Conversion of 40 marks of internal evaluation to 20 Marks	• Question -1: Solve the following questions (Five questions of 2 Marks) • Question -2: Attempt any two questions (Three questions of 10 Marks) • Question -3: Attempt any four questions (Five questions of 5 Marks) Note: Conversion of 50 marks of ESE evaluation to 30 Marks

Karmaveer Bhaurao Patil University, Satara

(A State Public University Est. u/s 3(6) of MPUA 2016)

Faculty of Science and Technology

Yashavantrao Chavan Institute of Science, Satara

Board of Studies in Computer Application

Programme: B.Sc.	**Semester** - V
Type: Minor	**Marks:** 50
Credits: 2	**From:** A. Y. 2025-26

Name of the Course: BCAT 235 Advanced Microprocessor

Course Objectives:

1) Understand microprocessor fundamentals
2) Learn the basics of assembly language programming
3) Study the impact of microprocessors on real-world applications
4) Explore microprocessor interfacing techniques

Course Outcomes:

1) Explain the basic architecture and operation.
2) Analyse and design microprocessor interfacing circuits
3) Understand and apply memory management techniques
4) Design program for data transfer, delay generation, I/O operations and manipulation, arithmetic and logic operations, interfacing of LED, relay.

Module	Title and Contents	Hrs.
Module -1:	**Module -1: Introduction to Microprocessor** 1.1. Introduction to Microprocessors: Evolution of Microprocessors (From 4-bit to 64-bit Systems), Applications 1.2. Basic Components: CPU, Memory (RAM and ROM), Input/Output Devices, Buses 1.3. Overview of the 8085 Microprocessor: Features of the 8085 Microprocessor 1.4. Microprocessor, Introduction to modern microprocessor like Intel 8086 / 8088, Intel 80386 (386)	7
Module -2:	**Module -2: Architecture and Operations of the 8085 Microprocessor** 2.1. Pin Configuration and Their Functions 2.2. Architecture of the 8085 Microprocessor: Registers, ALU (Arithmetic and Logical unit) 2.3. Flag registers, timing and Control unit, Interrupt control, Address and data bus 2.4. Features of 8085 microprocessor	8
Module -3:	**Module -3: Instruction Cycles and Timing Diagrams** 3.1 Instruction Cycle and Machine Cycle: Instruction Cycle, Machine Cycle, 3.2 Understanding the Concept of Fetch, Decode, and Execute Cycles 3.3 Timing Diagram for Opcode Fetch, 3.4 Timing Diagram for Memory Read and Write.	8
Module -4:	**Module -4: Assembly Programming and Applications**	8

	4.1 Addressing Modes in 8085: Immediate, Direct, Register, Indirect, and Implicit Addressing Modes 4.2 Examples of Addressing Modes 4.3 Instruction Set of the 8085, Classification of Instructions: Data Transfer, Arithmetic, Logical, Branching, and Control Instructions 4.4 Basics of Assembly Language Programming: Introduction to Assembly Language Programming (ALP), Structure of an Assembly Language Program	

Reference Books: -

1) Ghosh, P.K., Sridhar, P.R. "0000 to 8085 Microprocessor". 2nd Edition. John Wiley and Sons.
2) Thegarajan, R., Dhanpal, S. "Microprocessor and Its Application". 1st Edition. New Age International Private Ltd.
3) Udaya Kumar, K., Uma Shankar, B.S. "The 8085 Microprocessor: Architecture, Programming, and Interfacing". Pearson Education.
4) Triebel, Walter, Singh, Avtar A. "8088 and 8086 Microprocessors: Programming, Interfacing, Software Hardware and Applications". 4th Edition. Pearson Education.
5) Senthil Kumar, Saravanan, Jeevananthan. "Microprocessors and Microcontrollers." Latest Edition: 2010.

Evaluation Pattern:

Total Marks: 50

Internal Continuous Evaluation (20 Marks):	**End Semester Examination (30 Marks):**
• CCE - I: 10 Marks: Objective • CCE - II: 10 Marks: Objective • Mid Semester Exam: 20 Marks: Subjective Note: Conversion of 40 marks of internal evaluation to 20 Marks	• Question -1: Solve the following questions (Five questions of 2 Marks) • Question -2: Attempt any two questions (Three questions of 10 Marks) • Question -3: Attempt any four questions (Five questions of 5 Marks) Note: Conversion of 50 marks of ESE evaluation to 30 Marks

Karmaveer Bhaurao Patil University, Satara

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Faculty of Science and Technology

Yashavantrao Chavan Institute of Science, Satara

Board of Studies in Computer Application

Programme: B.Sc.	**Semester** -III
Type: Minor Practical	**Marks:** 50
Credits: 2	**From:** A. Y. 2025-26

Name of the Course: BCAP 236, Lab Course Based on BCAT- 234 & 235

Course Objectives:

1) Understand Fundamentals of electrical signal – hardware
2) Learn How to Design hardware.
3) Study op- Amp.
4) Apply Fundamental Arithmetic Operations
5) Analyze and Implement Advanced Arithmetic Techniques in Op- Amp

Course Outcomes:

1) Demonstrate proficiency in performing arithmetic operations using different addressing modes, applying knowledge to solve numerical problems effectively.
2) Understand and apply feedback principles
3) Create Structured Programs with Subroutines.
4) Identify and explain the working principle of Op-Amps
5) Design active filters using Op-Amps

Module	Title and Contents	Module
Section I:	**List of Practical** 1) Signal Conditioning Circuit for RTD (Resistance Temperature Detector) 2) Pressure Sensors: Types and Applications 3) Light Sensors: LDR and Photodiodes 4) Introduction to Multimeters 5) Familiarization with Oscilloscope and Function Generator 6) Function Generators: Signal Generation and Analysis 7) Analog PID Controllers: Principles and Applications 8) Controllers: Open-Loop and Closed-Loop Systems 9) Analog to Digital and Digital to Analog Conversion 10) Understanding the Basic Functions of an Oscilloscope	**60**
Section II:	**List of Practical** 1) Exploring the Pin Configuration of 8085 2) Addition operation using 8085 microprocessors 3) Multiplication operation using 8085 microprocessors. 4) Data Transfer Instructions Simulation. 5) Instruction Cycle Simulation 6) Write assembly language code in 8085 microprocessors. To find factorial of a given number 7) Study of logical instructions 8) To find largest number from given series in 8085 microprocessors. 9) To find smallest number from given series in 8085 microprocessors 10) Subtraction operation using 8085 microprocessors Division operation using 8085 microprocessors	

Reference Books:-

1) Udaya Kumar, K., Uma Shankar, B.S. "The 8085 Microprocessor: Architecture, Programming, and Interfacing". Pearson Education.
2) Triebel, Walter, Singh, Avtar A. "8088 and 8086 Microprocessors: Programming, Interfacing, Software Hardware and Applications". 4th Edition. Pearson Education.
3) Gayakwad, Ramakant A. "OP-AMP and Linear Integrated Circuits". Fourth Edition. PHI Learning Pvt. Ltd., New Delhi, 2014.
4) Kalsi, H.C. "Electronic Instrumentation". 12th Edition. McGraw Hill Pvt. Ltd., New Delhi, 2014.

Evaluation Pattern:

Total Marks: 50

Journal, Students' Performance Viva, Project (20 Marks):	**Practical Exam Paper(30 Marks):**
• Journa1: 10 Marks • Students' Performance: 05 Marks • Viva: 05 Marks	Section I: Attempt any two questions (Four questions of 10+5 Marks) Section II: Attempt any two questions (Four questions of 10+5 Marks)

Karmaveer Bhaurao Patil University, Satara

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Faculty of Science and Technology

Yashavantrao Chavan Institute of Science, Satara

Board of Studies in Computer Application

Programme: B.Sc.	**Semester:** III
Type: VSC	**Marks:** 50
Credits: 2	**From:** A. Y. 2025-26

Name of the Course: BCAP VSC-1, Web Content Management: Wordpress

Course Objectives:

1) To make students familiar with wordpress.
2) Understand concepts of design and developing a website.
3) Gain knowledge of plugins.

Course Outcomes:

1) Demonstrate ability to use wordpress.
2) Explain use of wordpress themes.
3) Formulate different tasks

Module	Title and Contents	Module
Section I:	**List of Practical** 1) WordPress – OVERVIEW 2) Installation of WordPress 3) WordPress – DASHBOARD 4) WordPress – GENERAL SETTINGS 5) WordPress – WRITING SETTINGS 6) WordPress – READING SETTINGS 7) WordPress – DISCUSSION SETTINGS 8) WordPress themes 9) Introduction of wordpress plugins 10) Adding plugin, Upload the plugin, Installing a WordPress Plugin 11) Add a page to wordpress 12) Apply customization to pages 13) Adding custom CSS 14) Add a Site Title and Tagline 15) Create a Webpage using wordpress	**60**

Reference Books:-

1) Lisa Sabin-Wilson, "WordPress For Dummies (For Dummies Series)", Published by For Dummies (April 7, 2014).
2) Stephen Burge, Mikall Angela Hill , Robbie Adair ,"WordPress Explained: Your Step-by-Step Guide to WordPress (2020 Edition)", Published by independently published (November 7, 2017).
3) Lisa Sabin-Wilson WordPress All-in-One For Dummies (For Dummies (Computer/Tech))", Published by For Dummies(April 9, 2019).
4) Connell, Andy Williams. "WordPress for Beginners: A Visual Step-by-Step Guide." Latest Edition: 2023.
5) Mullenweg, Matt (WordPress Founder). "The WordPress Way." Latest Edition: 2021.

Evaluation Pattern:

Total Marks: 50

Journal, Students' Performance Viva, Project (20 Marks): • Journa1: 10 Marks • Students' Performance: 05 Marks • Viva: 05 Marks	**Practical Exam Paper (30 Marks):** • Section I: Attempt any three questions (Five questions of 10 Marks)

Karmaveer Bhaurao Patil University, Satara

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Board of Studies in Computer Application

Programme: B.Sc.	**Semester** - III
Type: SEC	**Marks: 50**
Credits:2	**From:** A. Y. 2025-26

Name of the Course: BCAPSEC 1, Information Security

Course Objectives:

1) To study the concepts of Operating System
2) Understand Linux commands.
3) Study VI editor Concepts
4) Understand Shell Programming

Course Outcomes:

1) Demonstrate ability to use System Hacking Concepts.
2) Explain use of Security Services.
3) Formulate different threat concepts.
4) Define use of cryptography and explain their characteristics.

Module	Title and Contents	Hrs.
Section I:	**List of Practical** 1) Introduction to Information Security 2) Install & Configure Antivirus System (Any). 3) Set up operating system updates 4) Perform Backup and restore of the system 5) Set up passwords to operating system and applications 6) Apply security to file folder or application using access permissions and verify 7) Write a program to implement Caesar & Vernam Cipher 8) Create and verify Hash Code for given message 9) Write a program to implement Rail fence technique 10) Write a program to implement Simple Columnar Transposition technique 11) Create and verify digital signature using tool (e.g. Cryptool). 12) Use Steganography to encode and decode the message using any 13) Install firewall on any operating system 14) Configure firewall settings on any operating system 15) Create and verify Digital Certificate using tool (e.g. Cryptool)	60

Reference Books: -

1) Pfleeger, "Security in Computing, Fourth Edition", Published by Pearson Education (1, January 2007)
2) Wenbo Mao, "Modern Cryptography: Theory and Practice", Published by Prentice Hall (25 July 2003).
3) William Stallings, "Network Security Essentials: Applications and Standards", Published by Pearson Education (27 February 2018)
4) Stallings William, "Cryptography and Network Security - Principles and Practice Seventh Edition", Published by Pearson Education (30 June 2017).
5) Whitman, Michael E., Mattord, Herbert J. "Principles of Information Security." Latest Edition: 2022 (7th Edition).

Evaluation Pattern:

Total Marks: 50	
Journal, Students' Performance Viva, Project (20 Marks): • Journa1: 10 Marks • Students' Performance: 05 Marks • Viva: 05 Marks	**Practical Exam Paper (30 Marks):** • Section I: Attempt any three questions (Five questions of 10 Marks)

Karmaveer Bhaurao Patil University, Satara

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Faculty of Science and Technology

Yashwantrao Chavan institute of science, Satara

Board of Studies in Computer Application

Programme: Computer Application	**Semester** - IV
Type: Major	**Marks:** 50
Credits: 2	**From:** A. Y. 2025-26

Name of the Course: BCAT 241 RDBMS

Course Objectives:

1) To study the concept Database
2) To understand the operators and command in RDBMS
3) To study the Joins
4) To understand the concept of PL/ SQL statement

Course Outcomes:

1) Apply normalization techniques to improve database design.
2) Use various control structures to improve programming logic.
3) Design classes and objects.
4) Use constructor and destructor.

Module	Title and Contents	Hrs
Module -1:	**Module -1: Introduction to RDBMS** **1.1** Concept of RDBMS, Difference between DBMS and RDBMS, Features of RDBMS **1.2** Terminologies: Relation, attribute, domain, Tuple, Entities, Degree, Codd's Rules **1.3** Relational Model: Structure of Relational Database, Concept of Relational Algebra **1.4** Role and Responsibilities of DBA.	**8**
Module -2:	**Module -2: Basics of SQL** **2.1** Features of SQL, Data types, Difference between various platforms for SQL **2.2** Integrity Constraints- (Primary key, foreign key, unique key, not null, default, check)) DDL, DML, DCL, TCL Commands **2.3** Select Statement with ClausesWhere, Having, Order by, Group by **2.4** SQL Operators-Arithmetic, Relational, Logical, Like, Between **2.5** Functions in SQL (Aggregate functions, String Functions)	**8**
Module -3:	**Module -3: Joins and Sub queries in SQL** **3.1** Join types - Inner Join, Outer Join, Cross Join and self-Join **3.2** Sub-queries, Multiple sub queries, nesting of sub queries **3.3** sub queries in DML commands **3.4** correlated sub queries, Create Indexes, Sequences, Views	**6**
Module -4:	**Module -4: PL/SQL control statements and stored procedures** **4.1** Introduction to PL/SQL Block Structure Control Structures-Branching statements, Iterative Control statements **4.2** Stored procedures–Creating and executing procedures with and without parameters **4.3** Cursors –Concept, TypesImplicit, Explicit, Procedure to create explicit cursors **4.4** TRIGGERS: Concept and types	**8**

Reference Books: -

1) Date, C.J. "Introduction to Database Systems". Pearson Education
2) Korth, Henry F., Silberschatz, Abraham, Sudarshan, S. "Database System Concepts". McGraw Hill.

<table>
<tr><td colspan="2">3) Rob, Peter. “Database Principles: Fundamentals of Design, Implementation and Management”. 10th Edition. Cengage Publication.
4) Deshpande, Dr. P.S. “SQL/PLSQL for Oracle 11G Black Book”. Wiley Dreamtech.
5) Kale, Pravin S. “Relational Database Management Systems.” Latest Edition: 2019.</td></tr>
<tr><td colspan="2">Evaluation Pattern:</td></tr>
<tr><td colspan="2">Total Marks: 50</td></tr>
<tr><td>Internal Continuous Evaluation (20 Marks):
• CCE – I: 10 Marks: Objective
• CCE – I: 10 Marks: Objective
• Mid Semester Exam: 20 Marks: Subjective
Note: Conversion of 40 marks of internal evaluation to 20 Marks</td><td>End Semester Examination:
• Question -1: Solve the following questions.
• (Five questions of two Marks)
• Question -2: Attempt any two questions.
• (Three questions of 10 Marks)
• Question -3: Attempt any four questions.
• (Five questions of 5 Marks)
Note: Conversion of 50 marks of ESE evaluation to 30 Marks.</td></tr>
</table>

Karmaveer Bhaurao Patil University, Satara

(A State Public University Est. u/s 3(6) of MPUA 2016)

Faculty of Science and Technology

Yashwantrao Chavan institute of science, Satara

Board of Studies in Computer Application

Programme: Computer Application	**Semester** - IV
Type : Major	**Marks:** 50
Credits : 2	**From:** A. Y. 2025-26

Name of the Course: BCAT 242 Web Development (PHP)

Course Objectives:

1) Learn basic concepts of PHP.
2) Describe the basic concepts of MYSQL and various databases used in real applications.
3) Learn the principles behind systematic database design approaches.
4) Study the database structure by applying the concepts of Entity relational model and Normalization.

Course Outcomes:

1) Understand the basics of PHP programming language and its role in web development.
2) Implement functions and arrays in PHP to solve programming problems.
3) Design web forms using HTML and process user input using PHP.
4) Execute file uploads and perform file handling operations in PHP applications.

Module	Title and Contents	Hrs
Module -1:	**Module -1: Introduction to PHP** **1.1** Introduction to PHP: Setting up a PHP development environment, Basics of web development. **1.2** PHP Syntax and Variables: PHP tags and delimiters, PHP data types and variables, Variable scope, Constants and Magic constants. **1.3** Operators and Expressions: Arithmetic, assignment, comparison and logical operators, String and array operators. **1.4** Precedence and associativity of operators, Type juggling and type casting.	**10**
Module -2:	**Module -2: Control Structures and Functions and Arrays** **2.1** Control Structures: Conditional statements: if, else, elseif, switch. **2.2** Looping statements: for, while, do-while, foreach Break and continue statements. Error handling and exceptions. **2.3** Functions and Arrays: Defining and calling functions Passing arguments to functions, returning values from functions. **2.4** Working with arrays: indexed, associative, and multidimensional arrays, Array functions and sorting.	**8**
Module -3:	**Module -3: Working with Forms and Database-MySQL** **3.1** Working with Forms and User Input: HTML forms and form elements, retrieving user input with $_GET, $_POST. **3.2** Form validation and sanitization, Handling file uploads. **3.3** Working with Database-MySQL: Introduction to databases and MySQL, connecting to a MySQL database, SQL queries: SELECT, INSERT, UPDATE, DELETE. **3.4** Prepared statements and preventing SQL injection, Retrieving and displaying data from a database.	**6**
Module -4:	**Module -4: Session Management and Cookies** **4.1** Session Management and Cookies: Understanding sessions and cookies, Creating & destroying sessions, storing session data. **4.2** Managing user authentication & authorization. **4.3** File Handling and Directory Operations: Working with files and directories, reading	**6**

	from and writing to files. **4.4** File uploads and file permissions, File and directory manipulation functions.	

Reference Books: -

1) Welling, Luke, Thomson, Laura. "PHP and MySQL Web Development".
2) Nixon, Robin. "Learning PHP, MySQL & JavaScript".
3) Lerdorf, Rasmus, Tatroe, Kevin. "Programming PHP".
4) Bayross, Ivan. "Web Enabled Commercial Application Development Using HTML, DHTML, JavaScript, Perl CGI, and PHP." Latest Edition: 2010.
5) Thareja, Reema. "Programming in PHP." Latest Edition: 2017.

Evaluation Pattern:

Total Marks:50

Internal Continuous Evaluation (20 Marks):	**End Semester Examination:**
• CCE – I: 10 Marks: Objective • CCE – I: 10 Marks: Objective • Mid Semester Exam: 20 Marks: Subjective Note: Conversion of 40 marks of internal evaluation to 20 Marks	• Question -1: Solve the following questions. • (Five questions of two Marks) • Question -2: Attempt any two questions. • (Three questions of 10 Marks) • Question -3: Attempt any four questions. • (Five questions of 5 Marks) • Note: Conversion of 50 marks of ESE evaluation to 30 Marks.

Karmaveer Bhaurao Patil University, Satara

(A State Public University Est. u/s 3(6) of MPUA 2016)

Faculty of Science and Technology

Yashwantrao Chavan institute of science, Satara

Board of Studies in Computer Application

Programme: Computer Application	**Semester** - IV
Type: Major	**Marks:** 50
Credits: 2	**From:** A. Y. 2025-26

Name of the Course: BCAP 243 Lab Course Based on BCAT 241 and BCAT 242

Course Objectives:

1) Learn Basic Programming Concepts
2) To understand the operators and command in RDBMS
3) Understand the different concepts of operations on Pointers.
4) Learn the DDL and DML Query.
5) Learn Basic Programming Concepts in php.
6) Study different basic concepts arrays in php.

Course Outcomes:

1) Understand the basic concepts of database management system.
2) Apply the concepts of object, classes and constructor.
3) Analyze a given database application scenario to use ER model for conceptual design of the database.
4) Develop skills for writing programs using 'php'.
5) Develop a Programming logic.

Module	Title and Contents	Hrs
Section I:	**List of Practical's** 1) Create the tables with appropriate constraints. 2) Perform the following: • Creating a Database Viewing all Tables in a Database • Creating Tables (With and Without Constraints) • Inserting/Updating/Deleting Records in a Table • Saving (Commit) and Undoing(rollback) 3) Perform the following: • Altering a Table • Dropping/Truncating/Renaming Tables 4) Perform the following: • Simple Queries with Aggregate functions • Queries with Aggregate functions (group by and having clause) 5) Queries in volving • Date Functions • String Functions • Math Functions 6) Creating queries on Joins 7) Creating Views and index. 8) PL-SQL block on branching statement. 9) PL-SQL block on looping statement. 10) Stored Procedures, cursors and triggers Creating stored procedure with and without parameters, creating cursor, Creating triggers	

Section II:	**List of Practical's: Web Development (PHP)** 1) Write a PHP program to swap two numbers with and without using third variable. 2) Write a PHP program to find the factorial of a number. 3) Write a PHP program to count the total number of words in a string. 4) Write a program in PHP to find the occurrence of a word in a string. 5) Write a PHP program to replace a word in a string. 6) Write a PHP program to demonstrate various functions of regular expression. 7) Write a PHP program to find area of triangle and rectangle using functions. 8) Write a PHP program to find the GCD of two numbers using user-defined functions. 9) Write a Program for finding the biggest number in an array without using any array Functions. 10) Write a Program for finding the smallest number in an array. 11) Write a PHP program to design a simple calculator. 12) Design a simple web page to generate multiplication table for a given number using PHP. 13) Design a web page that should compute one's age on a given date using PHP. 14) Write a PHP program read Student information (Roll_No, Name, Class, Contact_No, email_id) using HTML form and display this information using GET/POST method. 15) Write a PHP program to read student marks for semester subjects with other required details (prn, name, rollno, class, etc.) and display semester mark list.	

Reference Books:-

1) Date, C.J. "Introduction to Database Systems". Pearson Education
2) Korth, Henry F., Silberschatz, Abraham, Sudarshan, S. "Database System Concepts". McGraw Hill.
3) Rob, Peter. "Database Principles: Fundamentals of Design, Implementation and Management". 10th Edition. Cengage Publication.
4) Deshpande, Dr. P.S. "SQL/PLSQL for Oracle 11G Black Book". Wiley Dreamtech.
5) Bayross, Ivan. "Web Enabled Commercial Application Development Using HTML, DHTML, JavaScript, Perl CGI, and PHP." Latest Edition: 2010.

Evaluation Pattern:

Total Marks: 50

Journal, Student's Performance Viva, Project (20 Marks):	**Practical Exam Paper (30 Marks):**
• Journal 1: 10 Marks • Students Performance: 05 Marks Viva: 05 Marks	Section I: Attempt any two questions (Four questions of 10+5 Marks) Section II: Attempt any two questions (Four questions of 10+5 Marks))

Karmaveer Bhaurao Patil University, Satara

(A State Public University Est. u/s 3(6) of MPUA 2016)

Faculty of Science and Technology

Yashwantrao Chavan institute of science, Satara

Board of Studies in Computer Application

Programme: Computer Application	**Semester** - IV
Type: Minor	**Marks:** 50
Credits: 2	**From:** A. Y. 2025-26

Name of the Course: BCAT 244 Advanced Communication

Course Objectives:

1) Introduce the fundamental concepts of electronic communication systems.
2) Explain the importance and types of modulation in analog and digital communication.
3) Understand the characteristics and applications of different communication media including wired and wireless technologies.
4) Analyze the evolution and characteristics of mobile and wireless technologies (2G to 5G, Bluetooth, Wi-Fi, Zigbee, Ethernet).

Course Outcomes:

1) Explain various communication modes (simplex, duplex) and transmission types (serial, parallel).
2) Understand and justify the need for modulation in communication systems.
3) Demonstrate knowledge of digital modulation methods such as ASK, FSK, PSK, and signal modulation formats like PAM, PWM, PPM, and PCM.
4) Evaluate modern wireless technologies (2G to 5G, Wi-Fi, Bluetooth, Zigbee) and their impact on communication systems.

Module	Title and Contents	Hrs
Module -1:	**Module -1: Electronic Communication** 1.1 Types of communication: Serial, parallel, simplex, duplex 1.2 Modulation, significance, Need of modulation, 1.3 Types of modulation: Analog Modulation-Amplitude Modulation (AM), Frequency 1.4 Modulation (FM), and Phase Modulation (PM), 1.5 Digital Modulation-Amplitude Shift Keying (ASK), Frequency Shift Keying (FSK), and Phase Shift Keying (PSK)	**8**
Module -2:	**Module -2: Analog Modulation** 2.1. Amplitude Modulation: modulating signal, modulated signal, 2.2. envelope modulation detection, 2.3. over and under modulation 2.4. Frequency and phase modulation: modulating signal, modulated signal, 2.5. envelope modulation detection, over and under modulation	**8**
Module -3:	**Module -3: Digital modulation and keying Techniques** 3.1 PAM (Pulse Amplitude Modulation), 3.2 PWM (Pulse Width Modulation), 3.3 PPM (Pulse Position Modulation), 3.4 PCM (Pulse Code Modulation), 3.5 TDM, FDM, 3.6 frequency shift keying, amplitude shift keying	**8**
Module -4:	**Module -4: Communication Medium** 4.1 Twisted pair, coaxial cable, 4.2 cat 5, cat 6, 4.3 wireless communication, 4.4 2G, 3G, 4G, 5G,	**6**

	4.5 Bluetooth, Wi Fi, Zigbee, Ethernet.	

Reference Books: -

1) George Kennedy and Bernard Davis, Electronic Communications Systems, 5th edition, McGraw-Hill, 2002.
2) Herbert Taub and Donald Schilling, Principles of Communication Systems, 3rd edition, McGraw-Hill, 2007.
3) B.P. Lathi, Modern Digital and Analog Communication Systems, 4th edition, Oxford University Press, 2009.
4) Simon Haykin, Communication Systems, 5th edition, Wiley, 2009.
5) William Stallings, Data and Computer Communications, 10th edition, Pearson, 2013.

Evaluation Pattern:

Total Marks: 50

Internal Continuous Evaluation (20 Marks):	**End Semester Examination:**
• CCE – I: 10 Marks: Objective • CCE – I: 10 Marks: Objective • Mid Semester Exam: 20 Marks: Subjective Note: Conversion of 40 marks of internal evaluation to 20 Marks	• Question -1: Solve the following questions. • (Five questions of two Marks) • Question -2: Attempt any two questions. • (Three questions of 10 Marks) • Question -3: Attempt any four questions. • (Five questions of 5 Marks) Note: Conversion of 50 marks of ESE evaluation to 30 Marks.

Karmaveer Bhaurao Patil University, Satara

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Faculty of Science and Technology

Yashwantrao Chavan institute of science, Satara

Board of Studies in Computer Application

Programme: Computer Application	**Semester** - IV
Type: Minor	**Marks:** 50
Credits: 2	**From:** A. Y. 2025-26

Name of the Course: BCAT 245 Embedded System and Applications

Course Objectives:

1) Study of Comprehension with microcomputer organization and 8051 family.
2) Understand Factual and Conceptual Knowledge of 8051 microcontroller architect
3) Understand and familiarize with Instruction set and programming.
4) Study about I/O port, timer, counter and external interfaces programming

Course Outcomes:

1) Distinguish microcontrollers based on their features.
2) Identify and illustrate the architectural details of 8051 microcontroller.
3) Utilize instructions of 8051 microcontroller.
4) Design program for data transfer, delay generation, I/O operations and manipulation, arithmetic and logic operations, interfacing of LED, relay.

Module	Title and Contents	Hrs
Module -1:	**Module -1: Introduction to Microcontrollers** 1.1 Introduction: Features, Advantages and Applications, 1.2 Difference between Microprocessor and Microcontroller, 1.3 Architecture of 8051 Microcontroller, 1.4 Pin Configuration and Functional Details of 8051, Reset and clock circuit, 1.5 Introduction to modern microcontrollers PIC (PIC16 / PIC18 / PIC32 (Microchip)), AVR, ARM	**7**
Module -2:	**Module -2: Instruction set** 2.1 Instructions, 2.2 addressing modes (Immediate, Register, Direct, Indirect) 2.3 Instruction set (Data transfer, Arithmetic, Logic, Branching), 2.4 Stack and stack pointer, 2.5Memory organization of 8051 (internal/external memory)	**8**
Module -3:	**Module -3: Facilities in 8051** 3.1 Special Function Registers (SFRs), 3.2 PSW register, 3.3 Time delay generation using registers, 3.4 Timer/Counter operation and modes (TMOD, TCON), 3.5 Serial ports, time delay generation using timers	**8**
Module -4:	**Module -4: Interfacing of Microcontroller** 4.1 Interfacing LED, Interfacing LCD, 4.2 Interfacing Keyboard, Interfacing Relay, 4.3 Interfacing Optocoupler, 4.4 Case studies on 7 segment display, thumbwheel switch,	**8**

Reference Books: -

1) Ayala, Kenneth. “The 8051 Microcontroller”. 3rd Edition. CENGAGE Learning, 2005
2) Mazidi, M.A., Mazidi, J.G., McKinlay, R.D. “The 8051 Microcontroller and Embedded Systems Using Assembly and C”. 2nd Edition. Pearson Education India, 2007

<table>
<tr><td colspan="2">3) Gaonkar, Ramesh S. “Microprocessor Architecture, Programming and Applications with 8085”. 6th Edition. Wiley Eastern Limited, 2013.
4) Deshmukh, Ajay V. “Microcontrollers (Theory and Applications)”. Tata McGraw Hill, 2005.
5) Padmanabhan, T.R., Ananthi, T. “Introduction to Microcontrollers and Embedded Systems.” Latest Edition: 2013.</td></tr>
<tr><td colspan="2">Evaluation Pattern:</td></tr>
<tr><td colspan="2">Total Marks: 50</td></tr>
<tr><td>Internal Continuous Evaluation (20 Marks):
• CCE – I: 10 Marks: Objective
• CCE – I: 10 Marks: Objective
• Mid Semester Exam: 20 Marks: Subjective
Note: Conversion of 40 marks of internal evaluation to 20 Marks</td><td>End Semester Examination:
• Question -1: Solve the following questions.
• (Five questions of two Marks)
• Question -2: Attempt any two questions.
• (Three questions of 10 Marks)
• Question -3: Attempt any four questions.
• (Five questions of 5 Marks)
Note: Conversion of 50 marks of ESE evaluation to 30 Marks.</td></tr>
</table>

Karmaveer Bhaurao Patil University, Satara

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Faculty of Science and Technology

Yashwantrao Chavan institute of science, Satara

Board of Studies in Computer Application

Programme: Computer Application	**Semester** - IV
Type: Minor Practical	**Marks:** 50
Credits: 2	**From:** A. Y. 2025-26

Name of the Course: BCAT 246 Lab Course Based on BCAT 244 & BCAT 245

Course Objectives:

1) Understand Assembly Programming Fundamentals.
2) Comprehensive knowledge of the 8051-microcontroller architecture.
3) Learn to execute and analyze arithmetic and Logical Operations.
4) Understand the Working Principles of Sensors and Transducers.
5) Implement Signal Conditioning Techniques.

Course Outcomes:

1) Apply Assembly Language Concepts.
2) Demonstrate Microcontroller Programming Skills.
3) Implement Arithmetic and Logical Operations.
4) Design and Implement Embedded System Applications.
5) demonstrate the network's ability to transmit sensor data over long distances.

Module	Title and Contents	Hrs
Section I:	**List of Practical's: Electronic Communication for computing** 1) Amplitude Modulation (AM) using Transistor Circuit 2) Demodulation of AM Signal using Diode Detector 3) Frequency Modulation (FM) using IC 566 or Function Generator 4) Study of Serial and Parallel Communication 5) Simplex, Half-Duplex, and Full-Duplex Communication 6) Study of Communication Cables (Compare twisted pair, coaxial, Cat 5, and Cat 6 cables) 7) IR Transmitter and Receiver for Wireless Communication 8) Simple Audio Amplifier for Signal Transmission using LM386 9) Simple ASK (Amplitude Shift Keying) Modulation and Demodulation using 555 Timer 10) IR Transmitter and Receiver for Wireless Communication	
Section II:	**List of Practical's: Embedded System and Applications** 1) LED Blinking 2) Logical Shifting of Port Data 3) Addition and subtraction operation using 8051 Microcontroller 4) Multiplication and division operation using 8051 Microcontroller 5) Study the architecture of 8051 microcontroller 6) Study of Addressing Modes 7) Time delay generation using timers 8051 8) Interfacing of LCD using 8051 microcontrollers 9) Interfacing of LED using 8051 microcontrollers 10) Explore the use of timers as counters in 8051.	

Reference Books: -

1) Microcontrollers (Theory and Applications), Ajay V. Deshmukh, Tata McGraw Hill, 2005 Microprocessor Architecture Programming & applications with 8085, 2002, R.S. Goankar, Prentice Hall.
2) Embedded Systems: Architecture, Programming & Design, Raj Kamal, 2008, Tata McGraw Hill.
3) The 8051 Microcontroller and Embedded Systems Using Assembly and C, M.A.
4) B.P. Lathi, Modern Digital and Analog Communication Systems, 4th edition, Oxford University Press, 2009.
5) Simon Haykin, Communication Systems, 5th edition, Wiley, 2009.

Evaluation Pattern:

Total Marks: 100 / 50

Journal, Student's Performance Viva, Project (20 Marks):	**Practical Exam Paper (30 Marks):**
• Journal 1: 10 Marks • Students Performance: 05 Marks Viva: 05 Marks	Section I: Attempt any two questions (Four questions of 10+5 Marks) Section II: Attempt any two questions (Four questions of 10+5 Marks)

Karmaveer Bhaurao Patil University, Satara

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Faculty of Science and Technology

Yashwantrao Chavan institute of science, Satara

Board of Studies in Computer Application

Programme: Computer Application	**Semester** - IV
Type: VSC	**Marks:** 50
Credits: 2	**From:** A. Y. 2025-26

Name of the Course: BCAPVSC-2 Web Content Management: Joomla

Course Objectives:

1) To make students familiar with Joomla.
2) Understand concepts of design and developing a website.
3) Gain knowledge of plugins.
4) To know information of Joomla themes.

Course Outcomes:

1) Understand different CMS platforms and its applications.
2) Apply themes and customize design for the websites using WordPress.
3) Understand the essential concepts of Joomla and its features.
4) Develop and manage a web site using Joomla Modules and Templates.

Module	Title and Contents	Hrs
Section I:	**List of Practical's:** 1) Install Joomla on a local server (XAMPP/WAMP) or a web hosting server. 2) Configure basic settings and customize the global configuration options. 3) Create different categories and articles and assign them to appropriate categories. 4) Upload, organize, and use media files (images, videos) within Joomla's Media Manager. 5) Create a main navigation menu with menu items linking to articles, categories, or external links. 6) Install and configure a plugin, module, and component. 7) Add new users, assign roles, and set permissions. 8) Install a Joomla template and modify its layout and styling. 9) Create a "Contact Us" page using the default contact form. 10) Add and position modules (e.g., search, latest articles, or custom HTML). 11) Enable multilingual support and create translated versions of articles. 12) Configure SEO-friendly URLs and metadata for articles and categories. 13) Set up a blog section with article publishing, tags, and commenting. 14) Install and configure a popular extension (e.g., JEvents or VirtueMart). 15) Use a backup tool (e.g., Akeeba Backup) to create a backup and restore the site.	

Reference Books: -

1) Williams, Dr. Andy. "WordPress for Beginners 2020: A Visual Step-by-Step Guide to Mastering WordPress".
2) Sabin-Wilson, Lisa. "WordPress All-in-One for Dummies".
3) Williams, Brad, Damstra, David, Stern, Ham. "Professional WordPress Design and Development".
4) Severdia, Ron, Gress, Jennifer. "Using Joomla!".
5) Pearson Education. "The Official Joomla! Book".

Evaluation Pattern:

Total Marks: 50

Journal, Student's Performance Viva, Project (20 Marks): • Journal 1: 10 Marks • Students Performance: 05 Marks • Viva: 05 Marks	**Practical Exam Paper (30 Marks):** Section I: Attempt any three questions • (Five questions of 10 Marks)

Karmaveer Bhaurao Patil University, Satara

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Faculty of Science and Technology

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Board of Studies in Computer Application

Programme: Computer Application	**Semester** - IV
Type: SEP	**Marks:** 50
Credits: 2	**From:** A. Y. 2025-26

Name of the Course: BCAPSEC 1 Ethical Security

Course Objectives:

1) To make students familiar with ethical hacking.
2) Understand concepts of hacking Techniques.
3) Gain knowledge of malware.
4) To know information of Penetration Testing.

Course Outcomes:

1) Define ethical hacking and explain their characteristics.
2) Explain use of penetration, Footprinting.
3) Demonstrate ability to use System Hacking Concepts.
4) Formulate different SQL injection and virus concepts. Define use of cryptography and explain their characteristics.

Module	Title and Contents	Hrs
Section I:	**List of Practical's:** 1) Introduction of footprinting 2) Performing footprinting using google hacking 3) To trace any received email 4) To fetch DNS information 5) Port scanning, Network scanning 6) Ids (intrusion detection systems) tool 7) Using cryptool to encrypt and decrypt password using rc4 algorithm. 8) Use cain and abel for cracking windows account password using dictionary attack and to decode wireless network passwords. 9) Using traceroute, ping, ifconfig, netstat command 10) Creating a virus, creating a trojan, Creating the dns payload 11) File inclusion attack simulation using dvwa, lamp stack in Debian 12) Disguise as google bot to view hidden content of a website 13) Kaspersky lifetime validity 14) SQL injection 15) SQL injection for website hacking.	

Reference Books: -

1) Matthew Hickey, Jennifer Arcuri, "Hands on Hacking: Become an Expert at Next Gen Penetration Testing and Purple Teaming", Published by Wiley (4 September 2020).

2) Dr. Allen Harper, "GREY HAT HACKING: THE ETHICAL HACKERS HANDBOOK", Published by McGraw Hill (1 November 2020)

3) Thirumalesh, "The Complete Ethical Hacking Book: A Comprehensive Beginner's Guide to Learn and Master in Ethical Hacking Paperback", Published by OrangeBooks Publication (9 September 2022).

4) Jon Erickson, "Hacking: The Art of Exploitation, 2nd Ed", Published by No Starch Press, US (1 February 2008).

5) Allen, Patrick Engebretson. "The Basics of Hacking and Penetration Testing." Latest Edition: 2016 (2nd Edition).

Evaluation Pattern:	
Total Marks: 50	
Journal, Student's Performance Viva, Project (20 Marks): • Journal 1: 10 Marks • Students Performance: 05 Marks Viva: 05 Marks	**Practical Exam Paper (30 Marks):** Section I: Attempt any three questions (Five questions of 10 Marks)