SHIVAJI UNIVERSITY, KOLHAPUR - 416004,
MAHARASHTRA
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शिवाजी विद्यापीठ, कोल्हापूर - ४१६००४,महाराष्ट्र
दूरध्वनी - ईपीएबीएक्स - २६०९०००, अभ्यासमंडळे विभाग दुरध्वनी विभाग ०२३१—२६०९०९३/९४

Estd. 1962
"A++" Accredited by NAAC(2021)
With CGPA 3.52

Ref../SU/BOS/Com & Mgmt./ 540 **Date : 19/07/2023**

To,

The Principal
All Affiliated (Commerce & Management) Colleges/Institutions,
Shivaji University, Kolhapur

Subject : Regarding Syllabi of BCA Part-II (Sem-III/IV) Choice Based Credit System (CBCS) degree programme under the Faculty of Commerce & Management as per National Education Policy, 2020

Sir/Madam,

With reference to the subject mentioned above, I am directed to inform you that the university authorities have accepted and granted approval to the revised syllabi of **BCA Part-II (Sem-III/IV) Choice Based Credit System (CBCS)** under the Faculty of Commerce & Management as per National Education Policy, 2020

This syllabi shall be implemented from the academic **year 2023-2024** onwards. A soft copy containing the syllabus is attached herewith and it is also available on university website www.unishivaji.ac.in (Student - Online Syllabus).

You are therefore, requested to bring this to the notice of all students and teachers concerned.

Thanking you,

Yours faithfully,

(Dr. S. M. Kubal)
Dy. Registrar

Encl : As above

Copy to,

1. Dean, Faculty of Commerce & Management
2. Chairman, Board of Studies

} for information

3. Director, BOEE
4. Appointment Section
5. P. G. Admission Section
6. B.Com and O. E. 1 Section
7. Affiliation Section (U.G./P.G.)
8. Computer Center/I.T.
9. Eligibility Section
10. Distance Education
11. P.G. Seminer Section

} for information and necessary action.

SHIVAJI UNIVERSITY KOLHAPUR

Estd. 1962,

NAAC "A" Grade

Faculty of Commerce and Management

Syllabus for

BCA Part II (CBCS) Sem-III & IV

(Regulations in accordance with National Education Policy to be implemented from Academic Year 2023-24)

(Subject to the modifications that will be made from time to time)

Syllabus of BCA-II (Sem.- III & IV)

BCA-II(Sem.-III)

Course Code	Title of Paper	Credit	Internal	External	Total
CC 301	RDBMS	4	20	80	100
CC 302	Computer Network and Internet	4	20	80	100
CC 303	Data Structure using C	4	20	80	100
AEC 304	Elements of Statistics	4	20	80	100
AEC305	Human Resource Management and Materials Management	4	20	80	100
CCL 306	Lab Course-V Based on CC301	2	-	50	50
CCL 307	Lab Course VI based on CC303	2	-	50	50
SECSB308	Skill Development III	2	50		50
AECC-EVS	Environmental Studies				
		26	150	500	650

BCA-II (Sem.-IV)

Course Code	Title of Paper	Credit	Internal	External	Total
CC 401	Object Oriented Programming Using C++	4	20	80	100
CC 402	Software Engineering	4	20	80	100
CC 403	PHP	4	20	80	100
AEC 404	Entrepreneurship Development	4	20	80	100
AEC 405	ERP	4	20	80	100
CCL 406	Lab Course-VII Based on CC401	2	-	50	50
CCL 407	Lab Course-VIII Based on CC403	2	-	50	50
AEC 408	Mini Project	2		50	50
SECSB409	Environmental Studies	4	20	80	100
Total		30	120	630	750

BCA-II(Sem.-III)

CourseCode: CC301	RDBMS	Credits:04	Marks:100
Course Outcomes	After completion of this course student should be able to- 1. Describe the fundamental elements of Relational Database Management Systems. 2. Explain various commands, sub queries & joins in SQL with example. 3. Enhance programming skills and techniques using PL/SQL 4. To solve database problems using PL/SQL by using Cursors and Triggers.		

Unit No.	Descriptions	No .of Periods
I	**Introduction to RDBMS** • Concept of RDBMS • Difference between DBMS and RDBMS , Features of RDBMS • Terminologies: Relation, attribute, domain, Tuple, Entities, Degree , Codd's Rules • Relational Model: Structure of Relational Database • Concept of Relational Algebra • Role and Responsibilities of DBA	**15**
II	**Basics of SQL** • Features of SQL, Data types • Difference between various platforms for SQL • Integrity Constraints-(Primary key, Foreign key, unique key, not null, default, check) • DDL,DML,DCL,TCL Commands • Select Statement with Clauses-Where , Having, Orderby, Group by • SQL Operators-Arithmetic, Relational, Logical, Like, Between, IN operator • Functions in SQL o Aggregate functions(avg, count, min, max, sum) o String Functions(concat, instr, mid, length, strcmp, trim, ltrim, rtrim) o Math Functions (abs,ceil,floor, mod, pow,sqrt) o Date and Time Functions (adddate, datediff,day,month, year,hour,min,sec)	**15**
III	**Joins And Sub queries in SQL** • Join types - Inner Join, Outer Join, Cross Join and self-Join • Sub-queries, Multiple sub queries, nesting of sub queries, sub queries in DML commands ,correlated sub queries • Create Indexes, Sequences • **Views**(creating, altering dropping, renaming and manipulating views)	**15**

IV	**PL/SQL control statements and stored procedures** • Introduction to PL/SQL Block Structure • Control Structures-Branching statements, Iterative Control statements. • Stored procedures–Creating and executing procedures with and without parameters. • Cursors –Concept, Types- Implicit, Explicit, Procedure to create explicit cursors • TRIGGERS: Concept and types.	**15**
	Books Recommended: 1. Introduction to Database Systems C.J. Date Pearsons Education 2. Database System Concept Korth, Silberschatz and Sudarshan MGH 3. Database Principles: Fundamentals of Design, Implementation and Management by Rob Edition- 10 Cengage Publication 4. SQL/PLSQL For Oracle 11G Black Book Dr. Deshpande Wiley Dreamtech 5. ORACLEPL/SQLProgrammingScottUlmanTMH9th 6. SQL,PL/SQL the programming language of Oracle Ivan Bayross BPB 4th Edition 7. Fundamentals of Database Systems Elmasri Navathe Pearson Education	

Course code: CC 302	**Computer Network and Internet**	**Credit :04**	**Marks:100**
Course Outcomes	After completion of this course student should be able to 1. Understand the concept of computer network. 2. Identify different components required to build different networks. 3. Recognize the functions of network layers and different protocols. 4. Discuss the important features of the Internet and Web.		
UNIT No.	Description		No. of Periods
Unit-I	**Introduction to Computer Network:** Definition of a Computer Network, concept of Network, Components of a computer network, use of computer networks. Simplex, Half duplex & Full duplex. Components of computer networks-files server, workstation. Network devices-hub, repeater, bridge, router, gateway. Classification of computer network- geographical spread (LAN,WAN, MAN).		15
Unit-II	**Data Transmission & Topologies:** Data transmission-serial and parallel transmission. Data communication-analog and digital transmission. Transmission Medias- I) Guided media - twisted pair, coaxial cable, optical fibers. II) Unguided media-radio waves, microwaves, infrared. Topologies- bus, star, ring, mesh, tree.		15
Unit-III	**OSI Model and TCP/IP:** Introduction- Concept of Error detection & control code. Flow control- Stop and Wait protocol, sliding window protocol. Routing & Routing algorithms-shortest path, flooding. Switching techniques- circuit, packet & message switching, Connection oriented and connectionless services. OSI Model-Introduction, Working and Functions of – Physical layer, Data Link Layer, Network Layer, Transport Layer, Session Layer, Presentation Layer, Application Layer. TCP/IP Model-Introduction, Working and Functions of – Process/Application layer, Host to Host/Transport layer, Internet layer, Network access/Link layer.		15
Unit-IV	**Internet and Web:** Introduction to internet, Evolution of Internet, Difference in Internet, Intranet & Extranet. Domain Name System (DNS). Web browsers & its features, Search engines, Netiquette, Introduction to Web 3.0, Advantages of Web 3.0. Internet security threats and security solutions.		15
Reference Books:	1. Computer Networks Andrew Tanenbaum, Pearson Education 2. Computer Networks Fundamentals and applications, R S Rajesh, K S Easwarakumar, R Balasubramanian, VIKAS Publishing House Pvt. Ltd. 3. Data Communication and Networks, James Irvin, David Harle Wiley 4. Computer Networks protocols, Standards and Interface Black C. Prentice Hall of India 5. Computer Communication Networks William Stalling Prentice Hall of India 6. Computer NetworksEdition-01by Dave Cengage Publication		

Courseco de:CC303	DataStructureusingC	Credit:04	Marks:100
CourseOu tcomes	Aftercompletionofthiscoursestudentshouldbeableto- 1. Useandimplementappropriatedatastructureforthe requiredproblemsusingaprogramming languagesuch asC. 2. Understandvarioussearching&sortingtechniques. 3. ImplementingvariousdatastructuresStacks,Queues 4. ImplementationofLinkedListsandTrees.		
UNITNo.	**Descriptio n**		**No.of Periods**
I	**Introductiontodatastructures** • IntroductiontoDataStructures • DataandInformation • Datastructuresanditstypes • Datastructuresoperations		15
II	**SortingandSearchingMethods** • IntroductiontoSortingandsearching. • BubbleSort • Insertionsort • Selectionsort • Mergesort • Linearsearch • Binarysearchandhashingconcept		15
III	**StacksandQueues** • ConceptofAbstractDatatypes • Introductiontostack • PrimitiveStackoperations:Push&Pop • ArrayandLinkedImplementationofStackinC • Applicationofstack:PrefixandPostfix • Expressions,Evaluationofpostfixexpression • Definitionofqueue. • Operationsonqueue. • Typesofqueue-Linear,Circular. • Applicationsofqueue		15
IV	**LinkedLists** • Introductiontolinkedlists • ImplementationofLinkedlist • Operationsonlinear linked list, • Circularlinkedlist, • doubly linkedlist • Sequentialandlinkedlists		15
	ReferenceBooks: 1. DataStructureThroughC-ByDr.Sahani.		

	2. DataStructuresUsingCYashwantKanitkar–BPBPublication 3. IntroductiontoDataStructuresusingC-AshokKamthane 4. DataStructuresusingC-Bandopadhyay&Dey(Pearson) 5. DataStructuresusingC-BySrivastavaBPBPublication. 6. DataStructureusingCbyA.M.Tanenbaum,Yecidyanlang 7. Data Structures: A Pseudocode Approach with C by Gilberg Edition-02 Cengage Publication 8. Computer Science: A Structured Programming Approach Using C by Forouzan Edition-03 Cengage Publication	

Course code: AEC304	**Elements of Statistics**	**Credits :04**	**Marks:100**
Course Outcomes	After completion of this course student should be able to 1) Represent the data in pictorial and graphical form. 2) Describe and understand the data with the help of various measures of data. 3) Analyze bivariate data 4) Understand the concept of probability and probability distributions.		
Unit No.	**Descriptions**		**No. of Periods**
I	**Introduction to Statistics** 1.1. Meaning of Statistics 1.2. Primary and Secondary data, Qualitative and quantitative data, Discrete and continuous data, frequency, cumulative frequency, frequency distribution 1.3 Representation of data by graphs: Histogram, frequency polygon, frequency curve, Ogive curve. Representation of Statistical data by diagram: Bar diagram and Pie chart.		15
II	**Descriptive Statistics** 2.1 Measures of central Tendency: Meaning of averages, Requirements of good average. Arithmetic mean (A.M.), Combined mean, Median, Quartiles, Mode, Relation between mean, median and mode. Merits and Demerits of Mean, Median and Mode, determination of Median and Mode by Graph. 2.2 Measures of Dispersion: Meaning of dispersion, Absolute and Relative measures of dispersion .Q.D, M.D, S.D. Variance and Combined variance, Coefficient of Variation (C.V.)		15
III	**Analysis of Bivariate data** 3.1 Correlation: Concept of Correlation, Types of correlation, Scattered diagram, Karl Pearson's Correlation Coefficient (r) and Spearman's Rank Correlation Coefficient (R), 3.2 Regression: Concept of Regression, regression coefficients and regression lines. Properties of regression coefficients (Statements only)		15
IV	**Probability** 4.1 Probability, addition law, multiplication law 4.2 Bayes' theorem		15
	Books Recommended: 1) Mathematical Statistics by H.C. Saxena and J. N. Kapur 2) Business Statistics by G. V. Kumbhojkar 3) Fundamentals of Statistics by S. C. Gupta 4) Business Statistics by S. S. Desai		
Note	1. The scope of the syllabus is limited to theory and numerical examples. Proofs of the properties are not expected. 2. Only non-programmablecalculator is allowed for internal and external examinations.		

Course code: AEC305	Human Resource Management and Materials Management	Credit :04	Marks:100

Course Outcomes	After completion of this course student should be able to :- 1. Understand HR Management and planning. 2. Describe process of Appraisal/training and Development. 3.Recognize Integrated approach to Material Management and computer applications in Material Management. 4. Demonstrate 5 R in purchasing and Inventory control techniques.	
UNIT No.	**Description**	**No. of Periods**
I	**Human Resource Management**:: Definitions, Objectives, Scope Functions, and Activities of HRM. Human Resources Planning: Definition and objectives of Human Resource planning, HRP process, Concept of Recruitment and Selection -Recruitment policy-Sources of Recruitment-Selection procedure – Promotion and demotion policy- Transfer policy.	**15**
II	**Performance Appraisal, Training and Development, Wage and salary Administration:** Performance Appraisal- Concept and objectives of performance Appraisal,Process of Performance Appraisal and methods Training and Development:- Meaning and Definition- Need-ObjectivesImportance of Training-Training Methods Wage and Salary Administration- Methods of wage payments, factors determining the level of Employee Remuneration , Profit sharingFringe Benefits and welfare incentives.	**15**
III	**Introduction to Material Management:** Definition, Objectives, Importance of Material Management. Functions of Material Management, Integrated approach to Material Management, Challenges in Material Management, Future of Material Management in India and Role of Computer in Material Management.	**15**
IV	**Purchasing & Inventory Management:** Purchasing-Definition, Objectives, Purchasing as a profit centre, 5R in purchasing, Purchasing cycle. Inventory Management-Definition, types of inventory, inventory costs, need of inventory.EOQ, Basic EOQ model. Vendor Managed Inventory, Selective Inventory control techniques.	**15**
	Reference Books: 1) Human Resource Management - Text &Cases by Dr.S.S.Khanka. 2) Personnel & Human Resource Management - Text &Case by P.Subba Rao, S.Chand Publishing . 3) Human Resource Management by Garry Desslar, Pearson Education Asia. 4) Purchasing and Materials Management by P. Gopalakrishnan 5) Materials and Logistics Management by K.Shridhara Bhat ,Himalaya Publishing House 6) Materials Management-Procedure,Text& Case-Prentice Hall India-A.K Dutta	

CourseCode:CCL306	LabCourseV BasedCC301	Credits:02	Marks:50
CourseOutcomes	Aftercompletionofthiscoursestudentshouldbeableto- 1. Designdatabaseforbusinessapplications and Useofqueries 2. Apply advanced SQL features and Analyze PL/SQL structures		
Sr.No.	**ListofPractical's:**		
1	Createthetableswithappropriateconstraints.		
2	Performthefollowing: ➢ Viewingallexistingdatabases ➢ CreatingaDatabase ➢ ViewingallTablesinaDatabase ➢ CreatingTables(WithandWithoutConstraints) ➢ Inserting/Updating/DeletingRecordsinaTable ➢ Saving(Commit)andUndoing(rollback)		
3	Performthefollowing: ➢ AlteringaTable ➢ Dropping/Truncating/RenamingTables ➢ Grantingandrevokingpermissions		
4	Performthefollowing: ➢ SimpleQueries ➢ SimpleQuerieswithAggregatefunctions ➢ QuerieswithAggregatefunctions(groupbyandhavingclause)		
5	Queriesinvolving ➢ DateFunctions ➢ StringFunctions ➢ MathFunctions		
6	Creating queries on Joins Creating Sub Queries		
7	Creating Views and index		
8	PL-SQL block on branching statement.		
9	PL-SQL block on looping statement.		
10	StoredProcedures,cursorsandtriggers ➢ Creatingstoredprocedurewithandwithoutparameters ➢ Creatingcursor ➢ Creatingtriggers		

CourseCode:CCL307	LabCourseVIbasedonCC303	Credit:02	Marks:50
CourseOutcomes	Aftercompletionofthiscoursestudentshouldbeableto- 1. Implementvariousdatastructures Like Stacks,Queues,LinkedLists. 2. Applying various searching techniques using data structure		
Sr. No.	**List of Practical's**		
1	Writeaprogramtoimplementstackusingstaticmethod.		
2	Programstoimplementapplicationsofstack.		
3	WriteaprogramtoimplementQueueusingstaticmethod.		
4	Programstoimplementapplicationsofqueue.		
5	Writeaprogramtocreatelinkedlist,addnodetolinkedlistandRemovenodefromlinkedlist.		
6	Writeaprogramtoimplementtypesoflinkedlist.		
7	Writeaprogramtoimplementstackandqueuedynamically.		
8	Writeaprogramtosortgivenelementsusingbubblesort,insertionsort,selectionsort		
9	WriteaprogramtosearchgivenelementusingLinearSearch.		
10	WriteaprogramtosearchgivenelementusingBinarySearch.		

Course code: SECSB308	Skill Development III	Credit :02	Marks:50
Course Outcomes	After completion of this course students will be able to : 1. Enhance Self Understanding 2. Understand Business Etiquette and Manners		
UNIT No.	**Description**		**No. of Periods**
I	Understanding self and others through Johari Window. Goal Setting- How to set Goals: Short term goal and Long term goal; Attitude Formation: Significance of Attitude, Factors affecting Attitude and How to build a Positive Attitude		**15**
II	Etiquette and Manners----Different Etiquette and Manners in Business. Grooming-Dressing, Postures, Gestures		**15**
	Reference Books: 1. Understanding the self –Richard Stever-Sage Publication Ltd 2. An introduction to Johari Window Prof Dinesh H Soni 3. The Power of A Positive Attitutde-Roger Fritz –Finger Print Publishing Business 4. Etiquiette-Shital Kakkar Mehra –Harper Business 5. Body Language-Allan Pease-Manjul Publishing House.		

BCA-II (Sem.-IV)

Course Code: CC 401	Object Oriented Programming Using C++	Credits: 04	Marks : 100
Course Outcomes	**After completion of this course students will able to-** 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.		
Unit No.	**Descriptions**		**No. of Periods**
1	**INTRODUCTION TO OOP** • Difference between POP & OOP • Structure of C++ Program • Basic Concepts of OOP – Objects, Classes, Data Abstraction and Data Encapsulation, Inheritance, Polymorphism, Dynamic Binding, Message Passing • Benefits & Features of OOP • Data types, Keywords and Operators • Control Structure – Conditional and Looping		15
2	**OBJECT, CLASSES & CONSTRUCTOR** • Class Definition, Function Definition and Declaration • Arguments to a Function - Passing Arguments to a Function, Default Arguments • Calling Functions, Inline Functions • Scope Rules of Functions and Variables • Member Function Definition – Inside class and Outside the class using scope Resolution Operator • Accessing Members from Object(S) • Static Class Members - Static Data Member, Static Member Function • Friend Function and Friend Classes • Declaration and Definition of a Constructor & Destructor		15
3	**INHERITANCE** • Concept of Inheritance • Base Class & Derived Class • Types of Inheritance – Single, Multiple, Hierarchical, Multilevel, Hybrid Inheritance • Dynamic Memory Allocation / Deallocation using New and Delete Operator		15
4	**POLYMORPHISM** • Concept of Polymorphism • Static Polymorphism and Dynamic (Compile time) Polymorphism • this pointer • Pointers to Derived Classes • Virtual Functions • Pure Virtual Function		15
Books Recommended:	1) The C++ Programming Language, 4th Edition by Bjarne Stroustrup 2) Object Oriented Programming with C++ by E. Balagurusamy 3) Let Us C++ by Yashavant P. Kanetkar 4) C++: The Complete Reference by Herbert Schildt 5) Unified Object-Oriented Modelling, Analysis & Design by SahaEdition-01 Cengage Publication		

Course code: CC 402	Software Engineering	Credit :04	Marks:100

Course Outcomes	After completion of this course student should be able to- 1. Understand life cycle models, requirement elicitation techniques, understand the concept of analysis and design of software. 2. Develop SRS document. 3. Use of analysis and design tools for system development. 4. Apply software engineering concepts in software development to develop quality software.

UNIT No.	Description	No. of Periods
I	**Introduction System , Analysis and System Design tools:** Definition, elements, characteristics of system Types of system.System Development life Cycle, Data Flow Diagrams (DFD), Data Dictionary, Entity-Relationship Diagrams. Decision Tree and Decision Table. Input and Output Design- I/O design considerations, Structured Chart, HIPO chart, Characteristics of Good Design.	15
II	**Introduction to Software Engineering:** Definition of Software Engineering, importance, principles of software engineering, Difference between software engineering and software programming, Members involved in software development. **Software process models:** Overview of software models (Waterfall, Prototyping and Spiral model).	15
III	**Requirement Engineering:** What is Requirement Engineering, Types of requirements, Requirement elicitation techniques, Principles of Requirement Specification, Software Requirement Specification document, Characteristics of good SRS. CASE STUDY– Library Management ,Payroll management System	15
IV	**Software Testing and Software Quality Assurance:** **Software Testing:** Definition, Test characteristics, Types of testing: Black-Box Testing , White-Box Testing ,Unit testing , Integration testing, Validation testing, System testing. **Software Quality Assurance:** Introduction toQuality, and its attributes, quality control, quality assurance, cost of quality, SQA activities, SQA plan.	15

	References (Books, Websites etc): 1. Software Engineering a Practitioners Approach by S. Pressman & Roger, Seventh Edition, McGraw Hill International Edition. 2. Software Engineering by Sommerville, , 7th edition, Pearson Publication 3. Software Engineering by K.K. Aggarwal & Yogesh Singh, New Age International Publishers. 4. Software Engineering: Concepts and Practices by Suman edition-02 Cengage Publication 5. Web sites of NPTEL / Swayam 6. www. edx.com	

Course Code: CC403	**PHP**	**Credits: 4**	**Marks:100**
Course Outcomes	After completion of this course students will be able to – 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.		
Unit No.	**Description**		**No. of Periods**
I	**Introduction to PHP:** Setting up a PHP development environment, Basics of web development **PHP Syntax and Variables:** PHP tags and delimiters, PHP data types and variables, Variable scope, Constants and Magic constants **Operators and Expressions:** Arithmetic, assignment, comparison and logical operators, String and array operators, Precedence and associativity of operators, Type juggling and type casting,		15
II	**Control Structures:** Conditional statements: if, else, elseif, switch, Looping statements: for, while, do-while, foreach Break and continue statements. Error handling and exceptions **Functions and Arrays:** Defining and calling functions Passing arguments to functions, Returning values from functions, Working with arrays: indexed, associative, and multidimensional arrays, Array functions and sorting		15
III	**Working with Forms and User Input:** HTML forms and form elements, Retrieving user input with $_GET and $_POST, Form validation and sanitization, Handling file uploads **Working with Database-MySQL:**		15

	Introduction to databases and MySQL, Connecting to a MySQL database, SQL queries: SELECT, INSERT, UPDATE, DELETE, Prepared statements and preventing SQL injection, Retrieving and displaying data from a database	
IV	**Session Management and Cookies:** Understanding sessions and cookies, Creating and destroying sessions, Storing session data, Managing user authentication and authorization **File Handling and Directory Operations** Working with files and directories, Reading from and writing to files, File uploads and file permissions, File and directory manipulation functions	15

References Books:

1. "PHP and MySQL Web Development" by Luke Welling and Laura Thomson
2. "Learning PHP, MySQL & JavaScript" by Robin Nixon
3. "Programming PHP" by RasmusLerdorf, Kevin Tatroe

Course code: AEC 404	Entrepreneurship Development	Credit :04	Marks:100
Course Outcomes	After completion of this course student should be able to 1. Define characteristics, function and types of entrepreneurs and know the role of Entrepreneurship in Economic Development. They should know the importance of women entrepreneurs. 2. Identify Business Opportunities and prepare business plan 3. Know project finance agencies. 4. Understand New Opportunities and Challenges in digital entrepreneurship		
UNIT No.	**Description**		**No. of Periods**
I	**Introduction to Entrepreneurship:** Evolution, Concept and definition of an entrepreneur, Characteristics,functions and types of entrepreneurs, Qualities of an Entrepreneur, Growth of Entrepreneurship in India, Role of Entrepreneurship in Economic Development, Entrepreneurship development process, Women Entrepreneurship in India, problems faced by women entrepreneurs.		15
II	**Business Opportunity Identification**: Search for Business Ideas, Market Assessment, Sources of Information and EnvironmentalAnalysis,Feasibility analysis- Market, Technical, finance, economic and social Entrepreneurial opportunities in India, Business Opportunity identification and selection.		15
III	**Business Plan Preparation and Project Finance** Meaning of Business plan, Significance and Contents of a Business Plan, developing Business Plan, Presenting Business Plan. Preparation of project report, project life cycle, Project Finance: Introduction, Types of Finance – equity finance, Debt finance, Sources of Finance,Venture Capital, Start-up and Make-in-India program, MUDRA Support Agencies: Support to Entrepreneurs by DIC, SIDBI, SIDCO. Entrepreneurship promotionby Government through various schemes.		15

IV	**Digital Entrepreneurship**: Meaning and Introduction, NewOpportunities and Challenges. Choosing a Digital BusinessIdea, importance of digital marketing for entrepreneurs Creating a Digital Business Design. Digital Business Model. Digital business platforms. DifferentElectronic interface to consumers. Components of business website. IT Entrepreneurs: Azim Premji, N.R. Narayan Murthy, Shiv Nadar, Mark Zuckerberg, Steve Jobs	15
	References Books: 1) Entrepreneurship Development (1st Edition 2021) - AbhaMathur - Taxmanns 2) Entrepreneurial Development - DrC.B.Gupta&Dr. N. P. Srinivasan (Jan 2020) - Sultanchand and sons 3).Dr.DilipSarwate, Entrepreneurship Development and Project Management, Everest Publishing house 4).Vasant Desai, Dynamics of Entrepreneurship development and Management, Himalaya Publishing House 5) David H Holt, Entrepreneurship and New Venture Creation, Prentice Hall 6) Paul Ajit Kumar, Paul, Entrepreneurship Development, Himalaya Publishing House Mumbai 7) Raj Shankar – Entrepreneurship: Theory and Practical – Vijay Nicole Imprints Pvt. Ltd. 8) S.S. Khanka – Entrepreneurial Development – S. Chand and Company LTD New Delhi 9) Enterprise Resource Planning by Singla Edition-02 Cengage Publication **Websites :** www.startupindia.gov.in www.india.gov.in http://www.makeinindia.com/home https://sites.fuqua.duke.edu/dukeven/selected-topics/the-entrepreneurial-process/ https://digitalskills.unlv.edu/digital.marketing/	

Course Code : AEC-405	Enterprise Resource Planning (ERP)	Credits : 4	Marks : 100
Course Outcomes	After completion of this course student should be able to 1. Understand concept, need and significance of ERP 2. Learn different concept regarding ERP implementation 3. Understand ERP models and related technologies 4. Describe popular products and future trends in ERP.		
Unit No.	**Description**		**No. of Periods**
1	**Introduction to ERP:** Introduction, Enterprise an Overview, Concepts and definition of ERP, ERP – A software solution, Benefits and Risks, Evolution of ERP, Reasons for growth of ERP, Conceptual Model of ERP, Introduction to BPR.		**15**
2	**ERP Implementation:** Implementation Challenges, ERP Implementation Strategies, Selection of ERP Subsystem, ERP Implementation Life Cycle, Selection of Vender, Role of Consultant, Post Implementation Activities.		**15**
3	**ERP Modules and Related Technologies:** Basic ERP Modules: Financial & Accounting Module, Inventory Module, Sales and Distribution Module, Production Module, Human Resource Module, Customer Relationship Module, Supply Chain Management ERP Related Technologies : BPR, SCM, CRM, MIS		**15**
4	**Marketplace and Future Trends of ERP:** ERP Market place and dynamics, SAP AG, Oracle, JD Edward, Future Trends in ERP		**15**

Reference Books:

1. Alexis Leon, “ERP Demystified”, Tata McGraw Hill
2. Vinod Kumar Grag and N.K. Venkitakrishnan, ERP- Concepts and Practice, PHI,2006.
3. Jagan Nathan Vaman, ERP in Practice, Tata McGraw-Hill,2008
4. Rahul V. Altekar “Enterprise Resource Planning”, Tata McGraw Hill
5. Manufacturing Resource Planning (MRP II) with Introduction to ERP; SCM; an CRM by Khalid Sheikh, Publisher: McGraw-Hill
6. ERP and Supply Chain Management by Christian N. Madu, Publisher: CHI
7. Sinha P. Magal and Jeffery Word, Essentials of Business Process and Information System, Wiley India,2012

Course Code: CCL 406	**Lab Course-VII Based on CC401**	**Credits: 02**	**Marks: 50**
Course Outcomes	After completion of this course students will be are able to List of Practical's: 1. Apply the concepts of object-oriented programming 2. Illustrating the functions, objects and process of data manipulations using C++		
Sr. No.	**Description**		
1	Write a simple program (without Class) to use of operators in C++		
2	Illustrating Control Structures.		
3	Write a program to create a class and creating an object.		
4	Illustrating different Access Specifiers		
5	Write aoop program to demonstrate static data member		
6	Demonstrate arguments to the function.		
7	Illustrating inline function.		
8	Define Member function-outside the class using Scope Resolution Operator		
9	Illustrating friend class and friend function.		
10	Create constructors – default, parameterized, copy.		
11	Destructor		
12	Dynamic Initialization of Object.		
13	Illustrating Inheritance – single, multiple and multilevel		
14	Perform static and dynamic polymorphism		
15	Demonstrate virtual & pure virtual function		

Course Code: CCL407	Lab Course-VIII based on CC-403	Credits: 2	Marks:50
Course Outcomes	After completion of this course students will be able to – 1. Acquire the ability to analyze problems, design algorithms and implement solutions using PHP. 2. Develop the ability to design and implement PHP programs that interact with user inputs, perform calculations and generate dynamic web contents.		
Sr. No	**Description**		
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.		

Course code: AEC 408	Mini Project	Credit :02	Marks:50
Sr. No.	**Description**		
Course Outcomes	After completion of this course student should be able to- 1. Implement fundamental domain knowledge of core courses for developing simple business applications. 2. Utilize the software development techniques, skills and modern tools.		
Guidelines for Project	1. A group of maximum **two to four** students prepare a mini project under the guidance of internal teacher. 2. Students should adopt SDLC approach 3. Project guide should provide progress report to each group & student should follow it.(Encl. Progress report) 4. **Number of Copies**: The student should submit **one Spiral copy** of the Project Report to College /University & also **prepare one individually spiral copy.** 5. The project report is duly signed by Principal or Head of Department, Project Guide and Student. 6. Acceptance/Rejection of Project Report:- ✓ The student should submit progress report with draft project report to the guide. ✓ Respective guide has right to suggest modifications for resubmission or accept the project. Only on acceptance of draft project report, the student should make the final copies		
Guidelines for submission of the Project Report.	**a. Paper:** The Report shall be typed on white paper, A4 size, for the final submission. The report to be submitted must be original and subsequent copies may be photocopied on any paper. **b. Typing**: The typing shall be of standard letter size, 1.5 spaced and on ***both side of the paper***. (Normal text should have Times New Roman, Font size 12. Headings can have bigger size) **c. Margins**: The typing must be done in the following margins: Left -----1.5 inch, Right ----- 1 inch Top ----- 1 inch, Bottom ----- 1 inch **d. Front Cover:** The front cover should contain the following details: TOP : The title in block capitals of 6mm to 15mm letters. CENTRE: Full name in block capitals of 6mm to 10mm letters. BOTTOM: Name of the University, Course, Year of submission -all in block capitals of 6mm to 10mm letters on separate lines with proper spacing with center alignment. **e. Blank Sheets:** At the beginning and end of the report, two white black papers should be provided, one for the purpose of binding and other to be left blank		
Documentation Format	a) Cover Page b) Institute/College Recommendation c) Guide Certificate		

	d) Declaration e) Acknowledgement f) Index g) Chapter Scheme **1) Introduction to Project –** Introduction -Existing System -Need and scope of Computer System - Organization Profile(Optional & applicable for live project only) **2) Proposed System** -Objectives -Requirement Engineering. • Requirement Gathering • Software Requirements **3) System Analysis•** System Diagram • DFD • ERD • UML (if applicable) (Note: Use advanced tools and techniques as per requirement.) **4) System Design** • Database Design • Input Design & its samples • Output Design (on screen) **5) Implementation** - System Requirement - Hardware - Software - Installation process - User Guideline **6) Reports** (with valid data minimum 4 reports) **7) • Conclusion • Limitations • Suggestion** **Annexure** • Source code(Include Main Logic source code) • Questioner/Schedule(if used) • Progress Report References i) Books ii) Journals iii) Periodicals and Newspapers iv) Web/Blogs