

SCHEME OF EXAMINATION
and
SYLLABUS
for
Bachelors in Vocation (B.Voc)
in
WEB DEVELOPMENT
Offered by
Community College of Skill Development



J.C. Bose University of Science & Technology YMCA
Sector-6, Mathura Road, Faridabad,
Haryana, India

2023-24

ABOUT THE PROGRAM

Bachelor of Vocational Studies (B.Voc.) is a practical and skill-oriented program which focuses on important practical knowledge along with theoretical knowledge. B.Voc. aims at providing adequate skills required for a particular trade. The B.Voc. Degree in Web Development runs with a mission to give out skills related to Computer Science and Web Development. This course is made for those students who wish to improve skills and want to be expertise in web designing and web development. The course is different from traditional academic programmes as it deals more with application-based studies rather than focusing on only theoretical knowledge. Vocational training programs have been created with the aim of imparting industry-specific skills in students. These programs are crafted in such a way that the students acquire skills, which will lead them to employment in the respective sector. These candidates become experts in their field and can enhance their skills more by opting for a master's degree. There is flexibility in the program as these candidates can pursue this course as long as they want for 1 year/2 years/3 years.

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

- PEO-1: To create theoretical and practical knowledge about core areas related to the field of web development and provides a judicious mix of skills relating to a profession and appropriate content of general education.
- PEO-2: Ensures that the students have adequate knowledge and skills, so that they are work ready at each exit point of the programme.
- PEO-3: To improve team building, team working and leadership skills of the students with high regard for ethical values and social responsibilities.
- PEO- 4: To enable students to communicate effectively and efficiently.

PROGRAMME OUTCOMES (POs)

- PO-1: Improve their computer literacy, their basic understanding of operative systems and working. Knowledge of software commonly used in academic and professional environments.
- PO-2: Do Academic and Professional Presentations - Designing and delivering an effective presentation and developing the various IT skills to the electronic databases.
- PO-3: Gain Analytical skills in the field of Computer Applications.
- PO-4: Acquire the knowledge of the latest technologies in web development and future trends.
- PO-5: Synthesize principles and theories of designing websites to different computing paradigms.
- PO-6: Develop professional skills that prepare the students for employment and for life-long learning in specific areas of web development and related fields.
- PO-7: Bridge the potential skill gap identified between the Institution and Industry.

PROGRAMME SPECIFIC OUTCOMES (PSOs)

- 1) Understand, analyze and develop computer programs in the areas related to web design.
- 2) The student will be ready and skilled to take-up a career or to pursue higher studies with high regard to ethical values and social responsibilities.

SCHEME OF EXAMINATION

FIRST SEMESTER

Subject Code	Subject Name	L-T-P	Credits	Marks Weightage		Course Type
				Internal	External	
BSC-105EL	English Literacy	3-0-0	3	25	75	BSC
BSC-106	Typography and Computer Application	3-0-0	3	25	75	BSC
WD-101	Basics of Operating System	3-0-0	3	25	75	PCC
WD-102	Fundamental of Computers and C Programming	3-0-0	3	25	75	PCC
MAC-101 to 103	Mandatory Audit Course	3-0-0	3	25	75	MAC
WD-105	C Programming Lab	0-0-3	3	30	70	SDP
WD-106	PC Software and HTML Lab	0-0-2	2	30	70	SDP
Total		15-0-5	20	185	515	

SECOND SEMESTER

Subject Code	Subject Name	L-T-P	Credits	Marks Weightage		Course Type
				Internal	External	
BSC-204BS	Behavioral Skills	3-0-0	3	25	75	BSC
WD-206	Discrete Mathematics	3-0-0	3	25	75	BSC
WD-201	Web Designing	3-0-0	3	25	75	PCC
WD-202	Object Oriented Programming	3-0-0	3	25	75	PCC
WD-203	Data Structures and Algorithms	3-0-0	3	25	75	PCC
WD-L-201	C++ Programming Lab	0-0-3	3	30	70	SDP
WD-L-202	Web Designing Lab	0-0-2	2	30	70	SDP
Total		15-0-5	20	185	515	

THIRD SEMESTER

Subject Code	Subject Name	L-T-P	Credits	Marks Weightage		Course Type
				Internal	External	
WD-301	Java Programming	3-0-0	3	25	75	PCC
WD-302	Computer Networks	3-0-0	3	25	75	PCC
WD-303	Database Management System	3-0-0	3	25	75	PCC
BSC-302ES	Employability Skills	3-0-0	3	25	75	BSC
WD-L-301	SQL & PHP Lab	0-0-3	3	30	70	SDP
WD-L-302	Java Programming Lab	0-0-3	3	30	70	SDP
WD-L-303	WordPress Lab	0-0-2	2	30	70	SDP
Total		12-0-8	20	190	510	

FOURTH SEMESTER

Subject Code	Subject Name	L-T-P	Credits	Marks Weightage		Course Type
				Internal	External	
WD-401	Introduction to Python	3-0-0	3	25	75	PCC
WD-402	Web Technologies using ASP(dot)NET	3-0-0	3	25	75	PCC
WD-L-401	Python Lab	0-0-3	3	30	70	SDP
BSC-401P	Project	0-0-2	2	30	70	SDP
OEC-401 to 403	Open Elective Course	3-0-0	3	25	75	OEC
WD-L-402	ASP(dot)NET Lab	0-0-3	3	30	70	SDP
PEC-WD-401 to 403	Program Elective Course	3-0-0	3	25	75	PEC
Total		12-0-8	20	190	510	

FIFTH SEMESTER

Subject Code	Subject Name	Credits	Marks Weightage		Course Type
			Internal	External	
WD-501	On Job Training (OJT)/ Internship	20	200	300	OJT
	Total	20	200	300	

SIXTH SEMESTER

Subject Code	Subject Name	Credits	Marks Weightage		Course Type
			Internal	External	
WD-601	On Job Training (OJT)/ Internship	20	200	300	OJT
	Total	20	200	300	

LIST OF MANDATORY AUDIT COURSE

COURSE CODE	COURSE NAME
MAC-101	Human Value And Professional Ethics
MAC-102	Balanced Diet And Nutrition
MAC-103	Environmental Science

LIST OF OPEN ELECTIVE COURSE

COURSE CODE	COURSE NAME
OEC-401	Entrepreneurship
OEC-402	Trends in Technology
OEC-403	Waste Management

LIST OF PROGRAM ELECTIVE COURSE

COURSE CODE	COURSE NAME
PEC-WD-401	Technology Trends in IT
PEC-WD-402	Introduction to AI
PEC-WD-403	Computer Network Security

SCHEME OF EXAMINATION
FIRST SEMESTER

Subject Code	Subject Name	L-T-P	Credits	Marks Weightage		Course Type
				Internal	External	
BSC-105EL	English Literacy	3-0-0	3	25	75	BSC
BSC-106	Typography and Computer Application	3-0-0	3	25	75	BSC
WD-101	Basics of Operating System	3-0-0	3	25	75	PCC
WD-102	Fundamental of Computers and C Programming	3-0-0	3	25	75	PCC
MAC-101 to 103	Mandatory Audit Course	3-0-0	3	25	75	MAC
WD-105	C Programming Lab	0-0-3	3	30	70	SDP
WD-106	PC Software and Html Lab	0-0-2	2	30	70	SDP
Total		15-0-5	20	185	515	

LIST OF MANDATORY AUDIT COURSE

COURSE CODE	COURSE NAME
MAC-101	Human Value And Professional Ethics
MAC-102	Balance Diet And Nutrition
MAC-103	Environmental Science

B. Voc. (Web Development) Ist Semester
ENGLISH LITERACY
BSC-105EL

No. of Credits:	3	Sessional:	25 Marks		
L	T	P	Total	Theory:	75 Marks
3	0	0	3	Total:	100 Marks

Course Objectives: The objective of studying this course is to acquire knowledge on the Basic English grammar starting from speeches to syntactic category going forward with tenses and its types. To comprehend voices, narration and sentence making.

Course Outcomes: At the end of the course, the student shall be able to:

CO1: To learn about Parts of Speech.

CO2: To learn about Syntactic Category.

CO3: To know more about the Tenses.

CO4: To acquire knowledge on Voices and Sentence Making.

Unit 1: Parts of Speech

Noun, Pronoun, Verb, Adverb, Adjective.

Unit 2: Literacy Skills

Preposition, Conjunction, Interjection.

Unit 3: Fragment of Tenses

Present tense, Past Tense, Future Tense.

Unit 4: Sentence Formation

Active and Passive voice, Direct and Indirect Narration, Simple Sentences, Compound Sentences, Complex Sentences, Compound-Complex Sentences.

Reference Books:

1. Wren and Martin. High School English Grammar and Composition. New Delhi: RRP, 2007.
2. Murphy, Raymond. Essential English Grammar. New Delhi: Cambridge, 2017.

Note: It is recommended that some part of the syllabus is to be covered in online mode.

B. Voc. (Web Development) Ist Semester
TYPOGRAPHY AND COMPUTER APPLICATION
BSC-106

No. of Credits:	3	Sessional:	25 Marks		
L	T	P	Total	Theory:	75 Marks
3	0	0	3	Total:	100 Marks

Course Objectives: The objective of studying this course is to understand and learn about the basics of windows, understand the important MS office programs and also be able to create documents for printing and sharing.

Course Outcomes: At the end of the course, the student shall be able to:

CO1: Learners will be able to claim proficiency in Word and PowerPoint.

CO2: Learners will be able to independently create professional looking documents and presentations.

CO3: Learners will be familiar with some advanced Word and PowerPoint functions.

CO4: Learners will understand how to use Word and PowerPoint in a variety of professional, educational and personal situations.

Unit 1: MS Windows: Basic components of windows, icons, types of icons, taskbar, activating windows, using desktop, title bar, running applications, exploring computer, managing files and folders, copying and moving files and folders. Control panel – display properties, adding and removing software and hardware, setting date and time, screensaver and appearance using windows accessories.

Unit 2: Documentation Using MS Word: Introduction to word processing interface, Toolbars, Menus, Creating & Editing Document, Formatting Document, Finding and replacing text, Format painter, Header and footer, Drop cap, Auto-text, Autocorrect, Spelling and Grammar Tool, Document Dictionary, Page Formatting, Bookmark, Previewing and printing document, Advance Features of MS-Word-Mail Merge, Macros, Tables, File Management, Printing, Styles, linking and embedding object, Template.

Unit 3: Electronic Spreadsheet using MS Excel: Introduction to MS-Excel, Cell, cell address, Creating & Editing Worksheet, Formatting and Essential Operations, Moving and copying data in excel, Header and footer, Formulas and Functions, Charts, Cell referencing, Page setup, Macros, Advance features of MS-Excel-Pivot table & Pivot Chart, Linking and Consolidation, Database Management using Excel-Sorting, Filtering, Validation, What if analysis with Goal Seek, Conditional formatting, Collaborating with Other Users, Analyzing and Presenting Complex data.

Unit 4: Presentation using MS PowerPoint: Presentations, Creating, Manipulating & Enhancing Slides, Organizational Charts, Excel Charts, Word Art, layering art Objects, Animations and Sounds, Inserting Animated Pictures or Accessing through Object, Inserting Recorded Sound Effect or In-Built Sound Effect., Introduction to MS Access: creating database creating and manipulating tables, forms, queries, reports, modules, importing and exporting of data.

Reference Books:

1. V. Rajaraman, Computer Fundamentals.
2. Ashok Arora, Fundamentals of Computer Systems.

3. Russell A Stultz, Fundamentals of Computer Systems.

Note: It is recommended that some part of the syllabus is to be covered in online mode.

B. Voc. (Web Development) Ist Semester
BASICS OF OPERATING SYSTEM
WD-101

No. of Credits:	3			Sessional:	25 Marks
L	T	P	Total	Theory:	75 Marks
3	0	0	3	Total:	100 Marks

Course Objectives: The objective of studying this course is to learn the fundamentals of Operating Systems, mechanisms to handle processes, mechanisms involved in memory management and also to gain knowledge on file management.

Course Outcomes: At the end of the course, Candidates will be able to:

CO1. Create processes.

CO2. Develop algorithms for process scheduling for a given specification of CPU utilization, Throughput, Turnaround Time, Waiting Time, and Response Time.

CO3. For a given specification of memory organization, develop the techniques for optimally allocating memory to processes by increasing memory utilization and for improving the access time.

CO4. Design and implement file management system

Unit 1: Operating Systems: Concept of Operating Systems, Need of operating system, Types of Operating Systems, Services of operating system, Structure of an operating system, Functions of operating system.

Unit 2: Processes: Definition, Different states of a Process, Process Scheduling, Types of Schedulers, and Scheduling criteria: CPU utilization, Throughput, Turnaround Time, Waiting Time, Response Time. Scheduling algorithms, FCFS, SJF, Priority, RR, Multiprocessor scheduling.

Unit 3: Memory & File Management: Logical and Physical address space, Swapping, Contiguous Memory allocation, Virtual Memory, Paging, Segmentation, Demand Paging, Page Replacement Algorithm, Thrashing. Concept of File, Access methods, Directory structure, File System structure, Allocation methods.

Unit 4: Disk Management & Case Study: Disk Structure, Disk Scheduling Algorithm, Network Operating System, Real Time Operating System, Distributed Operating System, Study of various Operating Systems: Windows, Dos, Linux etc.

Reference Books:

1. Operating System Concepts by Silberchatz et al, 5th edition, 1998, Addison Wesley.
2. Modern Operating Systems by A. Tanenbaum, 1992, Prentice-Hall.

B. Voc. (Web Development) Ist Semester
FUNDAMENTALS OF COMPUTERS AND C PROGRAMMING
WD-102

No. of Credits:	3			Sessional:	25 Marks
L	T	P	Total	Theory:	75 Marks
3	0	0	3	Total:	100 Marks

Course Objectives: The objectives of the course is to provide fundamentals of programming, to learn problem solving techniques and also to learn how to write programs in C.

Course Outcomes: At the end of the course, Candidates will be able to:

- CO1. Read, understand and trace the execution of programs written in C language.
- CO2. Write the C code for a given algorithm.
- CO3. Implement Programs with pointers and arrays, perform pointer arithmetic, and use the preprocessor.
- CO4. Write programs that perform operations using derived data types.

Unit 1 Computer Fundamentals: Concept of data and information; Components of Computer: Hardware Input Device, Output Device. CPU: Components of CPU; Memory and Storage Devices; Computer Software: System Software and Application Software; Functions of Operating System. Programming Languages: Machine, Assembly, High Level Language, 4GL; Language Translator; Linker, Loader; Classification of Computers: Micro, Mini, Mainframe, Supercomputer. Advantages of Computer, Limitations of Computer, Range of Applications of Computer, Social Concerns of Computer Technology: Positive and Negative Impacts, Computer Crimes, Viruses and their remedial solutions.

Unit-2 Problem Solving: pseudocode, Problem Identification, Analysis, Flowcharts, Decision Tables, Pseudo codes and algorithms, Program Coding, Program Testing and Execution. C Programming Fundamentals: Keywords, Variables and Constants, Structure of a C program. Operators & Expressions: Arithmetic, Unary, Logical, Bit-wise, Assignment & Conditional Operators, Library Functions, Control Statements: Looping using while, do...while, for statements, Nested loops; decision making using if...else, Else If Ladder; Switch, break, Continue and Go to statements.

Unit:3 Arrays & Functions: Declaration and Initialization; Multidimensional Arrays. String: Operations of Strings; Functions: Defining & Accessing User defined functions, Function Prototype, Passing Arguments, Passing array as argument, Recursion, Use of Library Functions; Macro vs. Functions. Pointers: Declarations, Operations on Pointers, Passing to a function, Pointers & Arrays, Array of Pointers, Array accessing through pointers, Pointer to functions, Function returning pointers, Dynamic Memory Allocations.

Unit: 4 Structures and Union: Defining and Initializing Structure, Array within Structure, Array of Structure, Nesting of Structure, Pointer to Structure, Passing structure and its pointer to Functions; Unions: Introduction to Unions and its Utilities. Files Handling: Opening and closing file in C; Create, Read and Write data to a file; Modes of Files, Operations on file using C Library Functions; Working with Command Line Arguments. Program Debugging and types of errors.

Reference Books:

1. Problem Solving and Program Design in C, 4th edition, by jeri R. Hanly and Elli B.Koffman.
2. Programming in C by Pradip Dey, Manas Ghosh 2nd edition Oxford University Press.

3. E.Balaguruswamy, Programming in ANSI C 5th Edition McGraw-Hill
4. A first book of ANSI C by Gray J.Brosin 3rd edition Cengage Delmar Learning India P.Ltd
5. AL Kelly, Iraphol, Programming in C, 4th edition Addison-Wesley – Professional

B. Voc. (Web Development) Ist Semester
HUMAN VALUE AND PROFESSIONAL ETHICS
MAC-101

No. of Credits:	3			Sessional:	25 Marks
L	T	P	Total	Theory:	75 Marks
3	0	0	3	Total:	100 Marks

Course Objectives: The objective of studying this course is to understand the value system, Honesty, Integrity, Harmony and universal declaration of human rights.

Course Outcomes: At the end of the course, the student shall be able to:

CO1: Learn about value education system

CO2: Improve understanding of values for life.

CO3: Acquire knowledge about harmony in the society.

CO4: Understand the human Right and Social Evils.

Unit 1: Introduction: Value education-its purpose and significance in the present world, Value system, The role of culture and civilization, Holistic living, Balancing the outer and inner - Body, Mind and Intellectual level- Duties and responsibilities.

Unit 2: Salient values for life: Truth, commitment, honesty and integrity, forgiveness and love, empathy and ability to sacrifice, care, unity, and inclusiveness, Self-esteem and self- confidence, punctuality - Time, task and resource management, Problem solving and decision-making skills- Interpersonal and Intra personal relationship, Team work, Positive and creative thinking.

Unit 3: Understanding Harmony: Harmony in Family and Society: How to owe responsibilities in family, Understanding Values in Human- Human relations, Role of Trust and Respect, Samman (Respect) for all, Akhand Samaj (A United Society)

Understanding the harmony in Society: Solution to our day-to-day problems, Prosperity and Compassion, the formula for establishing a fearless society, crafting a society that co- exists, Human Goals, Universal Human Order, From Family to the World.

Harmony in Nature: Understanding the Harmony in Nature, making sure your contribution is in harmony with nature, Interconnectedness and mutual fulfillment.

Unit 4: Environment and Ecological balance: Interdependence of all beings - living and non-living, The binding of man and nature - Environment conservation and enrichment.

Unit 5: Human Right and Social Evils: Human Rights: Universal Declaration of Human Rights National Integration - Peace and non-violence - Dr. APJ Kalam's ten points for enlightened citizenship - Social Values and Welfare of the citizen - The role of media in value building - Human Rights violations - Social Evils: Corruption, Cybercrime, Terrorism, Alcoholism, Drug addiction, Dowry, Domestic violence, Untouchability, female infanticide, atrocities against women and how to tackle them.

Reference Books:

1. R. R. Gaur, R Sangal, G P Bagaria, 2009, A Foundation Course in Human Values and Professional Ethics.
2. Prof. K. V. Subba Raju, 2013, Success Secrets for Engineering Students, Smart Student Publications, 3rd Edition.
3. Ivan Illich, 1974, Energy & Equity, The Trinity Press, Worcester, and HarperCollins, USA.

B. Voc. (Web Development) Ist Semester

BALANCED DIET AND NUTRITION

MAC-102

No. of Credits:	3			Sessional:	25 Marks
L	T	P	Total	Theory:	75 Marks
3	0	0	3	Total:	100 Marks

Course Objectives: The objective of studying this course is to understand and apply the concepts of balanced diet and nutritional value, students will be able to identify and apply food principles to food and nutrition systems.

Course Outcomes: At the end of the course, the student shall be able to:

CO1: Understand the basic concepts of a balanced diet.

CO2: Analyze the type of food and their nutritional value.

CO3: Evaluate calorie (BMR).

CO4: Learn the role of diet in healthy living.

Unit 1: Concepts and Components of Food Nutrition: Meaning of nutrition, Basic definition regarding nutritional requirements, Nutritional need of human; Concept of food, Acceptance of food, Function of food, Components of food and their classification; Macronutrients – Carbohydrate, Fat, Protein (source, function and effect on the body); Micronutrients – Vitamins, Mineral, Water, roughage (source, function and effect on body); Planning Balanced Diet.

Unit 2: Food Group: Cereals and Millet – Selection, Preparation and Nutritive value; Pulses, Nuts and Oilseeds- Selection, Preparation and Nutritive value; Milk and Milk production - Selection, Preparation and Nutritive value; Vegetable and Fruits - Selection, Preparation and Nutritive value; Fatty oil and Sugar, Jaggery - Selection, Preparation and Nutritive value.

Unit 3: Food and Digestion: Energy – Key concepts, Definition and Components of energy requirements.; Energy – Imbalance concepts of metabolism, anabolism and catabolism; Calorie requirement – BMR, SDA; Physical activity – carbohydrates, lipids and protein metabolism; Factors affecting energy- requirement and expenses; Factors affecting BMR; Factors influencing energy expenditure in physical activity; Methods and requirements for estimating energy expenditure.

Unit 4: Yogic concepts of Diet and Nutrition: General introduction to diet concepts, concepts of mitahara, Definition and classification, yogic diet according to traditional yoga texts; Concepts of diet according to GherandSamhita and Hathpradeepika; Satvik, Rajsik and Tamasik diet as describe in Bhagwadgeeta; Pathya and Apathya food according to the texts of Yoga; Role of yogic diet in healthy living; Diet according to nature of the body – Vata, Pitta and Kapha

Reference Books:

1. Bakhru, H. K., 1991, A Complete Handbook of Nature Cure.
2. Kumar Neeraj, Nagendra, 2014, MeraAaharMeraSwasthya.

B. Voc. (Web Development) Ist Semester
ENVIRONMENTAL SCIENCE
MAC-103

No. of Credits:	3	Sessional:	25 Marks		
L	T	P	Total	Theory:	75 Marks
3	0	0	3	Total:	100 Marks

Course Objectives: The objective of studying this course is to provide students a detailed knowledge on the threats and challenges to the environment due to developmental activities, to identify the natural resources and suitable methods for their conservation and sustainable development, to focus on the importance of ecosystem and biodiversity for maintaining ecological balance and to learn about various attributes of pollution management and waste management practices.

Course Outcomes: At the end of the course, the student shall be able to:

CO1: Get the information about the ecosystem and also about its functions like Food chain, Ecological pyramids etc.

CO2: Get the knowledge about the different types of resources like land, water, mineral and energy and also about the effects of the environment by the usage of these resources.

CO3: Gain the knowledge about the ecosystem diversity, its values and also about the importance of the endemic species and different techniques involved in its conservation

CO4: Gain knowledge about the different types of pollution and their control technologies, Wastewater treatment, Bio medical waste management etc.

Unit 1: The Multidisciplinary Nature of Environmental Studies: Definition, scope and importance. Need for public awareness.

Unit 2: Natural Resources Renewable and Non-Renewable Resources: Natural resources and associated problems, Forest resources: Use and overexploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people. Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems. Mineral resources: Use and exploitation, environmental effects of extracting and mineral resources, case studies. Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies. Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources. Case studies. Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification. Role of an individual in conservation of natural resources. Equitable use of resources for sustainable lifestyles.

Unit 3: Ecosystems: Concept of an ecosystem Structure and Concept of an ecosystem, Structure and function of an ecosystem. Producers, consumers and decomposers, Energy flow in the ecosystem. Ecological succession. Food chains, food webs and ecological pyramids, Introduction, types, characteristic features, structure and function of the following ecosystem: a) Forest ecosystem b) Grassland ecosystem c) Desert ecosystem d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, and estuaries).

Unit 4: Biodiversity and Its Conservation: Definition: genetic, species and ecosystem diversity. Biogeographical classification of India. Value of biodiversity: consumptive use,

productive use, social, ethical, aesthetic and option values. Biodiversity at global, National and local levels. India as a mega-diversity nation. Hot-spots of biodiversity. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts. Endangered and endemic species of India. Conservation of biodiversity: in-site and ex-situ conservation of biodiversity.

Unit 5: Social Issues and The Environment: From Unsustainable to Sustainable Development urban problems related to energy. Water conservation, rain water harvesting, watershed management. Resettlement and rehabilitation of people; its problems and concerns. Case studies, Environmental ethics: Issues and possible solutions. Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case studies, Wasteland reclamation. Consumerism and waste products, Environment Protection Act. Air (Prevention and Control of Pollution) Act. Water (Prevention and Control of Pollution) Act, Wildlife Protection Act. Forest Conservation Act. Issues involved in enforcement of environmental legislation, public awareness.

Reference Books:

1. "Perspectives in Environmental Studies" by A. Kaushik and C. P. Kaushik, New age international publishers.
2. "Environmental Studies by Benny Joseph", Tata McGraw Hill Co, New Delhi
3. "Environmental Science towards a sustainable future" by Richard T. Wright. 2008 PHL Learning Private Ltd. New Delhi.
4. "Environmental Engineering and science" by Gilbert M. Masters and Wendell P. Ela 2008 PHI Learning Pvt Ltd.
5. "Fundamentals of Ecology" by Odum, E.P., Barrick, M. and Barret, G.W. Thomson Brooks/Cole Publisher, California, 2005.

B. Voc. (Web Development) Ist Semester

C PROGRAMMING LAB

WD-105

No. of Credits:	3	Internal:	30 Marks		
L	T	P	Total	External:	70 Marks
0	0	3	3	Total:	100 Marks

Course Objectives: The objective of the course is to make students familiar with syntax and structure of C-Programming, and learn problem solving techniques using C.

Course Outcomes: After the completion of this course, the students will be able to:

CO1: Use the fundamentals of C programming in trivial problem solving.

CO2: Enhance skill on problem solving by constructing algorithms.

CO3: Identify solutions to a problem and apply control structures and user defined functions for solving the problem.

CO4: Able to create database table and perform logical queries with different conditions

List of Programs:

1. Write a program to display "hello world" in C.
2. Write a program to add two numbers (5&7) and display its sum.
3. Write a program to multiply two numbers (10&8) and display its product.
4. Write a program to calculate the area of a circle having its radius (r=5).
5. Write a program to calculate the area of an ellipse having its axes (minor=4cm, major=6cm).
6. Write a program to calculate simple interest for a given P=4000, T=2, R=5.5.
($I = P * T * R / 100$)
7. Write a program to declare two integers and one float variable then initialize them to 10, 15, and 12.6. Also print the variable values on the screen.
8. Write a C program to prompt the user to input 3 integer values and print these values in forward and reversed order.
9. Write a program to calculate simple and compound interest.
10. Write a program to swap two variables values with and without using third variables
11. Write a program to check odd or even number
 - a. using modulus operator
 - b. using bitwise operator
 - c. without using bitwise and modulus operator
 - d. using a conditional operator.
12. Print the value of y for given x=2 & z=4 and analyze the output.
 - i. $y = x++ + ++x;$
 - ii. $y = ++x + ++x;$
 - iii. $y = ++x + ++x + ++x;$
 - iv. $y = x > z;$
 - v. $y = x > z ? x : z;$
 - vi. $y = x \& z;$
 - vii. $y = x >> 2 + z << 1;$
13. Write a program to print the size of char, float, double and long double data types in C.

14. Write a program to produce the output as shown below:

x	y	expressions	results
6	3	x=y+3	x=6
6	3	x=y-2	x=1
6	3	x=y*5	x=15
6	3	x=x/y	x=2
6	3	x=x%y	x=0

15. Demonstrate the differences among getch(), getche(), getchar(). Demonstrate the difference between scanf() & gets(), printf() & puts().
16. Write a program to check whether input alphabet is vowel or not using if-else and switch statement.
17. Write a program that asks a number and test the number whether it is multiple of 5 or not.
18. Write a program to check whether the entered year is leap year or not (a year is leap if it is divisible by 4 and divisible by 100 or 400.)
19. Write a program to input two integer numbers and display the sum of even numbers between these two input numbers.
20. Write a program to find GCD (greatest common divisor or HCF) and LCM (least common multiple) of two numbers.
21. Write a program to display Fibonacci series of last term up to 300.
22. Write a program to enter 10 floating numbers in an array and display it.
23. Write a program to initialize one dimensional array of size 8 and display the sum and average of array elements.
24. Write a program to find biggest among three numbers using pointer.
25. Write a program to find the sum of all the elements of an array using pointers.
26. Write a program to swap value of two variables using pointer.
27. Write a program to read a sentence and count the number of characters & words in that sentence.
28. Write a program to copy one string to another string with and without using string handling function.
29. Write a program to concatenate two strings.
30. Write a program to compare two strings.

Reference Books:

1. The 'C' programming language by Kernighan and Ritchie, Prentice Hall
2. Computer Programming in 'C' by V. Rajaraman , Prentice Hall
3. Programming and Problem Solving by M. Sprankle, Pearson Education
4. How to solve it by Computer by R.G. Dromey, Pearson Education

B. Voc. (Web Development) Ist Semester
PC SOFTWARE AND HTML LAB
WD-106

No. of Credits:	2		
L	T	P	Total
0	0	2	2

Internal:	30 Marks
External:	70 Marks
Total:	100 Marks

Course Objectives:

1. To acquire knowledge and Skills for creation of Web Site considering both client- and server-side Programming.
2. To create Web applications using HTML.
3. To be well versed with XML and web services Technologies.
4. To be familiarized with open source Frameworks.

Course Outcomes: After the completion of this course, the students will be able to:

- CO1: Understand the principles of creating an effective web page, including an in-depth consideration of information architecture.
- CO2: Able to use the HTML programming language.
- CO3: Able to use the Design Programs / to make changes on the site.

List of Programs:

1. Write a leave letter to the Principal by using different alignments, correct formats in MS Word.
2. Create an electronic spreadsheet which shows the sales of different products for 5 years. Create column chart for the following data

Year	Product_1	Product_2	Product_3	Product_4
2010	1000	800	900	1000
2011	800	80	500	900
2012	1200	190	400	800
2013	400	200	300	1000
2014	1800	400	400	1200

3. Create a suitable examination database of 10 students and find the sum of the marks(total) of each student and respective class secured by the student. Display average marks of the class, subject wise and pass percentage.
4. Make a Powerpoint presentation containing details of all the subjects that you are studying in 1st Semester.
5. Program to describe various text formatting commands.
6. Program to create a Table.
7. Program to create a simple form.
8. Program to create an ordered and unordered list.
9. Program to create a hyperlink.
10. Program to insert an image to a Web page.
11. Program to insert scrolling text using Marquee tag.
12. Program to divide a page into Frames.
13. Program to create a simple layout of Web Page.

Reference Books:

1. Head First HTML and CSS by Elizabeth Robson and Eric Freeman.
2. HTML and CSS Quickstart Guide by by David DuRocher
3. Get Coding!: Learn HTML, CSS & JavaScript & Build a Website, App & Game – by Young Rewired State

SECOND SEMESTER

Subject Code	Subject Name	L-T-P	Credits	Marks Weightage		Course Type
				Internal	External	
BSC-204BS	Behavioral Skills	3-0-0	3	25	75	BSC
WD-206	Discrete Mathematics	3-0-0	3	25	75	BSC
WD-201	Web Designing	3-0-0	3	25	75	PCC
WD-202	Object Oriented Programming	3-0-0	3	25	75	PCC
WD-203	Data Structures and Algorithms	3-0-0	3	25	75	PCC
WD-L-201	C++ Programming Lab	0-0-3	3	30	70	SDP
WD-L-202	Web Designing Lab	0-0-2	2	30	70	SDP
Total		15-0-5	20	185	515	

B. Voc. (Web Development) IInd Semester

BEHAVIORAL SKILLS

BSC-204BS

No. of Credits:	3		
L	T	P	Total
3	0	0	3

Sessional:	25 Marks
Theory:	75 Marks
Total:	100 Marks
Duration of Exam:	3 Hours

Pre- Requisite: Communication Skills.

Successive: Basic reading and writing skills.

Course Objectives: The objective of studying this course is to discuss Communication skills and their forms and how it is going to help the students. To acquire the practical knowledge of writing skills, along with group discussion and interview skills.

Course Outcomes: At the end of the course, the student shall be able to:

- CO1 Understand the basic concept of communication.
- CO2 To acquire better writing skills in formal communication.
- CO3 Actively participate in group discussion / meetings / interviews and prepare & deliver presentations.
- CO4 Fundamental knowledge about Speaking and reading skills.

Course Contents:

Unit 1: Communication Skills

Meaning of Communication, Importance, Function, Types, Communication barriers and its solutions.

Unit 2: Writing Skills

Letter writing: Formal letter, application letter, covering letter and business letter.

Report writing: Academic report, Business report, technical report, News report.

Mail writing and resume

Unit 3: Soft Skills

Definition and significance of soft skills, Group Discussions, basic knowledge of translator and Paraphrasing.

Unit 4: Speaking and Reading Skills

Importance of Literacy skills (Reading, Writing, Listening, Speaking), telephonic communication skill, Levels of reading skills, process of skimming and scanning.

Text Books/ Reference Books:

1. Mishra. B, Sharma. S (2011) Communication Skills for Engineers and Scientists. PHI Learning Pvt. Ltd.
2. Chaturvedi P. D, Chaturvedi M. (2011) Business Communication: Concepts, Cases and Applications. Pearson Education India.

B. Voc. (Web Development) IInd Semester

DISCRETE MATHEMATICS

WD-206

No. of Credits:	3	Sessional:	25 Marks		
L	T	P	Total	Theory:	75 Marks
3	0	0	3	Total:	100 Marks

Pre- Requisite: Basic mathematics

Course Objectives: The objective of studying this course is to familiarize the prospective graduates with the basics of mathematics, provide knowledge on the application of set theory, functions, graph theory and probability.

Course Outcomes: At the end of the course, the student shall be able to:

CO1 Define, as well as explain with examples, the basic terminology of functions, relations, and sets.

CO2 Perform the operations associated with sets, functions, and relations.

CO3 Calculate probabilities of events for elementary problems such as games of chance.

CO4 Describe graph theory and its applicability in various computer applications.

Course Contents:

Unit 1: Set Theory

Sets: Sets, Subsets, Equal Sets Universal Sets, Finite and Infinite Sets, Operation on Sets, Union, Intersection, set difference and Complements of Sets, Dr- Morgan's Law, Cartesian Product, Cardinality of Set, Venn diagram

Unit 2: Relation & Functions

Properties of Relations, Equivalence Relation, Partial Order Relation Function: Domain and Range, Onto, Into and One to One Functions, Composite and Inverse Functions. Graph of Some Basic functions, algebraic, logarithm, trigonometric and exponential function.

Unit 3: Graph Theory

Basic concept of Graph Theory, Subgraphs, Trees & their properties, Binary trees, spanning trees, directed trees, Planar graphs, Euler and Hamiltonian graph, Minimum distance trees, Minimum weight and Minimum distance spanning trees.

Unit 4: Discrete Probability

Finite probability space, events, Properties of events, the multiplication theorem, independent events, total probability Conditional probability, Bayes' theorem.

Text Books/ Reference Books:

1. Gupta S.P. and Kapoor, V.K., Fundamentals of Applied statistics, Sultan Chand & Sons, 1996
2. Babu Ram: Discrete Mathematics, Vinayek Publishers, New Delhi.
3. Trembley, J.P & R. Manohar: Discrete Mathematical Structure with Application to Computer Science, TMH
4. Applied Mathematics for Polytechnics by H.K. Dass.
5. N.P. Bali and Manish Goyal, "A textbook of Engineering Mathematics", Laxmi Publications, Reprint, 2010.

B. Voc. (Web Development) IInd Semester

WEB DESIGNING

WD-201

No. of Credits:	3		
L	T	P	Total
3	0	0	3

Sessional:	25 Marks
Theory:	75 Marks
Total:	100 Marks
Duration of Exam:	3 Hours

Pre- Requisite: Basics of computer

Successive: Web Development

Course Objectives: The objectives of this course is to understand the principles of creating an effective web page, develop skills in analyzing the usability of a web site, to understand how to plan and conduct user research related to web usability and to learn the language of the web.

Course Outcomes: At the end of the course, Candidates will be able to:

CO1: Use the HTML programming language.

CO2: Resolves written HTML codes.

CO3: Runs the page he/she has designed using HTML codes.

CO4: Be able to use the Design Programs.

Course Content:

Unit: 1 Web Design Principles: Basic Principles involved in developing a web site, Planning process, Five Golden rules of Web Designing, World Wide Web, Why create a website, Web Standards.

Unit: 2 Introduction to HTML: What is HTML, HTML Documents, Basic structure of an HTML document, creating an HTML document, Markup Tags, Heading-Paragraphs, Line Breaks, and HTML Tags. Elements of HTML: Introduction to elements of HTML, Working with Text, Working with Lists, Tables and Frames; Working with Hyperlinks, Images and Multimedia; Working with Forms and controls.

Unit:3 Introduction to Cascading Style Sheets: Concept of CSS, Creating Style Sheet, CSS Properties, CSS Styling(Background, Text Format, Controlling Fonts), Working with block elements and objects, Working with Lists and Tables, CSS Id and Class, Box Model(Introduction, Border properties, Padding Properties, Margin properties), CSS Color.

Unit: 4 Introduction to Web Publishing or Hosting: Creating the WebSite, Saving the site, working on the website, Creating website structure, Themes-Publishing websites.

Unit: 5 JavaScript introduction: What is JavaScript, Understanding Events, JavaScript Example, and External JavaScript.

Unit: 6 Introduction to Bootstrap: History, Fundamentals of Bootstrap, Bootstrap Grid System, Bootstrap Form and Form Components, Introduction JQuery, Element Selector, Document ready function, Events, Event handling with Html or Bootstrap components.

Reference Books:

1. Satish Jain, Ambrish K. Rai and M. Geetha, Web Designing and Development, BPB Publications.
2. Hirdesh Bhardwaj, Web Designing.
3. Jon Duckett, HTML & CSS: Design and Build WebSites.

B. Voc. (Web Development) IInd Semester
OBJECT ORIENTED PROGRAMMING
WD-202

No. of Credits:	3		
L	T	P	Total
3	0	0	3

Sessional:	25 Marks
Theory:	75 Marks
Total:	100 Marks
Duration of Exam:	3 Hours

Pre- Requisite: Basic Knowledge of C

Successive: Object Oriented Concepts

Course Objectives: The objective is to make students familiar with the main features of the C++ language, C++ program & to solve a well specified problem and also to understand a C++ syntax written by someone else.

Course Outcomes: At the end of the course, students will be able to:

- CO1. Describe the important concepts of object oriented programming like object and class, Encapsulation, inheritance and polymorphism.
- CO2. Write the skeleton of C++ program.
- CO3. Write the simple C++ programs using the variables, operators, control structures, functions.
- CO4. Write the simple object oriented programs in C++ using objects and classes, inheritance, file management, exceptions etc.

Course Content:

Unit: 1 Concepts of OOP and C++ Basics: Introduction OOP, Procedural Vs. Object Oriented Programming, Principles of OOP, Benefits and applications of OOP. Overview of C++, Program structure, namespace, identifiers, variables, constants, enum, operators, typecasting, control structures.

Unit: 2 C++ Functions and Objects and Classes: Simple functions, Call and Return by reference, Inline functions, Macro Vs. Inline functions, Overloading of functions, default arguments, friend functions, virtual functions. Basics of object and class in C++, Private and public members, static data and function members, constructors and their types, destructors, operator overloading, type conversion.

Unit: 3 Inheritance and Polymorphism: Concept of Inheritance, types of inheritance: single, multiple, multilevel, hierarchical, hybrid, protected members, overriding, virtual base class. Pointers in C++, Pointers and Objects, this pointer, virtual and pure virtual functions, Implementing polymorphism.

Unit: 4 I/O, File Management, Templates, Exceptions and STL: Concept of streams, cin and cout objects, C++ stream classes, Unformatted and formatted I/O, manipulators, File stream, C++ File stream classes, File management functions, File modes, Binary and random Files. What is template? function templates and class templates, Introduction to exception, try-catch- throw, multiple catch, catch all, rethrowing exception, implementing user defined exceptions, Overview and use of Standard Template Library.

Reference Books:

1. Let Us C++, Yashavant Kanetkar
2. A Tour of C++ by Bjarne Stroustrup.
3. Programming: Principles and Practice Using C++ by Bjarne Stroustrup.

B. Voc. (Web Development) IInd Semester
DATA STRUCTURES AND ALGORITHMS
WD-203

No. of Credits:	3			Sessional:	25 Marks
L	T	P	Total	Theory:	75 Marks
3	0	0	3	Total:	100 Marks
				Duration of Exam:	3 Hours

Pre- Requisite: Preliminary knowledge of computers, C and C++.

Successive: Database design and logic development.

Course Objectives: The objective of studying this course is to impart the basic concepts of data structures and algorithms, searching and sorting techniques, stacks, queues, lists, trees & graphs and also enable them to write algorithms for solving problems with the help of fundamental data structures.

Course Outcomes: At the end of the course, the student shall be able to:

CO1: Argue the correctness of algorithms using inductive proofs and invariants.

CO2: Analyze worst-case running times of algorithms using asymptotic analysis.

CO3: Explain the major graph algorithms and their analyses.

CO4: Compare between different data structures. Pick an appropriate data structure for a design situation.

Course Content:

Unit: 1 Concept of Data Structures and algorithms: Concepts of Data Types, Data Structure, Abstract Data Type and their uses Background for Data Structure, Definition and use of ADT, Array as an ADT, Structure, Pointer. Introduction to Algorithms and their properties, Concepts of Analysis of algorithms with asymptotic notations (Big Oh) and their properties, time and space complexities.

Unit: 2 Stack and Queues: Definition and Primitive Operations, Stack Applications: Evaluation of Infix, Postfix and Prefix expressions, converting from infix to prefix and postfix. Definition of Queue and Primitive Operations of Linear and Circular Queue, Application and advantages of Linear, Circular Queue, and Priority Queue (Ascending and Descending Priority Queue)

Unit: 3 Recursion and Lists: Definition and Principle of Recursion, Application of Recursion, Recursion removal using stack, example of recursion for TOH Factorial, Fibonacci Sequences, GCD, efficiency of above recursive algorithms. List concepts, Static and Dynamic List Structure and implementation, Types of linked list, Operations on Linked List, Singly linked list, Circular Linked List, Doubly Linked List, Doubly Circular Linked List, Inserting, traversing and deleting nodes at beginning, end and specified positions in these linked lists, Linked implementation of a stack and queue in singly linked list

Unit: 4 Tree and Sorting: Definition and basic terminologies of tree, Binary Tree: Introduction, Types of Binary Tree, Level and depth, height balanced tree(AVL), Operations in Binary Search Tree (BST): Insertion, Deletion, Searching, Tree Traversal: Pre-order traversal, In-order traversal (sorted list of Nodes), Post-order traversal, Applications of Binary Tree (Huffman tree, expression tree) Introduction and types of sorting Algorithm and implementation of Bubble Sort, Insertion Sort, Selection Sort, Quick Sort, Merge Sort Comparison and Efficiency of sorting algorithms.

Unit: 5 Searching: Introduction Sequential Search, Binary Search and Tree Search Comparison and Efficiency of Searching *Hashing:* hash function, hash table and collision resolution

techniques. Definition and Representation of Graph, Types of Graph, *Graph Traversal*: Depth First Search, Breadth First Search Spanning Tree, Prim's Algorithm, Kruskal's algorithm and Round Robin Algorithm, Shortest Path Algorithm, Greedy and Dijkstra's Algorithm

Reference Books:

1. Data Structure with C by Seymour Lipschutz
2. Data Structure with C by Aaron M.Tanenbaum, Yedidyah Langsam

B. Voc. (Web Development) IInd Semester

C++ PROGRAMMING LAB

WD-L-201

No. of Credits:	3		
L	T	P	Total
3	0	0	3

Internal:	30 Marks
External:	70 Marks
Total:	100 Marks
Duration of Exam:	3 Hours

Pre- Requisite: Know about C Programming.

Successive: Object Oriented Concepts

Course Objectives: This course will provide students with a basic understanding of the C++ programming language, enabling them to write a C++ program to solve a well-defined problem, comprehend a C++ program written by another, debug and test C++ programs, and gain an understanding of object-oriented principles, virtual functions, templates, exception handling, and reading documentation and library code for C++.

Course Outcomes: After the completion of this course, the students will be able to:

- CO1: Understand and use the basic programming constructs of C/C++
- CO2: Manipulate various C/C++ data types, such as arrays, strings, and pointers
- CO3: Isolate and fix common errors in C++ programs
- CO4: Use memory appropriately, including proper allocation/deallocation procedures
- CO4: Apply object-oriented approaches to software problems in C++
- CO5: Write C++ programs using the above skills

Course Content:

1. Write a C++ program to find the largest of three numbers using an inline function.
2. Write a C++ program to sort an array of integers in ascending order using a function called exchange () which accepts two integer arguments by reference.
3. Write a C++ program to implement function overloading in order to compute power(m,n) where
 - i) m is double and n is int
 - ii) m and n are int.
4. Create a 'DISTANCE' class with: - feet and inches as data members - member function to input distance - member function to output distance - member function to add two distance objects Write a main function to create objects of DISTANCE class. Input two distances and output the sum.
5. Create a class called 'EMPLOYEE' that has - EMPCODE and EMPNAME as data members - member function getdata () to input data - member function display () to output data Write a main function to create EMP, an array of EMPLOYEE objects. Accept and display the details of at least 6 employees.
6. Create a class called 'TIME' that has - three integer data members for hours, minutes and seconds - constructor to initialize the object to zero - constructor to initialize the object to some constant value - member function to add two TIME objects - member function to display time in HH:MM:SS format Write a main function to create two TIME objects, add them and display the result in HH:MM:SS format.
7. Create a class 'COMPLEX' to hold a complex number. Write a friend function to add two complex numbers. Write a main function to add two COMPLEX objects.

8. Create a 'MATRIX' class of size m X n. Overload the '+' operator to add two MATRIX objects. Write a main function to implement it.
9. Derive a class 'MAT' from MATRIX class created in program No. 8. Add a member function to overload '*' operator to multiply two objects. (Single Inheritance)
10. Write a c++ program to illustrate multilevel inheritance.
11. Write a c++ program to illustrate multiple inheritance
12. Create a 'STRING' class which overloads '=' operator to compare two STRING objects.
13. Write a C++ program to illustrate 'this' pointer and pointers to derived classes.
14. Create a base class called 'SHAPE' having - two data members of type double - member function get-data() to initialize base class data members - pure virtual member function display-area() to compute and display the area of the geometrical object. Derive two specific classes 'TRIANGLE' and 'RECTANGLE' from the base class. Using these three classes design a program that will accept dimension of a triangle / rectangle interactively and display the area.
15. Write a C++ program to read a list containing item name, item code and cost interactively and display the data in a tabular format as shown below:
 - a. NAME CODE COST
16. Design your own manipulator to provide the following output specification for printing money value:
 1. 10 columns width
 2. The character '\$' at the beginning
 3. Showing '+' sign.
 4. Two digits precision
 5. Filling of unused spaces with '*'
 6. Trailing zeros shown
17. Write a C++ program that uses a single file for both reading and writing the data.
18. A file contains a list of names and telephone numbers in the following form: Name Tel. No. Write a C++ program to read the file and output the list in the tabular format. The name should be left-justified and numbers right-justified. Use a class object to store each set of data.
19. Write an interactive, menu-driven program that will access the file created in program No.18 and implement the following tasks:
 1. To determine the telephone numbers of the specified person.
 2. To determine the name if a telephone number is given.
 3. To update the telephone number whenever there is a change.
20. Write a C++ program that displays the size (in bytes) of a given file. The name of the file is specified as a command line argument.
21. Define a function template for finding the minimum value contained in an array. Write main () function to find the minimum value of integer array and minimum value of floating point numbers in an array.
22. Write a class template to represent a generic vector. Include member functions to perform the following tasks:
 1. To create the vector.
 2. To modify the value of a given element.
 3. To multiply the vector by a scalar value.
 4. To display the vector in the form (10, 20, 30,...)

Reference Books:

1. Let Us C++, Yashavant Kanetkar
2. A Tour of C++ by Bjarne Stroustrup.
3. Programming: Principles and Practice Using C++ by Bjarne Stroustrup.

B. Voc. (Web Development) IInd Semester

WEB DESIGNING LAB

WD-L-202

No. of Credits:	2		
L	T	P	Total
0	0	2	2

Internal:	30 Marks
External:	70 Marks
Total:	100 Marks
Duration of Exam:	3 Hours

Pre- Requisite: NIL

Successive: Web Development

Course Objectives: In this course, students will acquire skills and knowledge to create Web Sites using both client- and server-side programming, develop Web applications using industry-standard tools and techniques, become familiar with XML and web services technologies, and become acquainted with open source frameworks for software development.

Course Outcomes: After the completion of this course, the students will be able to:

CO1: Design a basic website using HTML5 and CSS3 to demonstrate responsive web design.

CO2: Develop simple web applications using server side programming and Database Connectivity.

CO3: Build well-formed XML Document and implement Web Service using Java

Course Content:

1. Introduction to HTML Tags :- Working of Web browser, Introduction to static Web pages and dynamic web pages, HTML body structure, HTML Tags:- Elements, Attribute, Heading tag, Paragraph tag, Formatting tags (Bold text, Important text, Italic text, Emphasized text, Marked text, Small text, Deleted text, Inserted text, Subscripts, Superscripts), Background color, image, font color, effects, Table tag List.
2. Advance HTML tags :- Frames iframes, anchor tag, Multimedia
3. Create Static Website by using all HTML Tags.
4. Introduction to Internal CSS
5. Introduction to External CSS
6. HTML Form tags (Elements, Attributes, properties, etc)
7. Introduction to JAVA Script (Programming basics)
8. Advance JAVA Script programming basics (Alert, Confirm, prompt) and Validations.
9. Create 3 Web page using Bootstrap framework use bootstrap table, image and form elements etc.
10. Create the web page using JQuery effects, events on different elements

Reference Books:

1. Satish Jain, Ambrish K. Rai and M. Geetha, Web Designing and Development, BPB Publications.
2. Hirdesh Bhardwaj, Web Designing.
3. Jon Duckett, HTML & CSS: Design and Build Web Sites

THIRD SEMESTER

Subject Code	Subject Name	L-T-P	Credits	Marks Weightage		Course Type
				Internal	External	
WD-301	Java Programming	3-0-0	3	25	75	PCC
WD-302	Computer Networks	3-0-0	3	25	75	PCC
WD-303	Database Management System	3-0-0	3	25	75	PCC
BSC-302ES	Employability Skills	3-0-0	3	25	75	BSC
WD-L-301	SQL & PHP Lab	0-0-3	3	30	70	SDP
WD-L-302	Java Programming Lab	0-0-3	3	30	70	SDP
WD-L-303	WordPress Lab	0-0-2	2	30	70	SDP
Total		12-0-8	20	190	510	

B. Voc. (Web Development) IIIrd Semester

JAVA PROGRAMMING

WD-301

No. of Credits:	3		
L	T	P	Total
3	0	0	3

Sessional:	25 Marks
Theory:	75 Marks
Total:	100 Marks
Duration of Exam:	3 Hours

Pre- Requisite: Basics of how to use a computer, and should be able to start a command line shell

Successive: Programming in Java

Course Objectives: In this course, the objective is to understand why Java is useful for the design of desktop and web applications, how to implement object-oriented designs using Java, how to identify Java language components and how they work together in applications, as well as how to develop and program stand-alone Java applications.

Course Outcomes: At the end of the course, Candidates will be able to:

- CO1. Use an integrated development environment to write, compile, run, and test simple object-oriented Java programs.
- CO2. Read and make elementary modifications to Java programs that solve real-world problems.
- CO3. Validate input in a Java program.
- CO4. Identify and fix defects and common security issues in code.

Course Content:

Unit: 1 Fundamentals of Object-Oriented Programming: Object-Oriented Paradigm – Basic Concepts of Object-Oriented Programming – Benefits of Object-Oriented Programming – Application of Object-Oriented Programming. Java Evolution: History – Features – How Java differs from C and C++ – Java and Internet – Java and www – Web Browsers. Overview of Java: simple Java program – Structure – Java Tokens – Statements – Java Virtual Machine.

Unit: 2 Constants, Variables, Data Types - Operators and Expressions – Decision Making and Branching: if, if-else, nested if, switch ? : Operator - Decision Making and Looping: while, do, for – Jumps in Loops - Labeled Loops – Classes, Objects and Methods. Generic and Collections, Garbage Collection.

Unit: 3 Arrays, Strings and Vectors, Abstract class and its uses, Interfaces, Inheritance: Types of Inheritance, Packages, Threading and Concurrency, Introduction to JDBC.

Unit: 4 Managing Errors and Exceptions – Applet Programming – Graphics Programming. Managing Input / Output Files in Java : Concepts of Streams- Stream Classes – Byte Stream classes – Character stream classes – Using streams – I/O Classes – File Class – I/O exceptions – Creation of files – Reading / Writing characters, Byte-Handling Primitive data Types – Random Access Files.

Reference books:

1. Programming with java – a primer - E. Balagurusamy, 3 rd Edition, TMH
2. The complete reference java 2 - Patrick Naughton & Hebert Schildt, 3rd ed, TMH
3. Programming with java – John R. Hubbard, 2nd Edition, TMH.

B. Voc. (Web Development) IIIrd Semester

COMPUTER NETWORKS

WD-302

No. of Credits:	3	Sessional:	25 Marks		
L	T	P	Total	Theory:	75 Marks
3	0	0	3	Total:	100 Marks
				Duration of Exam:	3 Hours

Pre- Requisite: Basic Knowledge of Computers and Communication

Successive: Networking concepts

Course Objectives: In this course, the objective is to discuss basic concepts, the need, and the various components in Networking, Learn the different types of network topologies used in a network, Understand the importance of LAN components, protocols, addressing schemes, and learn the basic concepts of WAN connectivity and its devices.

Course Outcomes: At the end of the course the students are able to:

CO1: Explain the layered architecture of computer networks and it's importance

CO2: Reason out the motivating factors to design efficient MAC protocol improving spectrum utilization efficiency

CO3: Make out the operation of TCP, its application scenarios and constraints in wireless domain

Course Content:

Unit 1: Introduction to Networking and Topologies

Overview of Networking, Need for Networking, Hardware and Software components, Network Communication Standards, OSI Reference Model, TCP/IP Model, Overview of network topologies, Basic topologies- bus, ring, star, mesh and hybrid.

Unit 2: LAN Components and Protocols

LAN Cables – Co-axial, twisted pair, optical fibre, LAN connectors- co-axial cable, and twisted pair cable, optical fibre, LAN devices – repeaters, hubs, switches, NIC, WLANs. Lower Layer Protocols – ARCnet, Ethernet, Ethernet Communication, Fast Ethernet, Gigabit Ethernet, Token Ring, Token Ring Frame format, Fault Management and tolerance, FDDI, Middle Layer Protocols- TCP/IP, Higher Layer Protocols- HTTP,FTP, SMTP, IMAP.

Unit 3: Network Addressing

Introduction, TCP/IP addressing scheme- Components of IP addressing, IP address classes, Limitations of IP address classes, IP subnetting – Creating subnets in networks, Communication across subnets, Subnetting Considerations, Subnetting Limitations, IPv6.

Unit 4: World Wide Web

Architectural Overview, Static Web Documents, Dynamic Web Documents, HTTP – HyperText Transfer Protocol, Performance Enhancements.

Reference Books:

1. A. Leon –Garcia, Indra Widjaja, “Communication Networks”, Tata McGraw Hill.
2. W. Stallings, “Data and Computer Communication”, 7th edition, PHI, New Delhi
3. M.Steen Strub, “Routing in Communication networks”, PH, New York.
4. William Stallings, High speed Networks TCP/IP & ATM Design Principles, PH, NY

B. Voc. (Web Development) IIIrd Semester

DATABASE MANAGEMENT SYSTEM

WD-303

No. of Credits:	3		
L	T	P	Total
3	0	0	3

Sessional:	25 Marks
Theory:	75 Marks
Total:	100 Marks
Duration of Exam:	3 Hours

Pre- Requisite: Basic programming concepts

Successive: Database connectivity

Course Objectives: In this course, the objective is to teach basic database concepts, applications, data models, schemas and instances. It also aims to familiarize students with the Entity Relationship Model for a database. It will demonstrate the use of constraints and relational algebra operations, and provide an introduction to SQL, as well as the construction of queries.

Course Outcomes: At the end of the course the students are able to:

CO1: Use the basic concepts of Database Systems in Database design

CO2: Apply SQL queries to interact with Database

CO3: Design a Database using ER Modelling

CO4: Apply normalization on database design to eliminate anomalies

Course Contents:

Unit: 1 Introduction: Introduction and applications of DBMS, Purpose of database, Data, Independence, Database System architecture- Levels, Mappings, Database, users and DBA
DATABASE DESIGN: Database Design Process, ER Diagrams - Entities, Attributes, Relationships, Constraints, keys, extended ER features, Generalization, Specialization, Aggregation, Conceptual design with the E-R model.

Unit: 2 The Relational Model: Introduction to the relational model, Integrity constraints over relations, Enforcing integrity constraints, Querying relational data, Logical database design: E-R to relational, Introduction to views, Destroying/altering tables and views. Relational Algebra And Calculus: Preliminaries, relational algebra operators, relational calculus - Tuple and domain relational calculus, expressive power of algebra and calculus.

Unit: 3 SQL: Basics of SQL, DDL, DML, DCL, structure – creation, alteration, defining constraints – Primary key, foreign key, unique, not null, check, IN operator, Functions - aggregate functions, Built-in functions – numeric, date, string functions, set operations, sub-queries, correlated subqueries, Use of group by, having, order by, join and its types, Exist, Any, All, view and its types. Transaction control commands – Commit, Rollback, Save point, cursors, stored procedures, Triggers.

Unit: 4 Schema Refinement and Normal Forms: Introduction to schema refinement, functional dependencies, reasoning about FDs. Normal forms: 1NF, 2NF, 3NF, BCNF, properties of decompositions, normalization, schema refinement in database design, case studies.

Unit: 5 Transactions Management: Transaction concept, transaction state, implementation of atomicity and durability, concurrent executions, Serializability, recoverability, implementation of isolation, transaction definition in SQL, testing for Serializability.

Reference Books:

1. Raghurama Krishnan, Johannes Gehrke, Database Management Systems, 3rd edition, Tata McGraw Hill, New Delhi, India.
2. Elmasri Navate, Fundamentals of Database Systems, Pearson Education, India.

B. Voc. (Web Development) IIIrd Semester

EMPLOYABILITY SKILLS

BSC-302ES

No. of Credits:				3
L	T	P	Total	
3	0	0	3	

Sessional:	25 Marks
Theory:	75 Marks
Total:	100 Marks
Duration of Exam:	3 Hours

Pre- Requisite: Communication skills, soft skills.

Successive: Professional and personal development.

Course Objectives: The objective of studying this course is to encourage the all-round development of students by focusing on behavioral skills and to make the students aware of the importance, the role and the content of behavioral skills through instructions, knowledge acquisition, demonstration and practice.

Course Outcomes: At the end of the course, the student shall be able to:

CO1: Understand the importance of behavioral skills.

CO2: Effectively communicate through verbal and nonverbal communication.

CO3: Function effectively in multi di.

CO4: To acquire knowledge on Voices and Sentence Making.

Course Contents:

Unit 1: Behavior skills

An Introduction – Definition and Significance of Soft Skills; Process, Importance and Measurement of Soft Skill Development.

Unit 2: Body Language: Gesture, posture, facial expression, Group Discussion– Giving up of PREP, REP Technique, Presentation Skills: How to make a PowerPoint presentation and Body language during presentation.

Unit 3: Teamwork and PDP: Teamwork Skills, Leadership Skills, Personality Development, Conflict Management, Decision-Making and Problem-Solving Skills.

Unit4: Writing Skills: Letter Writing, business letter, application letter, covering letter, formal mail, report writing, academic report, business report, technical project report, job application and resume writing.

Reference Books:

1. Wren and Martin. High School English Grammar and Composition. New Delhi:RRP, 2007
2. Murphy, Raymond. Essential English Grammar. New Delhi: Cambridge, 2017.
3. Malhotra, Prerna and Halder, Deb. Communication Skills: Theory and Practice.

B. Voc. (Web Development) IIIrd Semester

SQL & PHP Lab

WD-L-301

No. of Credits:				3
L	T	P	Total	
0	0	3	3	

Internal:	30 Marks
External:	70 Marks
Total:	100 Marks
Duration of Exam:	3 Hours

Pre- Requisite: Object oriented concepts

Successive: Database connectivity

Course Objectives: As part of this course, students will be introduced to basic database concepts, applications, data models, schemas and instances. There will be demonstrations of constraints and relational algebra operations, as well as an introduction to SQL and how to construct queries using SQL, as well as assistance with database design.

Course Outcomes: After the completion of this course, the students will be able to:

CO1: Apply the basic concepts of Database Systems and Applications.

CO2: Use the basics of SQL and construct queries using SQL in database creation and interaction.

CO3: Design a commercial relational database system (Oracle, MySQL) by writing SQL using the system.

CO4: Analyze and Select storage and recovery techniques of database systems.

Course Contents: SQL

1. Creation of a database and writing SQL queries to retrieve information from the database. Performing Insertion, Deletion, Modifying, Altering, Updating and Viewing records based on conditions.
2. Creation of Views, Synonyms, Sequence, Indexes, Save point.
3. Creating an Employee database to set various constraints.
4. Creating relationships between the databases.
5. Study of PL/SQL blocks.
6. Write a PL/SQL block to satisfy some conditions by accepting input from the user.
7. Write a PL/SQL block that handles all types of exceptions.
8. Creation of Procedures.
9. Creation of database triggers and functions
10. Mini projects (Application Development) Any one
 - i. Inventory Control System.
 - ii. Material Requirement Processing.
 - iii. Hospital Management System.
 - iv. Railway Reservation System.
 - v. Personal Information System.
 - vi. Web Based User Identification System.
 - vii. Timetable Management System.
 - viii. Hotel Management System

PHP

1. Study of web Standards & Web Based Architecture

2. Study of Basic Computer Languages. Design Student Sign-UP Form Using HTML, JavaScript, HTML5 & CSS
3. Introduction to PHP programming, XAMPP Tool and Dreamweaver Editor. Write a Simple Hello Program in PHP by Installing & Configuring XAMPP with Dreamweaver
4. Study of Basic Building Blocks in PHP. Write a Program in PHP for type Casting Of a Variables
5. Study of Control Structure & Loops in PHP. Write a Program In PHP to Display Multiplication Table Using Nested For Loop
6. Study of Array and Function In PHP. Write a program In PHP to Sort an array using function (Bubble Sort)
7. Study of Form handling In PHP. Design a personal Information form , then Submit & Retrieve the Form Data
8. Using \$_GET(), \$_POST() and \$_REQUEST() Variables
9. Study of Server Side Validation and Page Redirection In PHP. Design A Login Form and Validate that Form using PHP Programming
10. Study of Cookies and Sessions In PHP. Create Admin Login ,Logout form using session variables
11. Study of MYSQL DDL, DML, DCL Commands. Installation Of MYSQL 5.5 On windows and Executes their basic Commands
12. Study of PHP Database Connectivity with MYSQL. Write a PHP Code to make database connection, Create Database, Create Table In Mysql.
13. Study of MYSQL DataBase Operation. Write a PHP code Insert, Delete, Update, Select the Data From Database
14. Study of Image Uploading in PHP. Design A form which upload And Display Image in PHP
15. Mini Project in PHP

Reference Books:

1. Database System Concepts” by Abraham Silberschatz and S Sudarshan. ...
2. “ Introduction to Database Management Systems” by Kahate. ...
3. “ An Introduction to Database Systems” by Bipin Desai. ...
4. “ Principles of Database Systems” by J D Ullman.

B. Voc. (Web Development) IIIrd Semester

JAVA PROGRAMMING LAB

WD-L-302

No. of Credits:		3	
L	T	P	Total
0	0	3	3

Internal:	30 Marks
External:	70 Marks
Total:	100 Marks
Duration of Exam:	3 Hours

Pre- Requisite: Object oriented concepts

Successive: Java Programming Language

Course Objectives: This course aims to teach the fundamentals of object-oriented programming in Java, and to assist students in understanding the various concepts of the Java programming language. In this course, students will learn how to build, debug, and run simple Java programs within the Java environment. For the purpose of demonstrating the Java compiler, Eclipse platform, and the NetBeans IDE for the purpose of creating Java applications.

Course Outcomes: After the completion of this course, the students will be able to:

CO1: Develop Java programs using packages, inheritance and interface.

CO2: Create multithreaded programs.

CO3: Develop graphical User Interface using AWT.

CO4: Demonstrate event handling mechanism.

Course Content:

1. Write a Java program that prints all real solutions to the quadratic equation $ax^2 + bx + c = 0$. Read in a, b, c and use the quadratic formula. If the discriminant $b^2 - 4ac$ is negative, display a message stating that there are no real solutions.
2. Write a Java program that uses both recursive and non-recursive functions to print the nth value in the Fibonacci sequence.
3. Write a Java program that prompts the user for an integer and then prints out all prime numbers up to that integer.
4. Write a Java program to multiply two given matrices.
5. Write a Java Program that reads a line of integers, and then displays each integer, and the sum of all the integers
6. Write a Java program that checks whether a given string is a palindrome or not. Ex: MADAM is a palindrome.
7. Write a Java program for sorting lists of names. Read input from the command line.
8. Write a Java program to make frequency count of words in a given text.
9. Write a Java program to create a Student class with following fields i. Hall ticket number ii. Student Name iii. Department Create 'n' number of Student objects where 'n' value is passed as input to constructor.
10. Write a Java program to demonstrate String comparison using `==` and `equals` method.
11. Write a java program to create an abstract class named Shape that contains an empty method named number Of Sides (). Provide three classes named Trapezoid, Triangle and Hexagon such that each one of the classes extends the class Shape. Each one of the classes contains only the method number Of Sides () that shows the number of sides in the given geometrical figures.
12. Suppose that a table named Table.txt is stored in a text file. The first line in the file is the header, and the remaining lines correspond to rows in the table. The elements are separated by commas. Write a java program to display the table using JTable component.

13. Write a Java program to read copy content of one file to another by handling all file related exceptions.
14. Write a Java program that reads a file name from the user, and then displays information about whether the file exists, whether the file is readable, whether the file is writable, the type of file and the length of the file in bytes. Write a Java program that reads a file and displays the file on the screen, with a line number before each line. Write a Java program that displays the number of characters, lines and words in a text file.
15. Write a Java program that creates three threads. First thread displays “Good Morning” every one second, the second thread displays “Hello” every two seconds and the third thread displays “Welcome” every three seconds. Write a Java program that correctly implements producer consumer problem using the concept of inter thread communication.
16. Write a Java program that works as a simple calculator. Use a grid layout to arrange buttons for the digits and for the +, -, *, % operations. Add a text field to display the result.
17. Write a Java program for handling mouse events. Write a Java program for handling key events using Adapter classes.
18. Write a java program that simulates a traffic light. The program lets the user select one of three lights: red, yellow, or green. When a radio button is selected, the light is turned on, and only one light can be on at a time. No light is on when the program starts.
19. Write a Java program that allows the user to draw lines, rectangles and ovals.
20. Develop a simple calculator using Swings. Develop an applet that displays a simple message in the center of the screen.

Reference Books:

1. Java Programming Lab Manual with Study Guide by Syed Ahmed

B. Voc. (Web Development) IIIrd Semester

WORDPRESS LAB

WD-L-303

No. of Credits:	2		
L	T	P	Total
0	0	2	2

Internal:	30 Marks
External:	70 Marks
Total:	100 Marks
Duration of Exam:	3 Hours

Pre- Requisite: Knowledge of Programming language

Successive: Making websites

Course Objectives: The main goals of this course are to develop skills in analyzing the usability of a web site, to understand how to plan and conduct user research related to web usability, to learn the language of the web: HTML and CSS, to learn CSS grid layout and to learn CSS flexbox.

Course Outcomes: After the completion of this course, the students will be able to:

CO1: Have the ability to completely design a theme for WordPress.

CO2: Can build plug-ins and widgets using PHP.

CO3: Can use WordPress Database.

CO4: Are comfortable with the security and extensibility of your website.

Course Content:

1. Introduction to WordPress
2. Creating posts and pages
3. Formatting text
4. Publishing and scheduling posts
5. Adding images, audio, and video
6. Managing content
7. Customizing Appearance
8. Using widgets
9. Working with plug-ins
10. Editing users profiles
11. Configuring settings
12. Interacting with readers
13. Security and maintenance

Reference Books:

1. WordPress 5 Complete: Build beautiful and feature-rich websites from scratch, 7th Edition by Karol Król
2. WordPress Development Quick Start Guide by Paperback, Ratnayake Rakhitha Nimesh
3. Learn WordPress in Easy Way by Dr. Ritesh Kumar

FOURTH SEMESTER

Subject Code	Subject Name	L-T-P	Credits	Marks Weightage		Course Type
				Internal	External	
WD-401	Introduction to Python	3-0-0	3	25	75	PCC
WD-402	Web Technologies using ASP(dot)NET	3-0-0	3	25	75	PCC
WD-L-401	Python Lab	0-0-3	3	30	70	SDP
BSC-401P	Project	0-0-2	2	30	70	SDP
OEC-401 to 403	Open Elective Course	3-0-0	3	25	75	OEC
WD-L-402	ASP(dot)NET Lab	0-0-3	3	30	70	SDP
PEC- WD-401 to 403	Program Elective Course	3-0-0	3	25	75	PEC
Total		12-0-8	20	190	510	

B. Voc. (Web Development) IVth Semester

INTRODUCTION TO PYTHON

WD-401

No. of Credits:	3		
L	T	P	Total
3	0	0	3

Sessional:	25 Marks
Theory:	75 Marks
Total:	100 Marks
Duration of Exam:	3 Hours

Pre- Requisite: Basic knowledge of C & C++

Successive: Full knowledge of Python

Course Objectives: The main objective of this course is to provide you with a comprehensive understanding of Python programming basics and paradigms, as well as looping, control statements, and string manipulation. The concept of GUI controls and the design of GUI applications, along with handling files, handling exceptions, and connecting to databases, should be familiar to students.

Course Outcomes: After the completion of this course, the students will be able to:

CO1: Explain basic principles of Python programming language.

CO2: Implement object oriented concepts.

CO3: Implement database and GUI applications.

Course Content:

Unit:1 Familiarization with the basics of Python programming, process of writing a program, running it, and print statements; simple data types: integer, float, string. Introduce the notion of a variable, and methods to manipulate it, Knowledge of data types and operators, assignment statement, expressions, operators and their precedence.

Unit:2 Accepting input from the console, accepting input with specific data type, Conditional statements: if, if-else, if-elif-else; loops, while loops and programs using these iterative and control statements together.

Unit:3 Strings, Tuples, Lists; String methods and formatting, user defined functions and their declaration, Array and operations on array. List and Dictionary

Unit:4 Object oriented programming in python; Classes and Objects; initialization of objects using init in python, different types of inheritance used in python, operator overloading for arithmetic, logical or assignment operators.

Reference Books:

1. Introduction to Computing and Problem Solving with Python, Jeeva Jose, Khanna Publishing House
2. Taming Python by Programming, Jeeva Jose, Khanna Publishing House
3. Michael Urban and Joel Murach, Python Programming, Shroff/Murach, 2016

B. Voc. (Web Development) IVth Semester
WEB TECHNOLOGIES USING ASP(dot)NET
WD-402

No. of Credits:		3	
L	T	P	Total
3	0	0	3

Sessional:	25 Marks
Theory:	75 Marks
Total:	100 Marks
Duration of Exam:	3 Hours

Pre- Requisite: HTML, CSS, JAVASCRIPT

Successive: Full Stack Developer

Course Objectives: The main objective of this course is to explore .NET technologies for designing and developing dynamic, interactive, and responsive web applications. Provide a consistent, object-oriented programming environment regardless of the location in which the object code is stored and executed, whether the object code is executed locally but is distributed through the internet, or whether it is executed remotely.

Course Outcomes: After the completion of this course, the students will be able to:

CO1: Understand the .NET framework.

CO2: Develop a proficiency in the C# programming language.

CO3: Proficiently develop ASP.NET web applications using C#.

CO4: Use ADO.NET for data persistence in a web application.

Course Content:

Unit: 1 Basics: OOPs Concept, Classes and Objects, Inheritance, Polymorphism, Abstraction and Encapsulation Introduction to Standard Controls: Display information, accepting user input, submitting form data, displaying images, using the panel control, using the hyperlink control. Introduction to Validation Controls: Using the required field validator control, using the range validator control using the compare validator control, using the regular expression validator control, using the custom validator control, using the validation summary controls. Introduction to Rich Controls: Accepting file uploads, displaying a calendar, displaying advertisement, displaying different page views, displaying a wizard.

Unit: 2 Designing Website with Master Pages: Creating master pages, Modifying master page content, Loading master page dynamically. List Controls: Dropdown list control, Radio button list controls, list box controls, bulleted list controls, custom list controls. Grid View Controls: Grid view control fundamentals, using field with the grid view control, working with grid view control events extending the grid view control.

Unit: 3 SQL Data Source Control: Creating database connections, executing database commands, Using ASP.NET parameters with the SQL data source controls, programmatically executing SQL data source commands, Caching database data with the SQL data Source controls.

Unit: 4 Building Data Access Components with ADO.NET: Data table Object, Connected data access, Disconnected data access, Using dbCommand Object , Connection classes, Executing a synchronous database commands, Using the DbDataReader Object, Using DbDataAdapter Object, ListBox ADO.Net Data Binding, Building database objects with the .NET framework.

Reference Books:

1. Professional ASP.NET 4.5 in C# and VB, Wrox Publication, Jason N. Gaylord, Christian Wenz, Pranav Rastogi, Todd Miranda, Scott Hanselman, Scott Hunter

2. .Pro ASP.NET 4.5 in C#, Apress Publication, Freeman, Adam, MacDonald, Matthew, Szpuszta, Mario

B. Voc. (Web Development) IVth Semester

PYTHON LAB

WD-L-401

No. of Credits:	3		
L	T	P	Total
0	0	3	3

Internal:	30 Marks
External:	70 Marks
Total:	100 Marks
Duration of Exam:	3 Hours

Pre- Requisite: HTML, CSS, JAVASCRIPT

Successive: Full Stack Developer

Course Objectives: The main objective of this course is to be able to introduce core programming basics and program design with functions using the Python programming language, and to provide a variety of Object-Oriented Programming techniques, as well as in-depth techniques for processing data and information. We will also learn how to utilize high-performance programs in order to increase our practical skills.

Course Outcomes: After the completion of this course, the students will be able to:

CO1: Students should be able to understand the basic concepts of scripting and the contributions of scripting language.

CO2: Ability to explore python especially the object-oriented concepts, and the built-in objects of Python.

CO3: Ability to create practical and contemporary applications such as TCP/IP network programming, Web applications, discrete event simulations

Course Content:

1. Write a program to add two numbers.
2. Write a program to find a maximum of two numbers.
2. Write a program to find the factorial of a number.
3. Write a program to find simple interest.
4. Write a program to find compound interest.
5. Write a program to check Armstrong Number.
6. Write a program to find the area of a circle.
7. Write a program to print all Prime numbers in an Interval.
8. Write a program to check whether a number is Prime or not.
9. Write a program for n-th Fibonacci number.
10. Write a program for how to check if a given number is a Fibonacci number.
11. Write a program for nth multiple of a number in Fibonacci Series.
12. Write a program to print ASCII Value of a character.
13. Write a program for Sum of squares of first n natural numbers.
14. Write a program for cube sum of first n natural numbers.

Array Programs:

1. Write a program to find the sum of the array.
2. Write a program to find the largest element in an array.
3. Write a program for array rotation.
4. Write a program for Reversal algorithm for array rotation.
5. Write a program to Split the array and add the first part to the end.

6. Write a program for Find remainder of array multiplication divided by n.
7. Python Program to check if a given array is Monotonic.

List Programs:

1. Write a program to interchange first and last elements in a list.
2. Write a program to swap two elements in a list.
3. Write a program to find the length of the list.
4. Write a program to check if an element exists in a list.
5. Write a program of different ways to clear a list in Python.
6. Write a program for reversing a List.
8. Write a program to find the sum of elements in a list.
9. Write a program to multiply all numbers in the list.
10. Write a program to find the smallest number in a list.
11. Write a program to find the largest number in a list.

Reference Books:

1. Introduction to Computing and Problem Solving With Python, Jeeva Jose, Khanna Publishing House
2. Taming Python by Programming, Jeeva Jose, Khanna Publishing House
3. Michael Urban and Joel Murach, Python Programming, Shroff/Murach, 2016
4. Mark Lutz, Programming Python, O`Reilly, 4th Edition, 2010

B. Voc. (Web Development) IVth Semester

ASP(dot)NET LAB

WD-L-402

No. of Credits:				3
L	T	P	Total	
0	0	3	3	

Internal:	30 Marks
External:	70 Marks
Total:	100 Marks
Duration of Exam:	3 Hours

Pre- Requisite: C & C++

Successive: Applications

Course Objectives: The main objective of this course is to introduce you to the .Net IDE Component Framework, programming concepts in the .Net Framework, and creating a website using ASP.Net Controls as part of this learning experience.

Course Outcomes: After the completion of this course, the students will be able to:

CO1: Create user interactive web pages using ASP.Net.

CO2: Create simple data binding applications using ADO.Net connectivity.

CO3: Performing Database operations for Windows Form and web applications.

Course Content:

1. Introduction to C#, .net framework, feature, etc.
2. To Study Design of form and Database Connectivity.
3. To state management technique.
4. To study the web server controls of asp.net.
5. Master Page and content page.
6. To study the Validation controls in asp.net.
7. To study the grid view control in asp.net.
8. To study the ADO.net and Stored procedure in asp.net.
9. To study Dynamic link Library.
10. To Study Crystal reports

Reference Books:

1. ASP.NET Programmer's Reference by Paperback, Caison Charles
2. ASP.NET Core in Action, Second Edition by Andrew Lock
3. ASP.NET 4.5, Covers C# and VB Codes, Black Book by Kogent Learning Solutions Inc.

B. Voc. (Web Development) IVth Semester

ENTREPRENEURSHIP

OEC-401

No. of Credits:	3		
L	T	P	Total
3	0	0	3

Sessional:	25 Marks
Theory:	75 Marks
Total:	100 Marks
Duration of Exam:	3 Hours

Pre- Requisite: Communication Skills, soft skills.

Successive: Business and Industrial management.

Course Objectives: The objective of studying this course is that the students acquire necessary knowledge and skills required for organizing and carrying out entrepreneurial activities, to develop the ability of analyzing and understanding business situations in which entrepreneurs act and to master the knowledge necessary to plan entrepreneurial activities.

Course Outcomes: At the end of the course, the student shall be able to:

CO1: Apply the concepts of entrepreneurship development and significance of entrepreneurship in economic development.

CO2: Understand the key resources required to develop an existing business such as ideas and finance, launch a new venture, or initiate a business enterprise.

CO3: Understand the central role of opportunity recognition and marketing to business development.

CO4: Acknowledge the support available from the Government to start a new venture.

Course Content:

Unit 1: Entrepreneurship and entrepreneur: Entrepreneurship concept and process, Entrepreneur, Essential Characteristics of a good Entrepreneur, Types of entrepreneurs, Industrial Policy, Classification of industries- Micro, small scale, medium scale, large scale, Product identification/ selection, Site selection, Plant layout, Pre-market survey.

Unit 2: Entrepreneurship Support System and Start-ups: Introduction to start-up's, Role of District Industries Centre in setting up industry, Function of NSIC, SISI, NISIET, NRDC, SSIC, SIDO, NMTC, KVIC, RSMML, Role of state finance corporation, state electricity corporations, pollution control board, BIS, I.S.O. etc.

Unit 3: Introduction to Tax System, and Acts: Idea of income tax, Goods and Services Tax and custom duty, Introduction to Industrial Acts, factory Act, Workmen's Compensation Act 1923, Apprentices Act 1961, Environmental Protection Act 1986.

Unit 4: Project Report Preparation: Procedure of preparing a project report, Format of project report, Preparation of project report, Introduction to ISO: 9000 Series of Quality System

Reference Books:

1. Khanka S.S., "Entrepreneurship Development" S. Chand
2. Desai, A N. "Entrepreneur & Environment" Ashish, New Delhi.
3. Drucker, Peter. "Innovation and Entrepreneurship" Heinemann, London.
4. Jain Rajiv. "Planning a Small-Scale Industry: A Guide to Entrepreneurs" S.S. Books, Delhi.
5. Kumar, S A. "Entrepreneurship in Small Industry" Discovery, New Delhi.

B. Voc. (Web Development) IVth Semester

TRENDS IN TECHNOLOGY

OEC-402

No. of Credits:	3	Sessional:	25 Marks		
L	T	P	Total	Theory:	75 Marks
3	0	0	3	Total:	100 Marks
				Duration of Exam:	3 Hours

Pre- Requisite: Nil

Course Objectives: The objective of studying this course is to make students aware of the changes in technologies, applications and Systems around us.

Course Outcomes: At the end of the course, the student shall be able to:

CO1: Familiarize with the central concepts in innovation.

CO2: Learn about critical digitized components.

CO3: Know about the future trends based on technology outlooks – where are we now and where are we heading

CO4: Critically analyze, even practice “how to enable” innovation.

Course Content:

Unit 1: E-Commerce: Introduction: E-commerce as Business need-commerce, Types, Advantages, Disadvantages, e-Commerce Architecture; Internet Payment Systems, Characteristics, 4C Payment Methods, SET Protocol for Credit Card Payment, E-Cash, E-Check, Overview of Smart Card,

Unit 2: E-mail & Internet: Introduction, E-mail Account & Its Functions, Search Engine, Surfing Webpages, Basics of Social Networking Site.

Unit 3: E-Banking Transactions: Inter Banking, Intra Banking, Electronic Payments, (Payment – Gateway Example), Securities in E-banking (SSL, Digital Signatures – Examples), Services Provided: ATM, Smart Card ECS (Electronic Clearing System), e.g., Telephone, Electricity Bills.

Unit 4: E – Governance & E – Agriculture: E –Governance Models: (G2B, G2C, C2G, G2G), Challenges to E – Governance, Strategies and tactics for implementation of E – Governance, Types of Agriculture information (Soil, Water, Seeds, Market rate) & Technique dissemination, Future trade marketing, Corp Management, Query redresses System, (Information Kiosk, IVR, etc.), Case Study.

Unit 5: E-learning: Models WBT, CBT, Virtual Campus, LMS & LCMS, Video Conferencing, Chatting Bulleting, Building Online Community, Asynchronous / Synchronous Learning, Case Study.

Reference Books:

1. Internet (Use of Search Engines Google & yahoo etc.).
2. E-Commerce: C.V.S. Murty.
3. Fire Wall and Internet Security: William Cheswick, Stevens, Aviel, Rubin.
4. The Essential Guide to Knowledge management: Amrit Tiwana.
5. The GIS Book: George B. Karte.
6. Management Information System: Laudon & Laudon

B. Voc. (Web Development) IVth Semester

WASTE MANAGEMENT

OEC-403

No. of Credits:	3	Sessional:	25 Marks		
L	T	P	Total	Theory:	75 Marks
3	0	0	3	Total:	100 Marks
				Duration of Exam:	3 Hours

Pre- Requisite: Nil

Course Objectives: The purpose of this course is to introduce the sources of solid waste and hazardous waste. It also studies waste exchange, to understand how municipal solid waste is stored and collected, and to understand the principles of waste management.

Course Outcomes: At the end of the course, the student shall be able to:

CO1: Learn various sources of the solid waste.

CO2: Improve understanding of handling of waste.

CO3: Acquire knowledge about steering and suspension systems.

CO4: Understand Disposal in landfills.

Course Content:

Unit 1: Sources, Classification and Regulatory Framework: Types and Sources of solid and hazardous wastes - Need for solid and hazardous waste management – Elements of integrated waste management and roles of stakeholders - Salient features of Indian legislations on management and handling of municipal solid wastes, hazardous wastes, biomedical wastes, lead acid batteries, electronic wastes, plastics and fly ash – Financing waste management.

Unit 2: Waste Characterization and Source Reduction: Waste generation rates and variation - Composition, physical, chemical and biological properties of solid wastes – Hazardous Characteristics – TCLP tests – waste sampling and characterization plan - Source reduction of wastes –Waste exchange - Extended producer responsibility - Recycling and reuse Practical: Composition of MSW, Determination of Physical and Chemical Properties of MSW.

Unit 3: Storage, Collection and Transport of Wastes: Handling and segregation of wastes at source – storage and collection of municipal solid wastes – Analysis of Collection systems - Need for transfer and transport – Transfer stations Optimizing waste allocation– compatibility, storage, labeling and handling of hazardous wastes – hazardous waste manifests and transport.

Unit 4: Waste Processing Technologies: Objectives of waste processing – material separation and processing technologies – biological & chemical conversion technologies – methods and controls of Composting - thermal conversion technologies, energy recovery – incineration – solidification & stabilization of hazardous wastes- treatment of biomedical wastes

Unit 5: Waste Disposal: Waste disposal options – Disposal in landfills - Landfill Classification, types and methods – site selection - design and operation of sanitary landfills, secure landfills and landfill bioreactors – leachate and landfill gas management – landfill closure and environmental monitoring – Rehabilitation of open dumps – landfill remediation.

Reference Books:

1. George Tchobanoglous et al, “Integrated Solid Waste Management”, McGraw - Hill, 2014.
2. Manual on Municipal Solid waste Management, CPHEEO, Ministry of Urban Development, Govt. Of. India, New Delhi, 2000.

B. Voc. (Web Development) IVth Semester

TECHNOLOGY TRENDS IN IT

PEC-WD-401

No. of Credits:	3		
L	T	P	Total
3	0	0	3

Sessional:	25 Marks
Theory:	75 Marks
Total:	100 Marks
Duration of Exam:	3 Hours

Pre- Requisite: Networking basics

Successive: Basics of IOT

Course Objectives: In this course, students will be able to gain an understanding of the basics of the Internet of Things, be able to analyze basic protocols of wireless and MAC, be able to comprehend the concept of the web of things, and be able to understand the specialized aspects of big data, such as applications and analytics that will be used with big data.

Course Outcomes: At the end of the course, the student shall be able to:

CO1: Understand basic knowledge about the Internet of Things.

CO2: Understand management of resources in the Internet of Things.

CO3: Understand the concepts, characteristics, delivery models and benefits of cloud computing.

CO4: Students must be able to understand the specialized aspects of big data with the help of different big data applications.

Course Content:

Unit: 1 Internet of Things (IoT) – Introduction to IoT, Characteristics of IoT, Physical design of IoT, Logical design of IoT, Functional blocks of IoT, Communication models & APIs, IoT & M2M Machine to Machine, Difference between IoT and M2M, Software define Network, Challenges in IoT (Design, Development, Security), Wireless medium access issues, MAC protocol survey, Survey routing protocols, Sensor deployment & Node discovery, Data aggregation & dissemination.

Unit: 2 Internet of Things (IoT): Web of Things vs Internet of things, two pillars of web, Architecture and standardization of IoT, Unified multitier-WoT architecture, WoT portals and Business intelligence, Domain specific applications of IoT, Home automation, Industry applications, Surveillance applications, Other IoT applications Clustering, Synchronization, Software agents.

Unit: 3 Cloud Computing: SaaS, PaaS, IaaS, Public and Private Cloud; Virtualization, Virtual Server, Cloud Storage, Database Storage, Resource Management, Service Level Agreement.

Unit: 4 Big Data Systems: Big Data Characteristics, Types of Big Data, Big Data Architecture, Introduction to Map- Reduce and Hadoop; Distributed File System, HDFS. NOSQL: NOSQL and Query Optimization; Different NOSQL Products, Querying and Managing NOSQL; Indexing and Ordering Data Sets; NOSQL in Cloud.

Reference Books:

1. Computer Today, A. Ravichandran, Khanna Publishing House
2. Internet of Things, Jeeva Jose, Khanna Publishing House
3. Big Data and Hadoop, V.K. Jain, Khanna Publishing House
4. Data Sciences and Analytics, V.K. Jain, Khanna Publishing House

B. Voc. (Web Development) IVth Semester

INTRODUCTION TO AI

PEC-WD-402

No. of Credits:	3		
L	T	P	Total
3	0	0	3

Sessional:	25 Marks
Theory:	75 Marks
Total:	100 Marks
Duration of Exam:	3 Hours

Course Objectives: In this course, students will be able to gain a historical perspective on artificial intelligence (AI) and how it was developed. They will also gain a solid understanding of the basic principles of artificial intelligence in relation to problem solving, inference, perception, knowledge representation, and learning. Additionally, you will have the opportunity to explore the applications of artificial intelligence techniques to intelligent agents, expert systems, and other models of machine learning. Furthermore, you will have the opportunity to get hands-on experience with AI development tools, such as AI languages, expert system shells, and/or data mining tools.

Computer outcomes:

- CO1: Demonstrate fundamental understanding of the history of artificial intelligence (AI) and its foundations.
- CO2: Apply basic principles of AI in solutions that require problem solving, inference, perception, knowledge representation, and learning.
- CO3: Demonstrate awareness and a fundamental understanding of various applications of AI techniques in intelligent agents, expert systems, artificial neural networks and other machine learning models.
- CO4: Demonstrate proficiency developing applications in an 'AI language', expert system shell, or data mining tool.

Course Content:

Unit 1: Overview of AI: Introduction to AI, Importance of AI, AI and its related field, AI techniques, Criteria for success. Problems, problem space and search: Defining the problem as a state space search, Production system and its characteristics, Issues in the design of the search problem Heuristic search techniques: Generate and test, hill climbing, best first search technique, problem reduction, constraint satisfaction

Unit 2: Knowledge Representation: Definition and importance of knowledge, Knowledge representation, various approaches used in knowledge representation, Issues in knowledge representation. Using Predicate Logic: Representing Simple Facts in logic, representing instances and is-a relationship, Computable function and predicate.

Unit 3: Natural language processing: Introduction syntactic processing, Semantic processing, Discourse and pragmatic processing. Learning: Introduction learning, Rote learning, learning by taking advice, learning in problem solving, learning from example-induction, Explanation based learning.

Unit 4: Expert System: Introduction, representing using domain specific knowledge, Expert system shells. Knowledge acquisition: General concepts in knowledge acquisition, early work in Machine Learning, examples of Inductive Learners, computer vision, Robotics, overview of LISP- AI language.

Reference Books:

1. Artificial Intelligence, Munish Chandra Trivedi, Khanna Publishing House

B. Voc. (Web Development) IVth Semester

COMPUTER NETWORK SECURITY

PEC-WD-403

No. of Credits:	3		
L	T	P	Total
3	0	0	3

Sessional:	25 Marks
Theory:	75 Marks
Total:	100 Marks
Duration of Exam:	3 Hours

Course Objectives: As part of this course, students will be able to: Understand basic concepts of cryptography and network security, secure a message over an insecure channel using several techniques, understand how to maintain the Confidentiality, Integrity and Availability of data, and comprehend various protocols for network security to protect against threats in networks.

Course Outcomes: After successful completion of the course, students would be able to
CO1: Provide security of the data over the network.
CO2: Do research in the emerging areas of cryptography and network security.
CO3: Implement various networking protocols.
CO4: Protect any network from the threats in the world.

Course Contents:

Unit-1: Network Concept, Benefits of Network, Network classification (PAN, LAN, MAN, WAN), Peer to Peer, Client Server architecture, Transmission media: Guided & Unguided, Network Topologies. Networking terms: DNS, URL, client server architecture, TCP/IP, FTP, HTTP, HTTPS, SMTP, Telnet OSI and TCP/IP Models: Layers and their basic functions and Protocols, Comparison of OSI and TCP/IP. Networking Devices: Hubs, Switches, Routers, Bridges, Repeaters, Gateways and Modems, ADSL.

Unit-2: Ethernet Networking: Half and Full-Duplex Ethernet, Ethernet at the Data Link Layer, Ethernet at the Physical Layer. Switching Technologies: layer-2 switching, address learning in layer-2 switches, network loop problems in layer-2 switched networks, Spanning-Tree Protocol, LAN switch types and working with layer-2 switches, Wireless LAN

Unit-3: Internet layer Protocol: Internet Protocol, ICMP, ARP, RARP. IP Addressing: Different classes of IP addresses, Sub-netting for an internet work, Classless Addressing. Comparative study of IPv4 & IPv6. Introduction to Router Configuration. Introduction to Virtual LAN.

Unit-4: Transport Layer: Functions of transport layer, Difference between working of TCP and UDP. Application Layer: Domain Name System (DNS), Remote logging, Telnet, FTP, HTTP, HTTPS. Introduction to Network Security.

Reference Books:

1. Information & Computer Security, Sarika Gupta, Khanna Publishing House
2. An Integrated Approach to Computer Networks, Bhavneet Sidhu, Khanna Publishing House

FIFTH SEMESTER

Subject Code	Subject Name	L-T-P	Credits	Marks Weightage		Course Type
				Internal	External	
WD-OJT-501	On Job Training (OJT)/ Internship	0-30-0	30	150	350	OJT
Total		0-30-0	30	150	350	

Students will go into industries for **On Job Training**. Students will be evaluated **based upon On Job Training (OJT)/Internship** including report and presentation.

SIXTH SEMESTER

Subject Code	Subject Name	L-T-P	Credits	Marks Weightage		Course Type
				Internal	External	
WD-OJT-601	On Job Training (OJT)/ Internship	0-30-0	30	150	350	OJT
Total		0-30-0	30	150	350	

Students will go into industries for **On Job Training**. Students will be evaluated **based upon On Job Training (OJT)/Internship** including report and presentation.