SYLLABUS

Bachelor of Computer Applications

2nd SEMESTER

Mission of SCS&IT, DAVV

To produce world-class professionals who have excellent analytical skills, communication skills, team building spirit and ability to work in cross cultural environment.

To produce international quality IT professionals, who can independently design, develop and implement computer applications.

Professionals who dedicate themselves to mankind, who are environment conscious, follow social norms and ethics.

School of Computer Science & IT,
Devi Ahilya Vishwa Vidyalaya, Indore
www.scs.dauniv.ac.in

Course Name: **BCA 2nd Semester**

Subject Code: **CS-3208**

Subject Name: **Object Oriented Programming Through C++ - II**

Aim of the Subject

To clear the concept and applications of object oriented programming language C++

Learning Outcomes

The students are expected to learn following after completion of the course:

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Unit 1

Introduction to OOP's Languages, Difference between procedure oriented and object oriented languages, characteristics of OOP's languages, application of OOP's, basic program structure, preprocessor directives. OOP's paradigm & concepts: Objects, Class, A sample C++ program with class, Defining member function, Introduction to- Data abstraction, Data encapsulation, Inheritance, polymorphism. Difference between structure and class

Unit 2

Scope resolution operator, Constructors and Destructors, Types of constructors: Default, Parameterized, copy constructors. . Data types in C++, Data type conversion and casting, explicit and implicit type conversion, Block, Local and Global variables, Qualifiers effecting scope and visibility of variables : Static, Auto, Extern and Register variables, Operators in C++, manipulators.

Unit 3

Access specifiers in C++ : Public, Private and Protected data member and member functions, Defining a member function of a class outside the class using scope resolution operator, inline functions, difference between macro, inline and simple function, Polymorphism: Function overloading, Operator overloading, Unary and Binary operator overloading, types of polymorphism : Compile time and Runtime Polymorphism.

Unit 4

Pointers, this pointer, pointer to object, Pointer Arithmetic, Pointer to object. Inheritance, types of inheritance : single, multiple , multilevel, hierarchical, hybrid inheritance, public, private and protected visibility in inheritance. Function overriding, pure virtual function Abstract class.

Unit 5

Templates: Function template and class templates. Working with Files: Introduction to Classes for File Stream Operation, Opening & Closing Files, Detection of End of File, Working with Files, Exception Handling.

Text Book(s)

Text book :

1.C++ : The Complete Reference by Herbert Schildt 4th Edition Mc-Graw Hill

Reference Books

1. Let Us C++ - 2nd edition by Yashavant Kanetkar – BPB Publications

2. Balaguruswamy Object Oriented Programming With C++ Fourth Edition Tata Mc-Graw Hill

3. The C++ Programming Language by Bjarne Stroustrup Addison-Wesley

Reference Material(s)

Course Name: **BCA 2nd Semester**

Subject Code: **CS-1501**

Subject Name: **Operating System Basics & PC Packages**

Aim of the Subject

To make understanding of structure and functions of operating system and become proficiency in creating formatted documents.

Learning Outcomes

The students are expected to learn following after completion of the course:

- Basics of PC packages and exposure to basic functions and services of Operating System.
- Ability to understand Process Management.
- Basic concepts of Memory Management and Disk Management.

Unit 1

Introduction: MS Word, MS Excel, and MS Powerpoint.

Introduction to Operating System: Definition, Evaluation, Functions and Services, Role of Operating System in Resource Management.

Unit 2

Types of Operating System, Multiprogramming, Time sharing, Multitasking.

Process Management: Process Concept, Process States, Process States Diagram Process Control Block.

Unit 3

CPU Scheduling: Basic Concept, Scheduling Criteria, Short-term Scheduler, Long-term Scheduler, Medium -term Scheduler, Context Switching, Dispatcher.

Unit 4

Non-preemptive Scheduling Algorithms: FCFS, SJF etc. and Preemptive Scheduling Algorithms: SRTF, Round Robin, Priority etc., Advantages and Disadvantages of various Scheduling Algorithms.

Unit 5

Basics of Memory Management: Need for Memory Management, Fixed and Variable Partitions, Internal and External Fragmentation.

Disk Structure, Disk Arm Scheduling Algorithms.

Text Book(s)

Operating Systems Concepts by Silbeschautz and Galvin.

Microsoft Office : Ron Mansdield BPB Publication

Reference Material(s)

Modern Operating System, Tanenbaum A.S., Prentice/Hall of India

Course Name: **BCA 2nd Semester**

Subject Code: **CS-2020**

Subject Name: **Electronic Circuits**

Aim of the Subject

To provide the basics of electronic circuits, in particular, the fundamental laws of electric circuit analysis.

Learning Outcomes

The students are expected to learn following after completion of the course:

- Basic electrical properties and analyze electrical circuits.
- Expose the students to the various electronic components and devices.
- Knowledge regarding electronic machines and apply them for practical problems.
- Acquire knowledge in using the concepts in the field of electronic projects and
- research.

Unit 1

Introduction of the conductor, semiconductor and insulators. Overview of the semiconductors materials like intrinsic and extrinsic semiconductors. Drift current,

diffusion current and mobility. Mechanism of current flow in semiconductors.

Overview of the semiconductor diode and formation of depletion layer. Effect of

temperature on barrier voltage, mechanism of current flow in PN junction diode. Voltage/ Current characteristics of PN junction diode. Temperature effect on V/I characteristics, ideal diode. Diode parameters like bulk resistance, static resistance and peak inverse voltage (PIV).

Unit 2

Half wave rectifier and its derivation. Finding the input ac power, efficiency, voltage

regulation and ripple factor of half wave rectifier. Full wave rectifier classification.

Overview of the Zener diode and understand V/I characteristics of Zener diode.

Junction breakdown, avalanche breakdown, biasing, application of Zener diode as a

voltage regulator, peak clipper and Zener diode as a meter protector. Schottky diode Properties of Schottky diode and its applications. Varicap or Varactor diode and its curve, construction of power diode. Tunnel diode and its V/I characteristics.

Unit 3

PNP, NPN Transistor. Transistor biasing fixed bias circuit, emitter stabilized bias and voltage divider bias. Transistor behavior on the basis of output characteristics, load line analysis and operating point (Q point) and factors affecting it. DC voltage with voltage feedback ,some numerical based on it. Transistor as a switch, amplifier and emitter follower. Classification of amplifier, multistage amplifier construction and working of RC coupled amplifier. Frequency response of R-C amplifier and its advantages and disadvantages. Transformer coupled amplifier, frequency response and its advantages and disadvantages.

Unit 4

Transistor Configuration CB ,Characteristics of CB configuration ,Common emitter configuration, Characteristics of CE configuration Common collector ,Characteristics of CC configuration , Transistor behavior on the basis of output characteristics, load line analysis and operating point (Q point) and factors affecting it. Direct coupled amplifier and its advantages and disadvantages. Overview of Class A, Class B amplifier and their voltage-current graphs. Overview of Class AB, Class C amplifier and their voltage-current graphs. Push Pull operation: - Class A and Class B push pull amplifier its operation and efficiency. Quantity of power amplifier, collector or efficiency of amplifier.

Unit 5

Distortion, harmonic distortion and cross over distortion. Construction of FET and its biasing. Some characteristics regarding FET. Some definitions and regarding FET (shorted gate drain current, pinch of voltage). Some parameters regarding FET (AC drain resistance). Construction and working of Depletion type MOSFET. Construction and working of Enhancement type MOSFET. Characteristics curve.

Text Book(s)

1. Electronic Principle by Albert Paul Malvino, McGraw-Hill 7th Edition

2. Electronic Devices and Circuits by Robert Boylstad Pearson Education

3. Malley, J. (1992). Basic Circuit Analysis, 2nd Edition. McGraw-Hill.

Reference Material(s)

Solid State Electronic Devices by Ben G.Streetman

Transistor fundamentals - charles APike

Course Name: **BCA 2nd Semester**

Subject Code: **IC-2927**

Subject Name: **Environmental Awareness**

Aim of the Subject

To develop awareness towards environment in society.

Learning Outcomes

The students are expected to learn following after completion of the course:

- Basic knowledge of environment and its components.
- Ability to understand environmental degradation and ecosystem
- Knowledge regarding environmental pollution and their effects to the world.
- Exposure to planning and management of environment.

Unit 1

Environment meaning, structure and type of environment, components of environment, society and resources. Man environment relationship: Approach to study man interaction with environment (historical to present day)

Unit 2

Environmental degradation: Meaning of degradation, types of degradation, process of degradation, cause of degradation, Religious and philosophical factors, deforestation, agricultural development and degradation, population growth and degradation, urbanization and degradation, modern technology and degradation.

Unit 3

Ecology: Definition of ecology and ecosystem. Types of ecosystem, components of ecosystem, functions of ecosystem, productivity and stability of ecosystem.

Environmental disasters: Meaning and concepts, types of hazards and disaster, man

induced and natural hazards, global warming, ozone depletion, green house effect and other major environmental problems.

Unit 4

Environmental pollution: Air, water, solid, noise pollution. Meaning, definition, sources, types, adverse effects and methods of control.

Unit 5

Environmental planning and management: Concepts, aspects and approaches, resources management, ecological management. Biosphere reserves, management of wild life. Environmental regulation and rules, Vision of Environment by govt. of India,

Environmental policy, waste disposal rules and laws and legislation enacted by parliament for environmental protection.

Text Book(s)

Environmental Awareness : Dr. Dhananjoy Verma, Published by : Madhya Pradesh Hindi Granth Academy.

Reference Material(s)

Course Name: **BCA 2nd Semester**

Subject Code: **IC-1905**

Subject Name: **English Language and Composition**

Aim of the Subject

To improve english language proficiency of students.

Learning Outcomes

The students are expected to learn following after completion of the course:

- Basic knowledge of language skills.
- Knowledge regarding vocabulary, sentence formation.
- Adequate knowledge to understand literature and paragraph writing.

Unit 1

literature

1. Where the Mind is Without Fear

2. A Hero

3. Tryst With Destiny

4. Indian Weavers

5. The Portrait o f a Lady

6. The Solitary Reaper

Unit 2

Basic Language Skills:

Countable and Uncountable Nouns, Verbs, types of verbs , Tenses, determiners, adjectives

Adverbs, prepositions , conjunctions.

Unit 3

Basic Language Skills:

Vocabulary: Synonyms, Antonyms, Word Formation, Prefixes, Suffixes, Confusing Words, Misused Words, Similar Words with Different Meanings.

Unit 4

Sentence , hierarchy o f sentence, phrases, types of phrases, classification of sentence based on function and structure, parts of sentences.

Unit 5

Composition and Paragraph Writing, types of paragraph, descriptive paragraph.

Text Book(s)

English Language and Literary Heritage of India, Foundation course (English Language) Published by Commission for Scientific and Technical Terminology and M P Hindi Granth Academy Edition first (2017)

Reference Material(s)

English usage- Michael swan, English grammar and composition Wren and martin

Course Name: **BCA 2nd Semester**

Subject Code: **CS-1102**

Subject Name: **Mathematics- II**

Aim of the Subject

To provide mathematical background to the students so that they can be able to solve any problem related to computer science.

Learning Outcomes

The students are expected to learn following after completion of the course:

- Concepts of Fourier series and Laplace transform.
- Ability to solve differential equations by various methods.
- Concepts of Vector Calculus.

Unit 1

Fourier Series. Half Range Fourier Series, Laplace transforms & Inverse Laplace

transforms of simple functions, their elementary properties, applications of Laplace in solution of ordinary differential Equations.

Unit 2

Second Order Differential Equation with Variables Coefficients (Only by method: One solution is known and Variation of Parameters).

Unit 3

Solution of Differential Equation by Series method, Legendre's and Bessel's equation and their elementary properties.

Unit 4

Linear and Non-Linear Partial differential equation of first and second order with constant coefficients, Separation of variable method.

Unit 5

Vector calculus, Vector Differentiation, Velocity and acceleration, Gradient, Divergence and Curl. Line and Surface integral, Stoke's and Gauss divergence theorem.

Text Book(s)

Engineering Mathematics " Dr. D C Agarwal" Fifth Edition, Published by Shree Sai Prakashan

Reference Material(s)

Higher Engineering Mathematics - by B.S. Grewal, Edition: 36, Khanna Publishers, 2001. ISBN: 8174091157, 9788174091154

Higher Engineering Mathematics – BV Ramana, Tata McGraw-Hill Education, 2006, ISBN: 007063419X, 9780070634190

Course Name: **BCA 2nd Semester**

Subject Code: **IC-1924**

Subject Name: **Hindi Language**

Aim of the Subject

स्नातक स्तर के विद्यार्थियों को सम्प्रेषण कौशल में दीक्षित करना

Learning Outcomes

The students are expected to learn following after completion of the course:

- विद्यार्थी की अपनी भाषा, समाज, इतिहास, संस्कृति और प्रकृति आदि के प्रति रागात्मक
- दृष्टि विकसित होगी

Unit 1

(क) मानक हिंदी भाषा

(ख) अशुद्धियाँ और उनका संशोधन

Unit 2

(क) हिंदी का शब्द-भण्डार, (ख) हिंदी की वाक्य-रचना और विराम चिह्न

Unit 3

पत्र लेखन, सार-लेखन और पल्लवन

Unit 4

(क) भारत देश और उसके निवासी, (ख) भारतीय समाज की संरचना, (ग) सामजिक गतिशीलता, (घ) धर्म और दर्शन

Unit 5

(क) भातीय संस्कृति का विश्व पर प्रभाव, (ख) मध्यप्रदेश का सांस्कृतिक वैभव

Text Book(s)

भारतीयता के अमर स्वर

Reference Material(s)

मध्यप्रदेश हिंदी ग्रन्थ अकादमी, भोपाल