Shri Vaishnav Vidyapeeth Vishwavidyalaya
B.Tech. (Computer Science and Business Systems –TCS)
Choice Based Credit System (CBCS)-2019-20

SEMESTER III

COURSE CODE	CATEGORY	COURSE NAME	L	T	P	CREDITS	TEACHING & EVALUATION SCHEME				
							THEORY		PRACTICAL		
							END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*
BTCSCS201	**UG**	Formal Language and Automata Theory	**3**	**1**	**2**	**5**	**60**	**20**	**20**	**30**	**20**

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

COURSE OBJECTIVES

Student will have ability:

1.To introduce concepts in automata theory and theory of computation.
2. To identify different formal language classes and their relationships.
3. To design grammars and recognizers for different formal languages.

COURSE OUTCOMES

Upon completion of the subject, Students will be able:

1.Ability to relate practical problems to languages, automata, and computability.
2.Ability to demonstrate an increased level of mathematical sophistication.
3. Ability to apply mathematical and formal techniques for solving problems.

SYLLABUS

UNIT I

Introduction: Alphabet, languages and grammars, productions and derivation, Chomsky hierarchy of languages.

UNIT II

Regular languages and finite automata: Regular expressions and languages, deterministic finite automata (DFA) and equivalence with regular expressions, nondeterministic finite automata (NFA) and equivalence with DFA, regular grammars and equivalence with finite automata, properties of regular languages, Kleene's theorem, pumping lemma for regular languages, Myhill-Nerode theorem and its uses, minimization of finite automata.

UNIT III

Context-free languages and pushdown automata: Context-free grammars (CFG) and languages (CFL), Chomsky and Greibach normal forms, nondeterministic pushdown automata (PDA) and equivalence with CFG, parse trees, ambiguity in CFG, pumping lemma for context-free languages, deterministic pushdown automata, closure properties of CFLs.

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UNIT IV

Context-sensitive languages: Context-sensitive grammars (CSG) and languages, linear bounded automata and equivalence with CSG. **Turing machines:** The basic model for Turing machines (TM), Turing recognizable(recursively enumerable) and Turing-decidable (recursive) languages and their closure properties, variants of Turing machines, nondeterministic TMs and equivalence with deterministic TMs, unrestricted grammars and equivalence with Turing machines, TMsas enumerators.

UNIT V

Undecidability: Church-Turing thesis, universal Turing machine, the universal and diagonalization languages, reduction between languages and Rice s theorem, undecidable problems about languages. **Basic Introduction to Complexity:** Introductory ideas on Time complexity of deterministic and nondeterministic Turing machines, P and NP, NP- completeness, Cook's Theorem, other NP -Complete problems.

TEXT BOOKS:

1. Introduction to Automata Theory, Languages, and Computation John E. Hopcroft, Rajeev Motwani and Jeffrey D. Ullman.

REFERENCES:

1. Elements of the Theory of Computation, Harry R. Lewis and Christos H. Papadimitriou.
2. Automata and Computability, Dexter C. Kozen.
3. Introduction to the Theory of Computation, Michael Sipser.
4. Introduction to Languages and the Theory of Computation, John Martin.
5. Computers and Intractability: A Guide to the Theory of NP Completeness, M. R. Garey and D. S. Johnson.

List of Practical's:

YACC, the parser-generating tool(Chapter 5 of Introduction to Automata Theory, Languages, and Computation John E. Hopcroft, Rajeev Motwani and Jeffrey D. Ullman.)

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BTCSCS202	**UG**	Computer Organization and Architecture	**3**	**0**	**2**	**4**	**60**	**20**	**20**	**30**	**20**

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COURSE OBJECTIVES

Student will have ability:

1. Understand the architecture of a modern computer with its various processing units.
2. Understand the fundamentals of numerical data representation and manipulation in digital computers.
3. To explain the function of each element of a memory hierarchy.
4. To introduce hardware utilization methodology.
5. To impart knowledge in inter process communication.

COURSE OUTCOMES

Students will be able:

1. Upon completion of the subject,
2. Understand the architecture and functionality of central processing unit
3. Demonstrate and perform computer arithmetic operations on integer and real numbers.
4. Describe basic organization of computer and the architecture of 8086 microprocessor.
5. Identify and compare different methods for computer I/O mechanisms.
6. Categorize memory organization and explain the function of each element of a memory hierarchy.

SYLLABUS

UNIT I

Revision of basics in Boolean logic and Combinational/Sequential Circuits.

Functional blocks of a computer: CPU, memory, input-output subsystems, control unit.

Instruction set architecture of a CPU: Registers, instruction execution cycle, RTL interpretation of instructions, addressing modes, instruction set. Outlining instruction sets of some common CPUs.

UNIT II

Data representation: Signed number representation, fixed and floating point representations, character representation. **Computer arithmetic:** Integer addition and subtraction, ripple carry

adder, carry look-ahead adder, etc. multiplication – shift-and-add, Booth multiplier, carry save multiplier, etc. Division restoring and non-restoring techniques, floating point arithmetic, IEEE 754 format.

UNIT III

Introduction to x86 architecture.

CPU control unit design: Hardwired and micro-programmed design approaches, design of a simple hypothetical CPU. **Memory system design:** Semiconductor memory technologies, memory organization.

UNIT IV

Peripheral devices and their characteristics: Input-output subsystems, I/O device interface, I/O transfers – program controlled, interrupt driven and DMA, privileged and non-privileged instructions, software interrupts and exceptions. Programs and processes – role of interrupts in process state transitions, I/O device interfaces – SCII, USB

UNIT V

Pipelining: Basic concepts of pipelining, throughput and speedup, pipeline hazards. Parallel Processors: Introduction to parallel processors, Concurrent access to memory and cache coherency. **Memory organization:** Memory interleaving, concept of hierarchical memory organization, cache memory, cache size vs. block size, mapping functions, replacement algorithms, write policies.

TEXT BOOKS:

1. Computer System Architecture M. M. Mano:, 3rd ed., Prentice Hall of India, New Delhi, 1993.
2. Computer Organization and Design: The Hardware/Software Interface, David A. Patterson and John L. Hennessy.
3. Computer Organization and Embedded Systems, Carl Hamacher.

REFERENCES:

1. Computer Architecture and Organization, John P. Hayes.
2. Computer Organization and Architecture: Designing for Performance, William Stallings.
3. Computer System Design and Architecture, Vincent P. Heuring and Harry F. Jordan.

List of Practical's:

1. Circuits on breadboard or simulators

(a) Implementation of Combinational Digital/Boolean Circuits: Adder, Subtractor, Multiplication Module, Division Module, Multiplexer, Demultiplexer, Encoder, Decoder.

(b) Implementation of Sequential Circuits: Counters, Linear Feedback Shift Registers (LFSR)

2. C/C++ programming to understand the formats of char, int, float, double, long etc.

3. Machine language programming on x86 or higher version kits or simulators:

(i) Add/subtract/multiplication/division/GCD/LCM

(ii) Accessing some specific memory locations/ports

(iii) Counting odd and even integers from a series of memory locations

(iv) Printing values of selected registers

(v) Handing interrupts

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BTCSCS203	**UG**	Object Oriented Programming	**3**	**0**	**2**	**4**	**60**	**20**	**20**	**30**	**20**

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

COURSE OBJECTIVES

Student will have ability:

1. To explain abstract data types, classes and different types of objects.
2. To distinguish among types of relationships between classes and express the associations diagrammatically.
3. To analyze the public, protected and private modes of inheriting the classes.
4. To demonstrate the overloading of functions and operators to grant them a different meaning.
5. To formulate programs using the concepts of object oriented programming languages.

COURSE OUTCOMES

Upon completion of the subject, Students will be able:

1. Identify and describe the components of object-oriented technology and justify their relevance.
2. Classify and model the relationships/associations that exist between classes and objects.
3. Perform experiments on inheritance by implementing code reusability and polymorphism by overloading the functions as well as operators.
4. Develop programs for real world scenarios using the object oriented approach

SYLLABUS

UNIT I

Procedural programming, An Overview of C: Types Operator and Expressions, Scope and Lifetime, Constants, Pointers, Arrays, and References, Control Flow, Functions and Program Structure, Namespaces, error handling, Input and Output (*C*-way), Library Functions (*string*, *math*, *stdlib*), Command line arguments, Pre-processor directive

UNIT II

Some difference between C and C++: Single line comments, Local variable declaration within function scope, function declaration, function overloading, stronger type checking, Reference variable, parameter passing – value vs reference, passing pointer by value or reference, ~~#define constant vs const~~, Operator new and delete, the typecasting operator,Inline Functions in contrast to macro, default arguments

UNIT III

The Fundamentals of Object Oriented Programming: Necessity for OOP, Data Hiding, Data Abstraction, Encapsulation, Procedural Abstraction, Class and Object.
More extensions to C in C++ to provide OOP Facilities: Scope of Class and Scope Resolution

Operator, Member Function of a Class, private, protected and public Access Specifier, this Keyword, Constructors and Destructors, friend class, error handling (exception)

UNIT IV

Essentials of Object Oriented Programming: Operator overloading, Inheritance – Single and Multiple, Class Hierarchy, Pointers to Objects, Assignment of an Object to another Object, Polymorphism through dynamic binding, Virtual Functions, Overloading, overriding and hiding, Error Handling

UNIT V

Generic Programming: Template concept, class template, function template, template specialization

Input and Output: Streams, Files, Library functions, formatted output

Object Oriented Design and Modelling: UML concept, Use case for requirement capturing, Class diagram, Activity diagram and Sequence Diagram for design, Corresponding C++ code from design

TEXT BOOKS:

1. The C++ Programming Language, Bjarne Stroustrup, Addison Wesley.
2. C++ and Object-Oriented Programming Paradigm, Debasish Jana, PHI Learning Pvt. Ltd.

REFERENCES:

1. Programming – Principles and Practice Using C++, Bjarne Stroustrup, Addison Wesley.
2. The Design and Evolution of C++, Bjarne Stroustrup, Addison Wesley.

List of Practical's:

1. Parameter passing: passing parameter by value vs by reference, passing array as constant pointer
2. Function overloading: writing string operations like strcat and strncat, strcpy and strncpy as overloaded functions.
3. Dynamically allocating space for a pointer depending on input and doing this repeatedly, depending on different inputs and finally de-allocating the pointer.
4. Define class complex with all possible operations: constructor, destructor, copy constructor, assignment operator with the data members stored as pointer to integers.
5. Define class vector of integers with all possible operations like constructor, destructor, copy constructor and assignment operators
6. Define class matrix of integers with all possible operations like constructor, destructor, copy constructor and assignment operators
7. Define class matrix of integers using vector, with all possible operations like constructor, destructor, copy constructor and assignment operators
8. Define class stack, queue, linked-list, array, set using some data-type (int) with data members kept as private and functions kept in both protected and public sections.
9. Define class complex with all possible operators: constructor, destructor, copy constructor, assignment operator and operators >, <, >=, <=, ==, ++ (pre and post), +, +=, ( ), with the data members stored as pointer to integers.
10. Define class vector of integers with all possible operations like constructor, destructor, copy constructor and assignment operators>, <, >=, <=, ==, ++ (pre and post), +, +=, ( )

11. Define class matrix of integers with all possible operations like constructor, destructor, copy constructor and assignment operators>, <, >=, <=, ==, ++ (pre and post), +, +=, ( ).
12. Define class matrix of integers using vector, with all possible operations like constructor, destructor, copy constructor and assignment operators>, <, >=, <=, ==, ++ (pre and post), +, +=, ( ).
13. Define stack and queue inherited from array class, with standard functions and operators
14. Define a class called 'array' with data type passed as template type with constructor, destructor, copy constructor and assignment operators and index operator.
15. Define template functions for compare and use it in the algorithms like bubble sort, insertion sort, merge sort.
16. Formatted input-output examples
17. Input manipulators
18. Overriding operators <<, >>
19. Define class model for complex number, student class, book class and show it using UML diagram as well as concrete class.
20. Show behavioural modelling through sequence diagram and activity diagram for workflow in a typical log-in, log-out situation.

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BTCSCS204	**UG**	Computational Statistics	**3**	**0**	**2**	**4**	**60**	**20**	**20**	**30**	**20**

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COURSE OBJECTIVES

Student will have ability:

1. Acquaint with various Computational Statistical methods.
2. Understand Multivariate Normal Distribution and Multiple Linear Regression.
3. Use Multivariate Regression and Discriminant Analysis.
4. Understand Principal Component, Factor and Cluster Analysis models.

COURSE OUTCOMES

Upon completion of the subject, Students will be able:

1. Apply the fundamental concepts of Statistical methods to solve real-world problems.
2. Demonstrate the use of Normal Distribution and Linear Regression in computing applications.
3. Give descriptions for applying estimation techniques.
4. Apply the various analysis models for getting inferences.

SYLLABUS

UNIT I

Multivariate Normal Distribution: Multivariate Normal Distribution Functions, Conditional Distribution and its relation to regression model, Estimation of parameters.

Multiple Linear Regression Model: Standard multiple regression models with emphasis on detection of collinearity, outliers, non-normality and autocorrelation, Validation of model assumptions.

UNIT II

Multivariate Regression: Assumptions of Multivariate Regression Models, Parameter estimation, Multivariate Analysis of variance and covariance

Discriminant Analysis: Statistical background, linear discriminant function analysis, Estimating linear discriminant functions and their properties.

UNIT III

Principal Component Analysis: Principal components, Algorithm for conducting principal component analysis, deciding on how many principal components to retain, H-plot.

UNIT IV

Factor Analysis: Factor analysis model, Extracting common factors, determining number of factors, Transformation of factor analysis solutions, Factor scores.

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UNIT V

Cluster Analysis: Introduction, Types of clustering, Correlations and distances, clustering by partitioning methods, hierarchical clustering, overlapping clustering, K-Means Clustering-Profiling and Interpreting Clusters.

TEXT BOOKS:

1. An Introduction to Multivariate Statistical Analysis, T.W. Anderson.
2. Applied Multivariate Data Analysis, Vol I & II, J.D. Jobson.
3. Statistical Tests for Multivariate Analysis, H. Kris.
4. Programming Python, Mark Lutz.
5. Python 3 for Absolute Beginners, Tim Hall and J-P Stacey.
6. Beginning Python: From Novice to Professional, Magnus Lie Hetland. Edition, 2005.

REFERENCES:

1. Regression Diagnostics , Identifying Influential Data and Sources of Collinearety, D.A. Belsey, E. Kuh and R.E. Welsch
2. Applied Linear Regression Models, J. Neter, W. Wasserman and M.H. Kutner.
3. The Foundations of Factor Analysis, A.S. Mulaik.
4. Introduction to Linear Regression Analysis, D.C. Montgomery and E.A. Peck.
5. Cluster Analysis for Applications, M.R. Anderberg.
6. Multivariate Statistical Analysis, D.F. Morrison.
7. Python for Data Analysis, Wes Mc Kinney.

List of Practical's:

Python Concepts, Data Structures, Classes: Interpreter, Program Execution, Statements, Expressions, Flow Controls, Functions, Numeric Types, Sequences and Class Definition, Constructors, Text & Binary Files - Reading and Writing

Visualization in Python: Matplotlib package, Plotting Graphs, Controlling Graph, Adding Text, More Graph Types, Getting and setting values, Patches

Multivariate data analysis: Multiple regression, multi variate regression, cluster analysis with various algorithms, factor analysis, PCA and linear discriminant analysis. Various datasets should be used for each topic

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BTCSCS205	**UG**	**Software Engineering**	**3**	**1**	**2**	**5**	**60**	**20**	**20**	**30**	**20**

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COURSE OBJECTIVES

The student will have ability to:

1. To understand principles, concepts, methods, and techniques of the software engineering approach to producing quality software.
2. To understand need of project management and project management life cycle.
3. To organize software development project, including project plans and documentation, schedule and cost estimates, and quality assurance activities.
4. Be able to identify, formulate, and solve software engineering problems, including the specification, design, implementation, and testing of software systems that meet specification, performance, and maintenance.
5. Be able to use Unified Modeling Language in software specification documents.
6. Explore testing in various domains.

COURSE OUTCOMES

Upon completion of the subject, Students will be able to:

1. Define various software concepts, methods and techniques of software engineering to produce quality product.
2. Define and analyze software project management, the framework and the dimensions of software project management.
3. Explain needs for software specifications also they can classify different types of software requirements and their gathering techniques.
4. Convert the requirements model into the design model and demonstrate use of software and user-interface design principles.
5. Identify software testing strategies by using testing tools.

SYLLABUS

UNIT I

Introduction: Programming in the small vs. programming in the large; software project failures and importance ofsoftware quality and timely availability; engineering approach to software development; role ofsoftware engineering towards successful execution of large software projects; emergence of softwareengineering as a discipline.

UNIT II

Software Project Management: Basic concepts of life cycle models – different models and milestones; software project planning –identification of activities and resources; concepts of

feasibility study; techniques for estimation ofschedule and effort; software cost estimation models and concepts of software engineeringeconomics; techniques of software project control and reporting; introduction to measurement of software size; introduction to the concepts of risk and its mitigation; configuration management.

UNIT III

Software Quality and Reliability: Internal and external qualities; process and product quality; principles to achieve software quality; introduction to different software quality models like McCall, Boehm, FURPS / FURPS+, Dromey, ISO – 9126; introduction to Capability Maturity Models (CMM and CMMI); introduction to softwarereliability, reliability models and estimation.

UNIT IV

Software Requirements Analysis, Design and Construction: Introduction to Software Requirements Specifications (SRS) and requirement elicitation techniques;techniques for requirement modeling – decision tables, event tables, state transition tables, Petri nets;requirements documentation through use cases; introduction to UML, introduction to softwaremetrics and metrics based control methods; measures of code and design quality.

Object Oriented Analysis, Design and Construction: Concepts -- the principles of abstraction, modularity, specification, encapsulation and information hiding; concepts of abstract data type; Class Responsibility Collaborator (CRC) model; quality of design; design measurements; concepts of design patterns; Refactoring; object oriented construction principles; object oriented metrics.

UNIT V

Software Testing: Introduction to faults and failures; basic testing concepts; concepts of verification and validation; black box and white box tests; white box test coverage – code coverage, condition coverage, branch coverage; basic concepts of black-box tests – equivalence classes, boundary value tests, usage of state tables; testing use cases; transaction based testing; testing for non-functional requirements – volume, performance and efficiency; concepts of inspection.

TEXT BOOKS:

1. Software Engineering, Ian Sommerville.

REFERENCES:

1. Fundamentals of Software Engineering, Carlo Ghezzi, Jazayeri Mehdi, Mandrioli Dino.
2. Software Requirements and Specification: A Lexicon of Practice, Principles and Prejudices, Michael Jackson.
3. The Unified Development Process, Ivar Jacobson, Grady Booch, James Rumbaugh.
4. Design Patterns: Elements of Object-Oriented Reusable Software, Erich Gamma, Richard Helm, Ralph Johnson, John Vlissides.
5. Software Metrics: A Rigorous and Practical Approach, Norman E Fenton, Shari Lawrence Pfleeger.
6. Software Engineering: Theory and Practice, Shari Lawrence Pfleeger and Joanne M. Atlee
7. Object-Oriented Software Construction, Bertrand Meyer.
8. Object Oriented Software Engineering: A Use Case Driven Approach --Ivar Jacobson.
9. Touch of Class: Learning to Program Well with Objects and Contracts --Bertrand Meyer.
10. UML Distilled: A Brief Guide to the Standard Object Modeling Language --Martin Fowler.

List of Practical's:

Development of requirements specification, function oriented design using SA/SD, object-oriented design using UML, test case design, implementation using C++ and testing. Use of appropriate CASE tools and other tools such as configuration management tools, program analysis tools in the software life cycle.

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BTCSMS206	**UG**	Financial Management	**3**	**0**	**0**	**3**	**60**	**20**	**20**	**-**	**-**

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COURSE OBJECTIVES

The student will have ability to:

1. To offer the students relevant, systematic, efficient and actual knowledge of financial management that can be applied in practice with making financial decisions and resolving financial problems.
2. To help the students to develop awareness of the importance of Financial Management in corporate valuation
3. To enable students to describe how people analyze the corporate leverage under different conditions and understand why people valuate different corporates in different manner.

COURSE OUTCOMES

Upon completion of the subject, Students will be able to:

1. Understand the financial environment of business, and financial markets.
2. Know different sources for raising funds for business and cost associates with that.
3. Developing skills for interpretation business information and application of financial theory in financing related decisions

SYLLABUS

UNIT I

Introduction : Introduction to Financial Management - Goals of the firm - Financial Environments.
Time Value of Money : Simple and Compound Interest Rates, Amortization, Computing more that once ayear, Annuity Factor.

UNIT II

Valuation of Securities : Bond Valuation, Preferred Stock Valuation , Common Stock Valuation,Concept of Yield and YTM.
Risk & Return: Defining Risk and Return, Using Probability Distributions to Measure Risk, Attitudes Toward Risk,Risk and Return in a Portfolio Context, Diversification, The Capital Asset Pricing Model (CAPM)

UNIT III

Operating & Financial Leverage: Operating Leverage, Financial Leverage, Total Leverage, IndifferenceAnalysis in leverage study
Cost of Capital : Concept , Computation of Specific Cost of Capital for Equity - Preference –

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Debt,Weighted Average Cost of Capital – Factors affecting Cost of Capital 4L
Capital Budgeting : The Capital Budgeting Concept & Process - An Overview, Generating Investment ProjectProposals, Estimating Project, After Tax Incremental Operating Cash Flows, Capital Budgeting Techniques,Project Evaluation and Selection - Alternative Methods

UNIT IV
Working Capital Management: Overview, Working Capital Issues, Financing Current Assets (Short Termand Long Term- Mix), Combining Liability Structures and Current Asset Decisions, Estimation of WorkingCapital.

UNIT V
Cash Management: Motives for Holding cash, Speeding Up Cash Receipts, Slowing Down Cash Payouts,Electronic Commerce, Outsourcing, Cash Balances to maintain, Factoring.
Accounts Receivable Management: Credit & Collection Policies, Analyzing the Credit Applicant, CreditReferences, Selecting optimum Credit period. 4L

TEXT BOOKS:

1. Brealey, Myers and Allen, Principles of Corporate Finance
2. Case Study Materials: To be distributed for class discussion

References Books :

1. Srivastava, Misra: Financial Management, OUP
2. Van Horne and Wachowicz : Fundamentals of Financial Management, Prentice Hall/ Pearson Education

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BTCSIC208	**UG**	Indian Constitution (Non Credit)	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**50**

Course Objectives:

1. Create awareness about the Constitution of India, Fundamental Rights and Duties, Directive Principles.
2. Learn the role of Prime Minister, President and the Council of Ministers and the State Legislature.
3. Learn the divisions of executive, legislative and judiciary and so on.
4. Know how a municipal office, panchayat office etc. works.
5. Understand the importance and role of Election Commission Functions.

Course Outcomes:

1. Know the importance of Constitution and Government.
2. Become Good Citizens and know their fundamental rights, duties and principles.
3. Learn about the role of PM, President, Council of Ministers and Local Administration.
4. Understand the importance of Election Commission.
5. Know about Secularism, Federalism, Democracy, Liberty, Freedom of Expression, Special Status of States etc.

S.no	Title	Topics to be covered
1	Introduction	'Constitution' meaning of the term, Indian Constitution: Sources and constitutional history, Features: Citizenship, Preamble, Fundamental Rights and Duties, Directive Principles of State Policy.
2	Union Government and its Administration	Structure of the Indian Union: Federalism, Centre - State relationship, President: Role, power and position, PM and Council of ministers, Cabinet and Central Secretariat, Lok Sabha, Rajya Sabha.
3	State Government and its Administration	Governor: Role and Position, CM and Council of ministers, State Secretariat: Organization, Structure and Functions.
4	Local Administration	District's Administration head: Role and Importance, Municipalities: Introduction, Mayor and role of Elected Representative, CEO of Municipal Corporation, Pachayati raj: Introduction, PRI: Zila Pachayat, Elected officials and their roles, CEO Zila Pachayat: Position and role, Block level: Organizational Hierarchy (Different departments), Village level: Role of Elected and Appointed officials, Importance of grass root democracy
5	Election Commission	Election Commission: Role and Functioning, Chief Election Commissioner and Election Commissioners, State Election Commission: Role and Functioning, Institute and Bodies for the welfare of SC/ST/OBC and women.

Text/Reference Books:

1.‘Indian Polity’ by Laxmikanth 5th Edition, McGraw Hill Edition.
2.Indian Constitution by Subhash C. Kashyap, Vision Books Publisher
3.‘Introduction to Indian Constitution’ by D.D. Basu, 21st Edition, LexisNexisPublisher
4.‘Indian Administration by avasthi and avasthi-by lakshminarain agarwal publication

ASSESSMENT COMPONENTS

Students should be evaluated by Faculty coordinator
Evaluation methods used may consist of the following:
Assignment report
Presentation by the student

EVALUATION THROUGH SEMINAR PRESENTATION

The students will present their report though a seminar, which will be held by a Faculty Coordinator constituted by the concerned department as per norms of the institute. The evaluation through seminar presentation will be based on the following criteria.

a) Quality of material presented.
b) Effectiveness of presentation.
c) Depth of knowledge and skills.