M. C. E. Society's
Abeda Inamdar Senior College
Of Arts, Science and Commerce, Camp, Pune-1
(Autonomous) Affiliated to Savitribai Phule Pune University
NAAC accredited 'A' Grade

FACULTY OF Computer Science

Syllabus as Per 2026 NEP 2.O Guidelines

F.Y.B.Sc. Computer Science Syllabus

(Choice Based Credit System NEP 2026 Pattern)

Academic Year 2026-2027

(W.E.F. JUNE 2026-2027)

F.Y.B.Sc. Computer Science Syllabus as per NEP Guidelines
Choice Based Credit System NEP 2026 Pattern (W.E.F. 2026-2027)

Class	Semester	Nature of Subject	Course Code	Title of the Paper	Credits
FYBSc.(CS)	I	Major-I	26SBCS11MM	C Programming	2
		Major-II	26SBCS12MM	Database Management System-I	2
		Major-III	26SBCS13MM	Fundamentals of Computing	2
		VSC	26SBCS1VS	Practical - C Programming	2
		SEC	26SBCS1SE	Practical –Database Management System-I	2
		AEC	26ABEN11AE	Functional English-I	2
		VEC	26ABPO11VE	Democracy, Election & Governance	2
		IKS	26ABGHS11IK	History of Knowledge Production in India (Generic)	2
		OE	26CBCO11OEC	Digital Marketing	4
		CC	26SBHENT11CC	Health and Nutrition	2

VEC : Value Education Course

O.E. : Open Elective

F. Y. B.Sc. Computer Science Major Paper I

Semester I

(w. e. f. 2026-2027)
Choice Based Credit System (NEP 2026 Pattern)

Course/ Paper Title	**C Programming**
Nature of Course	**Major Mandatory**
Course Code	26SBCS11MM
Semester	**I**
No. of Credits	**2**
No. of teaching hours	**30 Hours of Teaching**

Program Specific Outcomes

Sr. No.	Program Specific Outcomes
PSO 1	Explore algorithmic approaches to problem solving.
PSO 2	Develop modular programs using control structures and arrays in 'C'.
PSO 3	Apply functions and recursion for structured program development.
PSO 4	Analyze problems and design solutions using flowcharts and algorithms.
PSO 5	Implement efficient solutions using arrays and user-defined functions.

Course Outcomes

CO No.	Cognitive Level	Course Outcome
CO1	R1, U2	Understand problem solving concepts, algorithms, flowcharts, and program development steps.
CO2	R1, U2	Explain fundamentals of C language including tokens, data types, operators, and I/O operations.
CO3	A3 U2 A4	Apply control structures to develop decision-making and looping programs.
CO4	A4 A3	Design and implement modular programs using functions and recursion.
CO5	E5 A4	Analyze and implement programs using arrays and solve real-world problems efficiently.

CO- PO Mapping Matrix

	PO					PSO				
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	3	3	2	3	3	3	2	2	3	2
CO2	3	2	3	2	3	2	3	2	2	2
CO3	3	3	3	3	2	3	3	2	2	3
CO4	3	2	2	3	2	2	3	3	3	2
CO5	3	2	2	2	3	3	3	3	2	3
AVG	**3**	**2.4**	**2.4**	**2.6**	**2.6**	**2.6**	**2.8**	**2.4**	**2.4**	**2.4**

Syllabus

Unit No.	Title with Contents	No. of Lectures
I	**Problem Solving Aspects**	**06**
	1. Introduction to problem solving using computers. 2. Problem solving steps. 3. Algorithms-definition, characteristics, examples, advantages, limitations. 4. Flowcharts - definition, notations, examples, advantages and limitations, Comparison with algorithms. **5.** Compilation process(compilers, interpreters),linking and loading, syntax and semantic errors, testing a program	
II	**'C' Fundamentals**	**07**
	1.History of 'C' Language 2.Application areas. 3.Structure of a 'C' program. 4.'C' Program development life cycle. 5.Function as building blocks. 6.'C' tokens 7.Character set, Keywords , Identifiers 8.Variables, Constants (character, integer,float, string, escape sequences, enumeration constant). 9.Data Types (Built-in and user defined data types). 10. Operators, Expressions, types of operators, Operator precedence and Order of evaluation. 11. Character input and output. 12. String input and output. 13. Formatted input and output. 14.Introduction to pre-processor	
III	**Control Structures**	**05**
	1. Decision making structures:-if, if-else, switch and conditional operator. 2. Loop control structures:-while, do while, for. 3. Use of break and continue. 4. Nested structures.	

	5. Unconditional branching (goto statement).	
IV	**Functions**	**06**
	1. Concept of function, Advantages of Modular design. 2. Standard library functions. 3. User defined functions:-declaration, definition, function call, parameter passing (by value), return statement. 4. Recursive functions. Scope of variables and Storage classes.	
V	**Arrays**	**06**
	1. Concept of array. 2. Types of Arrays – One, Two and Multi-dimensional 3. Array. 4. Array Operations - declaration, initialization, accessing array elements. 5. Memory representation of two-dimensional array(row major and column major) 6. Passing arrays to function. Array applications	

Reference Books

1. Alavi H. and Shanin. T., 1982, *Sociology of Developing Societies,* London, Macmillan.
2. Ashraf, Ali and Sharma, L. N., 2004, *Political Sociology: A new grammar of Politics*, Madras, Universities Press.
3. Biswas, Dipti Kumar, 1978, *Political Sociology- An Introduction*, Kolkata, Firma KLM.
4. Chackravarti Satyabrata, 2011, *Political Sociology*, New Delhi, Macmillan.
5. Coser Lewis (ed), 1967, *Political Sociology: Selected Essays*, New York, Harper& Row.
6. Dahl R.A., 1977, *Modern Political Analysis*, New Delhi, Prentice Hall
7. Geetha V., 2007, *Patriarchy*, Calcutta, Stree.
8. Gupta, Dipankar, 1996, *Political Sociology in India: Contemporary Trends*, New Delhi, Orient Longman.
9. Jangam, R. T., 1988, *Textbook of Political Sociology*, New Delhi, Oxford and IBH Publication Co.
10. Johari, J. C., 1987, *Comparative Political Theory: New Dimensions, Basic Concepts and Major Trends*, New Delhi, Sterling.

F. Y. B.Sc. Computer Science Major Paper II

Semester I

(w. e. f. 2026-2027)
Choice Based Credit System (NEP 2026 Pattern)

Course/ Paper Title	**Database Management System-I**
Nature of Course	**Major Mandatory**
Course Code	26SBCS12MM
Semester	**I**
No. of Credits	**2**
No. of teaching hours	**30 Hours of Teaching**

Program Specific Outcomes

Sr. No.	Program Specific Outcomes
PSO 1	Understand fundamental concepts of database systems and data management.
PSO 2	Design database schemas using conceptual models like ER diagrams.
PSO 3	Apply SQL queries for data manipulation and retrieval in relational databases.
PSO 4	Analyze and normalize database schemas to eliminate redundancy and anomalies.
PSO 5	Develop efficient database solutions ensuring data integrity and consistency.

Course Outcomes

CO No.	Cognitive Level	Course Outcome
CO1	R1, U2	Explain basic concepts of DBMS, its architecture, advantages, and differences from file systems.

CO2	U2, A3	Apply conceptual data modeling techniques using ER diagrams and constraints.
CO3	A3, A4	Construct SQL queries including joins, nested queries, and aggregate functions.
CO4	A4, U2	Analyze relational database design and apply normalization techniques.
CO5	E5, A4	Evaluate database schemas using functional dependencies and keys to ensure efficient design.

CO- PO Mapping Matrix

	PO					**PSO**				
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	3	2	1	2	2	3	2	1	2	2
CO2	3	3	2	2	2	2	3	2	2	2
CO3	3	3	3	2	3	2	2	3	2	3
CO4	3	2	2	3	2	2	2	2	3	2
CO5	3	2	2	3	3	2	2	2	3	3
AVG	**3**	**2.4**	**2.0**	**2.4**	**2.4**	**2.2**	**2.2**	**2.0**	**2.4**	**2.4**

Syllabus

Unit No.	Title with Contents	No. of Lectures
I	**Introduction to DBMS**	**03**
	1. Introduction 2. File system Vs. DBMS 3. Data independence 4. Structure of DBMS 5. Users of DBMS Advantages of DBMS	
II	**Conceptual Design**	**09**
	. Overview of DB design process 2. Introduction to data models (E-R model, Relational model, Network model, Hierarchical model) 3. Conceptual design using ER data model (entities, attributes, entity sets, relations, relationship sets) 4. Constraints (Key constraints, Integrity constraints ,referential integrity, unique constraint, Null/Not Null constraint, Check constraint, Mapping constraints) 5. Extended features – Specialization, Aggregation, Generalization	
III	**Structure Query Language**	**09**
	1.Introduction to query languages 2. Basic structure 3. SQL Commands 4. Basic SQL query with constraints & nested queries 5. Aggregate Operators and functions 6 .SQL mechanisms for joining relations (inner joins,outer join and their types) .Views	
IV	**Relational Database Design**	**09**
	1. Introduction to Relational-Database Design (undesirable properties of a RDB design) 2. Functional Dependency(Basic concepts, F+, Closure of an Attribute set) 3. Concept of normalization, Normal Forms (1NF,2NFand 3NF),Examples 4. Keys Concept	

Reference Books

1. Database System Concepts, Henry F. Korth, Abraham Silberschatz, S.Sudarshan,ISBN:9780071289597, Tata McGraw- Hill Education

2. Database Management Systems,Raghu Ramakrishnan, ISBN:9780071254342, Mcgraw-hill higher Education

3. Database Management Systems, Raghu Rama Krishnan and Johannes Gehrke, McGraw- Hill Science/Engineering/Math; 3 edition, ISBN:9780072465631
4. Database Systems, Shamkant B. Navathe,RamezElmasri,ISBN:9780132144988,PEARSON HIGHER EDUCATION

F. Y. B.Sc. Computer Science Major Paper III

Semester I

(w. e. f. 2026-2027)
Choice Based Credit System (NEP 2026 Pattern)

Course/ Paper Title	**Fundamentals of Computing**
Nature of Course	**Major Mandatory**
Course Code	26SBCS13MM
Semester	**I**
No. of Credits	**2**
No. of teaching hours	**30 Hours of Teaching**

Program Specific Outcomes

Sr. No.	Program Specific Outcomes
PSO 1	Understand basic concepts of computer systems, hardware, and software.
PSO 2	Apply number systems and data representation techniques in computing.
PSO 3	Analyze computer organization and memory structure.
PSO 4	Utilize internet services and digital communication tools effectively.
PSO 5	Apply cyber security awareness and understand emerging technologies.

Course Outcomes

CO No.	Cognitive Level	Course Outcome
CO1	R1, U2	Explain evolution, types, and functional units of computer systems along with hardware and software concepts.
CO2	U2, A3	Apply number system conversions, binary arithmetic, and data representation techniques.
CO3	U2, A3	Describe computer organization, memory hierarchy, and storage devices.
CO4	U2, A3	Explain internet fundamentals, digital communication tools, and web technologies.
CO5	A4, E5	Analyze cyber security issues and evaluate emerging technologies like AI, Cloud Computing, and IoT.

CO- PO Mapping Matrix

	PO					PSO				
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	3	2	1	2	2	3	1	2	1	1
CO2	3	3	2	2	2	2	3	2	1	1
CO3	3	2	2	3	2	2	2	3	1	1
CO4	2	2	2	3	3	1	1	1	3	2
CO5	2	2	2	3	3	1	1	1	2	3
AVG	**2.6**	**2.2**	**1.8**	**2.6**	**2.4**	**1.8**	**1.6**	**1.8**	**1.6**	**1.6**

Syllabus

Unit No.	Title with Contents	No. of Lectures
I	**Introduction to Computer Systems**	**06**
	1. Evolution and generations of computers 2. Types of computers (Micro, Mini, Mainframe, Supercomputer) 3. Functional units: CPU, ALU, Control Unit, Memory 4. Input and Output devices 5. Hardware vs Software 6. Types of software (System, Application, Utility)	
II	**Data Representation and Number Systems**	**08**
	1. Data and information concepts 2. Number systems: Binary, Decimal, Octal, Hexadecimal 3. Conversion between number systems 4. Binary arithmetic (addition, subtraction basics) 5. Representation of data: integers, characters 6. Character encoding (ASCII, Unicode)	
III	**Computer Organization and Memory**	**08**
	1. Basic organization of a computer system 2. Types of memory: Primary (RAM, ROM), Secondary storage 3. Cache memory (basic idea) 4. Storage devices: HDD, SSD, Pen drive, Cloud storage 5. Input/output interfaces (basic overview)	
IV	**Internet, Digital Technologies, and Cyber Awareness**	**08**
	1. Basics of Internet and networking 2. Web browsers and search techniques 3. Email and digital communication tools 4. Cybersecurity fundamentals (malware, phishing, safe practices) 5. Emerging technologies: Cloud Computing, Artificial Intelligence, IoT (introductory concepts)	

Reference Books

1. **Database System Concepts – Henry F. Korth, Abraham Silberschatz, S. Sudarshan**, ISBN: 9780071289597, Tata McGraw-Hill Education
2. **Fundamentals of Database Systems – Ramez Elmasri, Shamkant B. Navathe, ISBN: 9780136086208, Pearson Education**
3. **Database Management Systems – Raghu Ramakrishnan, Johannes Gehrke, ISBN: 9780072465631, McGraw-Hill Education**
4. **Database Management System – R. Panneerselvam, Minakshi Singh, ISBN: 9789332542600, Pearson India**
5. **An Introduction to Database Systems – C. J. Date, ISBN: 9788131705728, Pearson Education**
6. **SQL The Complete Reference – James R. Groff, Paul N. Weinberg, ISBN: 9780072224054, McGraw-Hill Education**

F. Y. B.Sc. Computer Science VSC

Semester I

(w. e. f. 2026-2027)
Choice Based Credit System (NEP 2026 Pattern)

Course/ Paper Title	**Practical -Problem solving using C**
Nature of Course	**Major Mandatory**
Course Code	**26SBCS1VS**
Semester	**I**
No. of Credits	**2**
No. of teaching hours	**30 Hours of Teaching**

Program Specific Outcomes

Sr. No.	Program Specific Outcomes
PSO 1	Apply problem-solving techniques using pseudocode and flowcharts.
PSO 2	Develop programs using decision-making and control structures in C.
PSO 3	Implement looping constructs to solve iterative problems efficiently.
PSO 4	Design modular programs using functions and recursion.
PSO 5	Apply arrays to solve real-world computational problems.

Course Outcomes

CO No.	Cognitive Level	Course Outcome
CO1	R1, U2	Understand problem-solving approaches using pseudo code and flowcharts and identify program errors.
CO2	R1, U2	Explain and implement decision-making control statements in C.
CO3	A3 U2 A4	Apply loop control structures to develop iterative programs.
CO4	A4 A3	Design and implement programs using functions, including recursion.
CO5	E5 A4	Analyze and develop programs using one-dimensional and two-dimensional arrays.

CO- PO Mapping Matrix

	PO					PSO				
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	3	2	1	2	2	3	1	1	2	1
CO2	3	3	2	2	2	2	3	1	1	1
CO3	3	3	3	2	2	2	2	3	1	1
CO4	3	2	2	3	2	2	2	2	3	1
CO5	3	2	2	2	3	2	2	2	2	3
AVG	**3**	**2.4**	**2.0**	**2.2**	**2.2**	**2.2**	**2.0**	**1.8**	**1.8**	**1.4**

Syllabus

Unit No.	Title with Contents	No. of Sessions
I	**Assignment 1.**	**02 Session**
	Problem Solving using Pseudo code and Flowchart, Simple programs, Understanding errors and error handling.	
II	**Assignment 2**	**02 Session**
	Practical Assignment based on Decision making control statement	
III	**Assignment 3**	**02 Session**
	Practical Assignment based on Loop Control Structures	
IV	**Assignment 4**	**04 Session**
	Practical Assignment based Functions (User Defined functions, Library functions and Recursion).	
V	**Assignment 5**	**02 Session**
	Practical Assignment based Arrays (1-D and 2-D).	

F. Y. B.Sc. Computer Science VSC

Semester I

(w. e. f. 2026-2027)
Choice Based Credit System (NEP 2026 Pattern)

Course/ Paper Title	**Practical –Database Management System-I**
Nature of Course	**Major Mandatory**
Course Code	26SBCS1SE
Semester	**I**
No. of Credits	**2**
No. of teaching hours	**30 Hours of Teaching**

Program Specific Outcomes

Sr. No.	Program Specific Outcomes
PSO 1	Understand and apply database concepts for creating and managing tables.
PSO 2	Implement integrity constraints such as primary key and foreign key in databases.
PSO 3	Apply additional constraints (NOT NULL, UNIQUE, CHECK) to ensure data integrity.
PSO 4	Perform database operations like insert, update, delete, alter, and drop effectively.
PSO 5	Construct SQL queries using SELECT statements and set operations for data retrieval.

Course Outcomes

CO No.	Cognitive Level	Course Outcome
CO1	R1, U2	Understand and create database tables with primary key constraints using various data types.
CO2	R1, U2	Explain and implement referential integrity using primary key and foreign key constraints.
CO3	A3 U2 A4	Apply different constraints such as NOT NULL, UNIQUE, and CHECK in table creation.
CO4	A4 A3	Perform database operations like insert, update, delete, alter, and drop on tables.
CO5	E5 A4	Analyze and construct SQL queries using SELECT statements and set operations like UNION and INTERSECT.

CO- PO Mapping Matrix

	PO					PSO				
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	3	2	1	2	2	3	1	1	1	1
CO2	3	3	2	2	2	2	3	1	1	1
CO3	3	3	2	2	2	2	2	3	1	1
CO4	3	2	2	3	2	2	2	2	3	1
CO5	3	3	3	2	3	2	2	2	2	3
AVG	**3**	**2.6**	**2.0**	**2.2**	**2.2**	**2.2**	**2.0**	**1.8**	**1.6**	**1.4**

Syllabus

I	**Assignment 1.**	**02 Sessions**
	Create simple tables with primary key constraints (table-level & field-level) using all data types**.**	
II	**Assignment 2.**	**02 Sessions**
	Create multiple tables with primary key and foreign key (referential integrity) constraints.	
III	**Assignment 3**	**02 Sessions**
	Add Check, Unique, and Not Null constraints to tables with PK & FK**.**	
IV	**Assignment 4**	**02 Sessions**
	Perform insert, update, delete, alter, and drop operations on tables.	
V	**Assignment 5**	**02 Sessions**
	Query tables using simple SELECT statements.	
VI	**Assignment 6**	**02 Sessions**
	Query tables using **set operations**: UNION and INTERSECT.	