MANONMANIAM SUNDARANAR UNIVERISTY,
TIRUNELVELI-12

SYLLABUS

UG - COURSES – AFFILIATED COLLEGES

Course Structure for B. Sc. Computer Science
(Choice Based Credit System)

(with effect from the academic year 2026-2027 onwards)

Semester-I				
Part	**Subject Status**	**Subject Title**	**Subject Code**	**Credit**
I	LANGUAGE	TAMIL/MALAYALAM	H1TL11	3
II	ENGLISH	ENGLISH	H2EN11	3
III	CORE	OBJECT ORIENTED PROGRAMMING WITH C++	HCCS11	4
III	CORE	OBJECT ORIENTED PROGRAMMING WITH C++ LAB	HCCSP1	3
III	ELECTIVE	DIGITAL LOGIC FUNDAMENTALS	HECS11	4
IV	SEC 1	PRACTICAL – OFFICE AUTOMATION LAB	HSCSP1	3
IV	FC	PROBLEM SOLVING TECHNIQUES	HFCS11	3

Total Marks: 100 Internal Exam: 25 marks + External Exam: 75 marks

A. **Scheme for internal Assessment**:
Maximum marks for written test: **20 marks**
3 internal tests, each of **I hour** duration shall be conducted every semester.
To the average of the **best two** written examinations must be added the marks scored in. The **assignment** for 5 marks.

The break up for internal assessment shall be:
Written test- 20 marks; Assignment -5 marks Total - 25 marks

B. Scheme of External Examination
3 hrs. examination at the end of the semester
A – Part : 1 mark question two - from each unit
B – Part : 5 marks question one - from each unit
C – Part : 8 marks question one - from each unit

- **Conversion of Marks into Grade Points and Letter Grades**

S.No	Marks	Letter Grade	Grade point (GP)	Performance
1	90-100	O	10	Outstanding
2	80-89	A+	9	Excellent
3	70-79	A	8	Very Good
4	60-69	B+	7	Good
5	50-59	B	6	Above Average
6	40-49	C	5	Pass
7	0-39	RA	-	Reappear
8	0	AA	-	Absent

- **Cumulative Grade Point Average (CGPA)**

$$\mathbf{CGPA} = \frac{\mathbf{\Sigma\,(GP \times C)}}{\mathbf{\Sigma C}}$$

- **GP** = Grade point, **C** = Credit
- CGPA is calculated only for Part-III courses
- CGPA for a semester is awarded on cumulative basis

- **Classification**
  a) First Class with Distinction : CGPA $\geq$ 7.5*****
  b) First Class : CGPA $\geq$ 6.0
  c) Second Class : CGPA $\geq$ 5.0 and $<$ 6.0
  d) Third Class : CGPA $<$ 5.0

PART - I பொதுத்தமிழ் I
நீதி இலக்கியங்களும் பக்தி இலக்கியங்களும்

அலகு 1

இலக்கிய அறிமுகம்

அ. நீதி இலக்கியங்கள் அறிமுகம் பதினெண் கீழ்க்கணக்கு நூல்கள்

1. திருக்குறள்
2. நாலடியார்
3. நான்மணிக்கடிகை
4. இன்னா நாற்பது
5. இனியவை நாற்பது
6. திரிகடுகம்
7. ஆசாரக் கோவை
8. பழமொழி
9. சிறுபஞ்சமூலம்
10. ஏலாதி
11. முதுமொழிக்காஞ்சி
12. கார் நாற்பது
13. ஐந்திணை எழுபது
14. ஐந்திணை ஐம்பது
15. திணைமொழி ஐம்பது
16. திலைமாலை நூற்றைம்பது
17. கைந்நிலை
18. களவழி நாற்பது

பிற நீதிநூல்கள்

1. ஆத்திசூடி - ஔவையார்
2. கொன்றைவேந்தன் - ஔவையார்
3. மூதுரை - ஔவையார்
4. நல்வழி - ஔவையார்
5. அறநெறிச்சாரம் - முனைப்பாடியார்
6. வெற்றிவேற்கை - அதிவீரராம பாண்டியர்
7. நீதிநெறிவிளக்கம் - குமரகுருபரர்
8. நன்னெறி - துரைமங்கலம் சிவப்பிரகாசர்
9. உலகநீதி - உலகநாதன்
10. நீதிநூல் - மாயூரம் வேதநாயகம்பிள்ளை

புதிய ஆத்திசூடிகள்

1. புதிய ஆத்திசூடி - பாரதியார்
2. இளையார் ஆத்திசூடி - பாரதிதாசன்
3. தமிழ்சூடி - வ.சுப.மாணிக்கம்
4. நெறிசூடி - நாரா. நாச்சியப்பன்
5. அறிவியல்சூடி - ச.மெய்யப்பன்
6. ஆய்வுகுடி - தமிழண்ணல்
7. நீதிசூடி - புலவர் சோம. இளவரசு

ஆ. பக்தி இலக்கியங்கள் அறிமுகம்

1. பன்னிரு திருமுறைகள்
2. சைவத் திருமடங்கள்
3. நாலாயிரத் திவ்வியப் பிரபந்தம்
4. கிறித்துவ சமயத் தமிழ் இலக்கிய வளர்ச்சி
5. இஸ்லாம் சமயத் தமிழ் இலக்கிய வளர்ச்சி

அலகு 2

நீதி இலக்கியங்கள் (செய்யுள்))

1. திருக்குறள் அறன் வலியுறுத்தல் (4 வது அதிகாரம்) 10 குறள்கள்
2. நாலடியார் - கல்வி (14 ஆவது அதிகாரம்) 10 பாடல்கள்
3. நான்மணிக்கடிகை நிலத்துக்கு அணிஎன்ப - 9ஆவது பாடல்
4. பழமொழி நானூறு தந் நடைநோக்கார் - 288 ஆவது பாடல்
5. இனியவை நாற்பது இளமையை மூப்பென்று -37ஆவது பாடல்
6. முதுமொழிக்காஞ்சி எளிய பத்து 10 பாடல்கள்
7. நல்வழி முதல் ஐந்து பாடல்கள்
8. நீதிநெறி விளக்கம் முதல் ஐந்து பாடல்கள்

அலகு -3

பக்தி இலக்கியங்கள்

1. முதல் 3 பாடல்கள் 1 திருநாவுக்கரசர் நின்ற திருத்தாண்டகம்
2. மாணிக்கவாசகர் - சிவபுராணம் முதல் 10 வரிகள்
3. பொய்கையாழ்வார் முதல் திருவந்தாதி - முதல் 2 பாடல்கள்
4. பூதத்தாழ்வார் இரண்டாம் திருவந்தாதி முதல் 3 பாடல்கள்
5. ஆண்டாள் - திருப்பாவை முதலாவது பாடல்
6. திரு.வி.க - கிறிஸ்து மொழிக்குறள் - 5 குறள்கள்
7. குணங்குடி மஸ்தான் சாகிபு பராபரக்கண்ணி 5 கண்ணிகள்

அலகு -4

உரைநடை

நூற்றாண்டு கண்ட ஆளுமைகள் த.அறம் (1-4)

1. இலக்கியப் பேரொளி தொ.மு.சி. ரகுநாதன்
2. திசைகாட்டி கு.அழகிரிசாமி
3. பொதுவுடைமைக் கவிஞர் தமிழ் ஒளி
4. கரிசல் இலக்கியத் தந்தை கி ராஜநாராயணன்
5. சங்க இலக்கியத்தில் குலக்குறியீடு பேராசிரியர் பா. ஆனந்தகுமார்.

அலகு -5

மொழிப்பயிற்சி ஒற்றுப்பிழைத் தவிர்த்தல்

1. வல்லினம் மிகும் இடங்கள்
2. வல்லினம் மிகா இடங்கள்
3. ஈர்ஒற்று வரும் இடங்கள்
4. ஒரு.ஒர் வரும் இடங்கள்
5. அதுஇ அஃது வரும் இடங்கள்
6. தான்இ தாம் வரும் இடங்கள்

MALAYALAM
PAPER I- PROSE, COMPOSITION AND TRANSLATION

Unit 1

This unit focus on the importance of Malayalam fiction, -the origin and development of Malayalam Short story –renaissance in short story—Thakazhi-Basheer-Karoor- -Navothana katha:

For detailed study:

1. Marappavakal- Karoor Neelakantappilla.
2. Uthuppante kinar.-Karoor Neelakantappilla.
3. Ezhunnallathuduty-Karoor Neelakantappilla.

Unit II

Kathayum adhunikathayum- To familiarize – Romanticism -Modernism, Plot and narration in modern short stories

For detailed study:

1. Neippayasam –Madhavikutty
2. Kadaltheerathu-.O.V.Vijayan
3. Radha radhamathram-M.Mukundan

Unit III

Samakala katha– Post modernism- Globalization-Women –Dalit- Cyber – Environmental issues in short stories- The theme, structure and narrative style of the authors -comparison-

For detailed study:

1. Viyarppadayalangal-Sara Joseph
2. Jwala - Priya .A.S
3. Vartha sareeram –Santhosh Echikkanam
4. Otta vaikkol viplavam –V.J.James

Unit IV

This unit briefs the history of Malayalm Novel- major works, romantic period- of M T Vasudevan Nair , narrative style of Nalukettu- craft and characterization in Nalukettu

Unit V

This unit focus on Translation, Word level and syntactic level and also discuss the writing style of Essay- introduce proverbs and paraphrasing in Malayalam

Recommened Texts

1. Marappavakalum mattu kathakalum – Karoor Neelakantapilla. (only 3 stories (a.)Marappavakal (b)Uthuppante kinar (c) Ezhunnallathuduty))
2. Nalukettu- .Novel -M.T.Vasudevan Nair

Reading list (print and online)

1. Adhunika Malayala Sahithya Charithram Prasthanangalilude – Dr. K.M.George (Ed.)
2. Cherukadha Innale Innu - M.Achuthan
3. Kadha Thedunna Kadha - N.Prabhakaran
4. M.T. Vakkinte Vismayam – V.R.Sudheesh
5. Kadhayum Kalavum –K.S.Ravikumar
6. Malayala Novalilee Desakaalangal- E. Ramkrishnan
7. Maranunna Malayala Noval- K.P. Appan
8. Andhanaya Daivam- P.K.Rajasekharan
9. Shyalee shilppam- Dr.K.M. Prabhakra Warier
10. Bhasha gadhyam- C.V. Vasudeva Bhattathiri
11. Karur Kadha patanam- M.M.Basheer

PART - II GENERAL ENGLISH - I

UNIT – I
PROSE

1. The Power of Prayer - APJ Abdul Kalam
2. On the love of life - William Hazlitt
3. Nature (Chapter 1) - R. W. Emerson
4. Forgetting - Robert Lynd

UNIT – II
POETRY

1. The Flower-School - Rabindranath Tagore
2. Love After Love - Derek Walcott
3. Don't Quit - Edgar Albert Guest
4. Night - Wole Soyinka

UNIT – III
SHORT STORY

1. The Missing Mail - R K Narayan
2. Two Gentlemen of Verona - A.J. Cronin.
3. A Real Durban - Jhumpa Lahiri
4. Girls at War - Chinua Achebe

UNIT – IV
GRAMMAR PARTS OF SPEECH

1. Noun, Kinds of Nouns, Gender, Number, Case
2. Pronoun - Personal, Emphatic, Demonstrative, Indefinite, distributive, Relative and Interrogative
3. Adjective, kinds of Adjectives - Degrees of Comparison

UNIT – V
COMPOSITION

1. Paragraph Writing
2. Story Writing (Hints Developing)
3. Reproduction of a Story Poem
4. Letter Writing

TEXT BOOKS & WEB RESOURCES

1. Web Resources
   Extract from Dr. A.P.J. Abdul Kalam's autobiography, Wings of Fire Hazlitt, William. “On the love of life.” . Quotidiana. Ed. Patrick Madden. 29 Sep 2006. 14 Jun 2026 https://essays.quotidiana.org/hazlitt/love_of_life/
   Nature:https://www.gutenberg.org/files/29433/29433-h/29433-h.htm
   Forgetting:https://archive.org/stream/in.ernet.dli.2015.73174/2015.73174.English-Essays-Of-Today_djvu.txt
2. Wren & Martin High School English Grammar and Composition

OBJECT ORIENTED PROGRAMMING WITH C++

UNIT I

Principles of OOP: Basic concepts of Object-Oriented Programming – Benefits and applications – Object Oriented Languages – A Simple C++ Program - Structure of C++ program.

Basic Elements of C++: Token – Keywords – Identifiers and constants – Basic Data Types – User-defined Data Types – Enumerated Data Type – Storage Class – Derived Data Types – Symbolic Constants – Declaration 0f Variables – Reference Variables – Scope Resolution Operator – Memory Dereferencing Operator – Memory Management Operators – Manipulators – Type Case Operator – Expressions – Operator Precedence – Control Structures

Functions in C++: The Main function – Function Prototyping – Call by Reference – inline functions – Default Arguments – Recursion – Function Overloading – Math Library Functions.

UNIT II

Classes and Objects: C Structures Revisited – Specifying a Class – Declaring Objects – Defining Member Function – Private Member Function – Memory Allocation for Objects – Static Data Member and Member Functions – Array of Objects – Object as Function Arguments – Friendly functions – Returning Objects – Pointers to Members.

Constructor and Destructors: Constructor – Parameterized Constructors – Multiple Constructors in a Class – Dynamic Initialization of Objects – Copy Constructor – Constructing 2-Dimentional Arrays – Destructors.

UNIT III

Operator Overloading: Overloading unary, binary operators – Overloading Binary Operators using Friend – Rules – Type conversions.

Inheritance: Types of Inheritance – Single Inheritance – Making a Private Member Inheritable – Multilevel Inheritance – Multiple Inheritance – Ambiguity Resolution in Inheritance – Hierarchal Inheritance – Hybrid Inheritance – Virtual Base Classes – Abstract Classes – Constructors in Derived Classes.

UNIT IV

Pointers: Declaration and Initializing Pointers – Manipulation of Pointers – Pointer Expression and Pointer Arithmetic – Using Pointers with Arrays and Strings – Pointers to Functions – Pointer to Objects – this Pointer – Polymorphism – Pointers to derived Classes – Virtual Functions – Pure Virtual Functions.

Managing Console I/O Operations: C++ Streams – Unformatted I/O Operations – Formatted Console I/O Operations – Managing Output with Manipulators.

UNIT V

Files: Introduction – File stream classes – Opening and Closing a File – Detecting End-of-File – File Modes – File Pointers and their manipulations – Sequential Input and Output Operations – Updating a File: Random Access – Error Handling during File Operations – Command Line Arguments

Templates: Class Templates – Class Templates with Multiple Parameters – Function Templates – Member Function Templates

Textbooks

1. E.Balagurusamy, "Object-Oriented Programming with C++", 8th Edition, McGraw Hill, 2020

Reference Books

1. Bjarne Stroustrup, "The C++ Programming Language", 4th Edition, Pearson Education, 2022
2. Reema Thareja, "Object Oriented Programming with C++", 2nd Edition, Oxford University Press, 2025
3. Herbert Schildt, "The Complete Reference C++" 4th Edition, McGraw Hill Education, 2017

OBJECT ORIENTED PROGRAMMING WITH C++ LAB

List of Exercises

1. Write a C++ program to demonstrate Class and Objects. Create a class Person with data members: name, date of birth, etc. Write a member function to read the relevant data. Write another function to calculate the age. Create 2 objects and show the elder one
2. Write a C++ program to demonstrate function overloading. Find the area of equilateral triangle (3 equals sides and 3 equal internal angles), isosceles triangle (2 sides are of equal length, and 1 side is different) and scalene triangle (all 3 sides are of different lengths and all 3 interior angles are unequal).
3. Write a C++ program to demonstrate the concept of Passing Objects to Functions. Create a class Time with data members' hour, minute and second. Write a member function to add two given times in the hour, minute and second format. Pass any 2 time-objects to the sum member function.
4. Write a C++ program to demonstrate the Friend Functions. Create 2 classes. Write friend functions to add, multiply and compare the values in 2 classes. Add a menu in the main program to select the above operations
5. Write a C++ program to demonstrate Constructor and Destructor. Create class

Employee with basic details including address for communication. Use new operator to allocate memory to store the employee's address and delete operator to free the allocated memory

6. Write a C++ program to change the sign of values in a 3 x 3 matrix and to find its transpose. Use unary – operator to change the sign and unary ~ operator to do the transpose. Write a C++ program to demonstrate Unary Operator Overloading
7. Write a C++ program to demonstrate Binary Operator Overloading to add 2 complex numbers. If A and B are complex objects, find A + B, 5 + A and A + 5
8. Write a C++ program to demonstrate: Single Inheritance
9. Write a C++ program to demonstrate: Multiple Inheritance
10. Write a C++ program to demonstrate: Virtual Functions.
11. Write a C++ program to find the biggest, smallest and average of N numbers passed through Command Line Arguments
12. Write a C++ program to find the roots of the quadratic equation. Write code to avoid errors like Divide by Zero and square root of negative numbers
13. Write a C++ program to create an array of 5 fruits and display the name in alphabetical order using pointers
14. Write a C++ program to create a text file. Prepare a simple resume in that file and close the file. Reopen the file in the read mode to display your resume.
15. Write a C++ program to open a binary random file and create N number of records. Display the contents of the record when the user specifies the record number.

DIGITAL LOGIC FUNDAMENTALS

UNIT I

Introduction: Analog vs digital – Binary System – The Basic Gates NOT, OR, AND – Universal Logic Gate NOR, NAND – AND-OR-Invert Gates

Number Systems and Codes: Binary Number System – Binary to Decimal Conversion – Decimal to Binary Conversion – Octal Numbers – Hexadecimal Numbers – The ASCII Code – The Excess-3 Code – The Gray Code.

UNIT II

Combinational Logic Circuits: Boolean Laws and Theorems – Sum of Products Method – Truth Table to Karnaugh Map – Pairs, Quads and Octets –Karnaugh Simplifications – Don't-Care Conditions – Product of Sums Method –Product of Sums Simplification.

UNIT III

Data Processing Circuits: Multiplexers – De-multiplexers – 1-of-16 Decoder – BCD-to-Decimal Decoder – Seven-Segment decoder – Encoders – Exclusive-OR gates – Parity Generators and Checkers.

Arithmetic Circuits: Binary Addition – Binary Subtraction – Unsigned Binary Numbers – Sign-Magnitude Numbers – 2‘s Complement Representation –2 ‘s Complement Arithmetic – Arithmetic Building Blocks.

UNIT IV

Clocks and Timing Circuits: Clock Waveforms – Pulse-forming Circuits

Flip-Flops: RS Flip Flops – Gated Flip flops – Edge Triggered RS Flip Flops – Edge Triggered D Flip Flops – Edge Triggered JK Flip Flops – JK Master Slave Flip Flops

UNIT V

Registers: Types of Registers – Serial_In-Serial_Out – Serial_In-Parallel_Out – Parallel_In-Serial_Out – Parallel_In-Parallel_Out – Universal Shift Register.

Textbooks

1. Donald P. Leach, Albert Paul Malvino and Goutam Saha, “Digital Principles and Applications”, 7th Edition, Tata McGraw Hill, 2011

Reference Books

1. Anand Kumar A, “Fundamentals of Digital Circuits”, 4th Edition, PHI Learning Private Limited
2. Morris Mano M and Micheal D. Ciletti, “Digital Design”, 8th Edition, Pearson Education

OFFICE AUTOMATION LAB

List of Exercises

1. Prepare your resume for a job in a detailed neat document. Highlight your credentials and strengths. Use proper page setting features to improve the readability. Use Numbering, Bullets and Tables whenever required
2. Prepare a month calendar in a document (Refer Microsoft Outlook Templates). Mark the public holiday and specify the reason below the calendar.
3. Prepare a write-up about your college. Highlight the activities and facilities in various departments. Use Spell Check, Find and Replace, indent, header and footer, and page numbers.
4. Prepare a document to show the alphabet picture chart. Show all 26 alphabets in a table with relevant pictures

5. Prepare a semester-wise mark statement for a computer science class for 10 students using any spreadsheet. Display the total and percentage for each student and rank them based on the student's total mark. Give proper headings. Display the column headings in bold and italics as required.

	Input Data														Use Formula								
	Semester 1					Semester 2					Sem 3	Sem 4	Sem 5	Sem 6	Total - Semester-wise						Total	Percentage	Rank
	C++	C++ Lab	DLF	OA Lab	PST	DS	DS Lab	DM	Web Prog	CA					Semester 1	Semester 2	Semester 3	Semester 4	Semester 5	Semester 6			
Student 1	50	60				70	75								110	145					255	63.75	5
Student 2	52	95				68	71								147	139					286	71.50	3
Student 3	82	88				72	95								170	167					337	84.25	1
Student 4	58	62				65	79								120	144					264	66.00	4
Student 5	82	63				74	93								145	167					312	78.00	2
Student 6																							
Student 7																							
Student 8																							
Student 9																							
Student 10																							

6. Prepare a spreadsheet with 2 columns: name and one-line address [door_number, street_name] (20 rows). Use the following functions with various arguments

   Text Function: upper, lower, proper, trim, left, right, mid, clean, text, value, replace, substitute, find and concat

   Display the results in the next 14 columns.
7. Prepare a spreadsheet with necessary input data columns: date, time, day, hour, etc (20 rows). Use the following functions with various arguments

   Date Function: date, today, now, datevalue, day, month, year, eomonth, weekday, datedif and workday

   Time Function: hour, minute, second, time and timevalue

   Display the results in the subsequent columns
8. Prepare a spreadsheet with necessary input data columns (20 rows). Use the following functions with various arguments

   Math Function: abs, floor, ceiling, round, even, sign, mod, log, product, rand, sin, cos, tan, sum and base

   Display the results in the subsequent columns
9. Prepare a spreadsheet with input data columns (20 rows). Use the following functions with various arguments

   Statistical Function: min, max, average, median, mode, stdev, var, count, countif, counta, rank and percentile

   Display the results in the subsequent columns
10. Enter the subject-wise (Tamil, English, Maths, Physics, Chemistry, Computer Science) HSC marks for 20 students. Use any spreadsheet to plot the following charts.

a. Percentage (10 bins) vs frequency.
b. Line graph of marks obtained for each subject
c. Pie chart (% of students with distinction, first class, second class, …)
d. 2-D graph showing marks obtained by a student for each subject
e. 3-D Graph showing marks obtained by a student for each semester

11. Prepare a presentation to display the sport day celebration in your campus. Create minimum 8 slides that include introduction, events, participants, winners, prize distribution and closing. Add pictures, animations and transitions
12. Prepare a presentation to show a script of a short story or advertisement with minimum 8 slides. Add characters, dialogues and scenes. Use animation for character movement and speech.
13. Create a **Student** database with a table of fields: age, date of birth, gender, class, place, pin code etc. Apply validation rules for age (17-25), date of birth (valid date), pin code (6 digits), etc. Display your data with proper formatting.
14. Create the **Employee** database with a table of fields: EmployeeID, Name, Designation, Department, Salary, etc and populate data through an input form. Generate a report containing the list of employees with designation and department.
15. Create a **Mobile Shop** database with a table of fields Product ID, brand, model, year of manufacturing, price, discount, etc and use queries to display (i) products available in a specific brand (ii) products available within a price range. (iii) products with offers and discounts

PROBLEM SOLVING TECHNIQUES

UNIT I

Introduction: History, characteristics and limitations of Computer. Hardware/Anatomy of Computer: CPU, Memory, Secondary storage devices, Input Devices and Output devices. Types of Computers: PC, Workstation, Minicomputer, Main frame and Supercomputer. Software: System software and Application software.

UNIT II

Programming Languages: Machine language, Assembly language, High-level language, 4GL and 5GL – Features of good programming language. Translators: Interpreters and Compilers. Data: Data types, Input, Processing of data, Arithmetic Operators, Hierarchy of operations and Output. Different phases in Program Development Cycle (PDC).

UNIT III

Structured Programming: Algorithm: Features of good algorithm, Benefits and drawbacks of algorithm. Flowcharts: Advantages and limitations of flowcharts, when to use flowcharts, flowchart symbols and types of flowcharts.

UNIT IV

Pseudocode: Writing a pseudocode. Coding, documenting and testing a program: Comment lines and types of errors. Selection Structures: Relational and Logical Operators – Selecting from Several Alternatives – Applications of Selection Structures.

UNIT V

Repetition Structures: Counter Controlled Loops – Nested Loops–Applications of Repetition Structures. Data: Numeric Data and Character Based Data. Arrays: One Dimensional Array - Two Dimensional Arrays – Strings as Arrays of Characters.

Textbooks

1. Stewart Venit, Introduction to Programming: Concepts and Design, Fourth Edition, 2010, Dream Tech Publishers.