MANONMANIAM SUNDARANAR UNIVERISTY,
TIRUNELVELI-12

SYLLABUS

UG - COURSES – AFFILIATED COLLEGES

Course Structure for BCA
(Choice Based Credit System)
(with effect from the academic year 2023-2024 onwards)

Semester-III				
Part	**Subject Status**	**Subject Title**	**Subject Code**	**Credit**
I	LANGUAGE	TAMIL/MALAYALAM/HINDI	E1TL31/ E1MY31/ E1HD31	3
II	ENGLISH	ENGLISH	E2EN31	3
III	CORE V	DATA STRUCTURES AND ALGORITHMS	EMCA31	5
III	CORE VI	DATA STRUCTURES AND ALGORITHMS USING C++ LAB	EMCAP3	4
IV	ELECTIVE 3	MICROPROCESSOR AND MICROCONTROLLER	EECA31	3
III	SEC 4	PHP PROGRAMMING LAB	ESCA31	2
IV	EVS	ENVIRONMENTAL STUDIES	EEVS31	2
		NAAN MUTHALVAN		2

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 TAMIL
தமிழக வரலாறும் பண்பாடும்

அலகு 1

தொழில் பழங்கால வரலாறும் சங்ககால வரலாறும்

1. தொழில் தமிழர்
2. பழைய கற்காலம்
3. புதிய கற்காலம்
4. உலோகக் காலம்
5. அகழ்வாராய்ச்சியில் தமிழும் தமிழரும் (கீழடி வரை)
6. திணை வாழ்வியல் (களவு வாழ்க்கை, கற்பு வாழ்க்கை, உணவு, அணிகலன்கள், வாணிகம், விளையாட்டுகள்)
7. கல்வியும் கலைகளும்
8. தமிழ் வளர்த்த சங்கம்
9. சங்க கால ஆட்சி முறை
10. அயல்நாட்டுத் தொடர்புகள்

அலகு 2

ஆட்சியர் வரலாறு

1. மூவேந்தர் வரலாறு
2. பல்லவர் வரலாறு
3. நாயக்கர் ஆட்சி
4. முகம்மதியர் ஆட்சி
5. மராட்டியர் ஆட்சி

அலகு 3

ஐரோப்பியர் கால வரலாறு

1. போர்த்துகீசியர்
2. டச்சுக்காரர்கள்
3. டேனிஸ்கரர்கள்
4. பிரெஞ்சுக்காரர்கள்
5. ஆங்கிலேயர்கள்
6. பாளையக்காரர்கள்
7. இந்தியா விடுதலை போராட்டத்தில் தமிழ்நாடு

அலகு 4

விடுதலைக்கிபின் தமிழ்நாட்டு வரலாறு

1. மொழிபோராட்டம்

2. சமூக மறுமலர்ச்சி
3. தொழில்நுட்ப வளர்ச்சி

அலகு 5

மொழிப்பயிற்சி

1. நிறுத்தக் குறிகள்
2. கலைச்சொற்கள்
3. மொழிபெயர்ப்பு

Text Books

- தமிழக வரலாறும் பண்பாடும் - கே. கே. பிள்ளை, உலகத் தமிழாராய்ச்சி நிறுவனம் , சென்னை
- தமிழர் நாகரீகம் பண்பாடும் - அ. தட்சிணாமூர்த்தி, யாழ் வெளியீடு, சென்னை
- தமிழக வரலாறும் பண்பாடும்-வே.தி.செல்லம், மணிவாசகர் பதிப்பகம், சென்னை

Reference Books

1. தமிழக சமூதாயா பண்பாட்டு கலை வரலாறு - கு சேதுராமன் , என்,சி,பி.எச், சென்னை
2. தமிழர் கலையும் பண்பாடும்-அ .கா.பெருமாள், என்,சி,பி.எச், சென்னை
3. ஒரு பண்பாட்டின் பயணம்: சிந்து முதல் வைகை வரை - ஆர். பாலகிருஷ்ணன், ரோஜா முத்தையா ஆராய்ச்சி நூலகம், சென்னை.

MALAYALAM - POETRY

UNIT I

This unit focus on significance of Malayalam Poetry and trends.

To familiarize the early stages of Malayalam poetry- Folklore heritage-Pattu-Bhakthi movement-Cherussery-Ezhutachan- Kunjan Nambiar-

Detailed study:

Jaritha Vilapam (Mahabharatam kilippattu) Ezhutachan

UNIT II

Romanticism –Asan- Ulloor – Vallathol

Detailed study :

1. Veena Poovu (First 7 slokas only)- Asan
2. Aa poomala- Changampuzha

UNIT III

Modernity in Malayalam poetry- First phase

Post Independent India and Modernization of Nation in Malayalam poetry

Detailed study

1. Yuga Parivarthanam- Vailoppilli Sreedhara Menon
2. Gandhiyum Godseyum- N .V.Krishna Warrier

UNIT IV

Modernity in Malayalam poetry- second phase

Detailed Study

1. Gajendra moksham _ Sugathakumari
2. Kozhi – Kadammanitta
3. Megharoopan – Aattoor Ravi Varma
4. Budhanum Attin kuttiyum – A. Ayyappan

UNIT V

This unit introduces the nature of samakalika kavitha It also evaluates s a m a k a l i k a kavitha,- the contemporary poetry originated after modern poetry- women, Dalit, environment and cyber issues.

Detailed study

1.Pattanbipuzhamanalil – P P Ramachandran
2.Malayalakavithakku oru Kathu- S. Joseph
3.Thoramazha – Rafeek Ahammad
4.Muttamadikkumbol – Anitha Thampi
5.Survey of India-B.M.Manoj

Recommended Text

Puthukavitha Ed by Dr.O.K.Santhosh.Madras University Publication (5 poems only)

(a) pattambipuzhamanalil,
(b) Malayala kavithakku oru kathu,
(c) Muttamadikkumbol,
(d) Thoramazha,
(e) Survey of India

Reading List (Print and Online)

1. Aadhunika Malayala Sahithya Charithram prasthanangaliloode – Dr. K.M.George (Ed.)
2. Kairaliyute Kadha – N.Krishnapillai
3. Kavitha Sahitya Charithram – M.Leelavathi
4. Adrushyathayute Akhyanangal- Rajesh Chirapadu
5. Adhunikananthara Malayala Kavitha –C.R.Prasad
6. Pen kavitha malayalathil-Sheeba Divakaran,kerala bhasha institute.Thiruvananthapuram
7. Samakalika Malayala kavitha-M.B.Manoj,Samayam Classics. Kannoor
8. Varnnaraji Dr.M.Leelavathi

HINDI - Patra Lekhan aur Paribhashik Shabdavali

Unit I

Niji Patra Lekhan

- Niji Patra – Arth aur Bhed
- Pitaji/Mataji ke naam patra
- Mitra, Bhai aadi ke naam patra
- Paribhashik Shabdawali – 20 words

Unit II

Samajik Patra Lekhan

- Samajik Patra – Arth aur Bhed
- Aavedan Patra – Noukri, Chutti aadi
- Dak Adhikari ke naam patra
- Paribhashik shabdawali – 20 words

Unit III

Vyavasayik Patra Lekhan

- Vyavasayik Patra – Arth aur Bhed
- Prakashak ke naam patra
- Shikayathi
- Paribhashik shabdavali – 20 words

Unit IV

- Samanya Parichay
- Sarkari Patra
- Ardh-Sarkari Patra
- Gyapan, Paripatra
- Anusmarak
- Paribhashik Shabdavali – 20 words

Unit V

- Precis Writing And Applied Grammar (Ling, Vachan and Karak)

Reference Books

1. Viyavaharik Hindi, Hindi Prachar press, T.Nagar, Madras-600 017
2. Alekhan aur Tippan – Prof. Viraj
3. Alekhan - Kichlu

Related Online Contents (MOOCs, SWAYAM, NPTEL, YouTube, Websites, etc.)

1. https://youtu.be/-kUPGG0B4tU
2. https://www.youtube.com/watch?v=xk14MNb1r7k

GENERAL ENGLISH

Unit I ACTIVE LISTENING

Short Story

1.1 In a Grove – Akutagawa Ryunosuke Translated from Japanese by Takashi Kojima

1.2 The Gift of the Magi – O' Henry

Prose

1.3 Listening – Robin Sharma

1.4 Nobel Prize Acceptance Speech – WangariMaathai

Unit II INTERPERSONAL RELATIONSHIPS

Prose

2.1 Telephone Conversation – Wole Soyinka

2.2 Of Friendship – Francis Bacon Song on (Motivational/ Narrative)

2.3 Ulysses – Alfred Lord Tennyson

2.4 And Still I Rise – Maya Angelou

Unit III COPING WITH STRESS

Poem

3.1 Leisure – W.H. Davies

3.2 Anxiety Monster – RhonaMcFerran

Readers Theatre

3.3 The Forty Fortunes: A Tale of Iran

3.4 Where there is a Will – Mahesh Dattani

Unit IV Grammar

4.1 Phrasal Verbs & Idioms

4.2 Modals and Auxiliaries

4.3 Verb Phrases – Gerund, Participle, Infinitive

Unit V Composition/ Writing Skills

5.1 Official Correspondence – Leave Letter, Letter of Application, Permission Letter

5.2 Drafting Invitations

5.3 Brochures for Programmes and Events

Text Books (Latest Editions)

1. Wangari Maathai – Nobel Lecture. Nobel Prize Outreach AB 2023. Jul 2023.
2. Mahesh Dattani, Where there is a Will. Penguin, 2013.
3. Martin Hewings, Advanced English Grammar, Cambridge University Press, 2000
4. Essential English Grammar by Raymond Murphy

Web Resources

1. WangariMaathai – Nobel Lecture. Nobel Prize Outreach AB 2023. Mon. 17 Jul 2023. https://www.nobelprize.org/prizes/peace/2004/maathai/lecture/
2. Telephone Conversation - Wole Soyinka https://www.k-state.edu/english/westmank/spring_00/SOYINKA.html
3. Anxiety Monster-RhonaMcFerran www.poetrysoup.com

DATA STRUCTURES AND ALGORITHMS

Course Objectives

- To understand the concepts of ADTs
- To learn linear data structures-lists, stacks, queues
- To learn Tree structures and application of trees
- To learn graph structures and application of graphs
- To understand various sorting and searching

UNIT I

Abstract Data Types (ADTs)- List ADT-array-based implementation-linked list implementation singly linked lists-circular linked lists-doubly-linked lists-applications of lists-Polynomial Manipulation- All operations-Insertion-Deletion-Merge-Traversal

UNIT II

Stack ADT-Operations- Applications- Evaluating arithmetic expressions – Conversion of infix topostfix expression-Queue ADT-Operations-Circular Queue- Priority Queue-deQueueapplications of queues.

UNIT III

Tree ADT-tree traversals-Binary Tree ADT-expression trees-applications of trees-binary searchtree ADT- Threaded Binary Trees-AVL Trees- B-Tree- B+ Tree – Heap-Applications of heap.

UNIT IV

Definition- Representation of Graph- Types of graph-Breadth first traversal – Depth firsttraversal-Topological sort- Bi-connectivity – Cut vertex- Euler circuits-Applications of graphs.

UNIT V

Searching- Linear search-Binary search-Sorting-Bubble sort-Selection sort-Insertion sort-Shellsort-Radix sort-Hashing-Hash functions- Separate chaining- Open Addressing-Rehashing Extendible Hashing

Text Book

1. Mark Allen Weiss, “Data Structures and Algorithm Analysis in C++”, Pearson Education 2014, 4th Edition.
2. Reema Thareja, “Data Structures Using C”, Oxford Universities Press 2014, 2nd Edition

Reference Books

1. Thomas H.Cormen,Chales E.Leiserson,Ronald L.Rivest, Clifford Stein, “Introduction to Algorithms”, McGraw Hill 2009, 3rd Edition.
2. Aho, Hopcroft and Ullman, “Data Structures and Algorithms”, Pearson Education 2003

Web Resources

1. NPTEL & MOOC courses titled Data Structures
2. https://nptel.ac.in/courses/106106127/

DATA STRUCTURES AND ALGORITHMS using C++LAB

Course Objectives

- To understand the concepts of ADTs
- To learn linear data structures-lists, stacks, queues
- To learn Tree structures and application of trees
- To learn graph structures and application of graphs
- To understand various sorting and searching

DETAILS

1. Write a program to implement the List ADT using arrays and linked lists.
2. Write aprogramto implement the following using a singly linked list.
    - Stack ADT
    - Queue ADT
3. Write a program that reads an infix expression, converts the expression to postfix form and then evaluates the postfix expression (use stack ADT).
4. Write a program to implement priority queue ADT.
5. Write a programto perform the following operations:
    - Insert an element into a binary search tree.
    - Delete an element from a binary search tree.
    - Search for a key element in a binary search tree.
6. Write aprogramto perform the following operations
    - Insertion into an AVL-tree
    - Deletion from an AVL-tree
7. Write a program for the implementation of BFS and DFS for a given graph.
8. Write aprogram for implementing the following searching methods:
    - Linear search
    - Binary search.
9. Write a programfor implementing the following sorting methods:
    - Bubble sort
    - Selection sort
    - Insertion sort
    - Radix sort.

Text Book

1. Mark Allen Weiss, “Data Structures and Algorithm Analysis in C++”, Pearson Education 2014, 4th Edition.
2. Reema Thareja, “Data Structures Using C”, Oxford Universities Press 2014, 2nd Edition

Reference Books

1. Thomas H.Cormen,Chales E.Leiserson,Ronald L.Rivest, Clifford Stein, “Introduction to Algorithms”, McGraw Hill 2009, 3rd Edition
2. Aho, Hopcroft and Ullman, “Data Structures and Algorithms”, Pearson Education 2003

Web Resources

1. NPTEL & MOOC courses titled Data Structures
2. https://nptel.ac.in/courses/106106127/

MICROPROCESSOR AND MICROCONTROLLER

Course Objectives

- To introduce the internal organization of Intel 8085 Microprocessor.
- To know about various instruction sets and classifications
- To enable the students to write assembly language programs using 8085.
- To interface the peripheral devices to 8085 using Interrupt controller and DMA interface.
- To provide real-life applications using microcontroller.

UNIT I

Digital Computers - Microcomputer Organization-Computer languages – Microprocessor Architecture and its operations – Microprocessor initiated operations and 8085 Bus organization – Internal Data operations and 8085 registers - Peripheral or External initiated operations.

UNIT II

8085 Microprocessor – Pinout and Signals – Functional block diagram - 8085 Instruction Set and Classifications.

UNIT III

BCD to Binary and Binary to BCD conversions - ASCII to BCD and BCD to ASCII conversions - Binary to ASCII and ASCII to Binary conversions. BCD Arithmetic - BCD addition and Subtraction - Multibyte Addition and Subtraction - Multiplication and Division.

UNIT IV

The 8085 Interrupts – RIM AND SIM instructions-8259 Programmable Interrupt Controller-Direct Memory Access (DMA) and 8257 DMA controller.

UNIT V

Introduction to Microcontroller - Microcontroller Vs Microprocessor - 8051 Microcontroller architecture - 8051 pin description. Timers and Counters – Operating Modes- Control Registers. Interrupts – Interrupts in 8051 - Interrupts Control Register – Execution of interrupt.

Text Books

1. R. S. Gaonkar- "Microprocessor Architecture- Programming and Applications with 8085", 5th Edition- Penram International Publications,2009. [For unit I to unit IV]
2. Soumitra Kumar Mandal -“Microprocessors and Microcontrollers – Architectures, Programming and Interfacing using 8085, 8086, 8051”, Tata McGraw Hill Education Private Limited. [for unit V].

Reference Books

1. Mathur- "Introduction to Microprocessor"- 3rd Edition- Tata McGraw-Hill - 1993.
2. Raj Kamal - "Microcontrollers: Architecture, Programming, Interfacing and System Design", Pearson Education, 2005.
3. Krishna Kant, "Microprocessors and Microcontrollers – Architectures, Programming and System Design 8085, 8086, 8051, 8096", PHI, 2008

Web Resources

1. Web resources from NDL Library, E-content from open source libraries
2. https://www.bing.com/

PHP PROGRAMMING LAB

Course Objective

- To provide the necessary knowledge on basics of PHP.
- To design and develop dynamic, database-driven web applications using PHP.
- To get an experience on various web application development techniques.
- To learn the necessary concepts for working with the files using PHP.
- To get a knowledge on sessions and cookies.

Exercises

1. Get name of a user from a form and show greeting text.
2. Write a PHP program to check whether given string is palindrome or not.
3. Write a PHP program to check whether given number is Armstrong or not.
4. Write a PHP program using function.
5. Create a PHP page for login page without sql connection.
6. Write a PHP program for Array manipulation.
7. Write a PHP program to design personal information
8. Create a PHP page for login page with sql connection.
9. Create a web page to advertise a product of the company using images and audio.
10. Create a PHP page for login system using session.

Text Book

1. Head First PHP & MySQL: A Brain-Friendly Guide- 2009-Lynn mighley and Michael Morrison.
2. The Joy of PHP: A Beginner's Guide to Programming Interactive Web Applications with PHP and MySQL- Alan Forbes

Reference Books

1. PHP: The Complete Reference-Steven Holzner.
2. DT Editorial Services (Author), "HTML 5 Black Book (Covers CSS3, JavaScript, XML, XHTML, AJAX, PHP, jQuery)", Paperback 2016, 2ndEdition.

Web Resources

1. Refer MOOC Courses like NPTEL and SWAYAM
2. https://www.w3schools.com/php/default.asp

ENVIRONMENTAL STUDIES

Course Objectives:

The main objectives of this course are:

- Enable the students to be aware of our natural resources, ecosystems and their linkages to society, livelihood, environment and conservation.

Unit I

Multidisciplinary Nature of Environmental Studies and Natural Resources:

Concept of Renewable and non-renewable resource, Natural resources and associated problems: Forest resources: Deforestation, Timber extraction, mining, dams and their effects. Water resources: Over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems. Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources. Land resources: Land degradation, man induced landslides, soil erosion and desertification.

UNIT II

Ecosystem: Concept of an Ecosystem, Structure and Functions of Ecosystem, Energy flow in the Ecosystem; Ecological Succession, Food Chains, Food webs and Ecological Pyramids, Characteristic Features of the following Ecosystem: Forest Ecosystem, Grassland Ecosystem and Desert Ecosystem, Aquatic Ecosystem (Ponds, Streams, Lakes, Rivers and Ocean Estuaries)

UNIT III

Biodiversity and its Conservation: Definition, levels and values of biodiversity; Threats to biodiversity- habitat loss, poaching of wildlife, man-wildlife conflicts, IUCN categories of threat; Terrestrial and marine hotspots of biodiversity in India; Conservation of Biodiversity - In-situ and Ex-situ conservation; Conservation schemes :Gir lion sanctuary project, Project tiger, Project elephant, Conservation of sea turtles in India. Ecotourism

UNIT IV

Environment Pollution: Types, causes, effects, and control - Air, Water, Soil and Noise pollution. Nuclear hazards and human health risks. Solid waste management: Control measure of urban and industrial waste. Climate change global warming, ozone layer depletion, acid rain, and impacts on human communities and agriculture

UNIT V

Social Issues and the Environment: Sustainable Development, Water Conservation, Resettlement and rehabilitation of people. Disaster Management: Floods, earthquake, cyclone and landslides. Consumerism and waste products; Environment Protection Act; Air and water (Prevention and control of Pollution) Act; Wild life protection Act; Forest conservation Act; Environmental movements (Chipko, Silent valley, Bishnois of Rajasthan). Environmental ethics. Environmental communication and public awareness.

Reading list

1. Erach Bharucha, 2021, Textbook of Environmental Studies for Undergraduate Courses, Third Edition, Orient blackswan Pvt. Ltd., Hyderabad.
2. V.K. Ahluwalia, Environmental Studies (Second Edition), Ane books India, T-Nagar, Chennai.
3. Y.K. Singh, 2006, Environmental science, New Age International (P) Ltd., Publishers, New Delhi.
4. S. P. Misra, 2023, Essential Environmental Studies, 4th Edn, Ane Books Pvt. Ltd., New Delhi.
5. G.S. Vijayalakshmi, A.G.Murugesan and N.Sukumaran, 2006, Basics of Environmental Science, Manonmaniam Sundaranar University Publications, Tirunelveli.

Recommended texts

1. N.Arumugam and V. Kumaresan, 2014, Environmental studies, 4th edition, Saras Publication, Nagercoil, TamilNadu.
2. M.Basu, and S. Xavier, 2016, Fundamentals of Environmental Studies, Cambridge University Press.
3. A.K. Mitra and R. Chakraborty, 2016, Introduction to Environmental Studies, Book Syndicate.
4. J.S. Singh, S.P.Singh, and S.R. Gupta, 2014, Ecology, Environmental Science and Conservation. S. Chand Publishing, New Delhi.