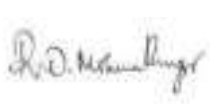
**ANNEXURE - II**


## *PG DEPARTMENT OF COMPUTATIONAL STUDIES*

### R24_BCA-Computer Applicaiton

| II SEMESTER | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Code No. | Title of Course | Periods | | | Course Category | Credits | Max. Marks | | |
| | | L | T | P | | | CAM | ESM | Total |
| A24CPT203C | Problem Solving & Programming Fundamentals | 4 | 0 | 0 | MJD | 4 | 25 | 75 | 100 |
| A24CPT204C | Visual Programming with C# | 4 | 0 | 0 | MJD | 4 | 25 | 75 | 100 |
| A24CPD201C | Microcontrollers Programming | 4 | 0 | 0 | MID | 4 | 25 | 75 | 100 |
| A24ENM202C | Professional Communication in English | 3 | 0 | 0 | MLD | 3 | 25 | 75 | 100 |
| A24TAT202C/ A24FRT202C | Tamil II / French II | 2 | 0 | 0 | AEC | 2 | 25 | 75 | 100 |
| A24CPS202C | Visual Programming with C# Lab | 0 | 0 | 6 | SEC | 3 | 50 | 50 | 100 |
| A24VAC202C | Environmental Studies | 2 | 0 | 0 | VAC | 2 | 25 | 75 | 100 |
| A24CAC202D | C Programming | 0 | 0 | 4 | EEC | 0 | 100 | 0 | 100 |
| | | | | | | 22 | 300 | 500 | 800 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Department | **Computational Studies** | | | Programme: **BCA** | | | | |
| Semester | **SECOND** | | | Course Category Code: **MJD** | | | *End Semester Exam Type: **TE** | |
| Course Code | **A24CPT203C** | | | Periods / Week | | | Credit | Maximum Marks |
| | | | | L | T | P | C | CAM / ESE / TM |
| Course Name | **Problem Solving & Programming Fundamentals** | | | **4** | **0** | **0** | **4** | **25 / 75 / 100** |
| Prerequisite | **Problem Solving Skills** | | | | | | | |
| Course Outcome | *After the completion of this course, the students will be able to:* | | | | | | | BT Mapping (Highest Level) |
| | **CO1** | Analyze problems and develop top-down designs | | | | | | **K2** |
| | **CO2** | Write, compile, and debug basic programs | | | | | | **K3** |
| | **CO3** | Implement logic with conditionals and loops | | | | | | **K3** |
| | **CO4** | Manipulate arrays of various dimensions | | | | | | **K4** |
| | **CO5** | Design and implement functions with recursion. | | | | | | **K4** |
| **UNIT-I** | **Introduction to Computer Problem-Solving** | | | | | | **Periods: 12** | |
| Problem-solving Aspect – Top-down Design – Implementation of Algorithms – Program Verification – Efficiency of Algorithms – Analysis of Algorithms. | | | | | | | | **CO1** |
| **UNIT-II** | **Basic programming constructs** | | | | | | **Periods: 12** | |
| Basic Data types (Numerical, String) – Variables – Expressions – I/O statements – Compile and Run – Debugging | | | | | | | | **CO2** |
| **UNIT-III** | **Decision Making – Branching & Looping** | | | | | | **Periods: 12** | |
| Decision making – Relational Operators – Conditional statement, Looping Statements – Nested loops – Infinite loops – Switch Statements | | | | | | | | **CO3** |
| **UNIT-IV** | **Array Techniques** | | | | | | **Periods: 12** | |
| Array Manipulation – Different operations – One dimensional Array – Two-dimensional Array – Multidimensional Array – Character – Arrays and Strings | | | | | | | | **CO4** |
| **UNIT-V** | **Modular solutions** | | | | | | **Periods: 12** | |
| Introduction to Functions – Importance of Design of Functions – Arguments – Parameters – Return Values – Local and Global Scope – Recursion | | | | | | | | **CO5** |
| **Lecture Periods: 60** | **Tutorial Periods: -** | | | **Practical Periods: -** | | | | **Total Periods: 60** |
| **Text Books** | | | | | | | | |
| 1. R. G. Dromey, "How to Solve it by Computer", Pearson Education India, Thirteen Edition, 2013.<br>2. Allen B. Downey, "Think Python: How to Think like a Computer Scientist", Third Edition, O'Reilly Publishers, 2020. | | | | | | | | |
| **Reference Books** | | | | | | | | |
| 1. Reema Thareja, "Python Programming: Using Problem Solving Approach", Oxford University Press, 2019 | | | | | | | | |



| |
|---|
| 2. Karthikeyan E, "A Textbook on C: Fundamentals, Data Structures and Problem Solving", PHI Learning, 2008 |
| **Web References** |
| 1. https://status.net/articles/problem-solving-skills-examples-steps-processes-techniques/<br>2. https://www.nptel/problem-solving-methodologies/ |

* TE – Theory Exam, LE – Lab Exam

**COs/POs/PSOs Mapping**

| COs | Program Outcomes (POs) | | | | | | Program Specific Outcomes (PSOs) | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PSO1 | PSO2 | PSO3 |
| 1 | 3 | 2 | 3 | 3 | 2 | 2 | 2 | 2 | 3 |
| 2 | 3 | 2 | 2 | 3 | 3 | 3 | 2 | 2 | 2 |
| 3 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 2 | 2 |
| 4 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 3 |
| 5 | 2 | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 3 |

**Correlation Level: 1 - Low, 2 - Medium, 3 – High**

**Evaluation Method**

| Assessment | Continuous Assessment Marks (CAM) | | | | | End Semester Examination (ESE) Marks | Total Marks |
|---|---|---|---|---|---|---|---|
| | CAT 1 | CAT 2 | Model Exam | Assignment* | Attendance | | |
| Marks | 10 | | 5 | 5 | 5 | 75 | 100 |

***** Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Department | **Computational Studies** | | | Programme: **BCA** | | | | |
| Semester | **SECOND** | | | Course Category Code: **MJD** | | | *End Semester Exam Type: **TE** | |
| Course Code | **A24CPT204C** | | | Periods / Week | | | Credit | Maximum Marks |
| | | | | L | T | P | C | CAM | ESE | TM |
| Course Name | **Visual Programming with C#** | | | **4** | **0** | **0** | **4** | **25** | **75** | **100** |
| Prerequisite | **Basic knowledge of computer Programming** | | | | | | | | | |
| Course Outcome | *After completion of the course, the students will be able to* | | | | | | | | BT Mapping (Highest Level) | |
| | **CO1** | Understand the key components of the .NET Framework related to C# development | | | | | | | **K2** | |
| | **CO2** | Learn the basic syntax and structure of C# programs | | | | | | | **K2** | |
| | **CO3** | Design C# applications by integrating various object-oriented programming techniques in the .NET framework | | | | | | | **K3** | |
| | **CO4** | Analyze the significance of graphical user interface (GUI) components and the Event Handling Model using C# programming | | | | | | | **K4** | |
| | **CO5** | Understand the essentials of ASP.NET Core | | | | | | | **K2** | |
| **UNIT-I** | **Introduction to .Net Framework** | | | | | | **Periods: 13** | | | |
| An Overview - Framework Components - The Common Language Runtime (CLR) - .NET Base Class Library - Common Language Specification (CLS) - Common Type System (CTS) - Metadata and Assemblies - .NET Namespaces - MSIL - JIT Compilers | | | | | | | | | | **CO1** |
| **UNIT-II** | **Overview of C#** | | | | | | **Periods: 15** | | | |
| Program structure- Literals- Variables- Constants -Data Types Operators-Statements and Expressions- Branching- Looping and loop control statements- Arrays- Strings manipulation- Boxing and Unboxing- Pre-processors- Namespaces. | | | | | | | | | | **CO2** |
| **UNIT-III** | **Object Oriented Programming concepts in C#** | | | | | | **Periods: 12** | | | |
| Class- Objects- Encapsulation- Constructors and its types Inheritance-Polymorphism-Interface-Abstract class- Operator overloading- Properties- Indexers- Delegates- Collections | | | | | | | | | | **CO3** |
| **UNIT-IV** | **Windows Forms** | | | | | | **Periods: 10** | | | |
| Introduction to Windows Forms and various controls-SDI and MDI applications- Menu Creation, Common Dialog Boxes- Events and event handling | | | | | | | | | | **CO4** |
| **UNIT-V** | **Getting started with ASP.Net** | | | | | | **Periods: 10** | | | |
| Choosing a code editor, Creating an ASP.NET Core project, Running the ASP.NET Core application, ASP.NET Core application - Creating the project, Testing ASP.Net Core Applications - Creating a unit test project, Writing and running unit tests | | | | | | | | | | **CO5** |
| **Lecture Periods: 45** | | **Tutorial Periods: -** | | **Practical Periods: -** | | | **Total Periods: 45** | | | |

**Text Books**


1. Herbert Schildt, “C# 4.0: The Complete Reference”, First Edition, McGraw Hill Education, 2017.
2. Albahari. J, "C# 10 in a Nutshell: The Definitive Reference", First Edition, O’Reilly, 2022.


**Reference Books**


1. Adam Freeman. A, “ Pro ASP.NET Core 7”, Tenth Edition. Manning Publication, 2023.

2. Charles Petzold, “Programming Windows Forms in C#”, Microsoft Press, 2002

**Web References**

1.C# 1: Introduction to programming and the C# language - Free Computer, Programming, Mathematics, Technical Books, Lecture Notes and Tutorials

2. Beginning Visual Web Programming in C#: From Novice to Professional | SpringerLink

**COs/POs/PSOs Mapping**

| COs | Program Outcomes (POs) | | | | | Program Specific Outcomes (PSOs) | | |
|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 |
| 1 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | 2 |
| 2 | 3 | 3 | 2 | 3 | 2 | 3 | 3 | 2 |
| 3 | 2 | 2 | 3 | 3 | 2 | 3 | 3 | 2 |
| 4 | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 3 |
| 5 | 2 | 2 | 2 | 3 | 3 | 3 | 2 | 2 |

**Correlation Level: 1 - Low, 2 - Medium, 3 – High**

**Evaluation Method**

| Assessment | Continuous Assessment Marks (CAM) | | | | | End Semester Examination (ESE) Marks | Total Marks |
|---|---|---|---|---|---|---|---|
| | CAT 1 | CAT 2 | Model Exam | Assignment* | Attendance | | |
| Marks | 10 | | 5 | 5 | 5 | 75 | 100 |

***** Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Department | **Computational Studies** | | | Programme: **BCA** | | | | |
| Semester | **SECOND** | | | Course Category Code: **MD** | | | *End Semester Exam Type: **TE** | |
| Course Code | **A24CPD201C** | | | Periods / Week | | | Credit | Maximum Marks |
| | | | | L | T | P | C | CAM | ESE | TM |
| Course Name | **Microcontrollers Programming** | | | **4** | **0** | **0** | **4** | **25** | **75** | **100** |
| Prerequisite | Assembly Language Programming | | | | | | | | | |
| Course Outcome | After completion of the course, the students will be able to | | | | | | | BT Mapping (Highest Level) | | |
| | **CO1** | Learn the fundamentals of Microcontrollers | | | | | | **K2** | | |
| | **CO2** | Understand the internal design of 8051 microcontroller along with the features and their programming | | | | | | **K2** | | |
| | **CO3** | Analyze the on-chip peripherals of microcontrollers | | | | | | **K3** | | |
| | **CO4** | Design different interfacing applications using microcontrollers and peripherals | | | | | | **K4** | | |
| **UNIT-I** | **Microprocessors and Microcontrollers** | | | | | | **Periods: 12** | | | |
| Microprocessors vs Microcontrollers – 8051 Architecture – Input/Output Pins – Ports – External Memory – Counter and Timers – Serial Data I/O – Interrupts | | | | | | | | | | **CO1** |
| **UNIT-II** | **Programming 8051** | | | | | | **Periods: 12** | | | |
| Addressing Modes – External Data Moves – Code Memory Read-Only Data Moves – PUSH and POP Opcodes – Data Exchanges – Logical Operations – Arithmetic Operations – Jump and Call Opcodes | | | | | | | | | | **CO2** |
| **UNIT-III** | 8051 Microcontroller Design | | | | | | **Periods: 12** | | | |
| Microcontroller Specification – Design – Testing – Timing Subroutines – Lookup Tables for 8051 – Serial Data Transmission. | | | | | | | | | | **CO3** |
| **UNIT-IV** | **Applications** | | | | | | **Periods: 12** | | | |
| Keyboards – Displays – Pulse Measurement – D/A and A/D Conversions – Multiple Interrupts | | | | | | | | | | **CO4** |
| **UNIT-V** | **Serial Data Communication** | | | | | | **Periods: 12** | | | |

| | |
|---|---|
| Network Configurations – 8051 Data Communication Modes. | **CO5** |

| | | | |
|---|---|---|---|
| **Lecture Periods: 60** | **Tutorial Periods: -** | **Practical Periods: -** | **Total Periods: 45** |

**Text Books**

1. Kenneth J. Ayala, “The 8051 Microcontroller Architecture, Programming, and Applications”, Delmar Cengage Learning, Third Edition, 2004.
2. Martin Bates, “PIC Microcontrollers - An Introduction to Microelectronics”, Third Edition, Newnes, Elsevier, 2011.

**Reference Books**

1. Hubert Henry Ward, “C Programming for the PIC Microcontroller Demystify Coding with Embedded Programming”, Apress, UK, 2020. https://doi.org/10.1007/978-1-4842-5525-4

**Web References**

1.The 8051 Microcontroller - Companion Site - Web References

2.8051 Microcontroller Assembly Language Programming.

**COs/POs/PSOs Mapping**

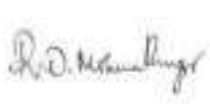
| COs | Program Outcomes (POs) | | | | | Program Specific Outcomes (PSOs) | | |
|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 |
| **1** | 2 | 3 | 3 | 3 | 3 | 2 | 2 | 2 |
| **2** | 3 | 3 | 2 | 3 | 2 | 3 | 3 | 2 |
| **3** | 2 | 2 | 3 | 3 | 2 | 3 | 3 | 2 |
| **4** | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 3 |
| **5** | 2 | 2 | 2 | 3 | 3 | 3 | 2 | 2 |

**Correlation Level: 1 - Low, 2 - Medium, 3 – High**

**Evaluation Method**

| Assessment | Continuous Assessment Marks (CAM) | | | | | End Semester Examination (ESE) Marks | Total Marks |
|---|---|---|---|---|---|---|---|
| | CAT 1 | CAT 2 | Model Exam | Assignment* | Attendance | | |
| Marks | 10 | | 5 | 5 | 5 | 75 | 100 |

***** Application oriented / Problem solving / Design / Analytical in content beyond the syllabus



| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Department | **Computational Studies** | Programme: **BCA** | | | | | | |
| Semester | **SECOND** | Course Category Code: **MLD** | | | *End Semester Exam Type: T**E** | | | |
| Course Code | **A24ENM202C** | Periods / Week | | | Credit | Maximum Marks | | |
| | | L | T | P | C | IM | ESE | TM |
| Course Name | **Professional Communication in English** | **3** | **0** | **0** | **3** | **25** | **75** | **100** |
| Prerequisite | | | | | | | | |

**Course Objectives**

- To develop proficiency in all four language skills [LSRW] in the context of professional communication in English.
- To enhance speaking skills to communicate effectively in various professional settings such as interviews and discussions.
- To improve reading and comprehension skills to understand spoken and written English in professional and general contexts.
- To enhance writing skills to effectively convey ideas and information through various written mediums like letters, resumes, emails and reports and
- To explore the different types of writing.

| Course Outcome | *After completion of the course, the students will be able to* | | BT Mapping (Highest Level) |
|---|---|---|---|
| | **CO1** | Apply communication skills in order to overcome communication barriers, and adapt individual communication style to different professional contexts effectively. | **K3** |
| | **CO2** | Demonstrate proficiency in listening to understand spoken English in various contexts and also to be able to synthesize and summarize important points. | **K3** |
| | **CO3** | Exhibit effective speaking skills by communicating eloquently and confidently in professional contexts like seminars, group discussions and interviews by learning to generate ideas and present them in a structured manner. | **K3** |
| | **CO4** | Display improved reading skills by comprehending and analysing texts to extract relevant information and identify main ideas to evaluate critically. | **K3** |
| | **CO5** | Produce well-written documents like business letters, emails, resumes, essays, reports and professional correspondence utilizing appropriate language and formatting. | **K3** |

| **UNIT-I** | **BASIC COMMUNICATION SKILLS** | **Periods: 09** |
|---|---|---|
| Introduction; relevance of communication; communication process; types of communication; barriers to communication; overcoming barriers; frames of reference. | | **CO1** |
| **UNIT-II** | **LISTENING** | **Periods: 09** |
| Types of listening; barriers to effective listening; listening and note taking; identifying important points; extracting salient points to summarize. | | **CO2** |
| **UNIT-III** | **SPEAKING** | **Periods: 09** |
| Public speaking; Setting clear objectives; generating ideas; preparing the speech; seminars; purpose of seminars; making notes to speak from; presentations; structure of presentations; group discussions; types of group discussions and topics; group dynamics; interviews; types of interviews; basic interview structure | | **CO3** |
| **UNIT-IV** | **READING** | **Periods: 09** |

| | |
|---|---|
| Comprehension, skimming, scanning, intensive reading, extensive reading, determining vocabulary from word parts and context clues; identifying the central argument as well as details | **CO4** |

| | | |
|---|---|---|
| **UNIT-V** | **WRITING** | **Periods: 09** |

| | |
|---|---|
| Functional grammar; spelling and punctuation: vocabulary; common errors; e-mails; resumes; report writing; note-making; description; narration; essay and paragraph writing. | **CO5** |

| | | | |
|---|---|---|---|
| **Lecture Periods: 45** | **Tutorial Periods: -** | **Practical Periods: -** | **Total Periods: 45** |
| | | | |

**Text Books**


1. Billingham, Jo, and Beatrice Baumgartner Cohen. Giving Presentations. Oxford University Press, 2003.
2. Cholij, Mark. Towards Academic English: Developing Effective Writing Skills. CUP, 2007.
3. Dutt, Kiranmai P, et al. A Course in Communication Skills. Cambridge University Press, 2008.
4. Mohan, Krishna, and Meera Banerji. Developing communication skills. Macmillan, 2016.
5. Murphy, Raymond. Intermediate English Grammar. Cambridge University Press, 2012.


**Reference Books**


1. Prasad, Hari Mohan. How to Prepare for Group Discussion and Interview. Tata McGraw-Hill Publishing Company, 1998.
2. Seely, John. Oxford Guide to Effective Writing and Speaking: How to Communicate Clearly. Oxford University Press, 2013.
3. Tickoo, Champa, and Jaya Sasikumar. Writing with a Purpose. Generic Publishers, 2014. Ur, Penny. Discussions That Work. Cambridge University Press, 1981
4. Ogidi, O. C. Study Speaking: A Course in Spoken English for Academic Purposes. CUP, 1993.


**Web References**

1. https://unm5.unm.edu/5-research-COMMUNICATION-skills.html
2. https://ebooks.inflibnet.ac.in/mgmtp07/chapter/importance-types-of-listening/
3. https://www.baycollege.edu/_resources/pdf/academics/academic-resources/open-education/principles-publicspeaking.pdf
4. https://www.summitlearning.org/docs/63364
5. https://sde.uoc.ac.in/sites/default/files/sde_videos/SLM-I%20Sem%20English-Functional%20Grammar%20and%20Communication%20in%20English%20(Scrutinized%20Final%20Draft).pdf

**COs/POs/PSOs Mapping**

| COs | Program Outcomes (POs) | | | | | Program Specific Outcomes (PSOs) | | |
|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PSO1 | PSO2 | PSO3 |
| 1 | 3 | 2 | 2 | 3 | 2 | 2 | 2 | 3 |
| 2 | 3 | 3 | 2 | 2 | 3 | 2 | 3 | 3 |
| 3 | 3 | 2 | 3 | 2 | 1 | 2 | 1 | 2 |
| 4 | 3 | 3 | 3 | 3 | 2 | 1 | 2 | 2 |
| 5 | 3 | 2 | 2 | 2 | 3 | 2 | 2 | 3 |

**Correlation Level: 1 - Low, 2 - Medium, 3 – High**

**Evaluation Method**

| Assessment | Continuous Assessment Marks (CAM) | | | | | End Semester Examination (ESE) Marks | Total Marks |
|---|---|---|---|---|---|---|---|
| | CAT 1 | CAT 2 | Model Exam | Assignment* | Attendance | | |
| Marks | 10 | | 5 | 5 | 5 | 75 | 100 |

***** Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

| Department | **Computational Studies** | Programme: **BCA** | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Semester | **SECOND** | Course Category Code: **AEC** | | | | *End Semester Exam Type: **TE** | | |
| Course Code | **A24TAT202C** | Periods / Week | | | Credit | Maximum Marks | | |
| | | L | T | P | C | CAM | ESE | TM |
| Course Name | **TAMIL - II** | **2** | **0** | **0** | **2** | **25** | **75** | **100** |
| **(Common to B.A, B.Sc., BBA., B.COM., BCA., B.COM CS.,)** | | | | | | | | |
| Prerequisite | | | | | | | | |

| Course Outcome | *After the completion of this course, the students will be able to:* | | BT Mapping (Highest Level) |
|---|---|---|---|
| | **CO1** | இலக்கியங்கள் உணர்த்தும் வாழ்வியல் நெறிமுறைகளைப் பேணிநடத்தல். | **K2** |
| | **CO2** | நமது எண்ணத்தை வெளிப்படுத்தும் கருவியாகத் தாய்மொழியைப் பயன்படுத்துதல். | **K3** |
| | **CO3** | தகவல் தெடர்புக்குத் தாய்மொழியின் முக்கியத்துவத்தை உணர்தல். | **K3** |
| | **CO4** | தாய்மொழியின் சிறப்பை அறிதல். | **K4** |
| | **CO5** | இலக்கிய இன்பங்களை நுகரும் திறன்களை வளர்த்தல். | **K4** |

| **UNIT-I** | காப்பியம் | **Periods: 09** |
|---|---|---|
| சிலப்பதிகாரம் - வழக்குரைகாதைனிகாவியுகுநீரும்...முதல் தோற்றான் உயிர்வரை (8 வரிகள்)<br>மணிமேகலை -பளிக்கறைபுக்ககாதைனிமதுமலர்க் கூந்தல்...முதல் புறமறிப் பாராய் வரை(106-121வரிகள்)<br>பெரியபுராணம் -இளையான்குடிமாறநாயனார்புராணம் - உள்ளம் அன்புகொண்டு...(17ஆவது பாடல்மட்டும்)<br>கம்பராமாயணம் - கும்பகர்ணவதைப்படலம் - உறங்குகின்றகும்பகன்ன... (45ஆவதுபாடல் மட்டும்)<br>தேம்பாவணி -பாலமாட்சிப்படலம் - ஊட்டினார்அருள்...(229 பாடல்மட்டும்)<br>சீறாப்புராணம் - மழையழைப்பித்தப் படலம் - வேயினைமுறித்துஎனத் தொடங்கும்(15ஆவது பாடல் மட்டும்) | | **CO1** |
| **UNIT-II** | பதினெண் கீழ்க்கணக்கு நூல்கள் | **Periods: 09** |
| திருக்குறள் - வலியறிதல் (48),நெஞ்சொடுகிளத்தல் (125)<br>நாலடியார் - அரும்பெறல்...(பாடல் எண்:34)<br>சிறுபஞ்சமூலம் -பூவாதுகாய்க்கும்...(பாடல் எண்:22)<br>ஐந்திணைஐம்பது - சுனைவாய்ச் சிறுநீரை...(பாடல் எண்:38)<br>கார்நாற்பது - கருவிளைகண்மலர்போல் பூத்தன...(பாடல் எண்:34)<br>களவழிநாற்பது - ஞாட்பினுளெஞ்சிய (பாடல் எண்:2) | | **CO2** |
| **UNIT-III** | சங்க இலக்கியம் - எட்டுத்தொகை | **Periods: 09** |
| ஐங்குறுநூறு - பாடல் எண்:44 -தோழி கூற்று<br>குறுந்தொகை - பாடல் எண்:224 - தலைவி கூற்று<br>நற்றிணை - பாடல் எண்:284 - தலைவன் கூற்று<br>அகநானூறு - பாடல் எண்:145 - செவிலி கூற்று<br>புறநானூறு - பாடல் எண்:102னி ஔவையார்<br>பரிபாடல் - பாடல் எண்:3 - திருமால் வாழ்த்து (1-11வரிகள்) | | **CO3** |
| **UNIT-IV** | பத்துப்பாட்டு | **Periods: 09** |
| பொருநராற்றுப்படை-வாரியும் வடித்தும்...முதல் பெருந்தகுபாடினிவரை(25-47)<br>சிறுபாணாற்றுப்படை- பைந்தனைஅவரை...முதல் வென்றிவேலூர் எய்தின் வரை (164-173)<br>பெரும்பாணாற்றுப்படை-பார்வையாத்த...முதல் பதம் மிகப் பருகுவீர்வரை (95-105)<br>குறிஞ்சிப்பாட்டு -அண்ணல் நெடுங்கோடு...முதல் சிவந்தகண்ணேம்வரை(54-61)<br>மதுரைக்காஞ்சி -மைபடுபெருந்தோள்...முதல் பெரும்பெயர் மதுரை வரை (687-699)<br>நெடுநல்வாடை -குளிர்காலக்காட்சி- கல்லென் துவலைத்...முதல் பண்ணுமுறைநிறுப்பவரை (64-70) | | **CO4** |
| **UNIT-V** | மொழிப்பயிற்சி, இலக்கியவரலாறு | **Periods: 09** |

| | |
|---|---|
| 1.முதல்,கரு,உரிப்பொருள் அறிதல்<br>2.அலகிட்டுவாய்ப்பாடு<br>3.அணிகள் அறிதல்<br>இலக்கியவரலாறு<br>காப்பியம்,அறஇலக்கியம்,சங்க இலக்கியம் குறித்தப் பாடப்பகுதியைஒட்டிய இலக்கியவரலாறு. | **CO5** |

| | | | |
|---|---|---|---|
| **Lecture Periods: 45** | **Tutorial Periods: -** | **Practical Periods: -** | **Total Periods: 45** |

**Text Books**


1. சிவகுமார்,எஸ்., -கொங்குதேர்வாழ்க்கை, பாடல் தொகுப்பு நூல் - தொகுதி -1, யுனைடெட் ரைட்டர்ஸ்,சென்னை -86. முதற்பதிப்பு.2003.
2. சாமிநாதையர் டாக்டர் உ.வே. குறுந்தொகை மூலமும் உரையும், டாக்டர் உ.வே.சாமிநாதையர் நூல் நிலையம், வெளியீட்டெண்: 277,பெசன்ட் நகர், சென்னைனி 600 090.எட்டாம் பதிப்புனி 2020.
3. வேங்கடராமன், வித்துவான்.ஹெச். (பதி.) - நற்றிணை மூலமும் உரையும்,டாக்டர்உ.வே.சாமிநாதையர் நூல் நிலையம், வெளியீட்டெண்: 277,பெசன்ட் நகர்,சென்னைனி 600 090. எட்டாம் பதிப்புனி 2020.
4. திருவள்ளுவர்- சேயோன் டாக்டர் - திருக்குறள்,மயிலைத் திருவள்ளுவர்தமிழ்ச் சங்கம்,184,பிராட்வே,சென்னை 600 108
5. வேங்கடசாமிநாட்டார்,ந.மு., - கார்நாற்பது,களவழிநாற்பதுனிசாரதாபதிப்பகம்,சாந்திஅடுக்ககம், ஸ்ரீகிரு'ணபுரம் தெரு, இராயப்பேட்டை,சென்னை -14. முதற்பதிப்பு: 2005.


**Reference Books**


1. சிற்பிபாலசுப்பிரமணியம் மற்றும் நீலபத்மநாபன் (ப.ஆசி.) னிபுதியதமிழ் இலக்கியவரலாறு, தொகுதி-1,2,3, சாகித்திய அகாதெமி,
புதுடெல்லி, 2013.
2. பாக்கியமேரி, வகைமை நோக்கில் தமிழ் இலக்கிய வரலாறு (செம்மை மற்றும் விரிவுப் பதிப்பு), பாரிநிலையம். சென்னை,
3. ஆனந்தன். சு. முனைவர்., - தமிழ் இலக்கியவரலாறு,கண்மணிபதீப்பகம், திருச்சி-2. இருபத்தி மூன்றாம் பதிப்புனி 2015.
4. பரந்தாமனார்,அ.கி.,நல்லதமிழ் எழுதவேண்டுமா,பாரிநிலையம்,சென்னை, 1998.
5. சம்பத், இரா., (பதி) -தொல்காப்பியக் கவிதையியல் வடிவம்-பாடுபொருள்-உத்தி-வகைமை,புதுச்சேரிமொழியியல் பண்பாட்டுஆராய்ச்சிநிறுவனம், புதுச்சேரி-605 001. முதற்பதிப்புனிஅக்டோபர் 2015.


**Web References**

1. http://www.tamilvu.org
2. http://www.tamilweb.com
3. http://www.tamilkodal.com
4. www.store.tamillexican.com
5. www.kala.tamilforu.blogspot.com
6. www.noolagam.com

* TE – Theory Exam, LE – Lab Exam

**COs/POs/PSOs Mapping**

| COs | Program Outcomes (POs) | | | | | | Program Specific Outcomes (PSOs) | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PSO1 | PSO2 | PSO3 |
| 1 | 3 | 2 | 3 | 3 | 2 | 2 | 2 | 2 | 3 |
| 2 | 3 | 2 | 2 | 3 | 3 | 3 | 2 | 2 | 2 |
| 3 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 2 | 2 |
| 4 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 3 |
| 5 | 2 | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 3 |

**Correlation Level: 1 - Low, 2 - Medium, 3 – High**

**Evaluation Method**

| Assessment | Continuous Assessment Marks (CAM) | | | | | End Semester Examination (ESE) Marks | Total Marks |
|---|---|---|---|---|---|---|---|
| | CAT 1 | CAT 2 | Model Exam | Assignment* | Attendance | | |
| Marks | 10 | | 5 | 5 | 5 | 75 | 100 |

***** Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Department | **Computational Studies** | | Programme **BCA** | | | | | |
| Semester | **SECOND** | | Course Category Code: **AEC** | | | *End Semester Exam Type: **TE** | | |
| Course Code | **A24FRT202C** | | Periods / Week | | | Credit | Maximum Marks | |
| | | | L | T | P | C | CAM | ESE / TM |
| Course Name | **FRENCH - II** | | **2** | **0** | **0** | **2** | **25** | **75** / **100** |
| Prerequisite | **French I** | | | | | | | |
| Course Outcome | *After the completion of this course, the students will be able to:* | | | | | | | BT Mapping (Highest Level) |
| | **CO1** | Analyze problems and develop top-down designs | | | | | | **K3** |
| | **CO2** | Write, compile, and debug basic programs | | | | | | **K3** |
| | **CO3** | Implement logic with conditionals and loops | | | | | | **K3** |
| | **CO4** | Manipulate arrays of various dimensions | | | | | | **K3** |
| | **CO5** | Design and implement functions with recursion. | | | | | | **K3** |
| **UNIT-I** | **Introduction to Computer Problem-Solving** | | | | | **Periods: 12** | | |
| Problem-solving Aspect – Top-down Design – Implementation of Algorithms – Program Verification – Efficiency of Algorithms – Analysis of Algorithms . | | | | | | | | **CO1** |
| **UNIT-II** | **Basic programming constructs** | | | | | **Periods: 12** | | |
| Basic Data types (Numerical, String) – Variables – Expressions – I/O statements – Compile and Run – Debugging | | | | | | | | **CO2** |
| **UNIT-III** | **Decision Making – Branching & Looping** | | | | | **Periods: 12** | | |
| Decision making – Relational Operators – Conditional statement, Looping Statements – Nested loops – Infinite loops – Switch Statements | | | | | | | | **CO3** |
| **UNIT-IV** | **Array Techniques** | | | | | **Periods: 12** | | |
| Array Manipulation – Different operations – One dimensional Array – Two-dimensional Array – Multidimensional Array – Character – Arrays and Strings | | | | | | | | **CO4** |
| **UNIT-V** | **Modular solutions** | | | | | **Periods: 12** | | |
| Introduction to Functions – Importance of Design of Functions – Arguments – Parameters – Return Values – Local and Global Scope – Recursion | | | | | | | | **CO5** |
| **Lecture Periods: 60** | **Tutorial Periods: -** | **Practical Periods: -** | | | | | **Total Periods: 60** | |

**Text Books**

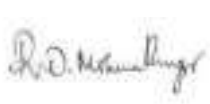
1. R. G. Dromey, “How to Solve it by Computer”, Pearson Education India, Thirteen Edition, 2013.
2. Allen B. Downey, “Think Python: How to Think like a Computer Scientist”, Third Edition, O’Reilly Publishers, 2020.

**Reference Books**

1. Reema Thareja, "Python Programming: Using Problem Solving Approach", Oxford University Press, 2019
2. Karthikeyan E, "A Textbook on C: Fundamentals, Data Structures and Problem Solving", PHI Learning, 2008

**Web References**

1. https://status.net/articles/problem-solving-skills-examples-steps-processes-techniques/
2. https://www.geeksforgeeks.org/problem-solving-methodologies/



* TE – Theory Exam, LE – Lab Exam

**COs/POs/PSOs Mapping**

| COs | Program Outcomes (POs) | | | | | | Program Specific Outcomes (PSOs) | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PSO1 | PSO2 | PSO3 |
| 1 | 3 | 2 | 3 | 3 | 2 | 2 | 2 | 2 | 3 |
| 2 | 3 | 2 | 2 | 3 | 3 | 3 | 2 | 2 | 2 |
| 3 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 2 | 2 |
| 4 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 3 |
| 5 | 2 | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 3 |

**Correlation Level: 1 - Low, 2 - Medium, 3 – High**

**Evaluation Method**

| Assessment | Continuous Assessment Marks (CAM) | | | | | End Semester Examination (ESE) Marks | Total Marks |
|---|---|---|---|---|---|---|---|
| | CAT 1 | CAT 2 | Model Exam | Assignment* | Attendance | | |
| Marks | 10 | | 5 | 5 | 5 | 75 | 100 |

***** Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

| Department | **Computational Studies** | Programme: **BCA** | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Semester | **SECOND** | Course Category Code: **SEC** | | | *End Semester Exam Type: **TE** | | | |
| Course Code | **A24CPS202C** | Periods / Week | | | Credit | Maximum Marks | | |
| | | L | T | P | C | CAM | ESE | TM |
| Course Name | **Visual Programming with C# Lab** | **0** | **0** | **4** | **2** | **50** | **50** | **100** |
| Prerequisite | Basic Programming Skills | | | | | | | |

| Course Outcome | | *After the completion of this course, the students will be able to:* | BT Mapping (Highest Level) |
|---|---|---|---|
| | **CO1** | Understand the key components of the .NET Framework related to C# development. | **K2** |
| | **CO2** | Learn the basic syntax and structure of C# programs. | **K3** |
| | **CO3** | Design C# applications by integrating various object-oriented programming techniques in .NET framework. | **K3** |
| | **CO4** | Analyze the significance of graphical user interface (GUI) components and the Event Handling Model using C# programming. | **K4** |
| | **CO5** | Create robust, scalable database applications using ADO.NET connectivity | **K4** |

1.Installation of Visual Studio and creation of Simple console Application.

2.Create simple C# program for the following concepts:

a. To Check whether the given number is Prime or not

b. To Check whether the given number is Armstrong or not

c. To demonstrate Pascal's Triangle

d. To Check whether the alphabet is a vowel or not using switch. Case.

e. To Check whether the given string is palindrome or not using arrays.

3.Create a program to demonstrate boxing and unboxing operations.

4. Implement Classes and Objects, Inheritance & Polymorphism

5. Implement Interfaces and Operator Overloading.

6. Create a GUI using standard controls, SDI & MDI forms.

7. Design an application with menu options and Common Dialog box.

8. Design a database application using Database Controls

9. Design an ADO database and perform the operations of insertion,

modification, deletion, and viewing.

10. Develop case studies listed below:

a. Employee Information System

b. Students' Information System

| Lecture Periods: 30 | Tutorial Periods: - | Practical Periods: - | Total Periods: 30 |
|---|---|---|---|

**Text Books**

1. Herbert Schildt, "The Complete Reference: C# 4.0", Tata McGraw Hill, 2012.
2. Christian Nagel et al. "Professional C# 2012 with .NET 4.5", Wiley India, 2012.

**Reference Books**

1. Andrew Troelsen, "Pro C# 2010 and the .NET 4 Platform", Fifth edition, A Press, 2010.
2. Ian Griffiths, Matthew Adams, Jesse Liberty, "Programming C# 4.0", Sixth Edition, O'Reilly, 2010

**Web References**

1. https://www.rdocumentation.org/
2. https://www.geeksforgeeks.org/visual-programming/
3. https://onlinecourses.nptel.ac.in/noc21_cs23/preview
4. https://archive.nptel.ac.in/courses/111/104/111104147/

* TE – Theory Exam, LE – Lab Exam

**COs/POs/PSOs Mapping**

| COs | Program Outcomes (POs) | | | | | | | | | | | | Program Specific Outcomes (PSOs) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
| 1 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | 2 |
| 2 | 3 | 3 | 2 | 3 | 2 | 3 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 3 | 2 |
| 3 | 2 | 2 | 3 | 3 | 2 | 3 | 3 | 2 | 2 | 3 | 3 | 2 | 3 | 3 | 2 |
| 4 | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 3 |
| 5 | 2 | 2 | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 2 | 2 |

**Correlation Level: 1 - Low, 2 - Medium, 3 – High**

**Evaluation Method**

| Assessment | Internal Marks | | | End Semester Examination (ESE) Marks | Total Marks |
|---|---|---|---|---|---|
| | **Model Exam** | **Record** | **Attendance** | **50** | 100 |
| Marks | 30 | 10 | 10 | | |

***** Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Department | **Computational Studies** | | | Programme: **BCA** | | | | |
| Semester | **SECOND** | | | Course Category Code: **VAC** | | End Semester Exam Type:**TE** | | |
| CourseCode | A24VAC202C | | Periods/Week | | | Credit | MaximumMarks | | |
| | | | L | T | P | C | CAM | ESE | TM |
| Course Name | **ENVIRONMENTAL STUDIES** | | **2** | **0** | **0** | **2** | **25** | **75** | **100** |
| (Common to B.A.., B.SC.,B.Com ., B.B.A and BCA Programmes) | | | | | | | | | |
| Prerequisite | Basic Knowledge and awareness on Environmental Studies | | | | | | | | |
| **Course Objectives** | To gain knowledge on the importance of natural resources and energy. | | | | | | | | |
| | To know the structure and function of an ecosystem. | | | | | | | | |
| | To imbibe an aesthetic value with respect to biodiversity, understand the threats and its conservation and appreciate the concept of interdependence. | | | | | | | | |
| | To know the causes of types of pollution and disaster management. | | | | | | | | |
| | To observe and discover the surrounding environment through field work. | | | | | | | | |
| **Course Outcomes** | ***On completion of the course, the students will be able to*** | | | | | | BT Mapping (Highest Level) | | |
| | **CO1** | Understand about the various resources | | | | | **K1** | | |
| | **CO2** | Learn about the biodiversity | | | | | **K1** | | |
| | **CO3** | Learn the different types of pollution and to prevent the pollution | | | | | **K2** | | |
| | **CO4** | Know about the pollution Act | | | | | **K2** | | |
| | **CO5** | Observe various environmental issues in surroundings | | | | | **K3** | | |
| **UNIT-I** | **ENVIRONMENTAL SCIENCES: NATURAL RESOURCES** | | | | | **Periods:06** | | | |
| Environmental Sciences - Relevance - Significance - Public awareness - Forest resources - Water resources - Mineral resources - Food resources - conflicts over resource sharing - Exploitation - Land use pattern - Environmental impact - fertilizer - Pesticide Problems - case studies | | | | | | | | | **CO1** |
| **UNIT-II** | **ECOSYSTEM, BIODIVERSITY AND ITS CONSERVATION** | | | | | **Periods:06** | | | |
| Ecosystem - concept - structure and function - producers, consumers and decomposers - Food chain - Food web - Ecological pyramids - Energy flow - Forest, Grassland, desert and aquatic ecosystem. Biodiversity - Definition - genetic, species and ecosystem diversity - Values and uses of biodiversity - biodiversity at global, national (India) and local levels - Hotspots, threats to biodiversity - conservation of biodiversity –Insitu&Exsitu. | | | | | | | | | **CO2** |
| **UNIT-III** | **ENVIRONMENTAL POLLUTION AND MANAGEMENT** | | | | | **Periods:06** | | | |
| Environmental Pollution - Causes - Effects and control measures of Air, Water, Marine, soil, solid waste, Thermal, Nuclear pollution and Disaster Management - Floods, Earth quake, Cyclone and Landslides. Role of individuals in prevention of pollution - pollution case studies. | | | | | | | | | **CO3** |
| **UNIT-IV** | **SOCIAL ISSUES - HUMAN POPULATION** | | | | | **Periods:06** | | | |
| Urban issues - Energy - water conservation - Environmental Ethics - Global warming - Resettlement and Rehabilitation issues - Environmental legislations - Environmental production Act. 1986 - Air, Water, Wildlife and forest conservation Act - Population growth and Explosion - Human rights and Value Education - Environmental Health - HIV/AIDS - Role of IT in Environment and Human Health - Women and child welfare - Public awareness - Case studies. | | | | | | | | | **CO4** |
| **UNIT-V** | **FIELD WORK** | | | | | **Periods:06** | | | |
| Visit to a local area / local polluted site / local simple ecosystem - Report submission. | | | | | | | | | **CO5** |
| **Lecture Periods:30** | | **Tutorial Periods:0** | | **Practical Periods:-** | | **Total Periods:30** | | | |

**TextBooks**

1. BharuchaErach, “Textbook of Environmental Studies for Undergraduate Courses”, Orient Black Swan, 2nd Edition, 2013.
2. BasuMahua, Savarimuthu Xavier, “Fundamentals of Environmental Studies”, Cambridge, 2nd Edition, 2017.
3. Agarwal, K.C. “Environmental Biology”, Nidi Publications, 1st Edition, 2004.

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1. Kumarasam, Alagappa Moses &Vasanthy, “Environmental Studies”, Bharathidasan University Publications, 1st Edition, 2004.
2. Rajamannar, “Environmental Studies”, EVR College Publications, 1st Edition, 2004.
3. Kalavathy, S, “Environmental Studies”, Bishop Heber College Publications, 1st Edition, 2004.

**Web References**

1. https://aits-tpt.edu.in/wp-content/uploads/2018/08/Environmental-Studies-Lecture-notes.doc-I_Betech_-ECE-CSE-EEE-CEME_III-Sem_BR.pdf
2. http://eagri.org/eagri50/ENVS302/pdf/lec05.pdf
3. https://www.youtube.com/watch?v=78prsPYm98g
4. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2792934/
5. https://www.frontiersin.org/articles/505570