

## **DEPARTMENT OF COMPUTER SCIENCE WITH ARTIFICIAL INTELLIGENCE & MACHINE LEARNING**

**Nallamuthu Gounder Mahalingam College  
(Autonomous)  
(An ISO 9001:2015 Certified Institution)  
Re-Accredited with 'B' Grade by NAAC  
Pollachi-642001**



### **SYLLABUS**

**B.Sc. COMPUTER SCIENCE WITH ARTIFICIAL INTELLIGENCE &  
MACHINE LEARNING**

**BATCH 2022-2025**

| B.Sc. – COMPUTER SCIENCE WITH ARTIFICIAL INTELLIGENCE & MACHINE LEARNING |                                    |                                                          |             |   |            |           |     |       |         |
|--------------------------------------------------------------------------|------------------------------------|----------------------------------------------------------|-------------|---|------------|-----------|-----|-------|---------|
| SCHEME OF EXAMINATION FOR 2022 - 2023                                    |                                    |                                                          |             |   |            |           |     |       |         |
| CHOICE BASED CREDIT SYSTEM & OBES                                        |                                    |                                                          |             |   |            |           |     |       |         |
| Part                                                                     | Course Code                        | Title of the Paper                                       | Hours/ Week |   | Exam Hours | MAX.MARKS |     |       | Credits |
|                                                                          |                                    |                                                          | T           | P |            | CI A      | ESE | Total |         |
| I SEMESTER                                                               |                                    |                                                          |             |   |            |           |     |       |         |
| I                                                                        | 22UTL101/<br>22UHN101/<br>22UFR101 | Tamil Paper-I/<br>Hindi Paper-I/<br>French Paper-I       | 6           |   | 3          | 50        | 50  | 100   | 3       |
| II                                                                       | 22UEN101                           | English Paper-I                                          | 5           |   | 3          | 50        | 50  | 100   | 3       |
| III                                                                      | 22UDA101                           | Core I: Java Programming                                 | 4           |   | 3          | 50        | 50  | 100   | 4       |
|                                                                          | 22UAI102                           | Core II: Industry 4.0                                    | 4           |   | 3          | 50        | 50  | 100   | 4       |
|                                                                          | 22UAI1A1                           | General Elective-1:<br>Introduction to Linear Algebra    | 4           |   | 3          | 50        | 50  | 100   | 4       |
|                                                                          | 22UAI103                           | Core Lab I: Programming Lab in Java                      |             | 5 | 3          | 25        | 25  | 50    | 2       |
| IV                                                                       | 22HEC101                           | Human Excellence: Personal Values& SKY Yoga Practice – 1 |             | 1 | 2          | 25        | 25  | 50    | 1       |
|                                                                          | 22UHR101                           | Human Rights in India                                    | 1           |   | 2          |           | 50  | 50    | 2       |
| V                                                                        |                                    | Extension Activities (NSS, NCC, Sports & Games)          |             |   |            |           |     |       |         |
| Total                                                                    |                                    |                                                          |             |   |            |           |     | 650   | 23      |

| <b><u>II SEMESTER</u></b> |                                   |                                                       |                    |          |                   |                  |            |              |                |
|---------------------------|-----------------------------------|-------------------------------------------------------|--------------------|----------|-------------------|------------------|------------|--------------|----------------|
| <b>Part</b>               | <b>Course Code</b>                | <b>Title of the Paper</b>                             | <b>Hours/ Week</b> |          | <b>Exam Hours</b> | <b>MAX.MARKS</b> |            |              | <b>Credits</b> |
|                           |                                   |                                                       | <b>T</b>           | <b>P</b> |                   | <b>CI A</b>      | <b>ESE</b> | <b>Total</b> |                |
| I                         | 22UTL202/<br>22UHN202<br>22UFR202 | Tamil Paper-II/<br>Hindi Paper-II/<br>French Paper-II | 6                  |          | 3                 | 50               | 50         | 100          | 3              |
| II                        | 22UEN202                          | English Paper – II                                    | 5                  |          | 3                 | 50               | 50         | 100          | 3              |
| III                       | 22UAI204                          | Core III: Programming in Python                       | 3                  |          | 3                 | 50               | 50         | 100          | 4              |
|                           | 22UAI205                          | Core IV: Data Structures & Algorithms                 | 4                  |          | 3                 | 50               | 50         | 100          | 4              |
|                           | 22UAI2A1                          | General Elective 2 : Optimization techniques          | 5                  |          | 3                 | 50               | 50         | 100          | 4              |
|                           | 22UAI206                          | Core Lab II: Programming Lab in Python                |                    | 4        | 3                 | 25               | 25         | 50           | 2              |
|                           | 22UAI207                          | Capstone Project - 1                                  |                    |          |                   | 25               | 25         | 50           | 2              |
| IV                        | 22HEC202                          | Human Excellence: Family Values& SKY Yoga Practice-2  |                    | 1        | 2                 | 25               | 25         | 50           | 1              |
|                           | 22EVS201                          | Environmental Studies                                 | 2                  |          | 2                 |                  | 50         | 50           | 2              |
| V                         |                                   | Extension Activities (NSS, NCC, Sports & Games)       |                    |          |                   |                  |            |              |                |
| EC                        |                                   | Online Course (MOOC/NPTEL/SWAYAM) Optional            |                    |          |                   |                  |            |              |                |
|                           | 22CMM201                          | Manaiyiyal Mahathuvam - I                             | Certificate course |          |                   |                  |            |              |                |
|                           | 22CUB201                          | Uzhavu Bharatham - I                                  | Certificate course |          |                   |                  |            |              |                |
| Value Added Course        | 22VAD201                          | Department Specific Value-Added Course                |                    |          |                   |                  |            |              |                |
| <b>Total</b>              |                                   |                                                       |                    |          |                   |                  |            | <b>700</b>   | <b>25</b>      |

| Part         | Course Code                        | Title of the Paper                                                                       | Hrs/Week                  |   | Exam Hrs | MAX.MARKS |     |       | Credits |
|--------------|------------------------------------|------------------------------------------------------------------------------------------|---------------------------|---|----------|-----------|-----|-------|---------|
|              |                                    |                                                                                          | T                         | P |          | CIA       | ESE | Total |         |
| III SEMESTER |                                    |                                                                                          |                           |   |          |           |     |       |         |
| I            | 22UTL303/<br>22UHN303/<br>22UFR303 | Tamil Paper-III/<br>Hindi Paper-III/ French Paper-III                                    | 3                         |   | 3        | 50        | 50  | 100   | 3       |
| II           | 22UEN303                           | English Paper – III                                                                      | 3                         |   | 3        | 50        | 50  | 100   | 3       |
| III          | 22UAI308                           | <b>Core V:</b><br>Database System Concepts                                               | 5                         |   | 3        | 50        | 50  | 100   | 3       |
|              | 22UAI309                           | <b>Core VI:</b> Introduction to AI                                                       | 5                         |   | 3        | 50        | 50  | 100   | 3       |
|              | 22UAI3A1/<br>22UAI3A2              | <b>General Elective 3 :</b> Discrete structures and its Application/Numerical techniques | 4                         |   | 3        | 50        | 50  | 100   | 3       |
|              | 22UAI310                           | <b>Core Lab III:</b> Database System Concepts Lab                                        |                           | 4 | 3        | 25        | 25  | 50    | 2       |
|              | 22UAI311                           | <b>Core Lab IV:</b> AI Lab                                                               |                           | 4 | 3        | 25        | 25  | 50    | 2       |
| IV           | 22HEC303                           | Human Excellence Paper: Professional Values& SKY Yoga Practice-3                         |                           | 1 | 2        | 20        | 30  | 50    | 1       |
|              | 22UAI3N1 /<br>22UAI3N2             | <b>Non-Major Elective Paper I:</b> Internet Concepts / Data Processing Through Excel Lab |                           | 1 | 2        | -         | 50  | 50    | 2       |
| V            |                                    | Extension Activities (NSS, NCC, Sports & Games, etc.,)                                   | -                         | - | -        | -         | -   | -     | -       |
|              | 22CMM302                           | Manaiyiyal Mahathuvam-II                                                                 | 15 hrs certificate course |   |          |           |     |       |         |
|              | 22CUB302                           | Uzhavu Bharatham – II                                                                    | 15 hrs certificate course |   |          |           |     |       |         |
| Total        |                                    |                                                                                          | 30                        |   |          |           |     | 700   | 22      |

| Part       | Course Code                        | Title of the Paper                                                               | Hrs/ Week |   | Exam hrs | MAX.MARKS |     |       | Credits |
|------------|------------------------------------|----------------------------------------------------------------------------------|-----------|---|----------|-----------|-----|-------|---------|
|            |                                    |                                                                                  | T         | P |          | CIA       | ESE | Total |         |
| IVSEMESTER |                                    |                                                                                  |           |   |          |           |     |       |         |
| I          | 22UTL404/<br>22UHN404/<br>22UFR404 | Tamil Paper-IV/<br>Hindi Paper-IV/<br>French Paper-IV                            | 3         |   | 3        | 50        | 50  | 100   | 3       |
| II         | 22UEN403                           | English Paper – IV                                                               | 3         |   | 3        | 50        | 50  | 100   | 3       |
| III        | 22UAI412                           | Core VII: Cloud Computing                                                        | 4         |   | 3        | 50        | 50  | 100   | 3       |
|            | 22UAI413                           | Core VIII: Introduction to Machine Learning                                      | 4         |   | 3        | 50        | 50  | 100   | 3       |
|            | 22UAI4A4                           | General Elective 4: Mathematics for ML                                           | 4         |   | 3        | 50        | 50  | 100   | 3       |
|            | 22UAI414                           | Core Lab V: ML Lab                                                               |           | 5 | 3        | 20        | 30  | 50    | 2       |
|            | 22UAI415                           | Capstone Project – 2                                                             |           | 1 |          | 20        | 30  | 50    | 2       |
|            | 22UAI416                           | SEC II: Naan Mudhalvan / Block Chain                                             |           | 2 | 2        | 20        | 30  | 50    | 2       |
| IV         | 22HEC404                           | Human Excellence Paper : Social Values & SKY Yoga Practice-4                     |           | 1 | 2        | 20        | 30  | 50    | 1       |
|            | 22UAI4N1                           | Non-Major Elective Paper-II: Web Technology lab /WEB APPLICATION using Photoshop |           | 1 | 2        | -         | 50  | 50    | 2       |
| V          |                                    | Extension Activities (NSS, NCC, Sports &Games,etc.,)                             |           |   |          |           |     | 50    | 1       |
|            | 22CMM403                           | Manaiyiyal Mahathuvam-III                                                        | 1         | - | 2        | -         | 50  | 50    | Grade   |
|            | 22CUB403                           | Uzhavu Bharatham – III                                                           | 1         | - | 2        | -         | 50  | 50    | Grade   |
|            | 22UAIVA                            | VAC II: Python for Data Science                                                  |           |   |          |           |     |       | 2*      |
|            |                                    | Total                                                                            | 30        |   |          |           |     | 800   | 25      |



HOD  
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**Bsc COMPUTER SCIENCE with AI & ML**

|                                                                 |                 |                               |                                                                    |                           |                  |
|-----------------------------------------------------------------|-----------------|-------------------------------|--------------------------------------------------------------------|---------------------------|------------------|
| <b>Programme Code:</b>                                          | <b>B.Sc</b>     | <b>Programme Title:</b>       | <b>Bachelor of Science<br/>(Computer Science with AI &amp; ML)</b> |                           |                  |
| <b>Course Code:</b>                                             | <b>22UAI207</b> | <b>Title</b>                  | <b>Batch:</b>                                                      | <b>2022 – 2025</b>        |                  |
| <b>Lecture<br/>Hrs./Week<br/>or<br/>Practical<br/>Hrs./Week</b> |                 | <b>Tutorial<br/>Hrs./Sem.</b> |                                                                    | <b>Capstone Project -</b> | <b>Semester:</b> |
|                                                                 |                 |                               |                                                                    | <b>1</b>                  | <b>II</b>        |
|                                                                 |                 |                               |                                                                    | <b>Credits:</b>           | <b>2</b>         |

**Maximum Marks: 100; CIA Mark: 50**

| <b>Components</b>        |    | <b>Calculation</b> | <b>CIA<br/>Total</b> |
|--------------------------|----|--------------------|----------------------|
| <b>Review I</b>          | 10 | 10+10+10+20        | 50                   |
| <b>Review II</b>         | 10 |                    |                      |
| <b>Review III</b>        | 10 |                    |                      |
| <b>Report Submission</b> | 20 |                    |                      |

*\* Components for 'Review' may include the following:*

Originality of Idea, Relevance to Current Trend, Candidate Involvement and Presentation of Report for Commerce, Management & Social Work.  
Synopsis, System Planning, Design, Coding, Input form, Output format, Preparation of Report & Submission for Computer Science cluster.

**Bsc COMPUTER SCIENCE with AI& ML PROJECT and  
VIVA VOCE**

**Guidelines**

**Introduction**

The title of the project work and the organization will be finalized at the end of fifth Semester. Each student will be assigned with a Faculty for guidance. The Project work and coding will be carried by using the facility of computer

science lab as well as in the organization. Periodical review will be conducted to monitor the progress of the project work. Project report will be prepared and submitted at the end of the semester. External examiner appointed by the Controller of Examination will conduct the viva voce examination along with respective guide.

### **Area of Work**

- Web Based Development
- Mobile app development
- Website development
- IoT Projects
- Big Data and Data Mining Projects
- Cloud Computing Projects
- Networking Projects
- Artificial Intelligence and Machine learning Projects
- Data Analytics Projects using Python, R, Tableau etc..
- System Software
- Web Security Projects
- Image Processing

### **Methodology**

#### **Arrangement of Contents**

The sequence in which the project report material should be arranged and bound as follows:

1. Cover Page & Title Page
2. Bonafide Certificates
3. Declaration
4. Acknowledgement
5. Synopsis
6. Table of Contents
7. Chapters
8. Appendix
9. References

## **Format of Table of Contents**

### **TABLE OF CONTENTS**

| <b>Chapter No.</b> | <b>Title</b>                              | <b>Page No.</b> |
|--------------------|-------------------------------------------|-----------------|
| <b>i</b>           | <b>Certificates</b>                       |                 |
| <b>ii</b>          | <b>Declaration</b>                        |                 |
| <b>iii</b>         | <b>Acknowledgement</b>                    |                 |
| <b>iv</b>          | <b>Synopsis</b>                           |                 |
| <b>1.</b>          | <b>Introduction</b>                       |                 |
|                    | 1.1 Introduction                          |                 |
|                    | 1.2 Objective of the Project              |                 |
|                    | 1.3 Company Profile                       |                 |
|                    | 1.4 System Specification                  |                 |
|                    | 1.4.1 Hardware Specification              |                 |
|                    | 1.4.2 Software Specification              |                 |
| <b>2</b>           | <b>System Study</b>                       |                 |
|                    | 2.1 Existing System                       |                 |
|                    | 2.1.2 Drawbacks                           |                 |
|                    | 2.2 Proposed System                       |                 |
|                    | 2.3 Planning and Scheduling               |                 |
| <b>3</b>           | <b>System Design</b>                      |                 |
|                    | <b>3.2 Overview of the Project</b>        |                 |
|                    | 3.1 Modules of the Project                |                 |
|                    | 3.2 Input Design Format                   |                 |
|                    | 3.3 Output Design                         |                 |
|                    | 3.4 Table Design                          |                 |
|                    | 3.5 Supporting Diagrams (ER/DFD/Use Case) |                 |
| <b>4</b>           | <b>Implementation and Testing</b>         |                 |
|                    | 4.1 Coding Methods                        |                 |
|                    | 4.2 Testing Approach                      |                 |
|                    | 4.3 Implementation and Maintenance        |                 |
| <b>5</b>           | <b>Project Evaluation</b>                 |                 |
|                    | 5.1 Project Outcome                       |                 |
|                    | 5.2 Limitation of the Project             |                 |
|                    | 5.3 Further Scope of the Project          |                 |
| <b>6</b>           | <b>Conclusion</b>                         |                 |
| <b>7</b>           | <b>Appendix</b>                           |                 |
|                    | <b>7.1 Source Code</b>                    |                 |
|                    | <b>7.2 Screenshots and Reports</b>        |                 |
| <b>8</b>           | <b>References</b>                         |                 |

## Size of the Project

The Project Report contents should be maximum of not exceeding 70 pages.



HOD

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