

**MAR BASELIOS COLLEGE OF ENGINEERING AND TECHNOLOGY**

**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

**B. Tech**  
**COMPUTER SCIENCE AND ENGINEERING**  
**(Artificial Intelligence)**

# **CURRICULUM**

FOR

**B. TECH DEGREE PROGRAMME**

IN

**COMPUTER SCIENCE AND ENGINEERING  
(Artificial Intelligence)**

**2022 SCHEME  
(AUTONOMOUS)**



**MAR BASELIOS COLLEGE OF ENGINEERING AND TECHNOLOGY**

(Approved by AICTE, Autonomous Institution Affiliated to APJ Abdul Kalam Technological University)  
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**MAR BASELIOS COLLEGE OF ENGINEERING AND TECHNOLOGY**

**(Autonomous)**

**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

**B. TECH DEGREE PROGRAMME**

**IN**

**COMPUTER SCIENCE AND ENGINEERING (Artificial Intelligence)**

**CURRICULUM AND DETAILED SYLLABI**

**2022 SCHEME**

| <b>Items</b>            | <b>Board of Studies(BOS)</b> | <b>Academic Council(AC)</b> |
|-------------------------|------------------------------|-----------------------------|
| <b>Date of Approval</b> | <b>16.08.2022</b>            | <b>21.11.2022</b>           |

**sd/-**

**Head of Department**

**Chairman, Board of Studies**

**sd/-**

**Principal**

**Chairman, Academic Council**



## **MAR BASELIOS COLLEGE OF ENGINEERING AND TECHNOLOGY**

### **Vision and Mission of the Institution**

**Vision:**

To be an Institution moulding globally competent professionals as epitomes of Noble Values.

**Mission:**

To transform the Youth as technically competent, ethically sound and socially committed professionals, by providing a vibrant learning ambience for the welfare of humanity.

### **DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

#### **Vision and Mission of the Department**

**Vision:**

To be a Centre of Excellence in Computer Science and Engineering providing quality education and research for the betterment of the society.

**Mission:**

To impart sound knowledge in theoretical and applied foundations of Computer Science and Engineering, and to train the students to solve real life issues to effectively define and shape life.

#### **PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)**

- PEO1:** Graduates will be successful professionals in Industries of core or interdisciplinary nature or entrepreneurs, demonstrating effective leadership and excellent team work.
- PEO2:** Graduates will expand the horizon of knowledge through higher education or research, leading to self-directed professional development
- PEO3:** Graduates will demonstrate competency in AI & ML, professional attitude and ethics while providing solutions in societal and environmental contexts



## **PROGRAMME OUTCOMES (POs)**

Engineering graduates will be able to:

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

## **PROGRAMME SPECIFIC OUTCOMES (PSOs)**

**PSO1:** To apply Algorithmic Principles, Programming Skills and Software Engineering Principles to design, develop and evaluate Software Systems of varying complexities.

**PSO2:** To apply knowledge of System Integration to design and implement computer-based systems

**PSO3:** To solve real world and socially relevant problems using AI and ML techniques

**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING****B.Tech. Programme in Computer Science and Engineering****(Artificial Intelligence)***For the students admitted from 2022-23***Scheduling of Courses****i) Knowledge Segments and Credits**

Every course of B. Tech Programme is placed in one of the nine categories as listed in table below. No semester shall have more than six lecture-based courses and two laboratory courses, and/or drawing/seminar/project courses in the curriculum.

*Table 1: Credit distribution and the Knowledge Domains*

| Sl. No.                        | Category  | Category Code | Total credits |
|--------------------------------|---|---------------|---------------|
| 1                              | Humanities and Social Sciences including Management Courses     | HSC           | 5             |
| 2                              | Basic Science Courses   | BSC           | 26            |
| 3                              | Engineering Science Courses                                     | ESC           | 22            |
| 4                              | Programme Core Courses, Comprehensive Course Work and Viva Voce | PCC           | 79            |
| 5                              | Programme Elective Courses                                      | PEC           | 15            |
| 6                              | Open Elective Courses   | OEC           | 03            |
| 7                              | Project Work and Seminar  | PWS           | 10            |
| 8                              | Mandatory Non-credit Courses (P/F) with Grade                   | MNC           | Non-Credit    |
| 9                              | Mandatory Student Activities (P/F)                              | MSA           | 2             |
| <b>Total Mandatory Credits</b> |   |               | <b>162</b>    |

**ii) Semester-wise Credit Distribution**

| Semester               | I  | II | III | IV | V  | VI | VII | VIII | Total      |
|------------------------|----|----|-----|----|----|----|-----|------|------------|
| Credits for Courses    | 20 | 18 | 22  | 22 | 24 | 22 | 15  | 17   | 160        |
| Activity Points (Min.) | 40 |    |     |    | 60 |    |     |      | 100        |
| Credits for Activities | 2  |    |     |    |    |    |     |      | 2          |
| <b>Total Credits</b>   |    |    |     |    |    |    |     |      | <b>162</b> |



| SEMESTER I   |               |               |  |       |              |           |
|--------------|---------------|---------------|--|-------|--------------|-----------|
| Slot         | Category Code | Course Number | Courses  | L-T-P | Hours        | Credit    |
| A            | BSC           | MA0U10A       | Linear Algebra and Calculus                      | 3-1-0 | 4            | 4         |
| B<br>½       | BSC           | PH0U10C       | Engineering Physics-C                            | 2-1-0 | 3            | 3         |
|              |               | CYOU10B       | Engineering Chemistry-B                          | 2-1-0 | 3            | 3         |
| C<br>½       | ESC           | ES0U10A       | Engineering Mechanics                            | 2-1-0 | 3            | 3         |
|              |               | ES0U10B       | Engineering Graphics                             | 2-0-2 | 4            | 3         |
| D<br>½       | ESC           | ES0U10C       | Basics of Civil and Mechanical Engineering       | 4-0-0 | 4            | 4         |
|              |               | ES0U10D       | Basics of Electrical and Electronics Engineering | 4-0-0 | 4            | 4         |
| E            | HSC           | HS0U10A       | Life Skills                                      | 2-0-2 | 4            | ---       |
| F            | ESC           | ES0U10G       | Problem Solving & Programming in C               | 3-0-2 | 5            | 4         |
| S<br>½       | BSC           | PHOU18A       | Physics Lab                                      | 0-0-2 | 2            | 1         |
|              |               | CYOU18A       | Chemistry Lab                                    | 0-0-2 | 2            | 1         |
| T<br>½       | ESC           | ES0U18A       | Civil and Mechanical Workshop                    | 0-0-2 | 2            | 1         |
|              |               | ES0U18B       | Electrical and Electronics Workshop              | 0-0-2 | 2            | 1         |
| <b>TOTAL</b> |               |               |  |       | <b>27/28</b> | <b>20</b> |

| SEMESTER II  |               |               |  |       |              |           |
|--------------|---------------|---------------|--|-------|--------------|-----------|
| Slot         | Category Code | Course Number | Courses  | L-T-P | Hours        | Credit    |
| A            | BSC           | MA0U10B       | Vector Calculus, Differential Equations and Transforms | 3-1-0 | 4            | 4         |
| B<br>1/2     | BSC           | PH0U10C       | Engineering Physics-C                                  | 3-0-0 | 3            | 3         |
|              |               | CYOU10B       | Engineering Chemistry-B                                | 3-0-0 | 3            | 3         |
| C<br>1/2     | ESC           | ES0U10A       | Engineering Mechanics                                  | 2-1-0 | 3            | 3         |
|              |               | ES0U10B       | Engineering Graphics                                   | 2-0-2 | 4            | 3         |
| D<br>1/2     | ESC           | ES0U10C       | Basics of Civil and Mechanical Engineering             | 4-0-0 | 4            | 4         |
|              |               | ES0U10D       | Basics of Electrical and Electronics Engineering       | 4-0-0 | 4            | 4         |
| E            | HSC           | HS0U10B       | Professional Communication                             | 2-0-2 | 4            | ---       |
| F            | ESC           | ES0U10H       | Introduction to Python                                 | 2-0-0 | 2            | 2         |
| S<br>1/2     | BSC           | PHOU18A       | Physics Lab  | 0-0-2 | 2            | 1         |
|              |               | CYOU18A       | Chemistry Lab  | 0-0-2 | 2            | 1         |
| T<br>1/2     | ESC           | ES0U18A       | Civil and Mechanical Workshop                          | 0-0-2 | 2            | 1         |
|              |               | ES0U18B       | Electrical and Electronics Workshop                    | 0-0-2 | 2            | 1         |
| <b>Total</b> |               |               |  |       | <b>24/25</b> | <b>18</b> |



**SEMESTER III**

| Slot         | Category Code | Course Number | Courses                                     | L-T-P | Hours        | Credit       |
|--------------|---------------|---------------|---|-------|--------------|--------------|
| A            | BSC           | MA0U20G       | Discrete Mathematical Structures            | 3-1-0 | 4            | 4            |
| B            | PCC           | CS1U20A       | Data Structures                             | 3-1-0 | 4            | 4            |
| C            | PCC           | CS1U20B       | Logic System Design                         | 3-1-0 | 4            | 4            |
| D            | PCC           | CS2U20A       | Object Oriented Programming using Python    | 3-1-0 | 4            | 4            |
| E<br>1/2     | ESC           | ES0U20A       | Design and Engineering                      | 2-0-0 | 2            | 2            |
|              | HSC           | HS0U20A       | Professional Ethics                         | 2-0-0 | 2            | 2            |
| F            | MNC           | NC0U20B       | Constitution of India                       | 2-0-0 | 2            | ---          |
| S            | PCC           | CS1U28A       | Data Structures Lab                         | 0-0-3 | 3            | 2            |
| T            | PCC           | CS2U28A       | Object Oriented Programming Lab (in Python) | 0-0-3 | 3            | 2            |
| R/M          | VAC           |               | Remedial/Minor Course                       | 3-1-0 | 4            | 4            |
| <b>TOTAL</b> |               |               |   |       | <b>26/30</b> | <b>22/26</b> |

**SEMESTER IV**

| Slot         | Category Code | Course Number | Courses                                 | L-T-P | Hours        | Credit       |
|--------------|---------------|---------------|---|-------|--------------|--------------|
| A            | BSC           | MA0U20F       | Mathematics for Artificial Intelligence | 3-1-0 | 4            | 4            |
| B            | PCC           | CS1U20D       | Computer Organization And Architecture  | 3-1-0 | 4            | 4            |
| C            | PCC           | CS1U20E       | Database Management Systems             | 3-1-0 | 4            | 4            |
| D            | PCC           | CS2U20B       | Introduction to Artificial Intelligence | 3-1-0 | 4            | 4            |
| E<br>½       | ESC           | ES0U20A       | Design and Engineering                  | 2-0-0 | 2            | 2            |
|              | HSC           | HS0U20A       | Professional Ethics                     | 2-0-0 | 2            | 2            |
| F            | MNC           |               | Universal Human Values-II               | 2-0-0 | 2            | ---          |
| S            | PCC           | CS2U28B       | AI Algorithms Lab                       | 0-0-3 | 3            | 2            |
| T            | PCC           | CS1U28D       | Database Management Lab                 | 0-0-3 | 3            | 2            |
| R/M/H        | VAC           |               | Remedial/Minor / Honours Course         | 3-1-0 | 4            | 4            |
| <b>TOTAL</b> |               |               |   |       | <b>26/30</b> | <b>22/26</b> |





| SEMESTER V   |               |               |                                      |       |              |              |
|--------------|---------------|---------------|--------------------------------------|-------|--------------|--------------|
| Slot         | Category Code | Course Number | Courses                              | L-T-P | Hours        | Credit       |
| A            | PCC           | CS2U30A       | Formal Languages and Automata Theory | 3-1-0 | 4            | 4            |
| B            | PCC           | CS2U30B       | Computer Networks                    | 3-1-0 | 4            | 4            |
| C            | PCC           | CS1U30C       | Operating Systems                    | 3-1-0 | 4            | 4            |
| D            | PCC           | CS2U30C       | Introduction to Machine Learning     | 3-1-0 | 4            | 4            |
| E            | PCC           | CS2U30D       | Artificial Neural Network            | 3-1-0 | 4            | 4            |
| F            | MNC           | NC0U30A       | Disaster Management                  | 2-0-0 | 2            | ---          |
| S            | PCC           | CS2U38A       | Operating Systems and Networking Lab | 0-0-4 | 4            | 2            |
| T            | PCC           | CS2U38B       | Machine Learning Lab                 | 0-0-4 | 4            | 2            |
| R/M/H        | VAC           |               | Remedial/Minor/Honours Course        | 3-1-0 | 4            | 4            |
| <b>TOTAL</b> |               |               |                                      |       | <b>30/34</b> | <b>24/28</b> |

| SEMESTER VI  |               |               |                                      |       |              |              |
|--------------|---------------|---------------|--------------------------------------|-------|--------------|--------------|
| Slot         | Category Code | Course Number | Courses                              | L-T-P | Hours        | Credit       |
| A            | PCC           | CS2U30E       | Robotics and Intelligent System      | 3-1-0 | 4            | 4            |
| B            | PCC           | CS2U30F       | Algorithm Analysis and Design        | 3-1-0 | 4            | 4            |
| C            | PCC           | CS2U30F       | Management of Software Systems       | 3-0-0 | 3            | 3            |
| D            | PEC           | CS2UXXX       | Program elective I                   | 2-1-0 | 3            | 3            |
| E            | HSC           | HS0U30A       | Industrial Economics & Foreign Trade | 3-0-0 | 3            | 3            |
| F            | PCC           | CS2U30I       | Comprehensive Course Work            | 1-0-0 | 1            | 1            |
| S            | PCC           | CS2U38C       | Robotics Lab                         | 0-0-3 | 3            | 2            |
| T            | PWS           | CS2U39A       | Mini Project                         | 0-0-3 | 3            | 2            |
| R/M/H        | VAC           |               | Remedial/Minor/Honours Course        | 3-1-0 | 4            | 4            |
| <b>TOTAL</b> |               |               |                                      |       | <b>24/28</b> | <b>22/26</b> |

**PROGRAMME ELECTIVE I**

| Slot | Category Code | Course Number | Courses  | L-T-P | Hours | Credit |
|------|---------------|---------------|--|-------|-------|--------|
| D    | PEC           | CS2U31A       | Intelligent Model Design and Thinking              | 2-1-0 | 3     | 3      |
|      |               | CS2U31B       | Concepts in computer graphics and image processing | 2-1-0 | 3     | 3      |
|      |               | CS1U31C       | Foundations of security in computing               | 2-1-0 | 3     | 3      |
|      |               | CS2U31C       | Object Oriented Programming using Java             | 2-1-0 | 3     | 3      |
|      |               | CS2U31D       | Artificial Neural Networks                         | 2-1-0 | 3     | 3      |
|      |               | CS2U31E       | Programming in R                                   | 2-1-0 | 3     | 3      |
|      |               | CS2U31F       | Machine Learning models and Storage Management     | 2-1-0 | 3     | 3      |



| SEMESTER VII |               |               |                               |                 |                   |              |
|--------------|---------------|---------------|-------------------------------|-----------------|-------------------|--------------|
| Slot         | Category Code | Course Number | Courses                       | L-T-P           | Hours             | Credit       |
| A            | PCC           | CS2U40A       | Foundations of Deep Learning  | 2-1-0           | 3                 | 3            |
| B            | PEC           | CS2UXXX       | Programme Elective II         | 2-1-0           | 3                 | 3            |
| C            | OEC           | CS0UXXX       | Open Elective                 | 2-1-0           | 3                 | 3            |
| D            | MNC           | NC0U40A       | Industrial Safety Engineering | 2-1-0           | 3                 | ---          |
| E            | PCC           | CS2U48A       | Deep Learning Lab             | 0-0-3           | 3                 | 2            |
| T            | PWS           | CS2U49A       | Seminar                       | 0-0-3           | 3                 | 2            |
| U            | PWS           | CS2U49B       | Project Phase I               | 0-0-6           | 6                 | 2            |
| R/M/H        | VAC           |               | Remedial/Minor/Honours Course | 0-1-6/<br>3-1-0 | 7/4               | 4            |
| <b>TOTAL</b> |               |               |                               |                 | <b>24 (31/28)</b> | <b>15/19</b> |

### PROGRAMME ELECTIVE II

| Slot | Category Code | Course Number | Courses                                | L-T-P | Hours | Credit |
|------|---------------|---------------|--|-------|-------|--------|
| D    | PEC           | CS2U41A       | Big data Analytics                     | 2-1-0 | 3     | 3      |
|      |               | CS2U41B       | Social Network Analysis                | 2-1-0 | 3     | 3      |
|      |               | CS2U41C       | Data Mining                            | 2-1-0 | 3     | 3      |
|      |               | CS2U41D       | AI for Health Care                     | 2-1-0 | 3     | 3      |
|      |               | CS2U41E       | Game Theory in Artificial Intelligence | 2-1-0 | 3     | 3      |
|      |               | CS1U41F       | Natural Language Processing            | 2-1-0 | 3     | 3      |
|      |               | CS2U41F       | Cloud Data Management                  | 2-1-0 | 3     | 3      |

### OPEN ELECTIVE I

| Slot | Category Code | Course Number | Courses                                | L-T-P | Hours | Credit |
|------|---------------|---------------|--|-------|-------|--------|
| C    | OEC           | CS0U41A       | Introduction to Mobile Computing       | 2-1-0 | 3     | 3      |
|      |               | CS0U41B       | Introduction to Deep Learning          | 2-1-0 | 3     | 3      |
|      |               | CS0U41C       | Computer Graphics and Image Processing | 2-1-0 | 3     | 3      |
|      |               | CS0U41D       | Python for Engineers                   | 2-1-0 | 3     | 3      |
|      |               | CS0U41E       | Object Oriented Concepts               | 2-1-0 | 3     | 3      |
|      |               | CS0U41F       | Introduction to AI and ML              | 2-1-0 | 3     | 3      |

**SEMESTER VIII**

| Slot         | Category Code | Course Number | Courses                       | L-T-P  | Hours        | Credit       |
|--------------|---------------|---------------|-------------------------------|--------|--------------|--------------|
| A            | PCC           | CS2U40B       | Robotic Process Automation    | 2-1-0  | 3            | 3            |
| B            | PEC           | CS2UXXX       | Programme Elective III        | 2-1-0  | 3            | 3            |
| C            | PEC           | CS2UXXX       | Programme Elective IV         | 2-1-0  | 3            | 3            |
| D            | PEC           | CS2UXXX       | Programme Elective V          | 2-1-0  | 3            | 3            |
| T            | PCC           | CS2U40C       | Comprehensive Course Viva     | 1-0-0  | 1            | 1            |
| U            | PWS           | CS2U49C       | Project Phase II              | 0-0-12 | 12           | 4            |
| R/M/H        | VAC           |               | Remedial/Minor/Honours Course | 0-1-6  | 7            | 4            |
| <b>TOTAL</b> |               |               |                               |        | <b>25/32</b> | <b>17/21</b> |

**PROGRAMME ELECTIVE III**

| Slot | Category Code | Course Number | Course                        | L-T-P | Hours | Credit |
|------|---------------|---------------|-------------------------------|-------|-------|--------|
| B    | PEC           | CS2U42A       | AI For Cyber Security         | 2-1-0 | 3     | 3      |
|      |               | CS2U42B       | Web Intelligence and Big Data | 2-1-0 | 3     | 3      |
|      |               | CS2U42C       | Cognitive Modelling           | 2-1-0 | 3     | 3      |
|      |               | CS2U42D       | Image and Video Analytics     | 2-1-0 | 3     | 3      |
|      |               | CS1U42G       | Computer Vision               | 2-1-0 | 3     | 3      |

**PROGRAMME ELECTIVE IV**

| Slot | Category Code | Course Number | Courses                                     | L-T-P | Hours | Credit |
|------|---------------|---------------|---|-------|-------|--------|
| B    | PEC           | CS2U43A       | Human Computer Interaction                  | 2-1-0 | 3     | 3      |
|      |               | CS2U43B       | Deep Learning for Signal & Image Processing | 2-1-0 | 3     | 3      |
|      |               | CS2U43C       | Artificial Intelligence for Robotics        | 2-1-0 | 3     | 3      |
|      |               | CS2U43D       | Data Pre-processing and Feature Engineering | 2-1-0 | 3     | 3      |
|      |               | CS2U43F       | Introduction to Reinforcement Learning      | 2-1-0 | 3     | 3      |
|      |               | CS2U43G       | Bio-Inspired Optimization Techniques        | 2-1-0 | 3     | 3      |
|      |               | CS2U43H       | Text Mining                                 | 2-1-0 | 3     | 3      |

**PROGRAMME ELECTIVE V**

| Slot | Category Code | Course Number | Courses                                  | L-T-P | Hours | Credit |
|------|---------------|---------------|--|-------|-------|--------|
| C    | PEC           | CS1U44A       | High Performance Computing               | 2-1-0 | 3     | 3      |
|      |               | CS1U44B       | Block Chain Technologies                 | 2-1-0 | 3     | 3      |
|      |               | CS2U44A       | Knowledge Engineering and Expert Systems | 2-1-0 | 3     | 3      |
|      |               | CS2U44B       | IoT for AI                               | 2-1-0 | 3     | 3      |
|      |               | CS2U44C       | Big Data and Database Management         | 2-1-0 | 3     | 3      |
|      |               | CS1U44F       | Bioinformatics                           | 2-1-0 | 3     | 3      |
|      |               | CS1U44G       | Computational Linguistics                | 2-1-0 | 3     | 3      |



**B. Tech (MINOR)**

| Semester | BASKET I<br>SOFTWARE<br>ENGINEERING |  |       |        | BASKET II<br>ARTIFICIAL<br>INTELLIGENCE<br>& MACHINE<br>LEARNING |                                     |       |        | BASKET III<br>NETWORKING |  |       |        |
|----------|-------------------------------------|--|-------|--------|--|-------------------------------------|-------|--------|--------------------------|--|-------|--------|
|          | Course<br>Number                    | Course                                 | L-T-P | Credit | Course<br>Number   | Course                              | L-T-P | Credit | Course<br>Number         | Course                                       | L-T-P | Credit |
| S3       | CS0M<br>20A                         | Object<br>Oriented<br>Programming      | 3-1-0 | 4      | CS0M<br>20B  | Python for<br>Machine<br>Learning   | 3-1-0 | 4      | CS0M<br>20C              | Data<br>Communication                        | 3-1-0 | 4      |
| S4       | CS0M<br>20D                         | Program<br>ming<br>Methodol<br>ogies   | 3-1-0 | 4      | CS0M<br>20E  | Mathematics for<br>Machine Learning | 3-1-0 | 4      | CS0M<br>20F              | Introduction to<br>Computer<br>Networks      | 3-1-0 | 4      |
| S5       | CS0M<br>30A                         | Concepts in<br>Software<br>Engineering | 3-1-0 | 4      | CS0M<br>30B  | Concepts in<br>Machine<br>Learning  | 3-1-0 | 4      | CS0M<br>30C              | Internet Of Things                           | 3-1-0 | 4      |
| S6       | CS0M<br>30D                         | Introduction to<br>Software<br>Testing | 3-1-0 | 4      | CS0M<br>30E  | Concepts in Deep<br>Learning        | 3-1-0 | 4      | CS0M<br>30F              | Wireless<br>Networks and<br>IoT Applications | 3-1-0 | 4      |
| S7       | CS0M<br>49A                         | Mini Project                           | 0-1-6 | 4      | CS0M<br>49A  | Mini Project                        | 0-1-6 | 4      | CS0M<br>49A              | Mini Project                                 | 0-1-6 | 4      |
| S8       | CS0M<br>49B                         | Mini Project                           | 0-1-6 | 4      | CS0M<br>49B  | Mini Project                        | 0-1-6 | 4      | CS0M<br>49B              | Mini Project                                 | 0-1-6 | 4      |

**B. Tech (HONOURS)**

| Semester  | BASKET I              |                          |       |        | BASKET II             |   |       |        | BASKET III      |                                      |       |        |
|-----------|-----------------------|--------------------------|-------|--------|-----------------------|---|-------|--------|-----------------|--------------------------------------|-------|--------|
|           | SECURITY IN COMPUTING |                          |       |        | COMPUTATIONAL BIOLOGY |   |       |        | COMPUTER VISION |                                      |       |        |
|           | Course Number         | Course                   | L-T-P | Credit | Course Number         | Course  | L-T-P | Credit | Course Number   | Course                               | L-T-P | Credit |
| <b>S4</b> | CS1H20A               | Number Theory            | 3-1-0 | 4      | CS2H20A               | Computational Fundamentals for Bioinformatics | 3-1-0 | 4      | CS2H20B         | Advanced Topics in Computer Graphics | 3-1-0 | 4      |
| <b>S5</b> | CS1H30A               | Cryptographic Algorithms | 3-1-0 | 4      | CS2H30A               | Computational Biology                         | 3-1-0 | 4      | CS2H30B         | Advanced Concepts In Computer Vision | 3-1-0 | 4      |
| <b>S6</b> | CS1H30D               | Network Security         | 3-1-0 | 4      | CS2H30C               | Machine Learning In Computational Biology     | 3-1-0 | 4      | CS2H30D         | Image And Video Processing           | 3-1-0 | 4      |
| <b>S7</b> | CS1H40A               | Cyber Forensics          | 3-1-0 | 4      | CS2H40A               | Computational Health Informatics              | 3-1-0 | 4      | CS2H40B         | Surveillance Video Analytics         | 3-1-0 | 4      |
| <b>S8</b> | CS1H49A               | Mini Project             | 0-1-6 | 4      | CS2H49A               | Mini Project                                  | 0-1-6 | 4      | CS2H49A         | Mini Project                         | 0-1-6 | 4      |

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