



Curriculum and Syllabi

B.E. COMPUTER SCIENCE AND ENGINEERING (CYBER SECURITY)

SEMESTERS I to VIII

Regulations 2025

**Programme: B.E. COMPUTER SCIENCE AND ENGINEERING
(CYBER SECURITY)**

2025 Regulations

(2025-29 Batch Onwards)

Curriculum for Semesters I to VIII

SEMESTER I

| S. No. | Course Code | Course Title | Hours per week | | | | Hours per sem | | | | Total no. of Hours per semester | Credits | Internal/ External Marks | Course Category |
|------------------------------|-------------|--|----------------|---|---|----|---------------|----|----|----|---------------------------------|---------|--------------------------|-----------------|
| | | | L | T | P | SL | L | T | P | SL | | | | |
| 1 | 25IP101 | Makerspace - Induction Program | - | - | - | - | - | - | - | - | - | 0 | - | - |
| Theory Cum Practical Courses | | | | | | | | | | | | | | |
| 2 | 25HS101 | English for Communication | 3 | 0 | 2 | 3 | 45 | 0 | 30 | 45 | 120 | 4 | 50/50 | HS |
| 3 | 25ES102 | Innovation and Design Thinking | 1 | 0 | 2 | 1 | 15 | 0 | 30 | 15 | 60 | 2 | 100/0 | ES |
| 4 | 25ES105 | Problem Solving Techniques using C Programming | 3 | 0 | 2 | 3 | 45 | 0 | 30 | 45 | 120 | 4 | 50/50 | ES |
| 5 | 25ES106 | Basics of Electrical and Electronics Engineering | 3 | 0 | 2 | 3 | 45 | 0 | 30 | 45 | 120 | 4 | 50/50 | ES |
| Theory Courses | | | | | | | | | | | | | | |
| 6 | 25MA101 | Matrices and Calculus | 3 | 1 | 0 | 4 | 45 | 15 | 0 | 60 | 120 | 4 | 40/60 | BS |
| 7 | 25CH101 | Applied Chemistry | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | BS |
| 8 | 25AC101 | Heritage of Tamils | 1 | 0 | 0 | 1 | 15 | 0 | 0 | 15 | 30 | 1 | 100/0 | AC |
| Practical Course | | | | | | | | | | | | | | |
| 9 | 25ES107 | Computer Hardware and Networking | 0 | 0 | 4 | 0 | 0 | 0 | 60 | 0 | 60 | 2 | 60/40 | ES |

SEMESTER II

| S. No. | Course Code | Course Title | Hours per week | | | | Hours per sem | | | | Total no. of Hours per semester | Credits | Internal/ External Marks | Course Category |
|------------------------------|-------------|---------------------------------------|----------------|---|---|----|---------------|----|----|----|---------------------------------|---------|--------------------------|-----------------|
| | | | L | T | P | SL | L | T | P | SL | | | | |
| Theory Cum Practical Courses | | | | | | | | | | | | | | |
| 1 | 25ES203 | Problem Solving Techniques using Java | 1 | 0 | 4 | 1 | 15 | 0 | 60 | 15 | 90 | 3 | 50/50 | ES |
| 2 | 25ES201 | Product Design and Development | 1 | 0 | 2 | 1 | 15 | 0 | 30 | 15 | 60 | 2 | 100/0 | ES |
| 3 | 25ES204 | Fundamentals of Web Design | 3 | 0 | 2 | 3 | 45 | 0 | 30 | 45 | 120 | 4 | 50/50 | ES |
| Theory Courses | | | | | | | | | | | | | | |
| 4 | 25MA202 | Numerical Techniques and | 3 | 1 | 0 | 4 | 45 | 15 | 0 | 60 | 120 | 4 | 40/60 | BS |

| S. No. | Course Code | Course Title | Hours per week | | | | Hours per sem | | | | Total no. of Hours per semester | Credits | Internal/ External Marks | Course Category |
|--------|-------------|------------------------|----------------|---|---|----|---------------|---|---|----|---------------------------------|---------|--------------------------|-----------------|
| | | | L | T | P | SL | L | T | P | SL | | | | |
| | | Linear Algebra | | | | | | | | | | | | |
| 5 | 25PH102 | Quantum Physics | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | BS |
| 6 | 25HS201 | Universal Human Values | 2 | 0 | 0 | 2 | 30 | 0 | 0 | 30 | 60 | 2 | 40/60 | HS |
| 7 | 25HS202 | Business Communication | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | HS |
| 8 | 25AC201 | Tamils and Technology | 1 | 0 | 0 | 1 | 15 | 0 | 0 | 15 | 30 | 1 | 100/0 | AC |
| 9 | | Foreign Language | 2 | 0 | 0 | 2 | 30 | 0 | 0 | 30 | 60 | 2 | 100/0 | HS |
| 10 | | Value Added Course | 1 | 0 | 0 | 1 | 15 | 0 | 0 | 15 | 30 | 1 | 100/0 | VAC* |

*Value Added Course is Optional

SEMESTER III

| S. No. | Course Code | Course Title | Hours per week | | | | Hours per sem | | | | Total no. of Hours per semester | Credits | Internal/ External Marks | Course Category |
|------------------------------|-------------|--|----------------|---|---|----|---------------|----|----|----|---------------------------------|---------|--------------------------|-----------------|
| | | | L | T | P | SL | L | T | P | SL | | | | |
| Theory Cum Practical Courses | | | | | | | | | | | | | | |
| 1 | 25ES101 | Problem Solving Techniques using Python | 3 | 0 | 2 | 3 | 45 | 0 | 30 | 45 | 120 | 4 | 50/50 | ES |
| 2 | 25CS301 | Data Structures and Algorithms using Java | 1 | 0 | 4 | 1 | 15 | 0 | 60 | 15 | 90 | 3 | 50/50 | PC |
| 3 | 25CS302 | Database Management Systems | 3 | 0 | 2 | 3 | 45 | 0 | 30 | 45 | 120 | 4 | 50/50 | PC |
| 4 | 25CY301 | Information and Cyber Security | 3 | 0 | 2 | 3 | 45 | 0 | 30 | 45 | 120 | 4 | 50/50 | PC |
| Theory Courses | | | | | | | | | | | | | | |
| 5 | 25MA303 | Discrete Mathematical Structures | 3 | 1 | 0 | 4 | 45 | 15 | 0 | 60 | 120 | 4 | 40/60 | BS |
| 6 | 25CS303 | Digital Principles and Computer Organization | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | PC |
| 7 | 25EEC304 | Aptitude and Soft Skills - I | 1 | 0 | 0 | 1 | 15 | 0 | 0 | 15 | 30 | 1 | 100/0 | EEC |
| 8 | 25MC301 | Environmental Science | 3 | 0 | 0 | 0 | 45 | 0 | 0 | 0 | 45 | 0 | 100/0 | MC |
| Practical Course | | | | | | | | | | | | | | |
| 9 | 25EEC305 | Industrial Training - I | - | - | - | - | - | - | - | - | 2 Weeks | 1 | 100/0 | EEC |

SEMESTER IV

| S. No. | Course Code | Course Title | Hours per week | | | | Hours per sem | | | | Total no. of Hours per semester | Credits | Internal/ External Marks | Course Category |
|------------------------------|-------------|------------------------|----------------|---|---|----|---------------|---|----|----|---------------------------------|---------|--------------------------|-----------------|
| | | | L | T | P | SL | L | T | P | SL | | | | |
| Theory Cum Practical Courses | | | | | | | | | | | | | | |
| 1 | 25IT401 | Full Stack Development | 2 | 0 | 2 | 2 | 30 | 0 | 30 | 30 | 90 | 3 | 50/50 | PC |

| S. No. | Course Code | Course Title | Hours per week | | | | Hours per sem | | | | Total no. of Hours per semester | Credits | Internal/External Marks | Course Category |
|------------------|-------------|-----------------------------------|----------------|---|---|----|---------------|----|----|----|---------------------------------|---------|-------------------------|-----------------|
| | | | L | T | P | SL | L | T | P | SL | | | | |
| 2 | 25IT402 | Data Communication and Networks | 3 | 0 | 2 | 3 | 45 | 0 | 30 | 45 | 120 | 4 | 50/50 | PC |
| 3 | 25ML401 | Machine Learning | 3 | 0 | 2 | 3 | 45 | 0 | 30 | 45 | 120 | 4 | 50/50 | PC |
| 4 | 25CS403 | Design and Analysis of Algorithms | 1 | 0 | 4 | 1 | 15 | 0 | 60 | 15 | 90 | 3 | 50/50 | PC |
| Theory Courses | | | | | | | | | | | | | | |
| 5 | 25MA302 | Probability and Statistics | 3 | 1 | 0 | 4 | 45 | 15 | 0 | 60 | 120 | 4 | 40/60 | BS |
| 6 | 25CS402 | Operating Systems | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | PC |
| 7 | 25EEC401 | Aptitude and Soft Skills - II | 1 | 0 | 0 | 1 | 15 | 0 | 0 | 15 | 30 | 1 | 100/0 | EEC |
| 8 | 25MC402 | Indian Knowledge and Heritage | 3 | 0 | 0 | 0 | 45 | 0 | 0 | 0 | 45 | 0 | 100/0 | MC |
| Practical Course | | | | | | | | | | | | | | |
| 9 | 25ES402 | System Programming Laboratory | 0 | 0 | 4 | 0 | 0 | 0 | 60 | 0 | 60 | 2 | 60/40 | ES |

SEMESTER V

| S. No. | Course Code | Course Title | Hours per week | | | | Hours per sem | | | | Total no. of Hours per semester | Credits | Internal/External Marks | Course Category |
|------------------------------|-------------|---|----------------|---|---|----|---------------|---|----|----|---------------------------------|---------|-------------------------|-----------------|
| | | | L | T | P | SL | L | T | P | SL | | | | |
| Theory Cum Practical Courses | | | | | | | | | | | | | | |
| 1 | 25CY501 | Ethical Hacking and Vulnerability Testing | 3 | 0 | 2 | 3 | 45 | 0 | 30 | 45 | 120 | 4 | 50/50 | PC |
| 2 | 25CS501 | DevOps and Cloud Computing | 1 | 0 | 4 | 1 | 15 | 0 | 60 | 15 | 90 | 3 | 50/50 | PC |
| 3 | 25CS502 | Cryptography | 3 | 0 | 2 | 3 | 45 | 0 | 30 | 45 | 120 | 4 | 50/50 | PC |
| Theory Courses | | | | | | | | | | | | | | |
| 4 | 25CS503 | Compiler Design | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | PC |
| 5 | | Professional Elective I | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | PE |
| 6 | | Professional Elective II | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | PE |
| 7 | | Open Elective I | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| Practical Course | | | | | | | | | | | | | | |
| 8 | 25EEC501 | Industrial Training - II | - | - | - | - | - | - | - | - | 2 Weeks | 1 | 100/0 | EEC |
| For Honours Degree | | | | | | | | | | | | | | |
| 1 | | Honours Elective I | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | |
| 2 | | Honours Elective II | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | |
| For Minor Degree | | | | | | | | | | | | | | |
| 1 | | Minor Elective I | | | | | | | | | 90 | 3 | | |
| 2 | | Minor Elective II | | | | | | | | | 90 | 3 | | |

SEMESTER VI

| S. No. | Course Code | Course Title | Hours per week | | | | Hours per sem | | | | Total no. of Hours per semester | Credits | Internal/External Marks | Course Category |
|-------------------------------------|-------------|------------------------------------|----------------|---|---|----|---------------|---|----|----|---------------------------------|---------|-------------------------|-----------------|
| | | | L | T | P | SL | L | T | P | SL | | | | |
| Theory Cum Practical Courses | | | | | | | | | | | | | | |
| 1 | 25CY601 | Digital Forensics | 3 | 0 | 2 | 3 | 45 | 0 | 30 | 45 | 120 | 4 | 50/50 | PC |
| 2 | 25CY602 | Engineering Secure Software System | 1 | 0 | 4 | 1 | 15 | 0 | 60 | 15 | 90 | 3 | 50/50 | PC |
| Theory Courses | | | | | | | | | | | | | | |
| 3 | 25CY603 | Network Security | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | PC |
| 4 | | Professional Elective III | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | PE |
| 5 | | Professional Elective IV | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | PE |
| 6 | | Open Elective II | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 7 | | Open Elective III | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| Practical Course | | | | | | | | | | | | | | |
| 8 | 25CYP601 | Mini Project | 0 | 0 | 4 | 0 | 0 | 0 | 60 | 0 | 60 | 2 | 60/40 | EEC |
| For Honours Degree | | | | | | | | | | | | | | |
| 1 | | Honours Elective III | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | |
| 2 | | Honours Elective IV | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | |
| For Minor Degree | | | | | | | | | | | | | | |
| 1 | | Minor Elective III | | | | | | | | | 90 | 3 | | |
| 2 | | Minor Elective IV | | | | | | | | | 90 | 3 | | |

SEMESTER VII

| S. No. | Course Code | Course Title | Hours per week | | | | Hours per sem | | | | Total no. of Hours per semester | Credits | Internal/External Marks | Course Category |
|---------------------------|-------------|-------------------------|----------------|---|---|----|---------------|---|----|----|---------------------------------|---------|-------------------------|-----------------|
| | | | L | T | P | SL | L | T | P | SL | | | | |
| Theory Courses | | | | | | | | | | | | | | |
| 1 | 25HS705 | Cyber Law and Ethics | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | HS |
| 2 | | Professional Elective V | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | PE |
| 3 | | Open Elective IV | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| Practical Course | | | | | | | | | | | | | | |
| 4 | 25CYP701 | Project Work - I | 0 | 0 | 4 | 0 | 0 | 0 | 60 | 0 | 60 | 2 | 100/0 | EEC |
| For Honours Degree | | | | | | | | | | | | | | |
| 1 | | Honours Elective V | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | |
| 2 | | Honours Elective VI | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | |
| For Minor Degree | | | | | | | | | | | | | | |
| 1 | | Minor Elective V | | | | | | | | | 90 | 3 | | |
| 2 | | Minor Elective VI | | | | | | | | | 90 | 3 | | |

SEMESTER VIII

| S. No. | Course Code | Course Title | Hours per week | | | | Hours per sem | | | | Total no. of Hours per semester | Credits | Internal/ External Marks | Course Category |
|------------------|-------------|-------------------|----------------|---|----|----|---------------|---|-----|----|---------------------------------|---------|--------------------------|-----------------|
| | | | L | T | P | SL | L | T | P | SL | | | | |
| Practical Course | | | | | | | | | | | | | | |
| 1 | 25CYP801 | Project Work - II | 0 | 0 | 20 | 0 | 0 | 0 | 300 | 0 | 300 | 10 | 60/40 | EEC |

TOTAL NO. OF CREDITS: 165

FOREIGN LANGUAGE

| S. No. | Course Code | Course Title | Hours per week | | | | Hours per sem | | | | Total no. of Hours per semester | Credits | Internal/External Marks | Course Category |
|----------------|-------------|--------------|----------------|---|---|----|---------------|---|---|----|---------------------------------|---------|-------------------------|-----------------|
| | | | L | T | P | SL | L | T | P | SL | | | | |
| Theory Courses | | | | | | | | | | | | | | |
| 1 | 25HS203 | German | 2 | 0 | 0 | 2 | 30 | 0 | 0 | 30 | 60 | 2 | 100/0 | HS |
| 2 | 25HS204 | Japanese | 2 | 0 | 0 | 2 | 30 | 0 | 0 | 30 | 60 | 2 | 100/0 | HS |

VALUE ADDED COURSE

| S. No. | Course Code | Course Title | Hours per week | | | | Hours per sem | | | | Total no. of Hours per semester | Credits | Internal/External Marks | Course Category |
|----------------|-------------|--------------|----------------|---|---|----|---------------|---|---|----|---------------------------------|---------|-------------------------|-----------------|
| | | | L | T | P | SL | L | T | P | SL | | | | |
| Theory Courses | | | | | | | | | | | | | | |
| 1 | 25VAC01 | French | 1 | 0 | 0 | 1 | 15 | 0 | 0 | 15 | 30 | 1 | 100/0 | VAC |
| 2 | 25VAC02 | Hindi | 1 | 0 | 0 | 1 | 15 | 0 | 0 | 15 | 30 | 1 | 100/0 | VAC |

PROFESSIONAL ELECTIVE COURSES : VERTICALS

| VERTICAL I Cloud Computing and Data Centre Technologies | VERTICAL II Internet of Things | VERTICAL III Data Security | VERTICAL IV Data Science | VERTICAL V Generative AI | VERTICAL VI Cyber Security |
|--|---|---------------------------------------|---------------------------------------|---|---|
| Virtualization and Cloud Computing | Sensor and Actuator Interfacing | Malware Analysis | Vibe Coding | Generative AI Security | IoT and Cloud Security |
| Cloud Services and Data Management | Smart System and Design | Secure Communication Protocols | AI for Business and Finance | Generative AI Trends and Applications | Blockchain and Cyber security |
| Cloud Storage Technologies | IoT Device Management | Cryptanalysis | Pattern Recognition | Introduction to Large Language Models | Cyber Threat Intelligence and Incident Response |
| Cloud Automation Tools and Applications | IoT Data Integration | Security Tools and Techniques | Designing Data Intensive Applications | Generative AI Design Patterns | Cybersecurity for Artificial Intelligence |
| Software Defined Networks | IoT Connectivity Service | Information Security Management | Predictive Modeling | Machine Intelligence for Medical Image Analysis | Quantum Computing and Security |
| Security and Privacy in Cloud | IoT Cloud Platforms | Quantum Cryptography | Prompt Engineering | Transformer Models | Mobile and Wireless Security |

VERTICAL I : Cloud Computing and Data Centre Technologies

| S. No. | Course Code | Course Title | Hours per week | | | | Hours per sem | | | | Total no. of Hours per semester | Credits | Internal/External Marks | Course Category |
|----------------|-------------|---|----------------|---|---|----|---------------|---|---|----|---------------------------------|---------|-------------------------|-----------------|
| | | | L | T | P | SL | L | T | P | SL | | | | |
| Theory Courses | | | | | | | | | | | | | | |
| 1 | 25PCS11 | Virtualization and Cloud Computing | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | PE |
| 2 | 25PCS12 | Cloud Services and Data Management | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | PE |
| 3 | 25PCS13 | Cloud Storage Technologies | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | PE |
| 4 | 25PCS14 | Cloud Automation Tools and Applications | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | PE |
| 5 | 25PCS15 | Software Defined Networks | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | PE |
| 6 | 25PCS16 | Security and Privacy in Cloud | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | PE |

VERTICAL II : Internet of Things

| S. No. | Course Code | Course Title | Hours per week | | | | Hours per sem | | | | Total no. of Hours per semester | Credits | Internal/External Marks | Course Category |
|----------------|-------------|---------------------------------|----------------|---|---|----|---------------|---|---|----|---------------------------------|---------|-------------------------|-----------------|
| | | | L | T | P | SL | L | T | P | SL | | | | |
| Theory Courses | | | | | | | | | | | | | | |
| 1 | 25PIT21 | Sensor and Actuator Interfacing | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | PE |
| 2 | 25PIT22 | Smart System and Design | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | PE |
| 3 | 25PIT23 | IoT Device Management | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | PE |
| 4 | 25PIT24 | IoT Data Integration | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | PE |
| 5 | 25PIT25 | IoT Connectivity Service | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | PE |
| 6 | 25PIT26 | IoT Cloud Platforms | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | PE |

VERTICAL III : Data Security

| S. No. | Course Code | Course Title | Hours per week | | | | Hours per sem | | | | Total no. of Hours per semester | Credits | Internal/External Marks | Course Category |
|----------------|-------------|--------------------------------|----------------|---|---|----|---------------|---|---|----|---------------------------------|---------|-------------------------|-----------------|
| | | | L | T | P | SL | L | T | P | SL | | | | |
| Theory Courses | | | | | | | | | | | | | | |
| 1 | 25PCY31 | Malware Analysis | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | PE |
| 2 | 25PCY32 | Secure Communication Protocols | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | PE |
| 3 | 25PCY33 | Cryptanalysis | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | PE |
| 4 | 25PCY34 | Security Tools and Techniques | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | PE |

| S. No. | Course Code | Course Title | Hours per week | | | | Hours per sem | | | | Total no. of Hours per semester | Credits | Internal/External Marks | Course Category |
|--------|-------------|---------------------------------|----------------|---|---|----|---------------|---|---|----|---------------------------------|---------|-------------------------|-----------------|
| | | | L | T | P | SL | L | T | P | SL | | | | |
| 5 | 25PCY35 | Information Security Management | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | PE |
| 6 | 25PCY36 | Quantum Cryptography | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | PE |

VERTICAL IV : Data Science

| S. No. | Course Code | Course Title | Hours per week | | | | Hours per sem | | | | Total no. of Hours per semester | Credits | Internal/External Marks | Course Category |
|----------------|-------------|---------------------------------------|----------------|---|---|----|---------------|---|---|----|---------------------------------|---------|-------------------------|-----------------|
| | | | L | T | P | SL | L | T | P | SL | | | | |
| Theory Courses | | | | | | | | | | | | | | |
| 1 | 25PAI41 | Vibe Coding | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | PE |
| 2 | 25PAI42 | AI for Business and Finance | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | PE |
| 3 | 25PAI43 | Pattern Recognition | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | PE |
| 4 | 25PAI44 | Designing Data Intensive Applications | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | PE |
| 5 | 25PAI45 | Predictive Modeling | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | PE |
| 6 | 25PAI46 | Prompt Engineering | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | PE |

VERTICAL V : Generative AI

| S. No. | Course Code | Course Title | Hours per week | | | | Hours per sem | | | | Total no. of Hours per semester | Credits | Internal/External Marks | Course Category |
|----------------|-------------|---|----------------|---|---|----|---------------|---|---|----|---------------------------------|---------|-------------------------|-----------------|
| | | | L | T | P | SL | L | T | P | SL | | | | |
| Theory Courses | | | | | | | | | | | | | | |
| 1 | 25PML51 | Generative AI Security | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | PE |
| 2 | 25PML52 | Generative AI Trends and Applications | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | PE |
| 3 | 25PML53 | Introduction to Large Language Models | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | PE |
| 4 | 25PML54 | Generative AI Design Patterns | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | PE |
| 5 | 25PML55 | Machine Intelligence for Medical Image Analysis | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | PE |
| 6 | 25PML56 | Transformer Models | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | PE |

VERTICAL VI : Cyber Security

| S. No. | Course Code | Course Title | Hours per week | | | | Hours per sem | | | | Total no. of Hours per semester | Credits | Internal/ External Marks | Course Category |
|----------------|-------------|---|----------------|---|---|----|---------------|---|---|----|---------------------------------|---------|--------------------------|-----------------|
| | | | L | T | P | SL | L | T | P | SL | | | | |
| Theory Courses | | | | | | | | | | | | | | |
| 1 | 25PCY61 | IoT and Cloud Security | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | PE |
| 2 | 25PCY62 | Blockchain and Cyber security | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | PE |
| 3 | 25PCY63 | Cyber Threat Intelligence and Incident Response | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | PE |
| 4 | 25PCY64 | Cybersecurity for Artificial Intelligence | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | PE |
| 5 | 25PCY65 | Quantum Computing and Security | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | PE |
| 6 | 25PCY66 | Mobile and Wireless Security | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | PE |

OPEN ELECTIVES

| S. No. | Course Code | Course Title | Hours per week | | | | Hours per sem | | | | Total no. of Hours per semester | Credits | Internal/External Marks | Course Category |
|----------------|-------------|--|----------------|---|---|----|---------------|---|---|----|---------------------------------|---------|-------------------------|-----------------|
| | | | L | T | P | SL | L | T | P | SL | | | | |
| Theory Courses | | | | | | | | | | | | | | |
| 1 | 25OIT11 | UI & UX Design | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 2 | 25OIT12 | High Performance Computing | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 3 | 25OCY11 | Information Security | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 4 | 25OCY12 | Cyber Physical Systems | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 5 | 25OCY13 | Information Retrieval System | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 6 | 25OAI11 | Intelligent Healthcare Solutions | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 7 | 25OML12 | AI for Precision Agriculture | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 8 | 25OCS12 | Cloud Web Services | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 9 | 25OCS13 | Blockchain Technologies | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 10 | 25OCS14 | Data Mining | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 11 | 25OME11 | Air Pollution and Control Engineering | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 12 | 25OME12 | Automotive Systems | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 13 | 25OME13 | Digital Manufacturing | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 14 | 25OME14 | Industrial Design and Rapid Prototyping Techniques | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 15 | 25OME15 | Lean Six Sigma | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 16 | 25OME16 | Low-Cost Automation | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 17 | 25OME17 | Micro and Precision Engineering | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 18 | 25OME18 | Plant Layout and Material Handling | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 19 | 25OME19 | Vehicle Styling and Design | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 20 | 25OEC11 | Wireless Communication | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 21 | 25OEC12 | Internet of Things and Applications | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 22 | 25OEC13 | Embedded Systems | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 23 | 25OEC14 | Introduction to Quantum Communication | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |

| S. No. | Course Code | Course Title | Hours per week | | | | Hours per sem | | | | Total no. of Hours per semester | Credits | Internal/ External Marks | Course Category |
|--------|-------------|---|----------------|---|---|----|---------------|---|---|----|---------------------------------|---------|--------------------------|-----------------|
| | | | L | T | P | SL | L | T | P | SL | | | | |
| 24 | 25OEC15 | Introduction to Quantum Sensing | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 25 | 25OEC16 | Engineering Foundations of Quantum Technologies | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 26 | 25OEC17 | Solid State Physics for Quantum Technologies | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 27 | 25OEC18 | Quantum Optics | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |

VERTICALS FOR MINOR DEGREE (In addition to all the verticals of other programmes)

| VERTICAL I Fintech and Block Chain | VERTICAL II Entrepreneurship | VERTICAL III Public Administration | VERTICAL IV Business Data Analytics | VERTICAL V Environment and Sustainability | VERTICAL VI Quantum Technologies |
|---|--|---|--|--|---|
| Finance for Managers | Foundations of Entrepreneurship | Principles of Public Administration | Statistics for Management | Sustainable Infrastructure Development | Foundations of Quantum Computing: Physics, Engineering, and Mathematics Computing |
| Fundamentals of Investment | Team Building and Leadership Management for Business | Public Finance and Budgeting | Business Analytics and Decision-Making | Sustainable Agriculture and Environmental Management | Survey of Quantum Technologies and Applications |
| Banking, Financial Services and Insurance | Creativity and Innovation in Entrepreneurship | Public Personnel Administration | Human Resource Analytics | Sustainable Bio Materials | Foundations of Quantum Technologies |
| Introduction to Blockchain and its Applications | Principles of Marketing Management for Business | Administrative Law and Governance | Marketing and Social Media Web Analytics | Materials for Energy Sustainability | Basic Laboratory Course for Quantum Technologies |
| Fintech Personal Finance and Payments | Human Resource Management for Entrepreneurs | Indian Administrative System | Operation and Supply Chain Analytics | Waste Management and Circular Economy | Introduction to Quantum Computation |
| Introduction to Fintech | Financing New Business Ventures | Public Policy Administration | Financial Analytics | Environmental Quality Monitoring and Analysis | Introduction to Quantum Materials |
| | | Comparative Public Administration and Development Studies | | Integrated Energy Planning for Sustainable Development | |
| | | | | Energy Efficiency for Sustainable Development | |

VERTICAL I : Fintech and Block Chain

| S. No. | Course Code | Course Title | Hours per week | | | | Hours per sem | | | | Total no. of Hours per semester | Credits | Internal/ External Marks | Course Category |
|----------------|-------------|---|----------------|---|---|----|---------------|---|---|----|---------------------------------|---------|--------------------------|-----------------|
| | | | L | T | P | SL | L | T | P | SL | | | | |
| Theory Courses | | | | | | | | | | | | | | |
| 1 | 25OMI11 | Finance for Managers | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 2 | 25OMI12 | Fundamentals of Investment | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 3 | 25OMI13 | Banking, Financial Services and Insurance | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 4 | 25OMI14 | Introduction to Blockchain and its Applications | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 5 | 25OMI15 | Fintech Personal Finance and Payments | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 6 | 25OMI16 | Introduction to Fintech | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |

VERTICAL II : Entrepreneurship

| S. No. | Course Code | Course Title | Hours per week | | | | Hours per sem | | | | Total no. of Hours per semester | Credits | Internal/ External Marks | Course Category |
|----------------|-------------|--|----------------|---|---|----|---------------|---|---|----|---------------------------------|---------|--------------------------|-----------------|
| | | | L | T | P | SL | L | T | P | SL | | | | |
| Theory Courses | | | | | | | | | | | | | | |
| 1 | 25OMI21 | Foundations of Entrepreneurship | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 2 | 25OMI22 | Team Building and Leadership Management for Business | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 3 | 25OMI23 | Creativity and Innovation in Entrepreneurship | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 4 | 25OMI24 | Principles of Marketing Management for Business | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 5 | 25OMI25 | Human Resource Management for Entrepreneurs | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 6 | 25OMI26 | Financing New Business Ventures | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |

VERTICAL III : Public Administration

| S. No. | Course Code | Course Title | Hours per week | | | | Hours per sem | | | | Total no. of Hours per semester | Credits | Internal/ External Marks | Course Category |
|----------------|-------------|-------------------------------------|----------------|---|---|----|---------------|---|---|----|---------------------------------|---------|--------------------------|-----------------|
| | | | L | T | P | SL | L | T | P | SL | | | | |
| Theory Courses | | | | | | | | | | | | | | |
| 1 | 25OMI31 | Principles of Public Administration | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 2 | 25OMI32 | Public Finance and Budgeting | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |

| S. No. | Course Code | Course Title | Hours per week | | | | Hours per sem | | | | Total no. of Hours per semester | Credits | Internal/ External Marks | Course Category |
|--------|-------------|---|----------------|---|---|----|---------------|---|---|----|---------------------------------|---------|--------------------------|-----------------|
| | | | L | T | P | SL | L | T | P | SL | | | | |
| 3 | 250MI33 | Public Personnel Administration | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 4 | 250MI34 | Administrative Law and Governance | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 5 | 250MI35 | Indian Administrative System | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 6 | 250MI36 | Public Policy Administration | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 7 | 250MI37 | Comparative Public Administration and Development Studies | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |

VERTICAL IV : Business Data Analytics

| S. No. | Course Code | Course Title | Hours per week | | | | Hours per sem | | | | Total no. of Hours per semester | Credits | Internal/ External Marks | Course Category |
|----------------|-------------|--|----------------|---|---|----|---------------|---|---|----|---------------------------------|---------|--------------------------|-----------------|
| | | | L | T | P | SL | L | T | P | SL | | | | |
| Theory Courses | | | | | | | | | | | | | | |
| 1 | 250MI41 | Statistics for Management | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 2 | 250MI42 | Business Analytics and Decision-Making | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 3 | 250MI43 | Human Resource Analytics | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 4 | 250MI44 | Marketing and Social Media Web Analytics | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 5 | 250MI45 | Operation and Supply Chain Analytics | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 6 | 250MI46 | Financial Analytics | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |

VERTICAL V : Environment and Sustainability

| S. No. | Course Code | Course Title | Hours per week | | | | Hours per sem | | | | Total no. of Hours per semester | Credits | Internal/ External Marks | Course Category |
|----------------|-------------|--|----------------|---|---|----|---------------|---|---|----|---------------------------------|---------|--------------------------|-----------------|
| | | | L | T | P | SL | L | T | P | SL | | | | |
| Theory Courses | | | | | | | | | | | | | | |
| 1 | 250MI51 | Sustainable Infrastructure Development | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 2 | 250MI52 | Sustainable Agriculture and Environmental Management | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 3 | 250MI53 | Sustainable Bio Materials | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 4 | 250MI54 | Materials for Energy Sustainability | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |

| S. No. | Course Code | Course Title | Hours per week | | | | Hours per sem | | | | Total no. of Hours per semester | Credits | Internal/ External Marks | Course Category |
|--------|-------------|--|----------------|---|---|----|---------------|---|---|----|---------------------------------|---------|--------------------------|-----------------|
| | | | L | T | P | SL | L | T | P | SL | | | | |
| 5 | 25OMI55 | Waste Management and Circular Economy | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 6 | 25OMI56 | Environmental Quality Monitoring and Analysis | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 7 | 25OMI57 | Integrated Energy Planning for Sustainable Development | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 8 | 25OMI58 | Energy Efficiency for Sustainable Development | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |

VERTICAL VI : Quantum Technologies

| S. No. | Course Code | Course Title | Hours per week | | | | Hours per sem | | | | Total no. of Hours per semester | Credits | Internal/ External Marks | Course Category |
|------------------|-------------|---|----------------|---|---|----|---------------|---|----|----|---------------------------------|---------|--------------------------|-----------------|
| | | | L | T | P | SL | L | T | P | SL | | | | |
| Theory Courses | | | | | | | | | | | | | | |
| 1 | 25OMI61 | Foundations of Quantum Computing: Physics, Engineering, and Mathematics Computing | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 2 | 25OMI62 | Survey of Quantum Technologies and Applications | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 3 | 25OMI63 | Foundations of Quantum Technologies | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| Practical Course | | | | | | | | | | | | | | |
| 4 | 25OMI64 | Basic Laboratory Course for Quantum Technologies | 2 | 0 | 2 | 2 | 30 | 0 | 30 | 30 | 90 | 3 | 50/50 | OE |
| Theory Courses | | | | | | | | | | | | | | |
| 5 | 25OMI65 | Introduction to Quantum Computation | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |
| 6 | 25OMI66 | Introduction to Quantum Materials | 3 | 0 | 0 | 3 | 45 | 0 | 0 | 45 | 90 | 3 | 40/60 | OE |

SUMMARY

| S.No. | COURSE CATEGORY | CREDITS AS PER SEMESTER | | | | | | | | TOTAL CREDITS |
|---------------|-----------------|-------------------------|----|-----|----|----|----|-----|------|---------------|
| | | I | II | III | IV | V | VI | VII | VIII | |
| 1 | HS | 4 | 7 | | | | | 3 | | 14 |
| 2 | BS | 7 | 7 | 4 | 4 | | | | | 22 |
| 3 | ES | 12 | 9 | 4 | 2 | | | | | 27 |
| 4 | PC | | | 14 | 17 | 14 | 10 | | | 55 |
| 5 | PE | | | | | 6 | 6 | 3 | | 15 |
| 6 | OE | | | | | 3 | 6 | 3 | | 12 |
| 7 | EEC | | | 2 | 1 | 1 | 2 | 2 | 10 | 18 |
| 8 | AC | 1 | 1 | | | | | | | 2 |
| 9 | MC | | | ✓ | ✓ | | | | | |
| TOTAL CREDITS | | 24 | 24 | 24 | 24 | 24 | 24 | 11 | 10 | 165 |