SRI KRISHNA COLLEGE OF ENGINEERING AND TECHNOLOGY



An Autonomous Institution | Approved by AICTE | Affiliated to Anna University | Accredited by NAAC with A++ Grade Kuniamuthur, Coimbatore — 641008

Phone: (0422)-2678001 (7 Lines) | Email: info@skcet.ac.in | Website: www.skcet.ac.in



DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING (CYBER SECURITY)

CURRICULUM AND SYLLABI

B.E COMPUTER SCIENCE AND ENGINEERING (Cyber Security)

REGULATION 2022 (2023-2027 Batch)

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING (CYBER SECURITY)

B.E COMPUTER SCIENCE AND ENGINEERING (Cyber Security)

REGULATION 2022 (2023-2027 Batch)

ABOUT THE DEPARTMENT

VISION

To be a globally renowned academic department for quality education and research in the field of Cyber security with ethical values and social commitment.

MISSION

To accomplish our vision, we are committed to:

M1: Impart comprehensive technical education to produce highly competent Cyber security professionals and Researchers.

M2: Provide an academic environment with state-of-the-art technological infrastructure to provide scalable cyber security solutions.

M3: Impart ethics, Social responsibility and necessary professional, leadership skills through student centric activities.

PROGRAMME OUTCOMES (POs)

Graduates will be able to:

- **PO1 Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- **PO2 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.
- **PO3 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.
- **PO4 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.
- **PO5 Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
- **PO6 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.
- **PO7 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.
- **PO8 Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- **PO9 Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- **PO10 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.

PO11 - 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.

PO12 - **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 EDUCATIONAL OBJECTIVES (PEOs)

To enable graduates to:

- 1. Get recognized as effective professionals for their applied skills, problem solving capabilities and professional skills in the field of cyber security.
- 2. Enrich skills and adopt emerging cyber security needs to pursue life-long learning and serve the society with social concern and code of ethics.

PROGRAMME SPECIFIC OUTCOMES (PSO)

Upon completion of the programme, graduates will have ability to:

PSO1 Attain the policies in information assurance and analyze the factors in an existing system and design implementations to comprehend and anticipate future challenges.

PSO2 Implement innovative cyber security solutions using standard tools, practices and technologies without compromising the privacy of individuals and entities.

PSO3 Use cyber security and cyber forensics software/tools. Design cyber-security strategies and assess cyber-security risk management policies to protect an organization's information and assets.

Mapping of PO's to PEO's

| Programme | | | | | Pro | gramı | ne Oı | ıtcome | s (PO |) | | |
|---------------------------------|---|---|---|---|-----|-------|-------|--------|-------|----|----|----|
| Educational Objectives (PEO) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| PEO 1 | 3 | 3 | 3 | 3 | 2 | 2 | - | 1 | 2 | 2 | 2 | 1 |
| PEO 2 | 2 | 2 | 2 | 1 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 3 |

Mapping of PO's to PSO's

| Programme Specific | Programme Outcomes (PO) | | | | | | | | | | | |
|--------------------|-------------------------|---|---|---|---|---|---|---|---|----|----|----|
| Outcomes (PSO) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| PSO 1 | 3 | 3 | 3 | 3 | 2 | 2 | - | 1 | 2 | 1 | 1 | 2 |
| PSO 2 | 3 | 3 | 3 | 3 | 3 | 2 | - | - | 2 | - | 1 | 2 |
| PSO3 | 3 | 3 | 3 | 2 | 3 | 2 | - | 1 | 2 | 1 | 1 | 2 |

Mapping of PSO's & PEO's

| Programme Specific Outcomes (PSO) | Programme Educational | Objectives (PEO) |
|-----------------------------------|-----------------------|------------------|
| | PEO1 | PEO2 |
| 1 | 3 | 2 |
| 2 | 3 | 2 |
| 3 | 3 | 2 |

| 1 | Reasonably agreed | 2 | Moderately agreed | 3 | Strongly agreed |
|---|-------------------|---|-------------------|---|-----------------|

| | | S | EMESTE | R I | | | | | | | |
|-------|------------------|--|---------------|------------------|---------|---------|----------|--|--|--|--|
| S No. | Course Code | Course | L/T/P | Contact hrs/week | Credits | Ext/Int | Category | | | | |
| 1 | 23MA101 | Mathematics I | 3/1/0 | 4 | 4 | 60/40 | BSC | | | | |
| 2 | 23IT101 | Application Development Practices | 1/0/4 | 5 | 3 | 50/50 | ESC | | | | |
| 3 | 23CS101 | Problem Solving using C++ | 1/0/4 | 5 | 3 | 50/50 | ESC | | | | |
| 4 | 23EN101 | Oral and Written Communication Skills | 2/0/2 | 3 | 3 | 50/50 | HSMC | | | | |
| 5 | 23CY101 | Networking and Communication | 3/0/2 | 5 | 4 | 50/50 | ESC | | | | |
| 6 | 23TA101 | Heritage of Tamils | 1/0/0 | 1 | 1 | 60/40 | HSMC | | | | |
| MANDA | ATORY COU | RSE | | | | | | | | | |
| 7 | 23MC101 | Mandatory Course I (Induction Programme) | Thre | e weeks | 0 | 0/100 | MC | | | | |
| | Total 23 18 700 | | | | | | | | | | |

| | | S | EMESTER | R II | | | |
|-------|----------|--|---------|----------|---------|---------|----------|
| S No. | Course | Course | L/T/P | Contact | Credits | Ext/Int | Category |
| | Code | | | hrs/week | | | |
| 1 | 23MA201 | Mathematics II | 3/1/0 | 4 | 4 | 60/40 | BSC |
| 2 | 23AS101 | Applied Science | 4/0/0 | 4 | 4 | 60/40 | BSC |
| 3 | 23CS201 | Data Structures and Algorithms | 1/0/4 | 5 | 3 | 50/50 | PCC |
| 4 | 23CD201 | Database Management Systems | 1/0/4 | 5 | 3 | 50/50 | PCC |
| 5 | 23CY201 | Java Programming | 1/0/4 | 5 | 3 | 50/50 | PCC |
| 6 | 23CY202 | Operating Systems | 3/0/2 | 5 | 4 | 50/50 | ESC |
| 7 | 23TA201 | Tamils and Technology | 1/0/0 | 1 | 1 | 60/40 | HSMC |
| 8 | 23AS102 | Applied Science Laboratory | 0/0/4 | 4 | 2 | 40/60 | BSC |
| MANDA | TORY COU | RSE | | | | | |
| 9 | 23MC102 | Mandatory Course II (Environmental Sciences) | Three | e weeks | 0 | 0/100 | МС |
| | | | Total | 33 | 24 | 900 | |

| | | 5 | SEMESTE | R III | | | | | | |
|-------|------------------|---|---------|------------------|---------|---------|----------|--|--|--|
| S No. | Course Code | Course | L/T/P | Contact hrs/week | Credits | Ext/Int | Category | | | |
| 1 | 23CY301 | Cyber Law and Digital Forensics | 3/0/0 | 3 | 3 | 60/40 | PCC | | | |
| 2 | 23CY302 | Data Analytics and Visualization | 3/1/0 | 4 | 4 | 60/40 | PCC | | | |
| 3 | 23CS301 | Advanced Java Programming | 1/0/4 | 5 | 3 | 50/50 | PCC | | | |
| 4 | 23IT301 | Web Technology using React | 1/0/4 | 5 | 3 | 50/50 | PCC | | | |
| 5 | 23MA301 | Mathematical Foundations for Computer Science | 3/1/0 | 5 | 4 | 60/40 | ESC | | | |
| 6 | 23GE301 | Universal Human Values | 3/0/0 | 3 | 3 | 60/40 | HSMC | | | |
| MAN | MANDATORY COURSE | | | | | | | | | |
| 7 | 23MC1XX | Mandatory Course: III | 2/0/0 | 2 | 0 | 0/100 | MC | | | |
| | | | Total | 27 | 20 | 700 | | | | |

| | SEMESTER IV | | | | | | | | | | | |
|-------|------------------|---------------------|-------|----------|---------|---------|----------|--|--|--|--|--|
| S No. | Course | Course | L/T/P | Contact | Credits | Ext/Int | Category | | | | | |
| | Code | | | hrs/week | | | | | | | | |
| 1 | 23CY401 | Ethical Hacking | 3/0/2 | 5 | 4 | 50/50 | PCC | | | | | |
| 2 | 2 23CY402 | Access Control and | 3/0/2 | 5 | 4 | 50/50 | PCC | | | | | |
| | | Identity management | 3/0/2 | 5 | 4 | 50/50 | PCC | | | | | |
| | | Auditing IT | | | | | | | | | | |
| 3 | 23CY403 | Infrastructure for | 3/1/0 | 4 | 4 | 60/40 | PCC | | | | | |
| | | Compliance | | | | | | | | | | |
| 4 | 23AD402 | Design and analysis | 1/0/4 | 5 | 3 | 50/50 | PCC | | | | | |
| 4 | 23AD402 | of algorithms | 1/0/4 | 5 | 3 | 30/30 | PCC | | | | | |
| 5 | 23IT402 | Web Frameworks | 0/0/4 | 4 | 2 | 40/60 | PCC | | | | | |
| 5 | 2311402 | using REST API | 0/0/4 | 4 | 2 | 40/60 | PCC | | | | | |
| 6 | 22 A D 402 | Managing Cloud and | 1/0/4 | 5 | 2 | E0/E0 | DCC | | | | | |
| 6 | 23AD403 | Containerization | 1/0/4 | 5 | 3 | 50/50 | PCC | | | | | |
| 7 | 7 23ME305 | Design Thinking and | 0/0/0 | 0 | 4 | 40/00 | LICMO | | | | | |
| / | | Idea Lab | 0/0/2 | 2 | 1 | 40/60 | HSMC | | | | | |
| | | | Total | 30 | 21 | 700 | | | | | | |

| | SEMESTER V | | | | | | | | | | | |
|-------|----------------|-------------------------------------|------------------------|------------------|---------|------------------------|----------|--|--|--|--|--|
| S No. | Course Code | Course | L/T/P | Contact hrs/week | Credits | Ext/Int | Category | | | | | |
| 1 | 23CY501 | Internet Security | 3/0/0 | 3 | 3 | 60/40 | PCC | | | | | |
| 2 | 23CY502 | Cloud Security | 3/0/0 | 3 | 3 | 60/40 | PCC | | | | | |
| 3 | 23CY503 | Python for Data Analysis | 3/0/0 | 3 | 3 | 60/40 | PCC | | | | | |
| 4 | 23CYXXX | Open Elective 1 | 3/0/0 | 3 | 3 | 60/40 | OEC | | | | | |
| 5 | 23XXXXX | Professional Elective-I | 3/0/0 (or) 0/0/6 | 3/6 | 3 | 60/40 (or) 40/60 | PEC | | | | | |
| 6 | 23CYXXX | Professional Elective – II | 3/0/0 | 3 | 3 | 60/40 | PEC | | | | | |
| 7 | 23CY504 | Python for Data Analysis Laboratory | 0/0/3 | 3 | 1.5 | 40/60 | PCC | | | | | |
| 8 | 23CY505 | Cloud Security Laboratory | 0/0/3 | 3 | 1.5 | 40/60 | PCC | | | | | |
| PROJ | PROJECT WORK | | | | | | | | | | | |
| 9 | 23CY506 | Mini Project I | 0/0/4 | 4 | 2 | 40/60 | PW | | | | | |
| | | | Total | 25 | 23 | 900 | | | | | | |

| | | SI | EMESTER | VI | | | | | | |
|-------|----------------|---|---------|------------------|---------|---------|----------|--|--|--|
| S No. | Course Code | Course | L/T/P | Contact hrs/week | Credits | Ext/Int | Category | | | |
| 1 | 23CY601 | Hacker Techniques Tools and Incident Handling | 3/0/2 | 5 | 4 | 50/50 | PCC | | | |
| 2 | 23CY602 | Security Policies and Implementation | 3/0/0 | 3 | 3 | 60/40 | PCC | | | |
| 3 | 23CY603 | Engineering Secure Software Systems | 3/0/0 | 3 | 3 | 60/40 | PCC | | | |
| 4 | 23CYXXX | Emerging Elective – I | 3/0/0 | 3 | 3 | 60/40 | EEC | | | |
| 5 | 23IT701 | Computational Biology | 3/0/0 | 3 | 3 | 60/40 | ESC | | | |
| 6 | 23CYXXX | Professional Elective – III | 3/0/0 | 3 | 3 | 60/40 | PEC | | | |
| 7 | 23CYXXX | Professional Elective – IV | 3/0/0 | 3 | 3 | 60/40 | PEC | | | |
| PRC | PROJECT WORK | | | | | | | | | |
| 8 | 23CY604 | Mini Project II | 0/0/4 | 4 | 2 | 40/60 | PW | | | |
| | | • | Total | 27 | 24 | 800 | | | | |

| | SEMESTER VII | | | | | | | | | | | |
|-------|----------------|--|-------|------------------|---------|---------|----------|--|--|--|--|--|
| S No. | Course Code | Course | L/T/P | Contact hrs/week | Credits | Ext/Int | Category | | | | | |
| 1 | 23CY701 | Artificial Intelligence and Machine Learning | 3/0/0 | 3 | 3 | 60/40 | PCC | | | | | |
| 2 | 23CS402 | Algorithms of Internet | 3/1/0 | 4 | 4 | 50/50 | PCC | | | | | |
| 3 | 23CYXXX | Professional Elective –V | 3/0/0 | 3 | 3 | 60/40 | PEC | | | | | |
| 4 | 23CYXXX | Professional Elective -VI | 3/0/0 | 3 | 3 | 60/40 | PEC | | | | | |
| 5 | 23CYXXX | Open Elective – II | 3/0/0 | 3 | 3 | 60/40 | OEC | | | | | |
| 6 | 23CYXXX | Emerging Elective – II | 3/0/0 | 3 | 3 | 60/40 | EEC | | | | | |
| 7 | 23EES01 | Employability Enhancement Skills | 0/0/2 | 2 | 2 | 50/50 | EES | | | | | |
| | | | Total | 21 | 21 | 700 | | | | | | |

| | SEMESTER VIII | | | | | | | | | | |
|-------|---------------|--------------|--------|----------|---------|---------|----------|--|--|--|--|
| S No. | Course | Course | L/T/P | Contact | Credits | Ext/Int | Category | | | | |
| | Code | | | hrs/week | | | | | | | |
| PROJE | CT WORK | | | | | | | | | | |
| 1 | 23CY801 | Project Work | 0/0/24 | 24 | 12 | 40/60 | PW | | | | |
| | | | Total | 24 | 12 | 100 | | | | | |

HUMANITIES AND MANAGEMENT COURSES (8 CREDITS)

| S No. | Course Code | Course | L/T/P | Contact hrs/week | | Ext/Int | Category |
|-------|----------------|---------------------------------------|-------|------------------|---|---------|----------|
| 1 | 23EN101 | Oral and Written Communication Skills | 2/0/2 | 3 | 3 | 50/50 | HSMC |
| 2 | 23TA101 | Heritage of Tamils | 1/0/0 | 1 | 1 | 60/40 | HSMC |
| 3 | 23TA201 | Tamils and Technology | 1/0/0 | 1 | 1 | 60/40 | HSMC |
| 4 | 23GE301 | Universal Human Values | 3/0/0 | 3 | 3 | 60/40 | HSMC |
| 5 | 23ENxxx | Design Thinking and Idea Lab | 0/0/2 | 2 | 1 | 40/60 | HSMC |

BASIC SCIENCE COURSES (14 CREDITS)

| S No. | Course Code | Course | L/T/P | Contact hrs/week | | Ext/Int | Category |
|-------|----------------|-------------------------------|-------|------------------|---|---------|----------|
| | Code | | | III S/Week | | | |
| 1 | 23MA101 | Mathematics I | 3/1/0 | 4 | 4 | 60/40 | BSC |
| 2 | 23MA201 | Mathematics II | 3/1/0 | 4 | 4 | 60/40 | BSC |
| 3 | 23AS101 | Applied Science | 4/0/0 | 4 | 4 | 60/40 | BSC |
| 4 | 23AS102 | Applied Science Laboratory | 0/0/4 | 4 | 2 | 40/60 | BSC |

ENGINEERING SCIENCE COURSES (21 CREDITS)

| S No. | Course Code | Course | L/T/P | Contact hrs/week | Credit | Ext/ Int | Category |
|-------|----------------|---|-------|------------------|--------|----------|----------|
| 1 | 23IT101 | Application Development Practices | 1/0/4 | 5 | 3 | 50/50 | ESC |
| 2 | 23CS101 | Problem Solving using C++ | 1/0/4 | 5 | 3 | 50/50 | ESC |
| 3 | 23CY101 | Networking and Communication | 3/0/2 | 4 | 4 | 50/50 | ESC |
| 4 | 23CY202 | Operating Systems | 3/0/2 | 5 | 4 | 50/50 | ESC |
| 5 | 23MA301 | Mathematical Foundations for Computer Science | 3/1/0 | 5 | 4 | 60/40 | ESC |
| 6 | 23IT701 | Computational Biology | 3/0/0 | 3 | 3 | 60/40 | ESC |

PROFESSIONAL CORE COURSES (71 CREDITS)

| S No. | Course Code | Course | L/T/P | Contact hrs/week | Credit | Ext/Int | Category |
|-------|----------------|---|-------|------------------|--------|---------|----------|
| 1 | 23CS201 | Data Structures and Algorithms | 1/0/4 | 5 | 3 | 50/50 | PCC |
| 2 | 23CD201 | Database Management Systems | 1/0/4 | 5 | 3 | 50/50 | PCC |
| 3 | 23CY201 | Java Programming | 1/0/4 | 5 | 3 | 50/50 | PCC |
| 4 | 23CY301 | Cyber Law and Digital Forensics | 3/1/0 | 3 | 3 | 60/40 | PCC |
| 5 | 23CY302 | Data Analytics and Visualization | 3/1/0 | 4 | 4 | 60/40 | PCC |
| 6 | 23CS301 | Advanced Java Programming | 1/0/4 | 5 | 3 | 50/50 | PCC |
| 7 | 23IT301 | Web Technology using React | 1/0/4 | 5 | 3 | 50/50 | PCC |
| 8 | 23CY401 | Ethical Hacking | 3/0/2 | 5 | 4 | 50/50 | PCC |
| 9 | 23CY402 | Access Control and Identity management | 3/0/2 | 5 | 4 | 50/50 | PCC |
| 10 | 23CY403 | Auditing IT Infrastructure for Compliance | 3/1/0 | 4 | 4 | 60/40 | PCC |
| 11 | 23AD402 | Design and analysis of algorithms | 1/0/4 | 5 | 3 | 50/50 | PCC |
| 12 | 23IT402 | Web Frameworks using REST API | 0/0/4 | 4 | 2 | 50/50 | PCC |
| 13 | 23AD403 | Managing Cloud and Containerization | 1/0/4 | 5 | 3 | 50/50 | PCC |
| 15 | 23CY501 | Internet Security | 3/0/0 | 3 | 3 | 60/40 | PCC |
| 16 | 23CY502 | Cloud Security | 3/0/0 | 3 | 3 | 60/40 | PCC |
| 17 | 23CY503 | Python for Data Analysis | 3/0/0 | 3 | 3 | 60/40 | PCC |
| 18 | 23CY504 | Python for Data Analysis Laboratory | 0/0/3 | 3 | 1.5 | 40/60 | PCC |
| 18 | 23CY505 | Cloud Security Laboratory | 0/0/3 | 3 | 1.5 | 40/60 | PCC |
| 19 | 23CY601 | Hacker Techniques Tools and Incident Handling | 3/0/2 | 5 | 4 | 50/50 | PCC |
| 20 | 23CY602 | Security Policies and Implementation | 3/0/0 | 3 | 3 | 60/40 | PCC |
| 21 | 23CY603 | Engineering secure software systems | 3/0/0 | 3 | 3 | 60/40 | PCC |
| 22 | 23CY701 | Artificial Intelligence and Machine Learning | 3/0/0 | 3 | 3 | 60/40 | PCC |
| 23 | 23CS402 | Algorithms of Internet | 3/1/0 | 4 | 4 | 50/50 | PCC |

PROFESSIONAL ELECTIVE COURSES: VERTICALS

VERTICAL - I Cloud Computing and Data Storage Technologies

| S.No. | Course Code | Course Title | L | Т | Р | Credit | Ext/Int |
|-------|-------------|--------------------------------|---|---|---|--------|---------|
| 1 | 23CD901 | Data Virtualization | 3 | 0 | 0 | 3 | 60/40 |
| 2 | 23IT901 | Cloud Services and Integration | 3 | 0 | 0 | 3 | 60/40 |
| 2 | 23CY901 | Security and Privacy in Cloud | 3 | 0 | 0 | 3 | 60/40 |
| 4 | 23AD901 | Storage Technologies | 3 | 0 | 0 | 3 | 60/40 |
| 5 | 23CS901 | Software Defined Networks | 3 | 0 | 0 | 3 | 60/40 |
| 6 | 23CB901 | Stream Processing | 3 | 0 | 0 | 3 | 60/40 |

VERTICAL – II Applied Artificial Intelligence

| S.No. | Course Code | Course Title | L | T | Р | Credit | Ext/Int |
|-------|-------------|-----------------------------------|---|---|---|--------|---------|
| 1 | 23IT911 | Intelligent Multiagent and Expert | 3 | 0 | 0 | 3 | 60/40 |
| | 2311911 | Systems | | | | | |
| 2 | 23AD911 | App Development | 3 | 0 | 0 | 3 | 60/40 |
| 2 | 23CY911 | ETL Tools | 3 | 0 | 0 | 3 | 60/40 |
| 4 | 23CS911 | Statistical Pattern Recognition | 3 | 0 | 0 | 3 | 60/40 |
| 5 | 23CD911 | Stochastic and Network Control | 3 | 0 | 0 | 3 | 60/40 |
| 6 | 23AD912 | Bayesian Data Analysis | 3 | 0 | 0 | 3 | 60/40 |

VERTICAL - III AI in Cyber Security

| S.No. | Course Code | Course Title | L | T | Р | Credit | Ext/Int |
|-------|----------------|-----------------------------------|---|---|---|--------|---------|
| 1 | 23CY921 | Data Privacy and Security | 3 | 0 | 0 | 3 | 60/40 |
| 2 | | , , | 3 | 0 | 0 | 3 | 60/40 |
| | 23CY922 | Cyber Crime and Forensics | | | | | |
| 3 | 22CY923 | Digital and Mobile Forensics | 3 | 0 | 0 | 3 | 60/40 |
| 4 | 23CY931 | Security and Privacy with Machine | 3 | 0 | 0 | 3 | 60/40 |
| 4 | 2301931 | Learning | | | | | |
| 5 | 23CY932 | Machine Learning for Intrusion | 3 | 0 | 0 | 3 | 60/40 |
| 3 | 2301932 | Detection System | | | | | |
| 6 | 23CY933 | Al in Cyber Security Policy and | 3 | 0 | 0 | 3 | 60/40 |
| 0 | 2301933 | Governance | | | | | |
| 7 | 23CY934 | Generative AI for Cyber Security | 3 | 0 | 0 | 3 | 60/40 |
| 8 | 23CY935 | Threat Intelligence Platform | 3 | 0 | 0 | 3 | 60/40 |
| 9 | 22CY936 | Human centered security and Al | 3 | 0 | 0 | 3 | 60/40 |

VERTICAL - IV Data Analytics

| S.No. | Course Code | Course Title | L | Т | Р | Credit | Ext/Int |
|-------|-------------|---------------------------------|---|---|---|--------|---------|
| 1 | 23IT931 | NLP in Analytics | 3 | 0 | 0 | 3 | 60/40 |
| 2 | 23IT932 | Deep Learning Techniques | 3 | 0 | 0 | 3 | 60/40 |
| 2 | 23IT933 | Cognitive Systems and Analytics | 3 | 0 | 0 | 3 | 60/40 |
| 4 | 23CS931 | Big Data Analytics | 3 | 0 | 0 | 3 | 60/40 |
| 5 | 23CD931 | Social Network Analysis | 3 | 0 | 0 | 3 | 60/40 |
| 6 | 23CY931 | Exploratory Data analytics | 3 | 0 | 0 | 3 | 60/40 |
| 7 | 23CS932 | Data Science with Python | 3 | 0 | 0 | 3 | 60/40 |

VERTICAL – V CYBER SECURITY

| S.No. | Course | Course Title | L | Т | Р | Credit | Ext/Int |
|-------|---------|--|---|---|---|--------|---------|
| | Code | | | | | | |
| 1 | 23CY951 | Modern Cryptography | 0 | 0 | 6 | 3 | 40/60 |
| 2 | 23CY952 | Security Architecture | 3 | 0 | 0 | 3 | 60/40 |
| 3 | 23CY953 | Web Application Security | 3 | 0 | 0 | 3 | 60/40 |
| 4 | 23CY954 | Malware Analysis | 3 | 0 | 0 | 3 | 60/40 |
| 5 | 23CY955 | Steganography and Digital Watermarking | 3 | 0 | 0 | 3 | 60/40 |
| 6 | 23CY956 | Social Network Security Concepts | 3 | 0 | 0 | 3 | 60/40 |
| 7 | 23CY957 | Data Encryption | 3 | 0 | 0 | 3 | 60/40 |
| 8 | 23CY958 | Biometric Security | 3 | 0 | 0 | 3 | 60/40 |
| 9 | 23CY959 | Security Assessment and Risk Analysis | 3 | 0 | 0 | 3 | 60/40 |

VERTICAL – VI CYBER FORENSICS

| S.No. | Course | Course Title | L | Т | Р | Credit | Ext/Int |
|-------|---------|--|---|---|---|--------|---------|
| | Code | | | | | | |
| 1 | 23CY961 | Machine Learning for Digital Forensics | 3 | 0 | 0 | 3 | 60/40 |
| 2 | 23CY962 | Multimedia Forensics | 3 | 0 | 0 | 3 | 60/40 |
| 3 | 23CY963 | Social Media Forensics | 3 | 0 | 0 | 3 | 60/40 |
| 4 | 23CY964 | Network Forensics | 3 | 0 | 0 | 3 | 60/40 |
| 5 | 23CY965 | Advanced Cyber Forensics | 3 | 0 | 0 | 3 | 60/40 |
| 6 | 23CY966 | Vulnerability Assessment and | 3 | 0 | 0 | 3 | 60/40 |
| 0 | | Penetration Testing | | | | | |
| 7 | 23CY967 | Artificial Intelligence in Cyber | 3 | 0 | 0 | 3 | 60/40 |
| , | | Forensics | | | | | |
| 8 | 23CY968 | Advanced Network Forensics and | 3 | 0 | 0 | 3 | 60/40 |
| 0 | | Traffic Analysis | | | | | |
| 9 | 23CY969 | Forensic Investigation Procedures | 3 | 0 | 0 | 3 | 60/40 |
| Э | | and Protocols | | | | | |

OPEN ELECTIVE COURSES

| S.No. | Course Code | Course Title | L | Т | Р | Credit | Ext/Int |
|----------|----------------|---|---|---|---|--------|---------|
| Open Ele | ective Cours | e - I | | | I | | I. |
| 1 | 23CY001 | Cyber Security Fundamentals | 3 | 0 | 0 | 3 | 60/40 |
| 2 | 23CY002 | Cryptography – Tools and Techniques | 3 | 0 | 0 | 3 | 60/40 |
| 3 | 23CY003 | Cybersecurity Auditing and Assurance | 3 | 0 | 0 | 3 | 60/40 |
| Open Ele | ective Cours | e - II | | | | | |
| 4 | 23CY004 | Edge Computing | 3 | 0 | 0 | 3 | 60/40 |
| 5 | 23CY005 | Operating System Security | 3 | 0 | 0 | 3 | 60/40 |
| 6 | 23CY006 | Security Governance, Risk, and compliance | 3 | 0 | 0 | 3 | 60/40 |

EMERGING ELECTIVE COURSES

| Emergin | Emerging Elective Course - I | | | | | | | | | | |
|---------|------------------------------|--|---|---|---|--------|---------|--|--|--|--|
| S.No. | Course | Course | L | Т | Р | Credit | Ext/Int | | | | |
| | Code | | | | | | | | | | |
| 1 | 23CY007 | Application Security | 3 | 0 | 0 | 3 | 60/40 | | | | |
| 2 | 23CY008 | Dependable Computing | 3 | 0 | 0 | 3 | 60/40 | | | | |
| 3 | 23CY009 | Security and Privacy of Cyber Physical Systems | 3 | 0 | 0 | 3 | 60/40 | | | | |
| Emergin | g Elective C | ourse - II | | | | | | | | | |
| 4 | 23CY010 | LDAP Directory Services | 3 | 0 | 0 | 3 | 60/40 | | | | |
| 5 | 23CY011 | Proactive Security Tools and Techniques | 3 | 0 | 0 | 3 | 60/40 | | | | |
| 6 | 23CY012 | Jenkins and Kubernetes | 3 | 0 | 0 | 3 | 60/40 | | | | |

VALUE ADDED COURSES

| S.No. | Course Code | Course | Credit | Category |
|-------|----------------|--------------------------------|--------|----------|
| 1 | 23VA140 | Kali Linux | 1 | VAC |
| 2 | 23VA141 | Wireshark | 1 | VAC |
| 3 | 23VA130 | Effective Communication Skills | 2 | VAC |

MANDATORY COURSES

| S.No. | Course | Course Title | Category | | |
|-------|---------|---|----------|--|--|
| | Code | | | | |
| 1 | 23MC101 | Induction Programme | MC | | |
| 2 | 23MC102 | Environmental Sciences | MC | | |
| 3 | 23MC103 | Soft Skills | MC | | |
| 4 | 23MC104 | Management Organizational Behaviour | MC | | |
| 5 | 23MC105 | General Aptitude | MC | | |
| 6 | 23MC106 | Life Skills and Ethics | MC | | |
| 7 | 23MC107 | Stress Management | MC | | |
| 8 | 23MC108 | Constitution of India | MC | | |
| 9 | 23MC109 | Essence of Indian Traditional Knowledge | MC | | |

SCHEME OF CREDIT DISTRIBUTION – SUMMARY

| S.No | 0,000 | Credits/Semester | | | | | | | | AICTE | |
|------|--|------------------|------|----|----|----|----|-----|------|---------------|-------|
| | Stream | ı | II | Ш | IV | ٧ | VI | VII | VIII | Credits | Norms |
| 1 | Humanities and Management Courses (HSMC) | 4 | 1 | 3 | 1 | | | | | 9 | 16 |
| 2 | Basic Science Courses (BSC) | 4 | 10 | | | | | | | 14 | 23 |
| 3 | Engineering Science Courses (ESC) | 10 | 4 | 4 | | | 3 | | | 21 | 29 |
| 4 | Professional Core Courses (PCC) | | 9 | 13 | 20 | 12 | 10 | 7 | | 71 | 59 |
| 5 | Professional Elective Courses (PEC) | | | | | 6 | 6 | 6 | | 18 | 12 |
| 6 | Open Elective Courses (OEC) | | | | | 3 | | 3 | | 6 | 9 |
| 7 | Emerging Elective Courses (EEC) | | | | | | 3 | 3 | | 6 | |
| 8 | Project Work (PW) | | | | | 2 | 2 | | 12 | 16 | 15 |
| 9 | Employability Enhancement Courses (EES) | | | | | | | 2 | | 2 | |
| 10 | 10 Mandatory Courses (MC) | | | | | | | | | Non credit | |
| | Total | 18 | 24 | 20 | 21 | 23 | 24 | 21 | 12 | 163 | |
| | AICTE | 17.5 | 20.5 | 23 | 22 | 21 | 22 | 18 | 15 | | 163 |