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School of Engineering and Technology

Department of Computer Science and Engineering

Curriculum Feedback Analysis 2025-26

The Department of Computer Science and Engineering revises its curriculum for the programs offered every year based on the relevant trends in industry and emerging technologies by considering the feedback provided by all its stakeholders on the curriculum. This report is an analysis of the feedback collected from the various stakeholders like students, alumni, faculty members, parents and industry experts. This report shall be forwarded to the Department Curriculum Design and Development Cell (CDC) for consideration while revising the curriculum.

This academic year feedback was collected from a total of 748 students, 64 faculty members, 48 alumni, 14 Industry Experts & Employers, 36 parents and 12 Academic Peers. This feedback was analyzed and this report contains the analysis and recommendations to CDC based on the analysis carried out.

Students Feedback on Curriculum

A total of 748 students took the curriculum feedback survey. The questionnaire and the number of responses for each year of study were as follows:

All Years of Study (UG & PG) Total Number of Students Participated in the Survey: 748 students					
Questions	**Excellent**	**Very Good**	**Good**	**Average**	**Needs Improvement**
Does the content of the curriculum satisfy the stated objectives and learning outcomes?	142	356	136	72	42
Does the curriculum cover advanced topics?	138	362	140	70	38
Is the curriculum effective in developing critical/analytical thinking?	135	348	152	76	37
Whether the curriculum enhances your knowledge and skills in the relevant domain?	148	372	126	68	34
Are the textbooks and reference materials relevant to the content of the curriculum?	150	360	138	60	40
Does the curriculum orient towards higher education?	144	368	134	64	38
Does the curriculum enable the students to apply their knowledge in real-life situations?	152	355	140	58	43
Is employability given weightage in the design and development of curriculum?	146	350	144	62	46

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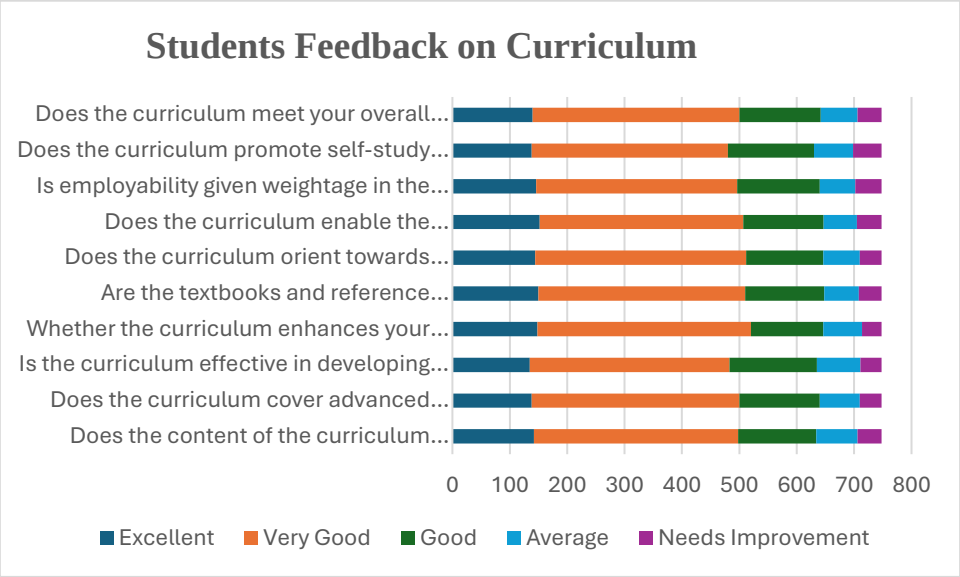
Does the curriculum promote self-study and attitude of research?	138	342	150	68	50
Does the curriculum meet your overall expectations?	140	360	142	64	42



The above table is a representation of the feedback responses given by the students as per the questionnaire.

From the feedback, it can be observed that approximately 88% of the students are satisfied with the curriculum being offered. However, based on the general comments and suggestions provided by the students, the following key points were observed:

- Need for more practical exposure and hands-on learning components
- Inclusion of industry-oriented electives in emerging areas
- Increase in real-time project-based learning
- Enhancement of internship opportunities and industry interaction

The department has already initiated steps to incorporate **practice-oriented courses and specialization-based electives** for the benefit of the students.

Faculty Feedback on Curriculum

Faculty members are the backbone of any higher education institution and their feedback is very important to analyse the curriculum and to update it as per the necessity. As a practice, the department takes feedback from every course-handling faculty member and the below section is an analysis of the same.

The questionnaire floated with faculty members concentrated on the below questions and also on suggestions/recommendations for the courses handled by them.

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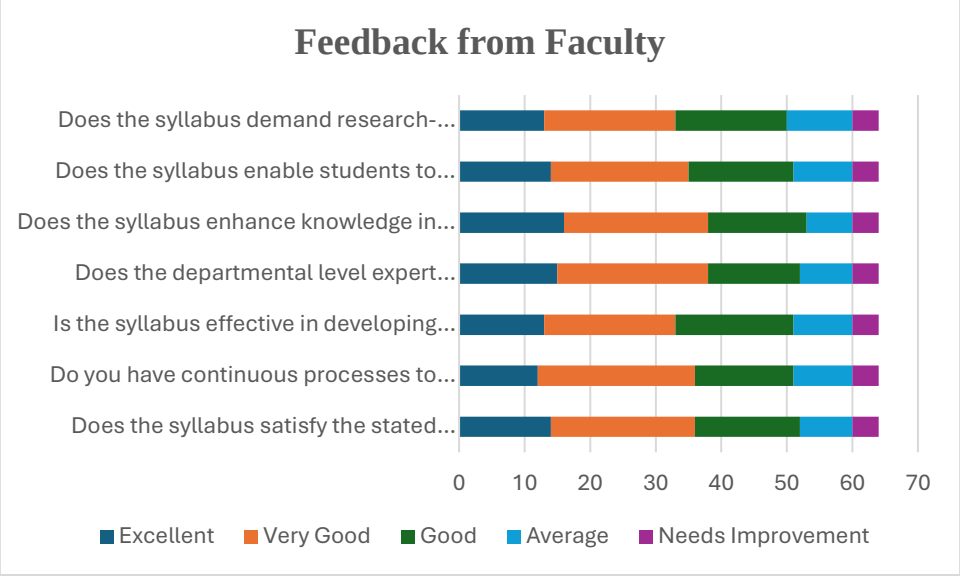
Total Number of Faculty Members Participated in the Survey: 64					
Questions	**Excellent**	**Very Good**	**Good**	**Average**	**Needs Improvement**
Does the syllabus satisfy the stated objectives and learning outcomes?	14	22	16	8	4
Do you have continuous processes to propose, modify and incorporate new topics?	12	24	15	9	4
Is the syllabus effective in developing independent thinking?	13	20	18	9	4
Does the departmental level expert committee meet to review the syllabus?	15	23	14	8	4
Does the syllabus enhance knowledge in the subject area?	16	22	15	7	4
Does the syllabus enable students to apply knowledge in real life?	14	21	16	9	4
Does the syllabus demand research-inclusive teaching?	13	20	17	10	4



The above table represents the feedback responses given by the faculty members.

From the feedback analysis, it can be observed that the majority of faculty members have rated the curriculum as Very Good and Good, indicating that the curriculum is effective and meets the expected learning outcomes.

However, based on the suggestions provided by the faculty members, the following key points were identified:

- Need for restructuring of certain courses to avoid overlap of prerequisites
- Inclusion of advanced and emerging topics (AI, ML, Cyber Security)
- Enhancement of research-oriented teaching methodologies

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- Integration of online certification courses (NPTEL/SWAYAM)

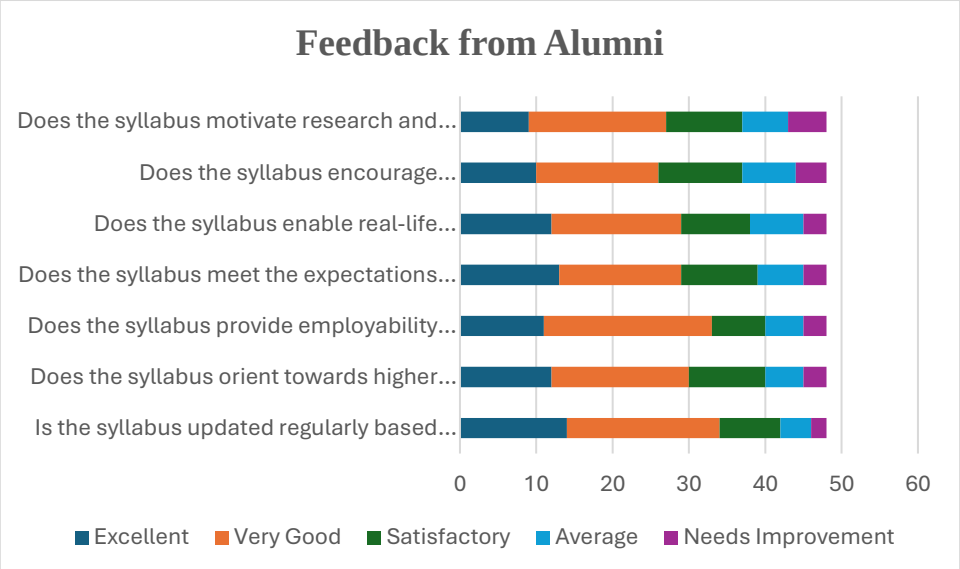
These suggestions have been discussed in the Curriculum Design and Development Cell (CDC) and necessary changes have been proposed.

Feedback from Alumni

The feedback was also collected from Alumni, who are one of our stakeholders and also BOS Members. A few majorly observed suggestions are:

1. To improve programming and logical thinking skills
2. To encourage use of platforms like Kaggle, HackerRank, and LeetCode
3. To emphasize certifications and project-based learning
4. To include industry-relevant tools and technologies

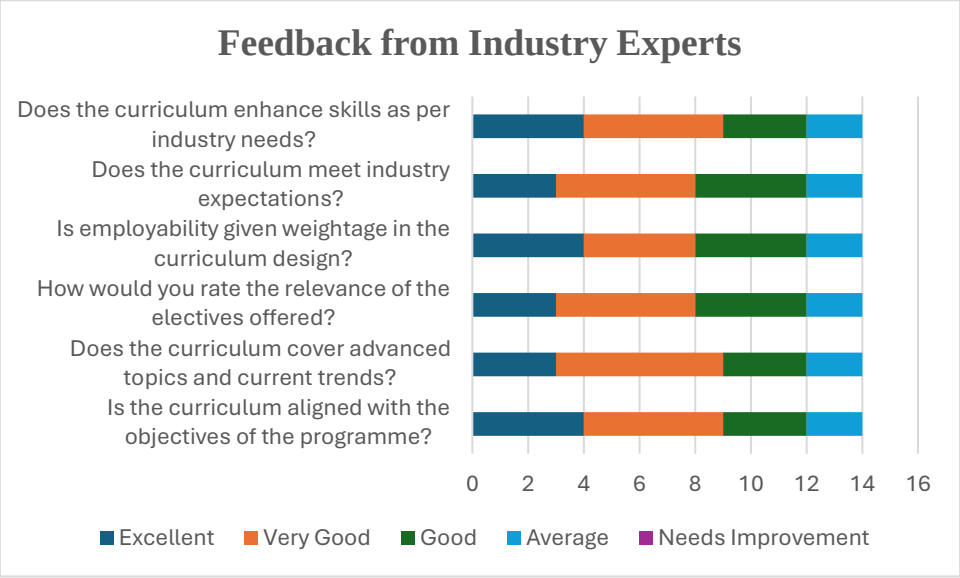
Total Number of Alumni Participated in the Survey: 48					
Questions	**Excellent**	**Very Good**	**Satisfactory**	**Average**	**Needs Improvement**
Is the syllabus updated regularly based on current trends and advanced topics?	14	20	8	4	2
Does the syllabus orient towards higher education?	12	18	10	5	3
Does the syllabus provide employability weightage?	11	22	7	5	3
Does the syllabus meet the expectations of the industry?	13	16	10	6	3
Does the syllabus enable real-life application?	12	17	9	7	3
Does the syllabus encourage entrepreneurship?	10	16	11	7	4
Does the syllabus motivate research and development?	9	18	10	6	5



Feedback from Industry Experts / Academic Experts

In addition to the feedback collected from faculty members, feedback was also collected from industry experts and employers to ensure that the curriculum is aligned with industry expectations.

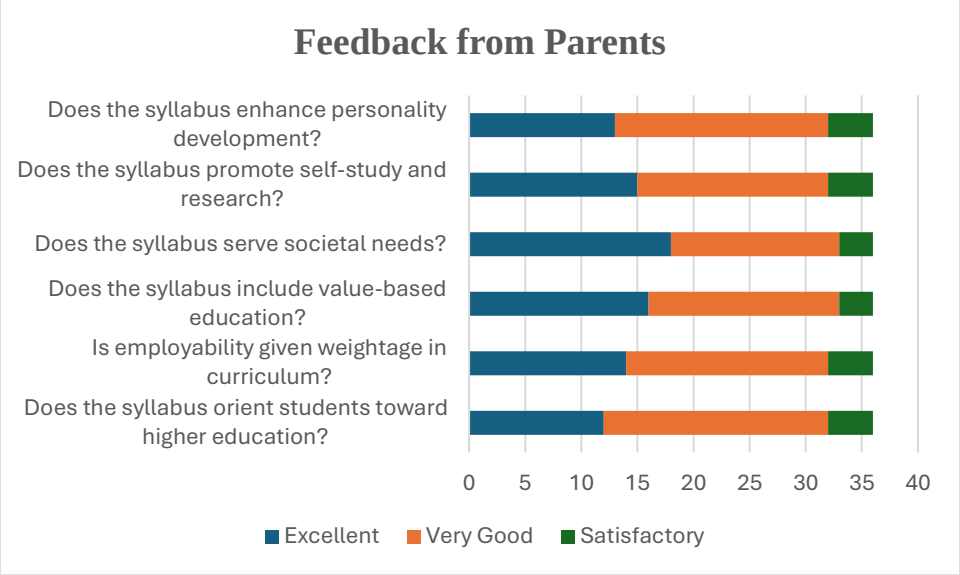
Total Number of Industry Experts & Employers Participated in the Survey: 14					
Questions	**Excellent**	**Very Good**	**Good**	**Average**	**Needs Improvement**
Is the curriculum aligned with the objectives of the programme?	4	5	3	2	0
Does the curriculum cover advanced topics and current trends?	3	6	3	2	0
How would you rate the relevance of the electives offered?	3	5	4	2	0
Is employability given weightage in the curriculum design?	4	4	4	2	0
Does the curriculum meet industry expectations?	3	5	4	2	0
Does the curriculum enhance skills as per industry needs?	4	5	3	2	0



Feedback from Parents

Total Number of Parents Participated in the Survey: 36			
Questions	**Excellent**	**Very Good**	**Satisfactory**
Does the syllabus orient students toward higher education?	12	20	4
Is employability given weightage in curriculum?	14	18	4
Does the syllabus include value-based education?	16	17	3
Does the syllabus serve societal needs?	18	15	3

Does the syllabus promote self-study and research?	15	17	4
Does the syllabus enhance personality development?	13	19	4



Feedback from Academic Peers

In addition to the feedback collected from students, faculty, alumni, parents and industry experts, feedback was also collected from Academic Peers to evaluate and enhance the curriculum in alignment with current academic standards, research trends and industry requirements.

Total Number of Academic Peers Participated in the Survey: 12					
Questions	**Excellent**	**Very Good**	**Good**	**Average**	**Needs Improvement**
Is the syllabus updated regularly based on current trends and advanced topics?	4	5	2	1	0
Does the syllabus orient students towards higher education?	3	6	2	1	0
Does the syllabus provide adequate employability skills?	3	5	3	1	0
Does the syllabus meet industry expectations?	2	6	3	1	0
Does the syllabus enable application of knowledge in real-life situations?	4	5	2	1	0
Does the curriculum promote critical and analytical thinking?	3	5	3	1	0
Does the curriculum encourage research and development activities?	2	6	3	1	0
Does the curriculum support entrepreneurship and innovation?	2	5	4	1	0

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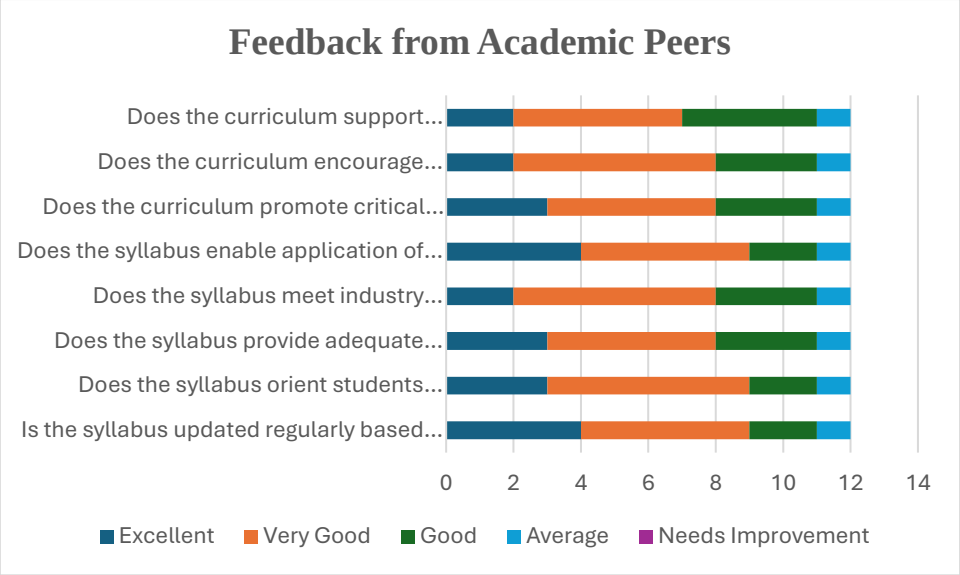

The above table represents the feedback provided by the academic peers based on the structured questionnaire.

From the feedback analysis, it can be observed that the majority of academic peers have rated the curriculum as Very Good to Excellent, indicating that the curriculum is well-aligned with current academic standards.

However, based on the suggestions and recommendations provided by the academic peers, the following key points were identified and same was submitted for BoS 2025 expert meeting for the further process:

- Need to strengthen research-oriented components in the curriculum
- Enhancement of entrepreneurship and innovation-based learning
- Inclusion of more interdisciplinary electives
- Improvement in industry-academia collaboration
- Incorporation of case studies and real-world problem-solving approaches

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Action Taken Report on Curriculum Feedback Analysis for 2025-26

The Department of Computer Science and Engineering collects analyses and takes action based on the feedback received from
all the stakeholders as far as curriculum is concerned. The stakeholders from whom the feedback is collected are

1. Students
2. Teachers
3. Alumni
4. Parents
5. Industry Experts / Academic Experts
6. Academic Peers

The Curriculum Design and Development Cell (CDC) of the Department initiates this feedback collection, also analyses the same, and prepares a feedback analysis report on the curriculum every academic year. These are then proposed to the Department Board of Studies (BoS) 2025 for their approval to be included in the curriculum for the subsequent academic year.

This report highlights the actions taken for the courses listed below, which have been revised based on feedback received from stakeholders. The details of these revisions are documented in the Changes in Curriculum Annexure Report.

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Minutes of the Seventeenth Meeting of the Board of Studies in the Department of Computer Science and Engineering held on 20th March 2025 at 9.30 am in the Conference Room, Block 1, Kengeri Campus, CHRIST (Deemed to be University), Bangalore.

In the Chair: Dr Balamurugan M, Head of the Department.

Members Present: Members present as per the attendance enclosed.

Leave of Absence: Dr. Mohammed Misbahuddin, Dr. Raju G & Dr.Xavier C

Declaration of Quorum and Calling the Meeting to Order

The Chairperson declared the validity of the quorum and called the Meeting to Order.

Matters on the Agenda

1. **To confirm the Minutes of the Sixteenth Meeting held on 16th March 2024, 10 AM**

   The minutes of the sixteenth Board of Studies in Computer Science and Engineering meeting, as per Annexure A, were duly reviewed, and it was noted that no matters arose from the previous meeting minutes.

2. **To consider and approve the new programmes**

   The following new programmes are proposed and presented to the Board.

   1. **B.Tech in Computer Science Engineering (Cyber Security)**
   2. **B.Tech in Computer Science & Systems Engineering**
   3. **Post Graduate Diploma in Cyber Security**
   4. **Certification Courses in Cyber Security** (working professionals / eligible candidates)
      a. Certification in "Ethical Hacking Expert"
      b. Certification in "SOC Analyst"
      c. Certification in "Vulnerability Assessment and Penetration Testing "
      d. Certification in "Cyber Compliance Auditing"

   The Board also reviewed and approved the new courses for BTCSE / BTCSE(AIML) / BTCSE(DS) / BTCSE(IOT)/ BTIT programmes.[Annexure B]

   It was recommended that the details of all the courses and their syllabus be presented to the Academic Council for its approval.

   The Programme Structure, Programme Outcomes (PO), Course Outcomes (CO), and PO-CO mapping of both UG and PG were prepared based on the inputs received from stakeholders (as per Annexure G). The Board reviewed and approved the same.

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3. **To consider and approve the curriculum for the B.Tech(batch 2025-29)**
The Board reviewed and approved the proposed curriculum for the UG batch of 2025-29 with a total of 168 credits for graduation. It was recommended that the details of all the programmes and their syllabus be presented to the Academic Council for its approval. Details of the curriculum are attached in Annexure C.

4. **To consider and approve the curriculum for the M.Tech (batch of 2025-27)**
The Board reviewed and approved the proposed curriculum for the PG batch of 2025-27 with a total of 68 credits for graduation. It was recommended that the curriculum and syllabus be presented to the Academic Council for its approval. Details of the curriculum are attached in Annexure C.
For M Tech Programmes(Computer Science and Engineering & Data Science), the open elective courses offered during the 3rd semester are replaced with Programme Elective Courses(PEC).

5. **To consider and recommend the proposed Learner-Centric Approach(LCA) Courses**

The Board reviewed and approved the following proposed Courses for the Learner-Centric Approach (LCA)

- Object Oriented Programming.
- Extended Reality.
- Internet & Web Programming.
- Artificial Intelligence & Machine Learning.
- Machine Learning.
- Machine Learning & Deep Learning.
- Computer Networks.
- Database Management System.
- Advanced IOT.
- Digital Image Processing.
- Big Data Analytics.
- Internet of Things.
- Cyber Forensics.
- Data Warehousing & Mining.

6. **To consider and approve the recommended changes in curriculum for the following Undergraduate Programmes**

The Board reviewed the proposed changes in the undergraduate curriculum. The incorporated changes are based on the feedback received from stakeholders such as Industry, Academic Peers, Professional Bodies, Alumni, and Students and as suggested by the Curriculum Development Cell (the details of the revisions are enclosed in the CIC document of the respective programme)

7. **To consider and approve recommended Changes in the Curriculum of the Undergraduate Programme (B.Tech in CSE /CSE(AIML)/ CSE(DS) /CSE(IOT)/ IT)**

The Board of Studies reviewed and approved the proposed changes in curriculum as mentioned below.

- The total credits for the UG program for the 2023 & 24 batch have been increased to 167.
- Industry-connected courses under the open elective category (from the 3rd semester to the 6th semester) with a total of 12 credits have been introduced.
- All PEC courses of (2+1) are converted to 03 Credits(Theory) with a practical component as part of the theory content.
- Credit remapping for the rejoining students in 3^{rd} , 4^{th} , 5^{th} , 6^{th} & 7^{th} semester.
- As per the suggestion of external academic expert Dr. Suit Kumar, the course "Biology for Engineers" would be included in the elective basket, as it covers the purview of limited scope in the respective domain(the revised course structure is attached in Annexure C)

8. **To consider and approve recommended Changes in the curriculum of the Postgraduate Programme (M.Tech in CSE / DS)**

- For M Tech Programmes(Computer Science and Engineering & Data Science), the open elective courses offered during the 3rd semester are replaced with programme elective courses.
- The board also reviewed and approved the changes in course code, course tile, semester change, credit change, course type change, exam marks change and syllabus revision (the details of the revisions are enclosed in the CIC document of the respective programme)

9. **To consider and recommend the Changes in curriculum for the B.Tech (Honours & Minors) Programme.**

The Board discussed and approved the curriculum for the Honours and Minor courses. Suggestions were made to ensure students receive diversified learning opportunities. (Annexure C)

10. **Changes in Evaluation & Assessment:**

- All PEC courses of(2+1) are converted to 03 Credits(Theory) with a practical exposure for UG courses. The CIA 3 will exclusively assess the practical exposure of the course.
- M.Tech courses in semesters 1 & 2, which are industry-connected (under C-DAC) will be evaluated internally considering teaching, assessment & evaluation. For the students who are pursuing the courses in the industry(C-DAC), the assessment & evaluation will be based on the industry policy.

11. **Certification Courses/ NPTEL/SWAYAM Course Offerings:** Online course integration through NPTEL and SWAYAM platforms was discussed. The identified NPTEL /MooC / certification courses for the students were reviewed and approved by the Board(Annexure D)
12. **Results and Result Analysis**: The semester results of UG & PG students were presented and performance metrics were analyzed programme-wise.
13. **Faculty Consultancy & Funding Projects:** The Board reviewed ongoing faculty consultancy & funded projects. Strategies were discussed to encourage faculty to engage in industry consultancy and secure grants for research projects and the publications by both faculty and students (Annexure E & Annexure F)

14.Other Key Discussions & Expert Opinions

- The academic expert member, Dr. Sujith Kumar approved the proposed changes and commended the department's efforts in ensuring an academically rigorous and industry-aligned curriculum.
- Dr. Sujith Kumar also stressed the need to establish clear and structured industry collaborations. He highlighted the importance of forming Memorandums of Understanding (MoUs) with companies, facilitating internships, guest lectures, and skill-development workshops to enhance students' employability. The Board agreed to actively channel resources towards building strong industry-academia connections.
- The alumni representative, Mr.Jival Jenson, agreed with Dr. Sujit Kumar, emphasizing that the proposed curriculum maintains a strong balance between fundamental knowledge and emerging technologies.
- The meeting concluded with an analysis of stakeholder feedback, including inputs from students, faculty, alumni, and industry representatives.

To consider any other matter with the permission of the Chair

With no other matters to discuss, the Chairperson adjourned the meeting, thanking all the members of the Board. The Chairperson particularly thanked Dr.Sujith Kumar & Mr. Jival Jenson for their presence and valuable suggestions. He also thanked Dr. M Misbahuddin M., Industry expert members (in his absentia) for his constant support and guidance for the Department.

(Dr. Balamurugan M)
Chairperson
Board of Studies

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CHRIST (Deemed to be University), Bangalore
School of Engineering and Technology
Department of Computer Science and Engineering
Board of Studies 2025'

20th, March 2025
Venue: Conference Room, Block-I, Kengeri Campus.

Attendance Sheet

SL.NO	NAME OF THE MEMBER	SIGNATURE
	INTERNAL MEMBER	
1	Dr. MARY ANITA E A (Associate Dean – SoET)	
2	Dr. BALAMURUGAN M (Head & Chairperson)	
3	Dr. JENOLOVESUM (Secretary)	
4	Dr. J.THOMAS	
5	Dr. RAGHEVANDRA S	
6	Dr. MANOHAR M	
7	FG OFFR Dr. MICHAEL MOSES T	
8	Dr. DANIEL D	
9	Dr. NAVEEN J	
10	Dr. RAJKUMAR RAJVEL	
11	Dr. A V N KRISHNA	
12	Dr. RAJU G	LEAVE OF ABSENCE
13	Dr. XAVIER C	LEAVE OF ABSENCE
14	Dr. RAVINDRANATH C	
15	Dr. SANDEEP KUMAR	
16	Dr. GOKULAPRIYA R	
17	Dr. SHIJU GEORGE	
18	Dr. KARTHICKEYAN H	
19	Dr. MELBIN REENA	
20	Dr. DIANA JEBA JINGLE I	
21	Dr. KANMANI P	
22	Mr. ARUL V	
23	Ms. BENEDICT TEPHILA P	
24	Ms. RATHI DEVI	

EXTERNAL EXPERT MEMBERS		
1	Dr. SUJIT KUMAR CHAKRABARTI (Academic Expert) Associate Professor, Department of Computer Science and Engg, IIIT Bangalore.	
2	Dr. M MISBHAHUDDIN (Industry Expert) Associate Director, C-DAC, Bangalore.	LEAVE OF ABSENCE
ALUMNI REPRESENTATIVE		
1	Mr. JIVAL JENSON (Alumni Representative) Specialist Programmer, Infosys Limited, Bangalore.	
STUDENT'S REPRESENTATIVE		
1	Mr. NILE ANURAGH PG-Student Representative, CHRIST (Deemed to be University), Bangalore.	
2	Ms. NIKITA TANNI UG-Student Representative, CHRIST (Deemed to be University), Bangalore.	

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Format for Submitting Changes in Curriculum

School : School of Engineering and Technology

Department : Computer Science and Engineering

Programme : B. Tech – Computer Science and Engineering

Section I (Summary)

Table 1 : The summary sheet of curriculum/a changes

Note : For Table 1 please provide only basic/essential information of changes as mentioned in the column heads. Do not elaborate.

S. No	Particulars I: Change in	Indicate "Yes"/ "No"	Particulars II	Brief Detail (if changes are incorporated)	
1	Course Code/s	Yes	For Batch 2022-2026 : 14	IOT741E02	Ethical Hacking
				DS741E03	Big Data Analytics
				IT741E05	Mobile Application Development
				IOT742E02	Penetration Testing and Vulnerability Assessment
				AIML742E04	Deep Learning
				IT742E05	Game Programming
				IOT743E02	Cyber Forensics
				DS743E03	Business Intelligence and Analytics
				AIML743E04	Natural Language Processing
				IT742E06	Software Testing
				IOT843E02	Mobile Forensics
				DS841E03	Data Modelling and Visualization
				IT842E05	DevOps
				CS846E06	Industrial IoT 4.0

1	Course Code/s	Yes	For Batch 2023-2027 and For Batch 2024-2028 : 18	CSE533	Design and Analysis of Algorithms
				CSE534P	Internet and Web Programming
				CSE631P	Foundations of Data Science
				CSE632	Compiler Design
				CSE641E01	Datacenter Virtualization
				IT641E02	Foundations of Blockchain Technology
				CSEDS641E04	Financial Data Analytics
				CSEIOT641E06	Quantum Computing
				IT742E02	Introduction to Ethical Hacking
				CSEAM742E03	Computer Vision
				CSEDS742E04	Data Modeling and Visualization
				IT743E02	Vulnerability Assessment and Testing
				CSEAM743E03	Soft Computing
				CSEDS743E04	Image and Video Analytics
				CSE844E01	Software Defined Networks
				IT844E02	Web Application Security
				CSEAM844E03	Generative AI
				IT844E06	Text and Speech Analysis
				CSE845E01	Storage Technologies
				CSEDS845E04	Optimization Algorithms
		Yes	For Batch 2024-2028 : 4	CSE351	Python Programming
				MA431	Probability and Statistics
				HS422	Entrepreneurship & IPR
				CSE641E07	Extended Realities

2	Course Title/s	No	For Batch 2022-2026 :0	Nil	
		Yes	For Batch 2023-2027 and For Batch 2024-2028 : 4	CSE784 CSE885 IT742E02 IT743E02 CSEDS845E04	Project Work I Project Work II Introduction to Ethical Hacking Vulnerability Assessment and Testing Optimization Algorithms
		No	For Batch 2024-2028 : 0	Nil	
3.	Course Outcome	No	For Batch 2022-2026 : 0	Nil	
		Yes	For Batch 2023- 2027 and For Batch 2024-2028 : 2	CSE434P CSE535	Computer Networks Cryptography Network Security
		Yes	For Batch 2024-2028 : 1	CSE351	Python Programming
4	Semester/s	No	For Batch 2022-2026 : 0	Nil	
		Yes	For Batch 2023-2027 And For Batch 2024-2028 : 8	CSE533 CSE534P CSE631P CSE632 CSEDS641E04 CSEAM742E03 CSEAM743E03 CSE844E01	Design and Analysis of Algorithms Internet and Web Programming Foundations of Data Science Compiler Design Financial Data Analytics Computer Vision Soft Computing Software Defined Networks

4	Semester/s	Yes	For Batch 2024-2028 : 3	CSE351 CSE641E07 HS422	Python Programming Extended Realities Entrepreneurship & IPR
5	Credits	No	For Batch 2022-2026 : 0	Nil	
		Yes	For Batch 2023-2027 And For Batch 2024-2028 : 2	CSE531P CSE533	Artificial Intelligence and Machine Learning Design and Analysis of Algorithms
		No	For Batch 2024-2028 : 0	Nil	
6	Marks	No	For Batch 2022-2026 : 0	Nil	
		No	For Batch 2023-2027 : 0	Nil	
		Yes	For Batch 2024-2028 : 0	CSE641E07	Extended Realities
7	CIA Pattern	Yes	For Batch 2022-2026 : 14	IOT741E02 DS741E03 IT741E05 IOT742E02 AIML742E04 IT742E05 IOT743E02 DS743E03 AIML743E04 IT742E06 IOT843E02 DS841E03 IT842E05 CS846E06	Ethical Hacking Big Data Analytics Mobile Application Development Penetration Testing and Vulnerability Assessment Deep Learning Game Programming Cyber Forensics Business Intelligence and Analytics Natural Language Processing Software Testing Mobile Forensics Data Modelling and Visualization DevOps Industrial IoT 4.0

7	CIA Pattern	Yes	For the batch 2023-2027 and 2024-2028 : 9	CSE531P	Artificial Intelligence and Machine Learning
				CSE533	Design and Analysis of Algorithms
				CSE641E01	Datacenter Virtualization
				IT742E02	Introduction to Ethical Hacking
				CSEAM742E03	Computer Vision
				CSEDS742E04	Data Modeling and Visualization
				IT743E02	Vulnerability Assessment and Testing
				IT844E02	Web Application Security
				IT844E06	Text and Speech Analysis
		Yes	For the batch 2024-2028 : 1	CSE641E07	Extended Realities
8	ESE Pattern	Yes	For Batch 2022-2026 : 14	IOT741E02	Ethical Hacking
				DS741E03	Big Data Analytics
				IT741E05	Mobile Application Development
				IOT742E02	Penetration Testing and Vulnerability Assessment
				AIML742E04	Deep Learning
				IT742E05	Game Programming
				IOT743E02	Cyber Forensics
				DS743E03	Business Intelligence and Analytics
				AIML743E04	Natural Language Processing
				IT742E06	Software Testing
				IOT843E02	Mobile Forensics
				DS841E03	Data Modelling and Visualization
				IT842E05	DevOps
				CS846E06	Industrial IoT 4.0

8	ESE Pattern	Yes	For Batch 2023-2027 and For Batch 2024-2028 : 9	CSE531P	Artificial Intelligence and Machine Learning
				CSE533	Design and Analysis of Algorithms
				CSE641E01	Datacenter Virtualization
				IT742E02	Introduction to Ethical Hacking
				CSEAM742E03	Computer Vision
				CSEDS742E04	Data Modeling and Visualization
				IT743E02	Vulnerability Assessment and Testing
				IT844E02	Web Application Security
				IT844E06	Text and Speech Analysis
		Yes	For the batch 2024-2028 : 1	CSE641E07	Extended Realities
9	Course Type Theory/Practical	Yes	For Batch 2022-2026 : 14	IOT741E02	Ethical Hacking
				DS741E03	Big Data Analytics
				IT741E05	Mobile Application Development
				IOT742E02	Penetration Testing and Vulnerability Assessment
				AIML742E04	Deep Learning
				IT742E05	Game Programming
				IOT743E02	Cyber Forensics
				DS743E03	Business Intelligence and Analytics
				AIML743E04	Natural Language Processing
				IT742E06	Software Testing
				IOT843E02	Mobile Forensics
				DS841E03	Data Modelling and Visualization
				IT842E05	DevOps
				CS846E06	Industrial IoT 4.0

9	Course Type Theory/Practical	Yes	For Batch 2023-2027 and For Batch 2024-2028 : 9	CSE531P CSE533 CSE641E01 IT742E02 CSEAM742E03 CSEDS742E04 IT743E02 IT844E02 IT844E06	Artificial Intelligence and Machine Learning Design and Analysis of Algorithms Datacenter Virtualization Introduction to Ethical Hacking Computer Vision Data Modeling and Visualization Vulnerability Assessment and Testing Web Application Security Text and Speech Analysis
		Yes	For Batch 2024-2028 : 1	CSE641E07	Extended Realities
10	Syllabus Change	Yes	For Batch 2022-2026 : 0	Nil	
		Yes	For Batch 2023-2027 And For Batch 2024 - 2028 : 3	CSEAM844E03 CSE533 CSEIOT641E06	Generative AI Design and Analysis of Algorithms Quantum Computing
		Yes	For Batch 2024-2028 : 2	CSE335P CSE351	Object Oriented Programming Python Programming

Section II (Detailed)

Note : In Section II, do not combine the tables. If a particular field table is not applicable, please leave it blank.

1. Course Code Change

S. No	Existing Semester, Code and Course Title	Proposed Code	Reasons for Change	Applicable to Batch
1.	VII, IOT741PE02 - Ethical Hacking	IOT741E02, Ethical Hacking	Change in elective basket	Batch 2022-2026
2.	VII, DS741PE03 - Big Data Analytics	DS741E03, Big Data Analytics	Change in elective basket	Batch 2022-2026
3.	VII, IT741PE05 - Mobile Application Development	IT741E05 - Mobile Application Development	Change in elective basket	Batch 2022-2026
4.	VII, IOT742PE02 - Penetration Testing and Vulnerability Assessment	IOT742E02 - Penetration Testing and Vulnerability Assessment	Change in elective basket	Batch 2022-2026
5.	VII, AIML742PE04 - Deep Learning	AIML742E04 - Deep Learning	Change in elective basket	Batch 2022-2026
6.	VII, IT742PE05 – Game Programming	IT742E05 – Game Programming	Change in elective basket	Batch 2022-2026
7.	VII, IOT743PE02 - Cyber Forensics	IOT743E02 -Cyber Forensics	Change in elective basket	Batch 2022-2026
8.	VII, DS743PE03 - Business Intelligence and Analytics	DS743E03 - Business Intelligence and Analytics	Change in elective basket	Batch 2022-2026
9.	VII, AIML743PE04 - Natural Language Processing	AIML743E04 Natural Language Processing	Change in elective basket	Batch 2022-2026

10.	VII, IT742PE06 - Software Testing	IT742E06 - Software Testing	Change in elective basket	Batch 2022-2026
11.	VIII, IOT843PE02 - Mobile Forensics	IOT843E02 - Mobile Forensics	Change in elective basket	Batch 2022-2026
12.	VIII, DS841PE03 - Data Modelling and Visualization	DS841E03 - Data Modelling and Visualization	Change in elective basket	Batch 2022-2026
13.	VIII, IT842PE05 - DevOps	IT842PE05 - DevOps	Change in elective basket	Batch 2022-2026
14.	VIII, CS846PE06 - Industrial IoT 4.0	CS846E06 - Industrial IoT 4.0	Change in elective basket	Batch 2022-2026
15.	VI, CSE632P - Design and Analysis of Algorithms	CSE533 - Design and Analysis of Algorithms	Change in semester	Batch 2024-2028, Batch 2023-2027
16.	VI, CSE633P - Internet and Web Programming	CSE534P - Internet and Web Programming	Change in semester	Batch 2024-2028, Batch 2023-2027
17.	V, CSE533P - Foundations of Data Science	CSE631P - Foundations of Data Science	Change in semester	Batch 2024-2028, Batch 2023-2027
18.	V, CSE534-Compiler Design	CSE632 - Compiler Design	Change in semester	Batch 2024-2028, Batch 2023-2027
19.	VI, CSE641PE01 - Data Centre Virtualization	CSE641E01 - Datacenter Virtualization	Change in Elective Basket	Batch 2024-2028, Batch 2023-2027
20.	VI, CSEIOT641PE02 - Foundations of Blockchain Technology	IT641E02 - Foundations of Blockchain Technology	Change in Elective Basket	Batch 2024-2028, Batch 2023-2027
21.	VIII, CSEDS841E03-Financial Data Analytics	CSEDS641E04 Financial Data Analytics	Change in Elective Basket	Batch 2024-2028, Batch 2023-2027

22.	VI, CSE643E06 - Quantum Computing	CSEIOT641E06 - Quantum Computing	Change in Elective Basket	Batch 2024-2028, Batch 2023-2027
23.	VII, CSEIOT741PE02 - Ethical Hacking	IT742E02 - Introduction to Ethical Hacking	Change in Elective Basket	Batch 2024-2028, Batch 2023-2027
24.	VIII, CSEAM843PE04 - Computer Vision	CSEAM742E03 - Computer Vision	Change in Elective basket	Batch 2024-2028, Batch 2023-2027
25.	VII, CSEDS743PE03 - Data Modeling and Visualization	CSEDS742E04 - Data Modeling and Visualization	change of elective basket	Batch 2024-2028, Batch 2023-2027
26.	VII, CSEIOT742PE02 - Penetration Testing and Vulnerability Assessment	IT743E02 – Vulnerability Assessment and Testing	Change in Elective Basket	Batch 2024-2028, Batch 2023-2027
27.	VI, CSEAM641E04 - Soft computing	CSEAM743E03 - Soft Computing	Change in Elective Basket	Batch 2024-2028, Batch 2023-2027
28.	VII, CSEAM748E04 - Image and Video Analytics	CSEDS743E04 - Image and Video Analytics	Change in Elective Basket	Batch 2024-2028, Batch 2023-2027
29.	VII, CSE743E01 - Software Defined Networks	CSE844E01 -Software Defined Networks	Change in Elective Basket	Batch 2024-2028, Batch 2023-2027
30.	VII, CSEIOT744PE02 - Web Application Security	IT844E02 - Web Application Security	Change in Elective Basket	Batch 2024-2028, Batch 2023-2027
31.	VII, CSE745E06 - Generative AI	CSEAM844E03 - Generative AI	Change in Elective basket	Batch 2024-2028, Batch 2023-2027
32.	VIII, CSEDS744PE03 - Text and Speech Analysis	IT844E06 - Text and Speech Analysis	Change in Semester	Batch 2024-2028, Batch 2023-2027

33.	VIII, CSEAM844E04 - Optimization Techniques	CSEDS845E04 - Optimization Algorithms	Change in elective basket	Batch 2024-2028, Batch 2023-2027
34.	IV, CSE435P- Python Programming	CSE351 - Python Programming	Change in semester	Batch 2024-2028
35.	IV, CSE431 - Probability and Statistics	MA431 - Probability and Statistics	Science and Humanities department is offering	Batch 2024-2028
36.	III, ESC8 (CSE351), Extended Realities	CSE641E07 - Extended Realities	Change from core to elective and changes in credit from 2 to 3	Batch 2024-2028,
37.	III, HS321 - Entrepreneurship & IPR	HS422 - Entrepreneurship & IPR	Change in semester	Batch 2024-2028

2. Course Title Change

S. No	Existing Code and Course Title	Proposed Change	Reasons for Change	Applicable to Batch
1.	CSE784 - Capstone Project	CSE784 - Project Work I	According to stakeholders' feedback	2023-2027, 2024-2028
2.	CSE885 - Project Work	CSE885 - Project Work II	According to stakeholders' feedback	2024-2028, 2023-2027
3.	CSEIOT741PE02 - Ethical Hacking	IT742E02 - Introduction to Ethical Hacking	According to stakeholders' feedback	2024-2028, 2023-2027
4.	CSEIOT742PE02 - Penetration Testing and Vulnerability Assessment	IT743E02 - Vulnerability Assessment and Testing	According to stakeholders' feedback	2024-2028, 2023-2027
5.	CSEAM844E04 - Optimization Techniques	CSEDS845E04 - Optimization Algorithms	According to stakeholders' feedback	2024-2028, 2023-2027

3. Course Outcome Change

S. No	Existing Code and Course Title	Proposed Change	Reasons for Change (Kindly justify using the programme outcomes)	Applicable to Batch
1.	CSE351 - Python Programming	CSE351 - Python Programming (CO1, CO2)	Action verbs are updated according to complexity of the course	2024-2028
2.	CSE434P - Computer Networks	CSE434P - Computer Networks (CO1, CO2, CO3, CO4, CO5)	Action verbs are updated according to complexity of the course	2023 – 2027, 2024 - 2028
3.	CSE535 - Cryptography Network Security	CSE535 - Cryptography Network Security (CO1, CO3, CO4, CO5)	Action verbs are updated according to complexity of the course	2023 – 2027, 2024 - 2028

4. Semester Change

S. No	Existing Semester Details with Course Code	Proposed Change in Semester	Reasons for Change	Applicable to Batch
1.	VI, CSE632P	V	According to prerequisite and changes in elective basket	2023 – 2027, 2024 - 2028
2.	VI, CSE633P	V	According to prerequisite and changes in elective basket	2023 – 2027, 2024 - 2028
3.	V, CSE533P	VI	According to prerequisite and changes in elective basket	2023 – 2027, 2024 - 2028
4.	V, CSE534	VI	According to prerequisite and changes in elective basket	2023 – 2027, 2024 - 2028
5.	VIII, CSEDS841E03	VI	According to prerequisite and changes in elective basket	2023 – 2027, 2024 – 2028

6.	VIII, CSEAM843PE04	VII	According to prerequisite and changes in elective basket	2023 – 2027, 2024 – 2028
7.	VI, CSEAM641E04	VII	According to prerequisite and changes in elective basket	2023 – 2027, 2024 – 2028
8.	VII, CSE743E01	VIII	According to prerequisite and changes in elective basket	2023 – 2027, 2024 – 2028
9.	IV, CSE435P	III	According to prerequisite and changes in elective basket	2024 – 2028
10.	III, HS321	IV	According to prerequisite and changes in elective basket	2024-2028
11.	III ESC8 (CSE351)	VI	According to prerequisite and changes in elective basket	2024-2028

5. Credits Change

S. No	Existing Credit Details with Course Codes	Proposed Credit Change	Reasons for Change	Applicable to Batch
1.	3, CSE531P - Artificial Intelligence and Machine Learning	4	As per stockholder feedback	2023 – 2027, 2024 - 2028
2.	4, CSE632P - Design and Analysis of Algorithms	3	As per stockholder feedback Practical Component Removed	2023 – 2027, 2024 - 2028

6. **Marks Change:**

S. No	Existing Code and Course	Existing Marks Details	Proposed Marks Change	Reasons for Change	Applicable to Batch
1.	CSE641E07 - Extended Realities	50	100	Change in credit and elective basket	2024-2028

7. **CIA Pattern**

S. No	Existing Code and Course	Existing Details	Proposed Change	Reasons for Change	Applicable to Batch
1.	IOT741PE02 - Ethical Hacking	CIA -50, ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2022-2026
2.	DS741PE03 - Big Data Analytics	CIA -50, ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2022-2026
3.	IT741PE05 - Mobile Application Development	CIA -50, ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2022-2026
4.	IOT742PE02 - Penetration Testing and Vulnerability Assessment	CIA -50, ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
5.	AIML742PE04 - Deep Learning	CIA -50, ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026

6.	IT742PE05 - Game Programming	CIA -50, ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
7.	IOT743PE02 - Cyber Forensics	CIA -50, ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
8.	DS743PE03 - Business Intelligence and Analytics	CIA -50, ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
9.	AIML743PE04 - Natural Language Processing	CIA -50, ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
10.	IT742PE06 - Software Testing	CIA -50, ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
11.	CS846E02 - Mobile Forensics	CIA -50, ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
12.	CS744E03 - Data Modeling and Visualization	CIA -50, ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
13.	CS846E05 - DevOps	CIA -50, ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026

14.	CS846E07 - Industrial IoT 4.0	CIA -50, ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
15.	CSE531P - Artificial Intelligence and Machine Learning	CIA – 50, ESE - 50	CIA -70, ESE - 30 Question paper setting for ESE is 100 marks	Credit change from 3 to 4 credit	2023 – 2027, 2024 - 2028
16.	CSE632P - Design and analysis of algorithms	CIA -70, ESE - 30 Theory + practical	CIA -50, ESE -50 converted theory +practical to only theory	Credit change from 4 to 3	2023 – 2027, 2024 - 2028
17.	CSE641PE01 - Datacenter Virtualization	CIA -50, ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory	Follow equality in elective basket	2023 – 2027, 2024 - 2028
18.	CSEIOT741PE02 - Ethical Hacking	CIA -50, ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2023 – 2027, 2024 - 2028
19.	CSEAM843PE04 - Computer Vision	CIA -50, ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2023 – 2027, 2024 - 2028
20.	CSEDS743PE03 - Data Modeling and Visualization.	CIA -50, ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2023 – 2027, 2024 - 2028
21.	CSEIOT742PE02 - Penetration Testing and Vulnerability Assessment	CIA -50, ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2023 – 2027, 2024 - 2028
22.	CSEIOT744PE02 - Web Application Security	CIA -50, ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2023 – 2027, 2024 - 2028

23.	CSEDS744PE03 - Text and Speech Analysis	CIA -50, ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2023 – 2027, 2024 - 2028
24.	CSE351 - Extended Realities	Practical	Theory	Change in credit and elective basket	2024-2028

8. ESE Pattern

S. No	Existing Code and Course	Existing Details	Proposed Change	Reasons for Change	Applicable to Batch
1.	IOT741PE02 - Ethical Hacking	CIA -50, ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2022-2026
2.	DS741PE03 - Big Data Analytics	CIA -50, ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2022-2026
3.	IT741PE05 - Mobile Application Development	CIA -50, ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2022-2026
4.	IOT742PE02 - Penetration Testing and Vulnerability Assessment	CIA -50, ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
5.	AIML742PE04 - Deep Learning	CIA -50, ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026

6.	IT742PE05 - Game Programming	CIA -50, ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
7.	IOT743PE02 - Cyber Forensics	CIA -50, ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
8.	DS743PE03 - Business Intelligence and Analytics	CIA -50, ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
9.	AIML743PE04 - Natural Language Processing	CIA -50, ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
10.	IT742PE06 - Software Testing	CIA -50, ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
11.	CS846E02 - Mobile Forensics	CIA -50, ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
12.	CS744E03 - Data Modeling and Visualization	CIA -50, ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
13.	CS846E05 - DevOps	CIA -50, ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026

14.	CS846E07 - Industrial IoT 4.0	CIA -50, ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
15.	CSE531P - Artificial Intelligence and Machine Learning	CIA – 50, ESE - 50	CIA -70, ESE - 30 Question paper setting for ESE is 100 marks	Credit change from 3 to 4 credit	2023 – 2027, 2024 - 2028
16.	CSE632P - Design and analysis of algorithms	CIA -70, ESE - 30 Theory + practical	CIA -50, ESE -50 converted theory +practical to only theory	Credit change from 4 to 3	2023 – 2027, 2024 - 2028
17.	CSE641PE01 - Datacenter Virtualization	CIA -50 ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory	Follow equality in elective basket	2023 – 2027, 2024 - 2028
18.	CSEIOT741PE02 - Ethical Hacking	CIA -50 ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2023 – 2027, 2024 - 2028
19.	CSEAM843PE04 - Computer Vision	CIA -50 ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2023 – 2027, 2024 - 2028
20.	CSEDS743PE03 - Data Modeling and Visualization.	CIA -50 ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2023 – 2027, 2024 - 2028
21.	CSEIOT742PE02 - Penetration Testing and Vulnerability Assessment	CIA -50 ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2023 – 2027, 2024 - 2028
22.	CSEIOT744PE02 - Web Application Security	CIA -50 ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2023 – 2027, 2024 - 2028

23.	CSEDS744PE03 - Text and Speech Analysis	CIA -50 ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2023 – 2027, 2024 - 2028
24.	CSE351 - Extended Realities	Practical	Theory	Change in credit and elective basket	2024-2028

9. Course Type Theory/Practical

S. No	Existing Code and Course	Existing Details	Proposed Change	Reasons for Change	Applicable to Batch
1.	IOT741PE02 - Ethical Hacking	CIA -50 ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2022-2026
2.	DS741PE03 - Big Data Analytics	CIA -50 ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2022-2026
3.	IT741PE05 - Mobile Application Development	CIA -50 ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2022-2026
4.	IOT742PE02 - Penetration Testing and Vulnerability Assessment	CIA -50 ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
5.	AIML742PE04 - Deep Learning	CIA -50 ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory , Theory	Follow common credit distribution in elective basket	2022-2026

6.	IT742PE05 - Game Programming	CIA -50 ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
7.	IOT743PE02 - Cyber Forensics	CIA -50 ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
8.	DS743PE03 - Business Intelligence and Analytics	CIA -50 ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
9.	AIML743PE04 - Natural Language Processing	CIA -50 ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
10.	IT742PE06 - Software Testing	CIA -50 ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
11.	CS846E02 - Mobile Forensics	CIA -50 ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
12.	CS744E03 - Data Modeling and Visualization	CIA -50 ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
13.	CS846E05 - DevOps	CIA -50 ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026

14.	CS846E07 - Industrial IoT 4.0	CIA -50 ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
15.	CSE531P - Artificial Intelligence and Machine Learning	CIA - 50 ESE - 50	CIA -70, ESE - 30 Question paper setting for ESE is 100 marks	Credit change from 3 to 4 credit	2023 – 2027, 2024 - 2028
16.	CSE632P - Design and analysis of algorithms	CIA -70 ESE - 30 Theory + practical	CIA -50 ESE -50 converted theory +practical to only theory	Credit change from 4 to 3	2023 – 2027, 2024 - 2028
17.	CSE641PE01 - Datacenter Virtualization	CIA -50 ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory	Follow equality in elective basket	2023 – 2027, 2024 - 2028
18.	CSEIOT741PE02 - Ethical Hacking	CIA -50 ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2023 – 2027, 2024 - 2028
19.	CSEAM843PE04 - Computer Vision	CIA -50 ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2023 – 2027, 2024 - 2028
20.	CSEDS743PE03 - Data Modeling and Visualization.	CIA -50 ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2023 – 2027, 2024 - 2028
21.	CSEIOT742PE02 - Penetration Testing and Vulnerability Assessment	CIA -50 ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2023 – 2027, 2024 - 2028
22.	CSEIOT744PE02 - Web Application Security	CIA -50 ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2023 – 2027, 2024 - 2028

23.	CSEDS744PE03 - Text and Speech Analysis	CIA -50 ESE - 50 Theory + practical	CIA -50, ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2023 – 2027, 2024 - 2028
24.	CSE351 - Extended Realities	Practical	Theory	Change in credit and elective basket	2024-2028

Note : Please enclose the Programme structure along with the syllabus of the courses with changes.

Chairperson, BOS
Date: 2/4/25

Secretary, BOS
Date: 2/4/25

Dean
Date: 2/4/25

Registrar
Date:

Dept of Computer Science and Engineering
School of Engineering and Technology
(Deemed to be University)

Verified and entered in the Knowledge Pro/ERP

Name :

Date :

Signature :

			HS521 - Software Engineering and Project Management OE5 AEC 5 OE 6 AEC 6 OE 7 Global Elective **Program Electives** **6th** CSE741PE01 - Datacenter Virtualization CSEIOT641E02 - Foundation to Blockchain Technology CSEAM849E04 - Human Centred AI CSE643E06 Quantum Computing **7th & 8th** CSEAM642PE04 - Computer Vision CSE841E01 - Infrastructure Solutions on Cloud CSEIOT841PE02 Penetration Testing and Vulnerability Assessment CSEAM741E04 - Soft Computing CSEAM748E04 - Image and Video Analytics CSE748E06 - Social Network Analysis CSE842E01 - Software Defined Networks CSEAM845E04 - Generative CSEDS744E03 - Text and Speech Analysis CSEAM846E04 - AI Ethics	HS522 - Software Engineering and Project Management OEC571 / 572 NCC / AEC5 OEC671 / 672 NCC / AEC 6 BTGExxx Global Elective **Program Electives** **6th** CSE641E01 - Datacenter Virtualization IT641E02 - Foundation of Blockchain Technology CSEAM641E03 - Human-Centred AI CSEIOT641E06 - Quantum Computing **7th & 8th** CSEAM742E03 - Computer Vision CSE743E01 - Infrastructure Solutions on Cloud IT743E02 Vulnerability Assessment and Testing CSEAM743E03 - Soft Computing CSEDS743E04 - Image and Video Analytics IT743E06 - Social Network Analysis CSE844E01 - Software Defined Networks CSEAM844E03 - Generative AI IT844E06 Text and Speech Analysis CSEAM845E03 - AI Ethics
			Academic Year 2024-28: **3rd** CSEAM332P, Introduction to Artificial Intelligence CSE435P, Python Programming HS321, Entrepreneurship and IPR HOL311, Holistic Education III OE3, AEC3 CSE431, Probability and Statistics OE4, AEC4 OE5, AEC5 OE6, AEC6 **Program Electives**	**Academic Year 2024-28:** **3rd** CSEAM435 Introduction to Artificial Intelligence (**moved to 4th sem)** CSE351 Python Programming **(Moved to 3rd sem)** HS322, Entrepreneurship and IPR HOL311K, Holistic Education III OEC371/372 NCC/AEC3 MA431, Probability and Statistics OEC471/472 NCC/AEC4 OEC571/572 NCC/AEC5 OEC671/672 NCC/AEC6 **Program Electives**

			6th CSE741PE01 - Datacenter Virtualization CSEIOT641E02 - Foundation to Blockchain Technology CSEAM849E04 - Human Centred AI CSE643E06 Quantum Computing **7th & 8th** CSEAM642PE04 - Computer Vision CSE841E01 - Infrastructure Solutions on Cloud CSEIOT841PE02 Penetration Testing and Vulnerability Assessment CSEAM741E04 - Soft Computing CSEAM748E04 - Image and Video Analytics CSE748E06 - Social Network Analysis CSE842E01 - Software Defined Networks CSEAM845E04 - Generative CSEDS744E03 - Text and Speech Analysis CSEAM846E04 - AI Ethics	**6th** CSE641E01 - Datacenter Virtualization IT641E02 - Foundation of Blockchain Technology CSEAM641E03 - Human-Centred AI CSEIOT641E06 - Quantum Computing **7th & 8th** CSEAM742E03 - Computer Vision CSE743E01 - Infrastructure Solutions on Cloud IT743E02 Vulnerability Assessment and Testing CSEAM743E03 - Soft Computing CSEDS743E04 - Image and Video Analytics IT743E06 - Social Network Analysis CSE844E01 - Software Defined Networks CSEAM844E03 - Generative AI IT844E06 Text and Speech Analysis CSEAM845E03 - AI Ethics
2	Course Title/s	NO	**Academic Year 2022-26:**	**NA**
		YES	**Academic Year 2023-27:** **Elective 7** CSEIOT741PE02 Ethical Hacking CSEDS744E03 - Text and Speech Analysis 5th ESC10, Robotic and Mechatronics AEC5 AEC6 CSEAM784, Capstone Project CSEAM885, Project Work	IT742E02 Introduction to Ethical Hacking IT844E06 Text and Speech Analysis 5th ESC10 Applied Industrial IoT (New Course) CSEAM784, Project Work I CSEAM885, Project Work II NCC/AEC5 NCC/AEC6
			Academic Year 2024-28: ESC10, Robotic and Mechatronics AEC3 AEC4 **Higher semester the same as for the 2023-27**	ESC10 Advanced Java Script Backend frameworks NCC/AEC3 NCC/AEC4
3.	Course Outcome	NO	**Academic Year 2022-26**	NA
		YES	**Academic Year 2023-27:** CSEAM531P Machine Learning CSEAM532- Digital Image Processing	All five COs are modified for CSEAM531P, CSEAM532

		YES	**Academic Year 2024-28:** CSE435P Python Programming Course CSEAM332P Introduction to Artificial Intelligence ***Higher semester same as for 2023-27***	All five COs are modified for CSEAM332P, CSE435P
4	Semester Change	NO	**Academic Year 2022-26**	NA
		YES	**Academic Year 2023-27:** 7th CSE741PE01 - Datacenter Virtualization **7th** CSEIOT641E02 - Foundation to Blockchain Technology 8th CSEAM849E04 - Human Centred AI 5th CSEAM532- Digital Image Processing PEC1-CSE642PE01 Cloud Computing (Elective)	6th CSE641E01 - Datacenter Virtualization 6th IT641E02 - Foundation of Blockchain Technology 6th CSEAM641E03 - Human-Centred AI 5th CSEAM532- Digital Image Processing CSE532P Cloud Computing (Core)
		YES	**Academic Year 2024-28:** 3rd , CSEAM332P Introduction to Artificial Intelligence 4th CSE435P Python Programming ***Higher semester same as for 2023-27***	4th , CSEAM332P Introduction to Artificial Intelligence 4th CSE435P Python Programming
5	Credits	YES	**Academic Year 2022-26** ***Electives 7th and 8th semester*** IOT742PE02 Penetration Testing and Vulnerability Assessment **2-0-1** DS741PE03 Big Data Analytics **2-0-1** IT741PE05 Mobile Application Development **2-0-1** IOT842PE02 Cyber Forensics **2-0-1** DS841PE03 Data Modelling and Visualization **2-0-1** IT842PE05 DevOps **2-0-1** AIML841PE04 Deep Learning **2-0-1** CS844PE06 Game Programming **2-0-1**	***Electives 7th and 8th semester*** IOT742E02 Penetration Testing and Vulnerability Assessment 3-**0-0** DS741E03 Big Data Analytics 3-**0-0** IT741PE05 Mobile Application Development 3-**0-0** IOT842E02 Cyber Forensics 3-**0-0** DS841PE03 Data Modelling and Visualization 3-**0-0** IT842E05 DevOps 3-**0-0** AIML841E04 Deep Learning 3-**0-0** CS844E06 Game Programming 3-**0-0**
		YES	**Academic Year 2023-27:** 7th CSE741PE01 - Datacenter Virtualization 2-0-1	6th CSE641E01 - Datacenter Virtualization 3-0-1

			6th CSEAM642PE04 - Computer Vision 2-0-1 CSEAM531P Machine Learning – 2-0-1 CSE533p, Design and Analysis of Algorithms 3-0-1	CSEAM742E03 - Computer Vision 3-0-0 CSEAM531P Machine Learning – 3-0-1 CSE533, Design and Analysis of Algorithms 3-0-0
		YES	**Academic Year 2024-28:** 3rd CSE351, Python Programming , 1-0-1 4th CSEAM435, Introduction to Artificial Intelligence, 2-0-1 ***Higher semester same as for 2023-27***	3rd CSE351, Python Programming , 0-0-2 4th CSEAM435, Introduction to Artificial Intelligence, 3-0-0
6	Marks	YES	**Academic Year 2022-26** ***Electives 7th and 8th semester*** IOT742PE02 Penetration Testing and Vulnerability Assessment **70+30** DS741PE03 Big Data Analytics **70+30** IT741PE05 Mobile Application Development **70+30** IOT842PE02 Cyber Forensics **70+30** DS841PE03 Data Modelling and Visualization **70+30** IT842PE05 DevOps **70+30** AIML841PE04 Deep Learning **70+30** CS844PE06 Game Programming **70+30**	***Electives 7th and 8th semester*** IOT742E02 Penetration Testing and Vulnerability Assessment **50+50** DS741E03 Big Data Analytics **50+50** IT741E05 Mobile Application Development **50+50** IOT842E02 Cyber Forensics **50+50** DS841E03 Data Modelling and Visualization **50+50** IT842E05 DevOps **50+50** AIML841E04 Deep Learning **50+50** CS844E06 Game Programming **50+50**
		YES	**Academic Year 2023-27:** 7th CSE741PE01 - Datacenter Virtualization 70+30 6th CSEAM642PE04 - Computer Vision 70+30 CSEAM531P Machine Learning *50+50* CSE533p, Design and Analysis of Algorithms 70+30	6th CSE641E01 - Datacenter Virtualization 50+50 CSEAM531P Machine Learning *100+50* CSEAM742E03 - Computer Vision 50 +50 CSE533, Design and Analysis of Algorithms 50+50
		YES	**Academic Year 2024-28:** ***Higher semester same as for 2023-27***	
7	CIA Pattern		**Academic Year 2022-26**	

			Electives 7th and 8th semester IOT742PE02 Penetration Testing and Vulnerability Assessment **70+30** DS741PE03 Big Data Analytics **70+30** IT741PE05 Mobile Application Development **70+30** IOT842PE02 Cyber Forensics **70+30** DS841PE03 Data Modelling and Visualization **70+30** IT842PE05 DevOps **70+30** AIML841PE04 Deep Learning **70+30** CS844PE06 Game Programming **70+30**	***Electives 7th and 8th semester*** IOT742E02 Penetration Testing and Vulnerability Assessment **50+50** DS741E03 Big Data Analytics **50+50** IT741E05 Mobile Application Development **50+50** IOT842E02 Cyber Forensics **50+50** DS841PE03 Data Modelling and Visualization **50+50** IT842E05 DevOps **50+50** AIML841E04 Deep Learning **50+50** CS844E06 Game Programming **50+50**
		YES	**Academic Year 2023-27:** 7th CSE741PE01 - Datacenter Virtualization 70+30 6th CSEAM642PE04 - Computer Vision 70+30 CSE533p, Design and Analysis of Algorithms 70+30	6th CSE641E01 - Datacenter Virtualization 50+50 CSE533, Design and Analysis of Algorithms 50+50
		YES	**Academic Year 2024-28:** ***Higher semester same as for 2023-27***	
8	ESE Pattern	YES	**Academic Year 2022-26** ***Electives 7th and 8th semester*** IOT742PE02 Penetration Testing and Vulnerability Assessment **50+50** DS741PE03 Big Data Analytics **50+50** IT741PE05 Mobile Application Development **50+50** IOT842PE02 Cyber Forensics **50+50** DS841PE03 Data Modelling and Visualization **50+50** IT842PE05 DevOps **50+50** AIML841PE04 Deep Learning **50+50** CS844PE06 Game Programming **50+50**	***Electives 7th and 8th semester*** IOT742E02 Penetration Testing and Vulnerability Assessment **50+50** DS741E03 Big Data Analytics **50+50** IT741E05 Mobile Application Development **50+50** IOT842E02 Cyber Forensics **50+50** DS841E03 Data Modelling and Visualization **50+50** IT842E05 DevOps **50+50** AIML841E04 Deep Learning **50+50** CS844E06 Game Programming **50+50**
		YES	**Academic Year 2023-27:** 7th CSE741PE01 - Datacenter Virtualization	6th CSE641E01 - Datacenter Virtualization 50+50

			6th CSEAM642PE04 - Computer Vision 70+30 CSEAM531P Machine Learning 50+50 CSE533p, Design and Analysis of Algorithms 70+30	CSEAM531P Machine Learning 70+30 CSE533, Design and Analysis of Algorithms 50+50
		YES	**Academic Year 2024-28:** ***The higher semester is the same as for 2023-27***	
9	Course Type: Theory/Practical	YES	**Academic Year 2022-26** ***Electives 7th and 8th semester*** IOT742PE02 Penetration Testing and Vulnerability Assessment - **Theory + Practical** DS741PE03 Big Data Analytics **Theory + Practical** IT741PE05 Mobile Application Development **Theory + Practical** IOT842PE02 Cyber Forensics **Theory + Practical** DS841PE03 Data Modelling and Visualization **Theory + Practical** IT842PE05 DevOps **Theory + Practical** AIML841PE04 Deep Learning **Theory + Practical** CS844PE06 Game Programming **Theory + Practical**	***Electives 7th and 8th semester*** OT742E02 Penetration Testing and Vulnerability Assessment - **Theory** DS741E03 Big Data Analytics **Theory** IT741E05 Mobile Application Development **Theory** IOT842E02 Cyber Forensics **Theory** DS841E03 Data Modelling and Visualization **Theory** IT842E05 DevOps **Theory** AIML841E04 Deep Learning **Theory** CS844E06 Game Programming **Theory**
		YES	**Academic Year 2023-27:** 7th CSE741PE01 - Datacenter Virtualization **Theory + Practical** 6th CSEAM642PE04 - Computer Vision **Theory + Practical** CSE533p, Design and Analysis of Algorithms - **Theory + Practical** CSE533p, Design and Analysis of Algorithms- **Theory + Practical**	6th CSE641E01 - Datacenter Virtualization **Theory** CSEAM742E03 - Computer Vision **Theory** CSE533p, Design and Analysis of Algorithms - **Theory** CSE533 Design and Analysis of Algorithms - **Theory**
		YES	**Academic Year 2024-28:** CSEAM435, Introduction to Artificial Intelligence, 2-0-1	CSEAM435, Introduction to Artificial Intelligence, Theory

			The higher semester is the same as for 2023-27	
10	Syllabus	NO	**Academic Year 2022-26**	NA
		YES	**Academic Year 2023-27:** 5th CSEAM531P Machine Learning	CSE533 Design and Analysis of Algorithms (no lab) CSE535P Cloud Computing (shifted from elective basket) ESC10 Applied Industrial IoT (L& t Course) CSE641E01 Datacenter Virtualization -3 CSEAM641E03 Human Centred AI- 3 (New Course) CSEDS641E04 Financial Data Analytics-3(New Course) CSEIOT641E05 Wireless Networks-3 (New Course) CSE641E07 Gender Sensitization (New Course CSEIOT742E05 IoT Architectures and Protocols (New Course) IT742E06 Prompt Engineering (New Course)
		YES	**Academic Year 2024-28:** 5th CSEAM531P Machine Learning ***The higher semester is the same as for 2023-27***	CSEAM435, Introduction to Artificial Intelligence (no lab) CSE533p, Design and Analysis of Algorithms (no lab) BTOE361T5P Front End UI/UX Development BTOE461T5P Advanced JavaScript Frontend Frameworks (Angular)(L&T Course) CSE535 Cloud Computing (Lab component CSEDS632P Exploratory Data Analytics(New Course) CSE641E01 Datacenter Virtualization -3 CSEAM641E03 Human Centred AI- 3(New Course) CSEDS641E04 Financial Data Analytics-3(New Course) CSEIOT641E05 Wireless Networks-3 (New Course)

				CSE641E07 Gender Sensitization (New Course CSEIOT742E05 IoT Architectures and Protocols (New Course) IT742E06 Prompt Engineering (New Course) CSE742E07 Disaster Management (New Course) CSEIOT743E05 Microprocessors and Microcontrollers (new Course) IT844E02 Web Application Security (new Course)

Section II (Detailed)

Note:In Section II, do not combine the tables. If a particular field table is not applicable, please leave it blank.

1. Course Code Change

SN	*Existing Semester, Code, and Course Title*	*Proposed Code*	*Reasons for Change*	*Applicable to Batch*
1	**7th Semester** IOT742PE02 Penetration Testing and Vulnerability Assessment DS741PE03 Big Data Analytics IT741PE05 Mobile Application Development **8th Semester** IOT842PE02 Cyber Forensics DS841PE03 Data Modelling and	**7th Semester** OT742E02 Penetration Testing and Vulnerability Assessment DS741E03 Big Data Analytics IT741E05 Mobile Application Development **8th Semester** IOT842E02 Cyber Forensics DS841E03 Data Modelling and	Lab component changed to informal lab	Batch 2022-2026

	IT842PE05 DevOps AIML841PE04 Deep Learning CS844PE06 Game Programming	IT842E05 DevOps AIML841E04 Deep Learning CS844E06 Game Programming		
2.	5th , CSE533P, Design and Analysis of Algorithms	CSE533	To accommodate the core ML course	Batch 2023-2027, Batch 2024-2028
3.	5th , CSEAM532- Digital Image Processing	CSEAM633	Moved to Semester 6 to replace CSEAM633P – Foundation of Data Science	Batch 2023-2027, Batch 2024-2028
4.	5th , HS521, Software Engineering and Project Management	HS522	Code Change	Batch 2023-2027, Batch 2024-2028
	3rd ESC8, Extended Reality (0-0-2)	NA	Removed and replaced by BTOE361T5P, Front End UI/UX Development (2-0-1)	Batch 2024-2028
	4th, ESC9, Sustainable Green Technology, 2-0-0	NA	Removed and replaced by the common course, BTOE461T5P, Advanced Java Script frontend, 2-0-1	Batch 2024-2028
5.	3rd , HS321, Entrepreneurship and IPR	HS322	Code Change	Batch 2024-2028
6.	3rd , HOL311, Holistic Education III	HOL311K	Code Change	Batch 2024-2028
7.	3rd , OE3, AEC3	OEC371/372	Common coding across all program	Batch 2024-2028
8.	4rd , CSE431, Probability and Statistics	MA431	As per the common subject code	Batch 2024-2028
9.	4rd , HOL411, Holistic Education III	HOL411K	As per the need of Coding	Batch 2024-2028
10.	4rd , OE4, AEC4	OEC471/472	Common coding across all program	Batch 2024-2028

11	4th CSE431, Probability and Statistics	MA431	Code Change as per the need	Batch 2024-2028
12	5rd , OE5, AEC5	OEC571/572	Common coding across all program	Batch 2023-2027, Batch 2024-2028
13	6rd , OE6, AEC6	OEC671/672	Common coding across all program	Batch 2023-2027, Batch 2024-2028
14	6th CSEAM633P, Foundation of Data Science	NA	Replaced by the course CSEAM633 -DIP	Batch 2023-2027, Batch 2024-2028
15	5th OE7, Global Elective	BTGEXXX	Change in code	Batch 2023-2027, Batch 2024-2028
16	3rd CSEAM332P, Introduction to Artificial Intelligence	CSEAM435	Semester Change	Batch 2024-2028
17	4th , CSE435P , Python Programming	CSE351	Semester Change	Batch 2024-2028

2. Course Title Change

SN	*Existing Code and Course Title*	*Proposed Change*	*Reasons for Change (Kindly justify using the program outcomes)*	*Applicable to Batch*
1.	5th ESC10, Robotic and Mechatronics	ESC10 Applied Industrial IoT (New Course)	Introduction of Common Course	Batch 2023-2027
2.	CSEAM784, Capstone Project	CSEAM784, Project Work I	Introduced Phase I for Continuation of the same work	Batch 2023-2027, Batch 2024-2028
3.	CSEAM885, Project Work	CSEAM885, Project Work II	Introduced Phase II for Continuation of the same Phase I	Batch 2023-2027, Batch 2024-2028
4.	5th ESC10, Robotic and Mechatronics	ESC10 Advanced Java Script Backend frameworks	Introduction of Common Course	Batch 2024-2028
5.	5rd , OE5, AEC5	NCC/AEC5	Common coding across all program	Batch 2023-2027, Batch 2024-2028
6.	6rd , OE6, AEC6	NCC/AEC6	Common coding across all program	Batch 2023-2027, Batch 2024-2028
7	3rd , OE3, AEC3	NCC/AEC3	Common coding across all program	Batch 2024-2028
8	4rd , OE3, AEC4	NCC/AEC4	Common coding across all program	Batch 2024-2028

3. Course Outcome Change

SN	Existing Code and Course Title	Proposed Change	Reasons for Change (Kindly justify using the program outcomes)	Applicable to Batch
1.	CSEAM531P Machine Learning	CO1,CO2,CO3,CO4,CO 5	According to CO levels & Syllabus content change , COs are changed	Batch 2023-2027, Batch 2024-2028

4. Semester Change

SN	*Existing Semester Details with Course Code*	*Proposed Change in Semester*	*Reasons for Change*	*Applicable to Batch*
7.	5th CSEAM532-Digital Image Processing	6th	Introduced CSE532P Cloud Computing course in 5th Semester	Batch 2023-2027, Batch 2024-2028
8.	3rd , CSEAM332P Introduction to Artificial Intelligence	4th	Introduced CSE435P Python Programming Course in 3th Semester	Batch 2024-2028
9.	4th CSE435P Python Programming Course	3rd	Introduced CSEAM435 Introduction to Artificial Intelligence	Batch 2024-2028

5. Credits Change NA

SN	*Existing Credit Details with Course Codes*	*Proposed Credit Change*	*Reasons for Change*	*Applicable to Batch*
1.	***Electives 7th and 8th semester*** IOT742PE02 Penetration Testing and Vulnerability Assessment **2-0-1** DS741PE03 Big Data Analytics **2-0-1** IT741PE05 Mobile Application Development **2-0-1** IOT842PE02 Cyber Forensics **2-0-1** DS841PE03 Data Modelling and Visualization **2-0-1** IT842PE05 DevOps **2-0-1** AIML841PE04 Deep Learning **2-0-1** CS844PE06 Game Programming **2-0-1**	***Electives 7th and 8th semester*** IOT742E02 Penetration Testing and Vulnerability Assessment **3-0-0** DS741E03 Big Data Analytics **3-0-0** IT741E05 Mobile Application Development **3-0-0** IOT842E02 Cyber Forensics **3-0-0** DS841E03 Data Modelling and Visualization **3-0-0** IT842E05 DevOps **3-0-0** AIML841E04 Deep Learning **3-0-0** CS844E06 Game Programming **3-0-0**	*Theory + Practical is converted to Theory*	Batch 2022-2026 Batch 2023-2027, Batch 2024-2028
2	CSEAM531P Machine Learning – 2-0-1	3-0-1	Addition of topics	Batch 2023-2027, Batch 2024-2028

3	5th ,CSE533p, Design and Analysis of Algorithms 3-0-1	3-0-0	To accommodate the core ML course	Batch 2023-2027, Batch 2024-2028
4	3rd CSE351, Python Programming , 1-0-1	0-0-2	Balance the credit	Batch 2024-2028
5	4th CSEAM435, Introduction to Artificial Intelligence, 2-0-1	3-0-0	Inclusion of additional topics	Batch 2024-2028

6. Marks Change : NA

SN	*Existing Code and Course*	*Existing Marks Details*	*Proposed Marks Change*	*Reasons for Change*	*Applicable to Batch*
1	***Electives 7th and 8th semester*** IOT742PE02 Penetration Testing and Vulnerability Assessment DS741PE03 Big Data Analytics IT741PE05 Mobile Application Development IOT842PE02 Cyber Forensics DS841PE03 Data Modelling and Visualization IT842PE05 DevOps AIML841PE04 Deep Learning CS844PE06 Game Programming	**70+30**	**50 + 50**	*Theory + Practical is converted to Theory*	Batch 2022-2026 Batch 2023-2027, Batch 2024-2028
2	5th CSEAM531P Machine Learning	*50+50*	*100+50*	*Change in Lecture Hours*	Batch 2023-2027, Batch 2024-2028
3	5th ,CSE533p, Design and Analysis of Algorithms	*70+30*	*50+50 (ESE QP-100 Marks)*	*Removal of lab Component*	Batch 2023-2027, Batch 2024-2028

7. CIA Pattern

SN	Existing Code and Course	Existing Details	Proposed Change	Reasons for Change	Applicable to Batch
1	***Electives 7th and 8th semester*** IOT742PE02 Penetration Testing and Vulnerability Assessment DS741PE03 Big Data Analytics IT741PE05 Mobile Application Development IOT842PE02 Cyber Forensics DS841PE03 Data Modelling and Visualization IT842PE05 DevOps AIML841PE04 Deep Learning CS844PE06 Game Programming	**70+30**	**50 + 50**	*Theory + Practical is converted to Theory*	Batch 2022-2026 Batch 2023-2027, Batch 2024-2028
2.	5th ,CSE533p, Design and Analysis of Algorithms	70+30	50+50 (ESE QP-100 Marks)	Removal of lab Component	Batch 2023-2027, Batch 2024-2028

8. ESE Pattern

SN	Existing Code and Course	Existing Details	Proposed Change	Reasons for Change	Applicable to Batch
1.	***Electives 7th and 8th semester*** IOT742PE02 Penetration Testing and Vulnerability Assessment DS741PE03 Big Data Analytics IT741PE05 Mobile Application Development IOT842PE02 Cyber Forensics DS841PE03 Data Modelling and Visualization IT842PE05 DevOps	*70+30*	*50+50 (ESE QP-100 Marks)*		Batch 2022-2026 Batch 2023-2027, Batch 2024-2028

	AIML841PE04 Deep Learning CS844PE06 Game Programming				
2.	5th CSEAM531P Machine Learning	CIA and ESE follows 50:50 and Students were writing 100 marks	70 + 30	feedback from stakeholders	Batch 2023-2027, Batch 2024-2028
3.	5th ,CSE533p, Design and Analysis of Algorithms	*70+30*	*50+50 (ESE QP-100 Marks)*	*Removal of lab Component*	Batch 2023-2027, Batch 2024-2028

9. Course Type Theory/Practical

SN	*Existing Code and Course*	*Existing Details*	*Proposed Change*	*Reasons for Change*	*Applicable to B atch*
	Electives 7th and 8th semester IOT742PE02 Penetration Testing and Vulnerability Assessment DS741PE03 Big Data Analytics IT741PE05 Mobile Application Development IOT842PE02 Cyber Forensics DS841PE03 Data Modelling and Visualization IT842PE05 DevOps AIML841PE04 Deep Learning CS844PE06 Game Programming	Theory + Practical	Theory	*Common to all program*	Batch 2022-2026 Batch 2023-2027, Batch 2024-2028
1	5th ,CSE533p, Design and Analysis of Algorithms	Theory + Practical	Theory	*Removal of lab Component*	Batch 2023-2027, Batch 2024-2028
	CSEAM435, Introduction to Artificial Intelligence, 2-0-1	Theory + Practical	Theory		
	5th ,CSE533p, Design and Analysis of Algorithms 3-0-1	Theory + Practical	Theory		

10. Syllabus

SN	*Existing Code and Course*	*Existing Details*	*Proposed Change*	*Reasons for Change*	*Applicable to Batch*
1	CSEAM531P Machine Learning	The old syllabus does not cover all the topics in the ML	All Five modules	To add more relevant content	Batch 2023-2027, Batch 2024-2028

Note: Please enclose the Programme structure along with the syllabus of the courses with changes.

Chairperson, BOS
Date: 2/4/25

Secretary, BOS
Date 2/4/25

Dean
Date: 2/4/25

Registrar
Date:

Verified and entered in the Knowledge Pro/ERP
Name:
Date:
Signature:

CHRIST
(DEEMED TO BE UNIVERSITY)
BANGALORE, INDIA

Format for Submitting Changes in Curriculum

School : School of Engineering and Technology
Department : Computer Science and Engineering
Programme : **B. Tech – CSE (Data Science)**

Section I (Summary)

Table 1: The summary sheet of curriculum/a changes
Note: For Table 1 please provide only basic/essential information of changes as mentioned in the column heads. Do not elaborate.

SN	Particulars I: Change in	Indicate "Yes"/ "No"	Particulars II	Brief Detail (if changes are incorporated)
1	Course Code/s	YES	**Academic Year 2022-26** IOT741PE02 DS745PE03 IT741PE05 DS744PE03 IOT742PE02 DS742PE03 AIML742PE04 IT742PE05 IOT842PE02 AIML844PE04 IT842PE05	IOT741E02 Ethical Hacking DS745E03 Natural Language Processing IT741E05 Mobile Application Development DS744E03 Applications of Data Science in Healthcare IOT742E02 Penetration Testing and Vulnerability Assessment DS742E03 Predictive Analytics AIML742E04 Deep Learning IT742E05 Game Programming IOT842E02 Cyber Forensics AIML844E04 Natural Language Processing IT842E05 DevOps
			Academic Year 2023-2027 CSE533P-Design and Analysis of Algorithms CSE642PE01-Cloud Computing. CSE643E06-Quantum Computing CSEAM644PE04-AI Ethics CSEDS643E03-Generative AI	CSE532P Cloud Computing CSE533 Design and Analysis of Algorithms (no lab) CSEDS535P Data Engineering and Visualization CSEIOT641E05 Wireless Networks CSEIOT641E06 Quantum Computing CSE641E07 Gender Sensitization CSEIOT743E05 Microprocessors and Microcontrollers IT743E06 Social Network Analytics CSE743E07 Data Ethics and Privacy CSEAM844E03 Generative AI CSEIOT844E05 Designing Smart Cities IT844E06 Text and Speeching Analysis

				CSE844E07 Design Thinking CSEAM845E03 AI Ethics CSEIOT845E05 Security in IoT IT845E06 Large Language Models
			Academic Year 2024-28: 10	CSE332P Python programming CSEDS435P Introduction to Data Science CSE532P Cloud Computing CSE533 Design and Analysis of Algorithms (no lab) CSEDS535P Data Engineering and Visualization CSEIOT641E05 Wireless Networks CSEIOT641E06 Quantum Computing CSE641E07 Gender Sensitization CSEIOT743E05 Microprocessors and Microcontrollers IT743E06 Social Network Analytics CSE743E07 Data Ethics and Privacy CSEAM844E03 Generative AI CSEIOT844E05 Designing Smart Cities IT844E06 Text and Speeching Analysis CSE844E07 Design Thinking CSEAM845E03 AI Ethics CSEIOT845E05 Security in IoT IT845E06 Large Language Models
2	Course Title/s	**YES**	**Academic Year 2022-26: Nill**	
			Academic Year 2023-27 & 2024-2028: 03	CSEDS531P Machine Learning and Deep Learning IT742E02 Introduction to Ethical Hacking CSEDS532 Cloud Computing for Data Science(2024 batch) CSEDS784 Project Work I CSEDS882 Project Work II
3.	Course Outcome	**YES**	**Academic Year 2022-26: Nill**	
			Academic Year 2023-27 & 2024-28	CSEDS531P Machine Learning and Deep Learning CSE434P Computer Networks CSE351 Python Programming

4	Semester/s	YES	**Academic Year 2022-26: Nil**	
			Academic Year 2023-27 & 2024-28	CSE332P Python programming CSEDS435P Introduction to Data Science CSE641E01 Datacenter Virtualization (7 th -6th) IT641E02 Foundations of Blockchain Technology (7 th-6th) CSEAM845E03 AI Ethics (6th -8th) CSE844E01 Software Defined Networks CSEAM844E03 Generative AI IT844E06 Text and Speech Analysis
5	Credits	YES	Mention Course Codes where Credit changes have been made: IOT741PE02, DS745PE03, IT741PE05, DS744PE03, IOT742PE02, DS742PE03, AIML742PE04, IT742PE05, IOT842PE02, AIML844PE04, IT842PE05	**Academic Year 2022-26:** IOT741E02 Ethical Hacking DS745E03 Natural Language Processing IT741E05 Mobile Application Development DS744E03 Applications of Data Science in Healthcare IOT742E02 Penetration Testing and Vulnerability Assessment DS742E03 Predictive Analytics AIML742E04 Deep Learning IT742E05 Game Programming IOT842E02 Cyber Forensics AIML844E04 Natural Language Processing IT842E05 DevOps
			Academic Year 2023-27& 2024-2028: 18	**Academic Year 2023-27&2024-2028** CSEDS531P Machine Learning and Deep Learning CSE533 Design and Analysis of Algorithms (no lab) CSE641E01 Datacenter Virtualization -3 CSEAM641E03 Human-Centred AI- 3 CSEDS641E04 Financial Data Analytics-3 CSEIOT641E06 Wireless Networks-3 CSEIOT641E05 Wireless Networks CSEIOT641E06 Quantum Computing CSE641E07 Gender Sensitization CSEIOT743E05 Microprocessors and Microcontrollers IT743E06 Social Network Analytics CSE743E07 Data Ethics and Privacy

				CSEAM844E03 Generative AI CSEIOT844E05 Designing Smart Cities IT844E06 Text and Speeching Analysis CSE844E07 Design Thinking CSEAM845E03 AI Ethics CSEIOT845E05 Security in IoT IT845E06 Large Language Models
6	Marks	**No**	Mention the Course Codes where Mark changes have been made	Academic Year 2022-26: Nil
				Academic Year 2023-27: Nil
				Academic Year 2024 – 2028: CSE641E07 Extended Realities (from 50 to 100)
7	CIA Pattern	**YES**	Mention the Course Codes where CIA pattern changes have been made IOT741PE02, DS745PE03, IT741PE05, DS744PE03, IOT742PE02, DS742PE03, AIML742PE04, IT742PE05, IOT842PE02, AIML844PE04, IT842PE05	**Academic Year 2022-26:** IOT741E02 Ethical Hacking DS745E03 Natural Language Processing IT741E05 Mobile Application Development DS744E03 Applications of Data Science in Healthcare IOT742E02 Penetration Testing and Vulnerability Assessment DS742E03 Predictive Analytics AIML742E04 Deep Learning IT742E05 Game Programming IOT842E02 Cyber Forensics AIML844E04 Natural Language Processing IT842E05 DevOps

			Academic Year 2023-27: 01	**Academic Year 2023-27 and 2024 - 2028:** CSE533 Design and Analysis of Algorithms (no lab) CSE641E01 Datacenter Virtualization -3 CSEAM641E03 Human-Centred AI- 3 CSEDS641E04 Financial Data Analytics-3 CSEIOT641E06 Wireless Networks-3 CSEIOT641E05 Wireless Networks CSEIOT641E06 Quantum Computing CSE641E07 Gender Sensitization CSEIOT743E05 Microprocessors and Microcontrollers IT743E06 Social Network Analytics CSE743E07 Data Ethics and Privacy CSEAM844E03 Generative AI CSEIOT844E05 Designing Smart Cities IT844E06 Text and Speeching Analysis CSE844E07 Design Thinking CSEAM845E03 AI Ethics CSEIOT845E05 Security in IoT
8	ESE Pattern	**YES**	Mention the Course Codes where ESE pattern changes have been made: **Academic Year 2022-26:** IOT741PE02, DS745PE03, IT741PE05, DS744PE03, IOT742PE02, DS742PE03, AIML742PE04, IT742PE05, IOT842PE02, AIML844PE04, IT842PE05	**Academic Year 2022-26:** IOT741E02 Ethical Hacking DS745E03 Natural Language Processing IT741E05 Mobile Application Development DS744E03 Applications of Data Science in Healthcare IOT742E02 Penetration Testing and Vulnerability Assessment DS742E03 Predictive Analytics AIML742E04 Deep Learning IT742E05 Game Programming IOT842E02 Cyber Forensics AIML844E04 Natural Language Processing IT842E05 DevOps
			Academic Year 2023-27&2024 - 2028	**Academic Year 2023-27&2024 - 2028** CSE533 Design and Analysis of Algorithms (no lab) CSE641E01 Datacenter Virtualization -3 CSEAM641E03 Human-Centred AI- 3

				CSEDS641E04 Financial Data Analytics-3 CSEIOT641E06 Wireless Networks-3 CSEIOT641E05 Wireless Networks CSEIOT641E06 Quantum Computing CSE641E07 Gender Sensitization CSEIOT743E05 Microprocessors and Microcontrollers IT743E06 Social Network Analytics CSE743E07 Data Ethics and Privacy CSEAM844E03 Generative AI CSEIOT844E05 Designing Smart Cities IT844E06 Text and Speech Analysis CSE844E07 Design Thinking CSEAM845E03 AI Ethics CSEIOT845E05 Security in IoT
9	Course Type: Theory/Practical	**YES**	Mention the Course Codes where course type changes have been made. **Academic Year 2022-26:** IOT741PE02, DS745PE03, IT741PE05, DS744PE03, IOT742PE02, DS742PE03, AIML742PE04, IT742PE05, IOT842PE02, AIML844PE04, IT842PE05	**Academic Year 2022-26:** IOT741E02 Ethical Hacking DS745E03 Natural Language Processing IT741E05 Mobile Application Development DS744E03 Applications of Data Science in Healthcare IOT742E02 Penetration Testing and Vulnerability Assessment DS742E03 Predictive Analytics AIML742E04 Deep Learning IT742E05 Game Programming IOT842E02 Cyber Forensics AIML844E04 Natural Language Processing IT842E05 DevOps
				Academic Year 2023-27 and 2024 - 2028: CSE533 Design and Analysis of Algorithms (no lab) CSE641E01 Datacenter Virtualization -3 CSEAM641E03 Human-Centred AI- 3 CSEDS641E04 Financial Data Analytics-3 CSEIOT641E06 Wireless Networks-3 CSEIOT641E05 Wireless Networks CSEIOT641E06 Quantum Computing

				CSE641E07 Gender Sensitization CSEIOT743E05 Microprocessors and Microcontrollers IT743E06 Social Network Analytics CSE743E07 Data Ethics and Privacy CSEAM844E03 Generative AI CSEIOT844E05 Designing Smart Cities IT844E06 Text and Speech Analysis CSE844E07 Design Thinking CSEAM845E03 AI Ethics CSEIOT845E05 Security in IoT
10	Syllabus	**YES**	Mention the total % of syllabus change made in the program (support document - Calculation of Syllabus change to be attached as an annexure) **Batch 2022: NIL** **Batch 2023:04** **Batch 2024:06**	CSE351 Python Programming CSE335P Object-Oriented Programming CSE533 Design and Analysis of Algorithms (no lab) CSEDS531P Machine Learning and Deep Learning CSEIOT641E06 Quantum Computing CSEAM844E03 Generative AI

Section II (Detailed)

Note: In Section II, do not combine the tables. If a particular field table is not applicable, please leave it blank.

1. Course Code Change

SN	*Existing Semester, Code and Course Title*	*Proposed Code*	*Reasons for Change*	*Applicable to Batch*
	Batch 2022-26			
1.	VII, IOT741PE02, Ethical Hacking	IOT741E02	To match with ESPRO tool requirements	Batch 2022
2.	VIII, DS745PE03, Natural Language Processing	DS745E03	To match with ESPRO tool requirements	Batch 2022
3.	VIII, IT741PE05, Mobile Application Development	IT741E05	To match with ESPRO tool requirements	Batch 2022
4.	VIII, DS744E03, Applications of Data Science in Healthcare	DS744E03	To match with ESPRO tool requirements	Batch 2022
5.	VIII, IOT742PE02, Penetration Testing and Vulnerability Assessment	IOT742E02	To match with ESPRO tool requirements	Batch 2022
6.	VIII, DS742PE03, Predictive Analytics	DS742E03	To match with ESPRO tool requirements	Batch 2022
7.	VIII, AIML742PE04, Deep Learning	AIML742E04	To match with ESPRO tool requirements	Batch 2022

8.	VIII, IT742PE05, Game Programming	IT742E05	To match with ESPRO tool requirements	Batch 2022
9.	VIII, IOT842PE02, Cyber Forensics	IOT842E02	To match with ESPRO tool requirements	Batch 2022
10.	VIII, AIML844PE04, Natural Language Processing	AIML844E04	To match with ESPRO tool requirements	Batch 2022
11.	VIII, IT842PE05, DevOps	IT842E05	To match with ESPRO tool requirements	Batch 2022
Batch 2023-27				
12.	V, CSE533P, Design and Analysis of Algorithms	CSE533	Lab component Removed	Batch 2023-2027& 20204-2028
13.	V, CSEDS532P, Data Engineering and Visualization	CSEDS535P	To accommodate the changes done in the flow of the semester	Batch 2023-2027& 20204-2028
14.	V, CSE642PE01, Cloud Computing	CSE532P	Moved from Elective basket to Core	Batch 2023-2027& 20204-2028
15.	VI, CSEAM644PE04, AI Ethics	CSEAM845E03	Moved to VIII Semester	Batch 2023-2027& 20204-2028
16.	VI, CSEDS643E03, Generative AI	CSEAM844E03	Moved to VIII Semester	Batch 2023-2027& 20204-2028
17.	VI, CSE643E06, Quantum Computing	CSEIOT641E06	The order of the course changed	Batch 2023-2027& 20204-2028
18.	VII, CSE741PE01, Datacenter Virtualization	CSE641E01	Shifted to VI Semester	Batch 2023-2027& 20204-2028
19.	VII, CSEIOT641E02, Foundation to Blockchain Technology	IT641E02	Shifted to VI Semester	Batch 2023-2027& 20204-2028
20.	VII, CSEDS747PE03, Image and Video Analytics	CSEDS743E04	Shifted to PEC 3 elective basket	Batch 2023-2027& 20204-2028

21.	VII, CSE749E06, Foundations of Blockchain Technology	IT641E02	Shifted to PEC 1 elective basket	Batch 2023-2027& 20204-2028
22.	VII,CSEIOT741PE02, Ethical Hacking	IT742E02	Shifted to PEC 2 elective basket	Batch 2023-2027& 20204-2028
	Academic Year 2024-28:			
23.	III, CSEDS332P, Introduction to Data Science	CSEDS435P-Introduction to Data Science	To accommodate the prerequisite course	Batch 2024-2028
24.	IV, CSE452, Python Programming	CSE351 Python Programming	To accommodate the prerequisite course	Batch 2024-2028
25.	V, CSE642PE01, Cloud Computing	CSE532 Cloud Computing for Data Science	Moved from Elective basket to Core	Batch 2024-2028

2. Course Title Change

SN	*Existing Code and Course Title*	*Proposed Change*	*Reasons for Change*	*Applicable to Batch*
	Academic Year 2022-26: Nil			
	Academic Year 2023 - 27 & 2024 - 28:			
1.	CSEDS532P Programming for Data Science	CSE435P – Python Programming	Offered as a common course to all specialization	Batch 2024-2028
2.	CSEDS531P, Machine Learning	CSEDS531P-*Machine Learning and Deep Learning*	VI semester deep learning course is combined to reduce repeated content.	Batch 2023 – 2027 and 2024-2028
3.	CSE532P Cloud Computing	CSE532 Cloud Computing for Data Science	According to course content changes, the title of the course has changed	Batch 2023 – 2027 and 2024-2028
4.	CSEIOT741PE02, Ethical Hacking	IT742E02-Introduction to Ethical Hacking	Shifted to PEC 2 elective basket	Batch 2023 – 2027 and 2024-2028

5.	CSEIOT841PE02, Penetration Testing, and Vulnerability Assessment.	IT743E02, Vulnerability Assessment and Testing	To maintain Uniformity in the naming	Batch 2023 – 2027 and 2024-2028
6.	CSEDS784, Project Work	CSEDS784, Project Work - I	To showcase the course continuity and naming convention	Batch 2023 – 2027 and 2024-2028
7.	CSEDS885, Project Work	CSEDS885, Project Work - II	To showcase the course continuity and naming convention	Batch 2023 – 2027 and 2024-2028

3. Course Outcome Change

SN	*Existing Code and Course Title*	*Proposed Change*	*Reasons for Change (Kindly justify using the programme outcomes)*	*Applicable to Batch*
1.	CSEDS531P, Machine Learning	CSEDS531P-*Machine Learning and Deep Learning*	According to CO levels , COs are changed	Batch 2023-2027 &Batch 2024-2028
2.	CSEIOT741PE02, Ethical Hacking	IT742E02 Introduction to Ethical Hacking	According to course content	Batch 2023-2027 &Batch 2024-2028
3.	CSE784, Capstone Project	CSEDS784Project Work I	To main the Sequence of the name	Batch 2023-2027 &Batch 2024-2028
4.	CSEDS885, Project Work	CSEDS885 Project Work II	To main the Sequence of the name	Batch 2023-2027 &Batch 2024-2028

4. Semester Change

SN	*Existing Semester Details with Course Code*	*Proposed Change in Semester*	*Reasons for Change*	*Applicable to Batch*
	III, CSEDS332P	IV Semester	To full fill the prerequisites	Batch 2024 - 2028

	IV, CSE435P	III Semester	To full fill the prerequisites	Batch 2023-2027 and 2024 - 2028
	VI, CSEAM644PE04	VIII Semester	To maintain the order of the electives	Batch 2023-2027 and 2024 - 2028
	VI, CSEDS643E03	VIII Semester	To maintain the order of the electives	Batch 2023-2027 and 2024 - 2028
	VII,CSE741PE01	VI Semester	To maintain the order of the electives	Batch 2023-2027 and 2024 - 2028
	VII, CSEIOT641E02	VI Semester	To maintain the order of the electives	Batch 2023-2027 and 2024 - 2028
	VII, CSE749E06	VI Semester	To maintain the order of the electives	Batch 2023-2027 and 2024 - 2028
	VIII, CSE841E01	VII Semester	To maintain the order of the electives	Batch 2023-2027 and 2024 - 2028
	VIII, CSEIOT841PE02,	VII Semester	To maintain the order of the electives	Batch 2023-2027 and 2024 - 2028
	VIII, CSEAM843PE04	VII Semester	To maintain the order of the electives	Batch 2023-2027 and 2024 - 2028

5. Credits Change

SN	*Existing Credit Details with Course Codes*	*Proposed Credit Change*	*Reasons for Change*	*Applicable to Batch*
01	*3(2+1), CSEDS531P*	*4 Credits (3+1)*	*Concepts of Deep Learning is added.*	*Batch 2023, 2024*
02	*3+1, CSE533*	*3 Credits*	*The lab component is removed*	*Batch 2023, 2024*

03	*2 +1, CSE642PE01*	*4 Credits (3+1)*	*Moved from elective basket to core*	*Batch 2023*

6. Marks Change

SN	*Existing Code and Course*	*Existing Marks Details*	*Proposed Marks Change*	*Reasons for Change*	*Applicable to Batch*
1	CSE641E07 Extended Realities	50	100	Change in credit and elective basket	2024-2028

7. CIA Pattern

SN	*Existing Code and Course*	*Existing Details*	*Proposed Change*	*Reasons for Change*	*Applicable to Batch*
1.	CSE533P Design and analysis of algorithms	CIA -70 ESE - 30 Theory + practical	CIA -50 ESE -50 converted theory +practical to only theory	Credit change from 4 to 3	2024-2028, 2023-2027
2.	CSE641PE01 Datacenter Virtualization	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory	Follow equality in elective basket	2024-2028, 2023-2027

3.	CSE351 Extended Realities	Practical	Theory	Change in credit and elective basket	2024-2028, 2023-2027
4.	CSEIOT741PE0 Ethical Hacking	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2024-2028, 2023-2027, 2022-2026
5.	CSEAM843PE04 Computer Vision	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2024-2028, 2023-2027
6.	CSEDS743PE0 3 Data Modeling and Visualization.	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2024-2028, 2023-2027
7.	CSEIOT742P E02 Penetration Testing and Vulnerability Assessment	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2024-2028, 2023-2027
8.	CSEDS744PE03 Text and Speech Analysis	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory	Follow same credit distribution in elective basket	2024-2028, 2023-2027

			Theory		
9.	CS743E02 Ethical Hacking (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2022-2026
10.	CSEDS747PE03 Image and Video Analytics (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2022-2026
11.	CS743E02 Penetration Testing and Vulnerability Assessment (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
12.	CSEDS745PE03 Natural Language Processing (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
13.					
14.	IT743PE05, Mobile Application Development (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026

15.	CSEIOT842PE02Cyber Forenscis(2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
16.	IT742E05 Game Programming	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
17.	IT843PE05 DevOps	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
18.					

8. ESE Pattern

SN	*Existing Code and Course*	*Existing Details*	*Proposed Change*	*Reasons for Change*	*Applicable to Batch*

1.	CSE531P Artificial Intelligence and Machine Learning	CIA - 50 ESE - 50	CIA -70 ESE - 30 Question paper setting for ESE is 100 marks	Credit change from 3 to 4 credit	2024-2028, 2023-2027
2.	CSE632P Design and analysis of algorithms	CIA -70 ESE - 30 Theory + practical	CIA -50 ESE -50 converted theory +practical to only theory	Credit change from 4 to 3	2024-2028, 2023-2027
3.	IT534P Data Warehousing and Data Mining	CIA - 50 ESE - 50 Theory + practical	CIA -70 ESE - 30 Question paper setting for ESE is 100 marks Theory + practical	Credit change from 3 to 4 credit	2024-2028, 2023-2027
4.	CSE641PE01 Datacenter Virtualization	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory	Follow equality in elective basket	2024-2028, 2023-2027
5.	CSE351 Extended Realities	Practical	Theory	Change to elective basket	2024-2028, 2023-2027
6.	CSEIOT741PE0 Ethical Hacking	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2024-2028, 2023-2027, 2022-2026
7.	CSEAM843PE04 Computer Vision	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50	Follow same credit distribution in elective basket	2024-2028, 2023-2027

			Question paper setting for ESE is 100 marks Only theory Theory		
8.	CSEDS743PE0 3 Data Modeling and Visualization.	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2024-2028, 2023-2027
9.	CSEIOT742P E02 Penetration Testing and Vulnerability Assessment	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2024-2028, 2023-2027
10.	CSEIOT744PE02 Web Application Security	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2024-2028, 2023-2027
11.	CSEDS744PE03 Text and Speech Analysis	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2024-2028, 2023-2027
12.	CS743E02 Ethical Hacking (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50	Follow same credit distribution in elective basket	2022-2026

			Question paper setting for ESE is 100 marks Only theory Theory		
13.	DS741PE03 Big Data Analytics	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2022-2026
14.	CS743E06 Image and Video Analytics (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2022-2026
15.	CS744E03 Deep Learning (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2022-2026
16.	CS743E02 Penetration Testing and Vulnerability Assessment (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
17.	CS743E03 Business	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50	Follow common credit distribution in elective basket	2022-2026

	Intelligence and Analytics(2+1)		Question paper setting for ESE is 100 marks Only theory Theory		
18.	CS743E04 Natural Language Processing (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
19.	CS743E05 Mobile Application Development (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
20.	CS744E02 Cyber Forenscis(2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
21.	CS744E03 Data Modeling and Visualization	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
22.	CS744E04 Game Programming	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50	Follow common credit distribution in elective basket	2022-2026

			Question paper setting for ESE is 100 marks Only theory Theory		
23.	CS846E02 Mobile Forensics	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
24.	CS846E05 DevOps	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
25.	CS846E07 Industrial IoT 4.0	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026

9. Course Type Theory/Practical

SN	*Existing Code and Course*	*Existing Details*	*Proposed Change*	*Reasons for Change*	*Applicable to Batch*
1.	CSE632P Design and analysis of algorithms	CIA -70 ESE - 30 Theory + practical	CIA -50 ESE -50 converted theory +practical to only theory	Credit change from 4 to 3	2024-2028, 2023-2027

2.	CSE641PE01 Datacenter Virtualization	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE to be 100 marks Only theory	Follow equality in elective basket	2024-2028, 2023-2027
3.	CSE351 Extended Realities	Practical	Theory	Change to elective basket	2024-2028, 2023-2027
4.	CSEIOT741PE0 Ethical Hacking	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE to be 100 marks Only theory Theory	Follow same credit distribution in elective basket	2024-2028, 2023-2027, 2022-2026
5.	CSEAM843PE04 Computer Vision	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE o be 100 marks Only theory Theory	Follow same credit distribution in elective basket	2024-2028, 2023-2027
6.	CSEIOT742P E02 Penetration Testing and Vulnerability Assessment	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE to be 100 marks Only theory Theory	Follow same credit distribution in elective basket	2024-2028, 2023-2027
7.	CSEDS744PE03 Text and Speech Analysis	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE to be 100 marks Only theory Theory	Follow same credit distribution in elective basket	2024-2028, 2023-2027
8.	CS743E02 Ethical Hacking (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE to be 100 marks Only theory Theory	Follow same credit distribution in elective basket	2022-2026
9.	CS743E06 Image and Video Analytics (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE to be 100 marks	Follow same credit distribution in elective basket	2022-2026

			Only theory Theory		
10	CS744E03 Deep Learning (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE to be 100 marks Only theory Theory	Follow same credit distribution in elective basket	2022-2026
11.	CS743E02 Penetration Testing and Vulnerability Assessment (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE to be 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
12.	CS743E04 Natural Language Processing (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE to be 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
13.	CS743E05 Mobile Application Development (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE to be 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
14.	CS744E02 Cyber Forenscis(2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE to be 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
15.	CS744E04 Game Programming	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE to be 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
16.	CS846E02 Mobile Forensics	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50	Follow common credit distribution in elective basket	2022-2026

			Question paper setting for ESE to be 100 marks Only theory Theory		
17.	CS846E05 DevOps	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE to be 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026

Note: Please enclose the Programme structure along with the syllabus of the courses with changes.

Chairperson, BOS
Date: 2/4/25

Secretary, BOS
Date 2/4/25

Dean
Date: 2/4/25

Registrar
Date:

Verified and entered in the Knowledge Pro/ERP
Name:
Date:
Signature:

CHRIST
(DEEMED TO BE UNIVERSITY)
BANGALORE, INDIA

Format for Submitting Changes in Curriculum

School: School of Engineering and Technology
Department: Computer Science and Engineering
Programme: B.Tech – Computer Science and Engineering (IOT)

Section I (Summary)

Table 1: The summary sheet of curriculum/a changes
Note: For Table 1 please provide only basic/essential information of changes as mentioned in the column heads. Do not elaborate.

SN	Particulars I: Change in	Indicate "Yes"/ "No"	Particulars II	Brief Detail (if changes are incorporated)
1	Course Code/s	Yes	For Batch 2022-2026 - **09**	IOT742E02 Penetration Testing and Vulnerability Assessment DS741E03 Big Data Analytics AIML743E04 Natural Language Processing IT741E05 Mobile Application Development IOT842E02 Cyber Forensics DS841E03 Data Modeling and Visualization AIML842E04 Computer Vision IT841E05 Game Programming
		Yes	Common changes for Batch 2023-2027, 2024-2028 -**10**	CSE533 Design and Analysis of Algorithms CSEIOT632P Cloud Computing for IOT CSEIOT641E06 Quantum Computing CSEAM742E03 Computer Vision CSEAM743E03 Soft Computing CSE844E01 Software Defined Networks CSEAM844E03 Generative AI CSEIOT844E05 Designing smart cities CSEAM845E03 AI Ethics IT844E06 Text and Speech Analysis IT742E02 Introduction to Ethical Hacking
			For Batch 2024-2028 **4**	VI, CSE641E07 Extended Realities III, CSE351 Python Programming IV, MA431 Probability and Statistics IV, HS422 Entrepreneurship & IPR
2	Course Title/s		2022-2026	Nil

			common changes for batch 2024-2028, 2023-2027	IT742E02 Introduction to Ethical Hacking CSEIOT632P Cloud Computing for IOT CSEIOT784 Project Work I IT844E06 Text and Speech Analysis
3.	Course Outcome	Yes	2022-2026	NIL
			For the batches 2023- 2027 and 2024-2028	CSE535 Cryptography Network Security (CO1,CO3,CO4,CO5)
			2024-2028	CSE351 Python Programming (CO1, CO2)
4	Semester/s	Yes	2022-2026	VII Semester Software Engineering
		Yes	2023-2027	VI, CSE641E01 Data Centre Virtualization VI, CSEDS641E04 Financial Data Analytics VII,CSEAM742E03 Computer Vision VII, CSEAM743E03 Soft Computing VIII,CSE844E01 Software Defined Networks VIII, IT844E02 Web Application Security VIII, CSEAM844E03 Generative AI VIII, IT844E06 Text and Speech Analysis
		Yes	2024-2028	III, CSE351 Python Programming VI, CSE641E07 Extended Realities IV, HS422 Entrepreneurship & IPR VI, CSE631P Foundations of Data Science VI, IT632P Data Warehousing and Data Mining V, CSE534P Internet and Web Programming VI, CSEDS641E04 Financial Data Analytics VII, CSEAM742E03 Computer Vision VII, CSEAM743E03 Soft Computing VIII, CSE844E01 Software Defined Networks VIII, IT844E02 Web Application Security VIII, CSEAM844E03 Generative AI VIII, IT844E06 Text and Speech Analysis
5	Credits	Yes	2024-2028	CSE531P Artificial Intelligence and Machine Learning (from 2+1 credits to 3+1 Credits) CSE533 Design and Analysis of Algorithms (2+1 changed to 3 Credit theory paper) CSE641E01 Data Centre Virtualization
		N0	2023-2027	CSE533 Design and Analysis of Algorithms (2+1 changed to 3 Credit theory paper)

				CSE531P Artificial Intelligence and Machine Learning (from 2+1 credits to 3+1 Credits) CSE641E01 Data Centre Virtualization IT742E02 Introduction to Ethical Hacking
		N0	2022-2026	Nil
6	Marks	Yes	2024-2028	CSE641E07 Extended Realities (from 50 to 100)
		N0	2023-2027	Nil
		N0	2022-2026	Nil
7	CIA Pattern	Yes	2022-2026	IOT742E02 Penetration Testing and Vulnerability Assessment DS741E03 Big Data Analytics AIML743E04 Natural Language Processing IT741E05 Mobile Application Development IOT842E02 Cyber Forensics DS841E03 Data Modeling and Visualization AIML842E04 Computer Vision IT841E05 Game Programming CS845E06 Foundations of AR/VR
		Yes	For the batch 2023-2027 and 2024-2028	CSE533 Design and Analysis of Algorithms CSEIOT632P Cloud Computing for IOT CSEIOT641E06 Quantum Computing CSEAM742E03 Computer Vision CSEAM743E03 Soft Computing CSE844E01 Software Defined Networks CSEAM844E03 Generative AI CSEIOT844E05 Designing smart cities CSEAM845E03 AI Ethics IT844E06 Text and Speech Analysis IT742E02 Introduction to Ethical Hacking
		Yes	For the batch 2024-2028	
8	ESE Pattern		2022-2026	Question paper setting for ESE to be 100 marks Only theory IOT742E02 Penetration Testing and Vulnerability Assessment DS741E03 Big Data Analytics AIML743E04 Natural Language Processing IT741E05 Mobile Application Development IOT842E02 Cyber Forensics DS841E03 Data Modeling and Visualization AIML842E04 Computer Vision

				IT841E05 Game Programming CS845E06 Foundations of AR/VR CSE641E01 Data Centre Virtualization IT742E02 Introduction to Ethical Hacking
			For the batch 2023-2027 and 2024-2028	CSE533 Design and Analysis of Algorithms CSEIOT632P Cloud Computing for IOT CSEIOT641E06 Quantum Computing CSEAM742E03 Computer Vision CSEAM743E03 Soft Computing CSE844E01 Software Defined Networks CSEAM844E03 Generative AI CSEIOT844E05 Designing smart cities CSEAM845E03 AI Ethics IT844E06 Text and Speech Analysis
			2024-2028	
9	Course Type: Theory/Practical		Batch 2022-2026	IOT742E02 Penetration Testing and Vulnerability Assessment DS741E03 Big Data Analytics AIML743E04 Natural Language Processing IT741E05 Mobile Application Development IOT842E02 Cyber Forensics DS841E03 Data Modeling and Visualization AIML842E04 Computer Vision IT841E05 Game Programming CS845E06 Foundations of AR/VR
			2023-2027	IT844E06 Text and Speech Analysis (Change in credit structure) IT844E02 Web Application Security (Change in credit structure) IT743E02 Vulnerability Assessment and Testing (Change in credit structure) CSEDS742E04 Data Modeling and Visualization (Change in credit structure) CSEAM742E03 Computer Vision(Change in credit structure) IT742E02 Introduction to Ethical Hacking(Change in credit structure) CSE641E01 Datacenter Virtualization(Change in credit structure) IT632P Data Warehousing and Data Mining(Change in credit structure) CSE533 Design and Analysis of Algorithms(Change in credit structure) CSE531P Artificial Intelligence and Machine Learning (Change in credit structure)

			2024-2028	IT844E06 Text and Speech Analysis (Change in credit structure) IT844E02 Web Application Security (Change in credit structure) IT743E02 Vulnerability Assessment and Testing (Change in credit structure) CSEDS742E04 Data Modeling and Visualization(Change in credit structure) CSEAM742E03 Computer Vision(Change in credit structure) IT742E02 Introduction to Ethical Hacking(Change in credit structure) CSE641E01 Datacenter Virtualization(Change in credit structure) IT632P Data Warehousing and Data Mining(Change in credit structure) CSE533 Design and Analysis of Algorithms(Change in credit structure) CSE531P Artificial Intelligence and Machine Learning (Change in credit structure) CSE641E07 Extended Realities
10	Syllabus	**YES**	Mention the total % of syllabus change made in the programme (support document - Calculation of Syllabus change to be attached as an annexure) Batch 2022: nil Batch 2023 & Batch 2024: 4	CSEIOT631P Advance Internet of Things CSEIOT331 Digital Systems And Computer Architecture IOT532 Cryptography and Network Security CSE533 Design and Analysis of Algorithms

Section II (Detailed)

Note: In Section II, do not combine the tables. If a particular field table is not applicable, please leave it blank.

1. Course Code Change

SN	*Existing Semester, Code and Course Title*	*Proposed Code*	*Reasons for Change*	*Applicable to Batch*
	V CSE533P Design and Analysis	V, CSE533 Design and Analysis of Algorithms	Change in Credit	Batch : 2023-2027 , 2024-2028
	IV, CSE435 Python Programming	CSE351 Python Programming	Change in semester	Batch : 2024-2028
	CSE336P Extended Realities	CSE351 Extended Realities	Change in course code	Batch : 2023-2027
	CSE351 Extended Realities	CSE641E07 Extended Realities	Change in Semester - moved to elective basket	Batch 2024-2028
	IV CSE431 Probability and Statistics	MA431 Probability and Statistics	The Science and Humanities department is offering	Batch 2024-2028
	III HS32 1 Entrepreneurship & IPR	HS422 Entrepreneurship & IPR	Change in semester	Batch 2024-2028
	VI, CSE633 P Internet and Web Programming	CSE534P Internet and Web Programming	Change in semester	Batch 2024-2028, Batch 2023-2027

	VI, CSEIOT641E02 , Foundations of Blockchain Technology	IT641E02 Foundations of Blockchain Technology	Programme wise weightage	Batch 2024-2028, Batch 2023-2027
	CSEDS841E03	CSEDS641E04 Financial Data Analytics	Change in Elective Basket	Batch 2024-2028, Batch 2023-2027
	VI , CSE643E06 Quantum Computing	CSEIOT641E06 Quantum Computing	Change in Elective Basket	Batch 2024-2028, Batch 2023-2027
	III, ESC8 (CSE351), Extended Realities	CSE641E07 Extended Realities	Change from core to elective and changes in credit from 2 to 3	Batch 2024-2028,
	VII, CSEIOT741PE02 Ethical Hacking	IT742E02 Introduction to Ethical Hacking	Change in Elective, change in Subject name	Batch 2024-2028, Batch 2023-2027
	VIII, CSEAM843PE04 Computer Vision	CSEAM742E03 Computer Vision	Change in Elective basket	Batch 2024-2028, Batch 2023-2027
	VII CSEDS743PE03 Data Modeling and Visualization	CSEDS742E04 Data Modeling and Visualization	Change of elective basket	Batch 2024-2028, Batch 2023-2027

	VII CSEIOT742PE02 - Penetration Testing and Vulnerability Assessment	IT743E02 Vulnerability Assessment and Testing	Change in Elective Basket	Batch 2024-2028, Batch 2023-2027
	VI CSEAM641E04 Soft computing	CSEAM743E03 Soft Computing	Change in Elective Basket	Batch 2024-2028, Batch 2023-2027
	VII CSEAM748E04 Image and Video Analytics	CSEDS743E04 Image and Video Analytics	Change in Elective Basket	Batch 2024-2028, Batch 2023-2027
	VII CSE743E01 Software Defined Networks	CSE844E01 Software Defined Networks	Change in Elective Basket	Batch 2024-2028, Batch 2023-2027
	VII CSEIOT744PE02 Web Application Security	IT844E02 Web Application Security	Change in Elective Basket	Batch 2024-2028, Batch 2023-2027
	VII CSE745E06 Generative AI	CSEAM844E03 Generative AI	Change in Elective basket	Batch 2024-2028, Batch 2023-2027
	VIII, CSEDS744PE03, Text and Speeching Analysis	IT844E06 Text and Speech Analysis	Change in Semester	Batch 2024-2028, Batch 2023-2027
	VIII, CSEAM844E04 Optimization Techniques	CSEDS845E04 Optimization Algorithms	Change in elective basket	Batch 2024-2028, Batch 2023-2027

	VII , CS743E04 Soft Computing	AIML741E04 Soft Computing	Change in elective basket	Batch 2022-2026
	VII, CS743E03 Big Data Analytics (2+1)	DS741PE03 Big Data Analytics	Change in elective basket	Batch 2022-2026
	VII, CS743E06 Image and Video Analytics (2+1)	AIML7445E04 Image and Video Analytics	Change in elective basket	Batch 2022-2026
	CS743E07 Wearable Computing	CS745E06 Wearable Computing	Change in elective basket	Batch 2022-2026
	CS744E01 Infrastructure Solutions on Cloud	CS742E01 Infrastructure Solutions on Cloud	Change in elective basket	Batch 2023-2027
	VII CS744E02 Penetration Testing and Vulnerability Assessment (2+1)	IOT742PE02 Penetration Testing and Vulnerability Assessment	Change in elective basket	Batch 2023-2027
	CS744E05 Game Programming(2+1)	IT742PE05 Game Programming	Change in elective basket	Batch 2022-2026
	CS743E01 Software Defined Networks	CS745E01 Software Defined Networks	Change in elective basket	Batch 2022-2026
	CS745E02 Cyber Forensics(2+1)	IOT743PE02 Cyber Forensics	Change in elective basket	Batch 2022-2026
	CS745E03 Business Intelligence and Analytics (2+1)	DS743PE03 Business Intelligence and Analytics	Change in elective basket	Batch 2022-2026
	CS745E04 Natural Language Processing (2+1)	AIML743PE04 Natural	Change in elective basket	Batch 2022-2026

		Language Processing		
	CS745E05 Software Testing (2+1)	IT742PE06 Software Testing	Change in elective basket	Batch 2022-2026
	CS745E07 Foundation to AR/VR	CS746E06 Foundations of AR/VR	Change in elective basket	Batch 2022-2026
	CS846E01 Storage Technologies	CS843E01 Storage Technologies	Change in elective basket	Batch 2023-2027
	CS846E02 Mobile Forensics(2+1)	IOT843PE02 Mobile Forensics	Change in elective basket	Batch 2022-2026
	CS846E03 Data Modelling	DS841PE03 Data Modelling and Visualization	Change in elective basket	Batch 2022-2026
	VIII CS846E04 Computer Vision	AIML842E04 Computer Vision	Change in elective basket	Batch 2022-2026

2. Course Title Change

SN	*Existing Code and Course Title*	*Proposed Change*	*Reasons for Change*	*Applicable to Batch*
1.	CSE78 4 Capstone Project	CSE784 Project Work I	According to stakeholders feedback	2023-2027
2.	Text and Speech analysis	IT844E06 Text and Speeching Analysis	According to stakeholders feedback	2024-2028,2023-2027

3.	Cloud computing for IOT	CSEIOT632P Cloud Computing for IOT	To make it more programme Specific	2024-2028,2023-2027

3. Course Outcome Change

SN	*Existing Code and Course Title*	*Proposed Change*	*Reasons for Change (Kindly justify using the programme outcomes)*	*Applicable to Batch*
1.	*CSE351 Python Programming*	*CSE351 Python Programming (CO1, CO2)*	Action verbs are updated according to complexity of the course	2024-2028
2.	*CSE434P Computer Networks*	*CSE434P Computer Networks (CO1, CO2,CO3,CO4,CO5)*	Action verbs are updated according to complexity of the course	2023- 2028, 2024-2028
3.	*CSE535 Cryptography Network Security*	*CSE535 Cryptography Network Security (CO1,CO3,CO4,CO5)*	Action verbs are updated according to complexity of the course	2023- 2028, 2024-2028

4. Semester Change

SN	*Existing Semester Details with Course Code*	*Proposed Change in Semester*	*Reasons for Change*	*Applicable to Batch*
	VI CSE632 P	V	According to prerequisite and changes in elective basket	2024-2028, 2023-2027
1.	VI CSE633 P	V	According to prerequisite and changes in elective basket	2024-2028, 2023-2027
2.	VII CSEDS744PE 03	VIII	According to prerequisite and changes in elective basket	2024-2028, 2023-2027, 2022-2026
3.	IV , CSE435P-	III	According to prerequisite and changes in elective basket	2024-2028
4.	III, HS321	IV	According to prerequisite and changes in elective basket	2024-2028
5.	VI CSE632P	V	According to prerequisite and changes in elective basket	2024-2028, 2023-2027
6.	VCSE533P	VI	According to prerequisite and changes in elective basket	2024-2028, 2023-2027
7.	V CSE534P	VI	According to prerequisite and changes in elective basket	2024-2028, 2023-2027
8.	VI CSE633P	V	According to prerequisite and changes in elective basket	2024-2028, 2023-2027
9.	VIII, CSEDS841E03	VI	According to prerequisite and changes in elective basket	2024-2028, 2023-2027, 2022-2026
10	III ESC8 (CSE351)	VI	According to prerequisite and changes in elective basket	2024-2028

11	VIII CSEAM843PE04	VII	According to prerequisite and changes in elective basket	2024-2028, 2023-2027, 2022-2026
12	VI CSEAM641E04	VII	According to prerequisite and changes in elective basket	2024-2028, 2023-2027,
13	VII CSE743E01	VIII	According to prerequisite and changes in elective basket	2024-2028, 2023-2027, 2022-2026
14	VII CSEIOT744PE02	VIII	According to prerequisite and changes in elective basket	2024-2028, 2023-2027, 2022-2026
15	VII CSE745E06	VIII	According to prerequisite and changes in elective basket	2024-2028, 2023-2027, 2022-2026
16	VII CSEDS744PE03	VIII	According to prerequisite and changes in elective basket	2024-2028, 2023-2027, 2022-2026

5. Credits Change

SN	*Existing Credit Details with Course Codes*	*Proposed Credit Change*	*Reasons for Change*	*Applicable to Batch*
1	3, CSE531PArtificial Intelligence and Machine Learning	4	As per stakeholder feedback	2024-2028

6. Marks Change:

SN	*Existing Code and Course*	*Existing Marks Details*	*Proposed Marks Change*	*Reasons for Change*	*Applicable to Batch*
1	CSE641E07 Extended Realities	50	100	Change in credit and elective basket	2024-2028

7. CIA Pattern

SN	*Existing Code and Course*	*Existing Details*	*Proposed Change*	*Reasons for Change*	*Applicable to Batch*
1.	CSE531P Artificial Intelligence and Machine Learning	CIA - 50 ESE - 50	CIA -70 ESE - 30 Question paper setting for ESE is 100 marks	Credit change from 3 to 4 credit	2024-2028, 2023-2027
2.	CSE632P Design and analysis of algorithms	CIA -70 ESE - 30 Theory + practical	CIA -50 ESE -50 converted theory +practical to only theory	Credit change from 4 to 3	2024-2028, 2023-2027
3.	IT534P Data Warehousing and Data Mining	CIA - 50 ESE - 50 Theory + practical	CIA -70 ESE - 30 Question paper setting for ESE is 100 marks Theory + practical	Credit change from 3 to 4 credit	2024-2028, 2023-2027
4.	CSE641PE01 Datacenter Virtualization	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory	Follow equality in elective basket	2024-2028, 2023-2027
5.	CSE351 Extended Realities	Practical	Theory	Change in credit and elective basket	2024-2028, 2023-2027
6.	CSEIOT741PE0 Ethical Hacking	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory	Follow same credit distribution in elective basket	2024-2028, 2023-2027, 2022-2026

			Theory		
7.	CSEAM843PE04 Computer Vision	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2024-2028, 2023-2027
8.	CSEDS743PE0 3 Data Modeling and Visualization.	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2024-2028, 2023-2027
9.	CSEIOT742P E02 Penetration Testing and Vulnerability Assessment	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2024-2028, 2023-2027
10.	CSEIOT744PE02 Web Application Security	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2024-2028, 2023-2027
11.	CSEDS744PE03 Text and Speech	CIA -50 ESE - 50	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks	Follow same credit distribution in elective basket	2024-2028, 2023-2027

	Analysis	Theory + practical	Only theory Theory		
12.	CS743E02 Ethical Hacking (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2022-2026
13.	DS741PE03 Big Data Analytics	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2022-2026
14.	CS743E06 Image and Video Analytics (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2022-2026
15.	CS744E03 Deep Learning (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2022-2026
16.	CS743E02 Penetration Testing and Vulnerability Assessment (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026

17.	CS743E03 Business Intelligence and Analytics(2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
18.	CS743E04 Natural Language Processing (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
19.	CS743E05 Mobile Application Development (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
20. 4	CS744E02 Cyber Forenscis(2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
21.	CS744E03 Data Modeling and Visualization	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
22.	CS744E04 Game Programming	CIA -50	CIA -50 ESE - 50	Follow common credit	2022-2026

		ESE - 50 Theory + practical	Question paper setting for ESE is 100 marks Only theory Theory	distribution in elective basket	
23.	CS846E02 Mobile Forensics	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
24.	CS846E05 DevOps	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
25.	CS846E07 Industrial IoT 4.0	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026

8. ESE Pattern

SN	*Existing Code and Course*	*Existing Details*	*Proposed Change*	*Reasons for Change*	*Applicable to Batch*
1.	CSE531P Artificial Intelligence and Machine Learning	CIA - 50 ESE - 50	CIA -70 ESE - 30 Question paper setting for ESE is 100 marks	Credit change from 3 to 4 credit	2024-2028, 2023-2027

2.	CSE632P Design and analysis of algorithms	CIA -70 ESE - 30 Theory + practical	CIA -50 ESE -50 converted theory +practical to only theory	Credit change from 4 to 3	2024-2028, 2023-2027
3.	IT534P Data Warehousing and Data Mining	CIA - 50 ESE - 50 Theory + practical	CIA -70 ESE - 30 Question paper setting for ESE is 100 marks Theory + practical	Credit change from 3 to 4 credit	2024-2028, 2023-2027
4.	CSE641PE01 Datacenter Virtualization	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory	Follow equality in elective basket	2024-2028, 2023-2027
5.	CSE351 Extended Realities	Practical	Theory	Change to elective basket	2024-2028, 2023-2027
6.	CSEIOT741PE0 Ethical Hacking	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2024-2028, 2023-2027, 2022-2026
7.	CSEAM843PE04 Computer Vision	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2024-2028, 2023-2027
8.	CSEDS743PE0	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50	Follow same credit	2024-2028, 2023-2027

	3 Data Modeling and Visualization.		Question paper setting for ESE is 100 marks Only theory Theory	distribution in elective basket	
9.	CSEIOT742PE02 Penetration Testing and Vulnerability Assessment	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2024-2028, 2023-2027
10.	CSEIOT744PE02 Web Application Security	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2024-2028, 2023-2027
11.	CSEDS744PE03 Text and Speech Analysis	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2024-2028, 2023-2027
12.	CS743E02 Ethical Hacking (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2022-2026
13.	DS741PE03 Big Data Analytics	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks	Follow same credit distribution in elective basket	2022-2026

			Only theory Theory		
14.	CS743E06 Image and Video Analytics (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2022-2026
15.	CS744E03 Deep Learning (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2022-2026
16.	CS743E02 Penetration Testing and Vulnerability Assessment (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
17.	CS743E03 Business Intelligence and Analytics(2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
18.	CS743E04 Natural Language Processing (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026

19.	CS743E05 Mobile Application Development (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
20.	CS744E02 Cyber Forenscis(2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
21.	CS744E03 Data Modeling and Visualization	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
22.	CS744E04 Game Programming	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
23.	CS846E02 Mobile Forensics	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
24.	CS846E05 DevOps	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50	Follow common credit	2022-2026

			Question paper setting for ESE is 100 marks Only theory Theory	distribution in elective basket	
25.	CS846E07 Industrial IoT 4.0	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026

9. Course Type Theory/Practical

SN	*Existing Code and Course*	*Existing Details*	*Proposed Change*	*Reasons for Change*	*Applicable to Batch*
1.	CSE632P Design and analysis of algorithms	CIA -70 ESE - 30 Theory + practical	CIA -50 ESE -50 converted theory +practical to only theory	Credit change from 4 to 3	2024-2028, 2023-2027
2.	CSE741PE01 Data Centre Visualization	CIA -50 ESE - 50 Theory	CIA -50 ESE - 50 Question paper setting for ESE to be 100 marks Only theory	Follow equality in elective basket	2024-2028, 2023-2027
3.	CSE351 Extended Realities	Practical	Theory	Change to elective basket	2024-2028, 2023-2027
4.	AIML842E04 Computer Vision	CIA -50 ESE - 50 Theory	CIA -50 ESE - 50 Question paper setting for ESE to be 100 marks Only theory	Follow same credit distribution in elective basket	2024-2028, 2023-2027

			Theory		
5.	CSEDS743PE0 3 Data Modeling and Visualization.	CIA -50 ESE - 50 Theory	CIA -50 ESE - 50 Question paper setting for ESE to be 100 marks Only theory Theory	Follow same credit distribution in elective basket	2024-2028, 2023-2027
6.	CSEIOT742P E02 Penetration Testing and Vulnerability Assessment	CIA -50 ESE - 50 Theory	CIA -50 ESE - 50 Question paper setting for ESE to be 100 marks Only theory Theory	Follow same credit distribution in elective basket	2024-2028, 2023-2027
7.	CSEIOT744PE02 Web Application Security	CIA -50 ESE - 50 Theory	CIA -50 ESE - 50 Question paper setting for ESE to be 100 marks Only theory Theory	Follow same credit distribution in elective basket	2024-2028, 2023-2027
8.	CSEDS744PE03 Text and Speech Analysis	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE to be 100 marks Only theory Theory	Follow same credit distribution in elective basket	2024-2028, 2023-2027
9.	CS743E02 Ethical Hacking (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE to be 100 marks Only theory Theory	Follow same credit distribution in elective basket	2022-2026

10.	DS741PE03 Big Data Analytics	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE to be 100 marks Only theory Theory	Follow same credit distribution in elective basket	2022-2026
11.	CS743E06 Image and Video Analytics (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE to be 100 marks Only theory Theory	Follow same credit distribution in elective basket	2022-2026
12.	CS744E03 Deep Learning (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE to be 100 marks Only theory Theory	Follow same credit distribution in elective basket	2022-2026
13.	CS743E02 Penetration Testing and Vulnerability Assessment (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE to be 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
14.	CS743E03 Business Intelligence and Analytics(2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE to be 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
15.	CS743E04 Natural Language Processing (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50	Follow common credit distribution in elective basket	2022-2026

			Question paper setting for ESE to be 100 marks Only theory Theory		
16.	CS743E05 Mobile Application Development (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE to be 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
17.	CS744E02 Cyber Forensics(2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE to be 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
18.	CS744E03 Data Modeling and Visualization	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE to be 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
19.	CS744E04 Game Programming	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE to be 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026

Note: Please enclose the Programme structure along with the syllabus of the courses with changes.

CHRIST
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BANGALORE, INDIA

Chairperson, BOS
Date: 2/4/25

Secretary, BOS
Date 2/4/25

Dean
Date: 2/4/25

Registrar
Date:

Verified and entered in the Knowledge Pro/ERP
Name:
Date:
Signature:

CHRIST
(DEEMED TO BE UNIVERSITY)
BANGALORE, INDIA

Format for Submitting Changes in Curriculum

School: School of Engineering and Technology
Department: Computer Science and Engineering
Programme: B.Tech - Information Technology

Section I (Summary)

Table 1: The summary sheet of curriculum/a changes
Note: For Table 1 please provide only basic/essential information of changes as mentioned in the column heads. Do not elaborate.

SN	Particulars I: Change in	Indicate "Yes"/ "No"	Particulars II	Brief Detail (if changes are incorporated)
1	Course Code/s		For Batch 2022-2026	IOT741E02, Ethical Hacking DS741E03 Big Data Analytics AIML745E04 Image and Video Analytics IOT742P02 Penetration Testing and Vulnerability Assessment AIML742E04 Deep Learning IT742E05 Game Programming IOT743E02 Cyber Forensics DS743E03 Business Intelligence and Analytics AIML743E04 Natural Language Processing IT742E06 Software Testing IOT843E02 Mobile Forensics DS841E03 Data Modelling and Visualization IT842E05 DevOps CS846E06 Indutrial IoT 4.0
		yes	Common changes for Batch 2023-2027, 2024-2028	CSE533 Design and Analysis of Algorithms CSE631P Foundations of Data Science IT632P Data Warehousing and Data Mining CSE534P Internet and Web Programming IT641E02 Foundations of Blockchain Technology CSEDS641E04 Financial Data Analytics CSEIOT641E06 Quantum Computing IT742E02 Introduction to Ethical Hacking CSEAM742E03 Computer Vision

				CSEDS742E04 Data Modeling and Visualization IT743E02 Vulnerability Assessment and Testing CSEAM743E03 Soft Computing CSEDS743E04 Image and Video Analytics CSE844E01 Software Defined Networks IT844E02 Web Application Security CSEAM844E03 Generative AI IT844E06 Text and Speech Analysis CSEDS845E04 Optimization Algorithms
			For Batch 2024-2028	VI, CSE641E07 Extended Realities III, CSE351 Python Programming IV, MA431 Probability and Statistics IV, HS422 Entrepreneurship & IPR
2	Course Title/s	Yes	2022-2026	Nil
		Yes	2023-2027	CSE784 Project Work I
			common changes for batch 2024-2028, 2023-2027	IT742E02 Introduction to Ethical Hacking
3.	Course Outcome	Yes	2022-2026	NIL
			For the batches 2023- 2027 and 2024-2028	*CSE434P Computer Networks (CO1, CO2,CO3,CO4,CO5)* *CSE535 Cryptography Network Security (CO1,CO3,CO4,CO5)*
			2024-2028	*CSE351 Python Programming (CO1, CO2)*
4	Semester/s	NO	2022-2026	*NIL*
		Yes	2023-2027	V, CSE533 Design and Analysis of Algorithms VI. CSE631P Foundations of Data Science VI, IT632P Data Warehousing and Data Mining V, CSE534P Internet and Web Programming VI, CSEDS641E04 Financial Data Analytics VII,CSEAM742E03 Computer Vision VII, CSEAM743E03 Soft Computing VIII,CSE844E01 Software Defined Networks VIII, IT844E02 Web Application Security VIII, CSEAM844E03 Generative AI

				VIII, IT844E06 Text and Speech Analysis
		Yes	2024-2028	III, CSE351 Python Programming VI, MA431 Probability and Statistics VI, CSE641E07 Extended Realities IV, HS422 Entrepreneurship & IPR V, CSE533 Design and Analysis of Algorithms VI, CSE631P Foundations of Data Science VI, IT632P Data Warehousing and Data Mining V, CSE534P Internet and Web Programming VI, CSEDS641E04 Financial Data Analytics VII, CSEAM742E03 Computer Vision VII, CSEAM743E03 Soft Computing VIII, CSE844E01 Software Defined Networks VIII, IT844E02 Web Application Security VIII, CSEAM844E03 Generative AI VIII, IT844E06 Text and Speech Analysis
5	Credits	Yes	2024-2028	CSE531P Artificial Intelligence and Machine Learning (from 3 credits to 4 Credits)
		No	2023-2027	Nil
		No	2022-2026	Nil
6	Marks	Yes	2024-2028	CSE641E07 Extended Realities (from 50 to 100)
		No	2023-2027	Nil
		No	2022-2026	Nil
7	CIA Pattern	Yes	2022-2026	DS741PE03 Big Data Analytics IOT741PE02 Ethical Hacking IOT742P02 Penetration Testing and Vulnerability Assessment AIML742E04 Deep Learning IT742E05 Game Programming IOT743E02 Cyber Forensics DS743E03 Business Intelligence and Analytics AIML743E04 Natural Language Processing IT742E06 Software Testing IOT843E02 Mobile Forensics DS841E03 Data Modelling and Visualization IT842E05 DevOps CS846E06 Indutrial IoT 4.0

		Yes	For the batch 2023-2027 and 2024-2028	IT844E06 Text and Speech Analysis (Change in credit structure) IT844E02 Web Application Security (Change in credit structure) IT743E02 Vulnerability Assessment and Testing (Change in credit structure) CSEDS742E04 Data Modeling and Visualization(Change in credit structure) CSEAM742E03 Computer Vision(Change in credit structure) IT742E02 Introduction to Ethical Hacking(Change in credit structure) CSE641E01 Datacenter Virtualization(Change in credit structure) IT632P Data Warehousing and Data Mining(Change in credit structure) CSE533 Design and Analysis of Algorithms(Change in credit structure) CSE531P Artificial Intelligence and Machine Learning (Change in credit structure)
		Yes	For the batch 2024-2028	CSE641E07 Extended Realities (Change in credit structure)
8	ESE Pattern	Yes	2022-2026	CS846PE06 Industrial IoT 4.0 (CIA -50 ESE - 50 Question paper setting for ESE to be 100 marks Only theory Theory) IT842PE05 DevOps IOT843PE02 Mobile Forensics IT742PE05 Game Programming DS841PE03 Data Modelling and Visualization IOT743PE02 Cyber Forensics IT741PE05 Mobile Application Development AIML743PE04 Natural Language Processing DS743PE03 Business Intelligence and Analytics IOT742PE02 Penetration Testing and Vulnerability Assessment AIML742PE04 Deep Learning AIML7445E04 Image and Video Analytics DS741PE03 Big Data Analytics

				IOT741PE02 Ethical Hacking
		Yes	For the batch 2023-2027 and 2024-2028	IT844E06 Text and Speech Analysis (Change in credit structure) IT844E02 Web Application Security (Change in credit structure) IT743E02 Vulnerability Assessment and Testing (Change in credit structure) CSEDS742E04 Data Modeling and Visualization(Change in credit structure) CSEAM742E03 Computer Vision(Change in credit structure) IT742E02 Introduction to Ethical Hacking(Change in credit structure) CSE641E01 Datacenter Virtualization(Change in credit structure) IT632P Data Warehousing and Data Mining(Change in credit structure) CSE533 Design and Analysis of Algorithms(Change in credit structure) CSE531P Artificial Intelligence and Machine Learning (Change in credit structure)
9	Course Type Theory/Practical	Yes	Batch 2022-2026	CS846PE06 Industrial IoT 4.0 (CIA -50 ESE – 50) IT842PE05 DevOps (CIA -50 ESE – 50) IOT843PE02 Mobile Forensics(CIA -50 ESE – 50) IT742PE05 Game Programming (CIA -50 ESE – 50) DS841PE03 Data Modelling and Visualization (CIA -50 ESE – 50) IOT743PE02 Cyber Forensics (CIA -50 ESE – 50) IT741PE05 Mobile Application Development(CIA -50 ESE – 50) AIML743PE04 Natural Language Processing(CIA -50 ESE – 50) DS743PE03 Business Intelligence and Analytics(CIA -50 ESE – 50)

				IOT742PE02 Penetration Testing and Vulnerability Assessment (CIA -50 ESE – 50) AIML742PE04 Deep Learning(CIA -50 ESE – 50) AIML7445E04 Image and Video Analytics(CIA -50 ESE – 50) DS741PE03 Big Data Analytics(CIA -50 ESE – 50) IOT741PE02 Ethical Hacking(CIA -50 ESE – 50)
		Yes	2023-2027	IT844E06 Text and Speeching Analysis (Change in credit structure) IT844E02 Web Application Security (Change in credit structure) IT743E02 Vulnerability Assessment and Testing (Change in credit structure) CSEDS742E04 Data Modeling and Visualization(Change in credit structure) CSEAM742E03 Computer Vision(Change in credit structure) IOT741PE02 Ethical Hacking IT844E06 Text and Speeching Analysis (Change in credit structure) IT844E02 Web Application Security (Change in credit structure) IT743E02 Vulnerability Assessment and Testing (Change in credit structure) CSEDS742E04 Data Modeling and Visualization(Change in credit structure) CSEAM742E03 Computer Vision(Change in credit structure) IT742E02 Introduction to Ethical Hacking(Change in credit structure) CSE641E01 Datacenter Virtualization(Change in credit structure) IT632P Data Warehousing and Data Mining(Change in credit structure) CSE533 Design and Analysis of Algorithms(Change in credit structure) CSE531P Artificial Intelligence and Machine Learning (Change in credit structure)
		Yes	2024-2028	IT844E06 Text and Speeching Analysis (Change in credit structure)

				IT844E02 Web Application Security (Change in credit structure) IT743E02 Vulnerability Assessment and Testing (Change in credit structure) CSEDS742E04 Data Modeling and Visualization(Change in credit structure) CSEAM742E03 Computer Vision(Change in credit structure) IT742E02 Introduction to Ethical Hacking(Change in credit structure) CSE641E01 Datacenter Virtualization(Change in credit structure) IT632P Data Warehousing and Data Mining(Change in credit structure) CSE533 Design and Analysis of Algorithms(Change in credit structure) CSE531P Artificial Intelligence and Machine Learning (Change in credit structure) CSE641E07 Extended Realities
10	Syllabus Revision	No	2022-2026	Nil
		Yes	2023-2024	Total Number of Subjects (including Elective) : 83 Total number of subjects change in syllabus : 04 Change in syllabus in % : 4.81%
		Yes	2024-2028	Total Number of Subjects (including Elective) : 83 Total number of subjects change in syllabus : 04 Change in syllabus in % : 4.81%

Section II (Detailed)

Note:In Section II, do not combine the tables. If a particular field table is not applicable, please leave it blank.

1. Course Code Change

SN	*Existing Semester, Code and Course Title*	*Proposed Code*	*Reasons for Change*	*Applicable to Batch*
1.	IV, CSE435 P- Python Programming	CSE351 Python Programming	Change in semester	Batch : 2024-2028
2.	IV CSE431 Probability and Statistics	MA431 Probability and Statistics	Science and Humanities department is offering	Batch 2024-2028
3.	III HS321 Entrepreneurship & IPR	HS422 Entrepreneurship & IPR	Change in semester	Batch 2024-2028
4.	VI , CSE632P Design and Analysis of Algorithms	CSE533 Design and Analysis of Algorithms	Change in semester	Batch 2024-2028, Batch 2023-2027
5.	V, CSE533P Foundations of Data Science	CSE631P Foundations of Data Science	Change in semester	Batch 2024-2028, Batch 2023-2027
6.	V, IT534P, Data Warehousing and Data Mining	IT632P Data Warehousing and Data Mining	Change in semester	Batch 2024-2028, Batch 2023-2027
7.	VI, CSE633P Internet and Web Programming	CSE534P Internet and Web Programming	Change in semester	Batch 2024-2028, Batch 2023-2027
8.	VI, CSEIOT641E02 , Foundations of Blockchain Technology	IT641E02 Foundations of Blockchain Technology	Programme wise weightage	Batch 2024-2028, Batch 2023-2027
9.	CSEDS841E03 Financial Data Analytics	CSEDS641E04	Change in Elective Basket	Batch 2024-2028, Batch 2023-2027

		Financial Data Analytics		
10.	VI , CSE643E06 Quantum Computing	CSEIOT641E06 Quantum Computing	Change in Elective Basket	Batch 2024-2028, Batch 2023-2027
11.	III, ESC8 (CSE351), Extended Realities	CSE641E07 Extended Realities	Change from core to elective and changes in credit from 2 to 3	Batch 2024-2028,
12.	VII, CSEIOT741PE02 Ethical Hacking	IT742E02 Introduction to Ethical Hacking	Change in Elective, change in Subject name	Batch 2024-2028, Batch 2023-2027
13.	VIII, CSEAM843PE04 Computer Vision	CSEAM742E03 Computer Vision	Change in Elective basket	Batch 2024-2028, Batch 2023-2027
14.	VII CSEDS743PE03 Data Modeling and Visualization	CSEDS742E04 Data Modeling and Visualization	change of elective basket	Batch 2024-2028, Batch 2023-2027
15.	VII CSEIOT742PE02 - Penetration Testing and Vulnerability Assessment	IT743E02 Vulnerability Assessment and Testing	Change in Elective Basket	Batch 2024-2028, Batch 2023-2027
16.	VI CSEAM641E04 Soft computing	CSEAM743E03 Soft Computing	Change in Elective Basket	Batch 2024-2028, Batch 2023-2027
17.	VII CSEAM748E04 Image and Video Analytics	CSEDS743E04 Image and Video Analytics	Change in Elective Basket	Batch 2024-2028, Batch 2023-2027

18.	VII CSE743E01 Software Defined Networks	CSE844E01 Software Defined Networks	Change in Elective Basket	Batch 2024-2028, Batch 2023-2027
19.	VII CSEIOT744PE 02 Web Application Security	IT844E02 Web Application Security	Change in Elective Basket	Batch 2024-2028, Batch 2023-2027
20.	VII CSE745E06 Generative AI	CSEAM844E03 Generative AI	Change in Elective basket	Batch 2024-2028, Batch 2023-2027
21.	VIII, CSEDS744PE 03, Text and Speeching Analysis	IT844E06 Text and Speeching Analysis	Change in Semester	Batch 2024-2028, Batch 2023-2027
22.	VIII, CSEAM844E0 4 Optimization Techniques	CSEDS845E04 Optimization Algorithms	Change in elective basket	Batch 2024-2028, Batch 2023-2027
23.	VII CS743E02 Ethical Hacking	IOT741PE02, Ethical Hacking	Change in elective basket	Batch 2022-2026
24.	VII, CS743E03 Big Data Analytics (2+1)	DS741PE03 Big Data Analytics	Change in elective basket	Batch 2022-2026
25.	VII,CS743E07 Wearable Computing	CS745E06 Wearable Computing	Change in elective basket	Batch 2022-2026
26.	VII, CS744E01 Infrastructure Solutions on Cloud	CS742E01 Infrastructure Solutions on Cloud	Change in elective basket	Batch 2022-2026
27.	VII, CS743E06 Image and Video Analytics (2+1)	AIML745E04 Image and Video Analytics	Change in elective basket	Batch 2022-2026
28.	VII CS744E02	IOT742PE02 Penetration Testing	Change in elective basket	Batch 2022-2026

	Penetration Testing and Vulnerability Assessment (2+1)	and Vulnerability Assessment		
29.	VII, CS744E03 Deep Learning (2+1)	AIML742PE04 Deep Learning	Change in elective basket	Batch 2022-2026
30.	VII, CS744E05 Game Programming(2+1)	IT742PE05 Game Programming	Change in elective basket	Batch 2022-2026
31.	VII, CS743E01 Software Defined Networks	CS745E01 Software Defined Networks	Change in elective basket	Batch 2022-2026
32.	VII,CS745E02 Cyber Forensics(2+1)	IOT743PE02 Cyber Forensics	Change in elective basket	Batch 2022-2026
33.	VII,CS745E03 Business Intelligence and Analytics (2+1)	DS743PE03 Business Intelligence and Analytics	Change in elective basket	Batch 2022-2026
34.	VII,CS745E04 Natural Language Processing (2+1)	AIML743PE04 Natural Language Processing	Change in elective basket	Batch 2022-2026
35.	VII, CS745E05 Software Testing (2+1)	IT742PE06 Software Testing	Change in elective basket	Batch 2022-2026
36.	VII,CS745E06 Hyper Spectral Image Processing	AIML745E04 Hyper Spectral Image Processing	Change in elective basket	Batch 2022-2026
37.	VII,CS745E07 Foundation to AR/VR	CS746E06 Foundations of AR/VR	Change in elective basket	Batch 2022-2026
38.	VIII, CS846E01Storage Technologies	CS843E01 Storage Technologies	Change in elective basket	Batch 2022-2026
39.	VIII,CS846E02 Mobile Forensics(2+1)	IOT843PE02 Mobile Forensics	Change in elective basket	Batch 2022-2026

40.	VIII, CS846E03 Data Modelling	DS841PE03 Data Modelling and Visualization	Change in elective basket	Batch 2022-2026
41.	VIII CS846E05DevOps (2+1)	IT842PE05 DevOps	Change in elective basket	Batch 2022-2026
42.	VIII CS846E04Computer Vision	AIML842E04 Computer Vision	Change in elective basket	Batch 2022-2026
43.	VIII CS846E07Industrial IoT 4.0	CS846PE06 Industrial IoT 4.0	Change in elective basket	Batch 2022-2026

2. Course Title Change

SN	*Existing Code and Course Title*	*Proposed Change*	*Reasons for Change*	*Applicable to Batch*
1.	CSE784 Capstone Project	CSE784 Project Work I	According to stakeholders feedback	2023-2027
2.	CSEIOT741PE02 , Ethical Hacking	IT742E02 Introduction to Ethical Hacking	According to stakeholders feedback and course content	2023-2027

3. Course Outcome Change

SN	*Existing Code and Course Title*	*Proposed Change*	*Reasons for Change (Kindly justify using the programme outcomes)*	*Applicable to Batch*
1.	*CSE351, Python Programming*	*CSE351 Python Programming (CO1, CO2)*	Action verbs are updated according to complexity of the course	2024-2028
2.	*CSE434P, Computer Networks*	*CSE434P Computer Networks (CO1, CO2,CO3,CO4,CO5)*	Action verbs are updated according to complexity of the course	2023- 2028. 2024-2028
3.	*CSE535 Cryptography Network Security*	*CSE535 Cryptography Network Security (CO1,CO3,CO4,CO5)*	Action verbs are updated according to complexity of the course	2023- 2028. 2024-2028

4. Semester Change

SN	*Existing Semester Details with Course Code*	*Proposed Change in Semester*	*Reasons for Change*	*Applicable to Batch*
1.	VI CSE632P	V	According to prerequisite and changes in elective basket	2024-2028, 2023-2027
2.	VI CSE633P	V	According to prerequisite and changes in elective basket	2024-2028, 2023-2027
3.	VII CSEDS744PE 03	VIII	According to prerequisite and changes in elective basket	2024-2028, 2023-2027, 2022-2026
4.	IV , CSE435P-	III	According to prerequisite and changes in elective basket	2024-2028
5.	III, HS321	IV	According to prerequisite and changes in elective basket	2024-2028
6.	VI CSE632P	V	According to prerequisite and changes in elective basket	2024-2028, 2023-2027
7.	V CSE533P	VI	According to prerequisite and changes in elective basket	2024-2028, 2023-2027
8.	V CSE534P	VI	According to prerequisite and changes in elective basket	2024-2028, 2023-2027
9.	VI CSE633P	V	According to prerequisite and changes in elective basket	2024-2028, 2023-2027
10.	VIII, CSEDS841E03	VI	According to prerequisite and changes in elective basket	2024-2028, 2023-2027, 2022-2026
11.	III ESC8 (CSE351)	VI	According to prerequisite and changes in elective basket	2024-2028

12.	VIII CSEAM843PE04	VII	According to prerequisite and changes in elective basket	2024-2028, 2023-2027, 2022-2026
13.	VI CSEAM641E04	VII	According to prerequisite and changes in elective basket	2024-2028, 2023-2027,
14.	VII CSE743E01	VIII	According to prerequisite and changes in elective basket	2024-2028, 2023-2027, 2022-2026
15.	VII CSEIOT744PE02	VIII	According to prerequisite and changes in elective basket	2024-2028, 2023-2027, 2022-2026
16.	VII CSE745E06	VIII	According to prerequisite and changes in elective basket	2024-2028, 2023-2027, 2022-2026
17.	VII CSEDS744PE03	VIII	According to prerequisite and changes in elective basket	2024-2028, 2023-2027, 2022-2026

5. Credits Change

SN	*Existing Credit Details with Course Codes*	*Proposed Credit Change*	*Reasons for Change*	*Applicable to Batch*
1	3, CSE531PArtificial Intelligence and Machine Learning	4	As per stockholder feedback	2024-2028

6. Marks Change:

SN	*Existing Code and Course*	*Existing Marks Details*	*Proposed Marks Change*	*Reasons for Change*	*Applicable to Batch*
1	CSE641E07 Extended Realities	50	100	Change in credit and elective basket	2024-2028

7. CIA Pattern

SN	*Existing Code and Course*	*Existing Details*	*Proposed Change*	*Reasons for Change*	*Applicable to Batch*

1.	CSE531P Artificial Intelligence and Machine Learning	CIA - 50 ESE - 50	CIA -70 ESE - 30 Question paper setting for ESE is 100 marks	Credit change from 3 to 4 credit	2024-2028, 2023-2027
2.	CSE632P Design and analysis of algorithms	CIA -70 ESE - 30 Theory + practical	CIA -50 ESE -50 converted theory +practical to only theory	Credit change from 4 to 3	2024-2028, 2023-2027
3.	IT534P Data Warehousing and Data Mining	CIA - 50 ESE - 50 Theory + practical	CIA -70 ESE - 30 Question paper setting for ESE is 100 marks Theory + practical	Credit change from 3 to 4 credit	2024-2028, 2023-2027
4.	CSE641PE01 Datacenter Virtualization	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory	Follow equality in elective basket	2024-2028, 2023-2027
5.	CSE351 Extended Realities	Practical	Theory	Change in credit and elective basket	2024-2028, 2023-2027
6.	CSEIOT741PE0 Ethical Hacking	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2024-2028, 2023-2027, 2022-2026
7.	CSEAM843PE04 Computer Vision	CIA -50 ESE - 50	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks	Follow same credit distribution in elective basket	2024-2028, 2023-2027

		Theory + practical	Only theory Theory		
8.	CSEDS743PE0 3 Data Modeling and Visualization.	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2024-2028, 2023-2027
9.	CSEIOT742P E02 Penetration Testing and Vulnerability Assessment	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2024-2028, 2023-2027
10.	CSEIOT744PE02 Web Application Security	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2024-2028, 2023-2027
11.	CSEDS744PE03 Text and Speech Analysis	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2024-2028, 2023-2027
12.	CS743E02 Ethical Hacking (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory	Follow same credit distribution in elective basket	2022-2026

			Theory		
13.	DS741PE03 Big Data Analytics	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2022-2026
14.	CS743E06 Image and Video Analytics (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2022-2026
15.	CS744E03 Deep Learning (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2022-2026
16.	CS743E02 Penetration Testing and Vulnerability Assessment (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
17.	CS743E03 Business Intelligence and Analytics(2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
18.	CS743E04 Natural Language Processing (2+1)	CIA -50 ESE - 50	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks	Follow common credit distribution in elective basket	2022-2026

		Theory + practical	Only theory Theory		
19.	CS743E05 Mobile Application Development (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
20. 4	CS744E02 Cyber Forenscis(2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
21.	CS744E03 Data Modeling and Visualization	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
22.	CS744E04 Game Programming	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
23.	CS846E02 Mobile Forensics	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
24.	CS846E05 DevOps	CIA -50 ESE - 50	CIA -50 ESE - 50	Follow common credit distribution in elective basket	2022-2026

		Theory + practical	Question paper setting for ESE is 100 marks Only theory Theory		
25.	CS846E07 Indutrial IoT 4.0	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026

8. ESE Pattern

SN	*Existing Code and Course*	*Existing Details*	*Proposed Change*	*Reasons for Change*	*Applicable to Batch*
1.	CSE531P Artificial Intelligence and Machine Learning	CIA - 50 ESE - 50	CIA -70 ESE - 30 Question paper setting for ESE is 100 marks	Credit change from 3 to 4 credit	2024-2028, 2023-2027
2.	CSE632P Design and analysis of algorithms	CIA -70 ESE - 30 Theory + practical	CIA -50 ESE -50 converted theory +practical to only theory	Credit change from 4 to 3	2024-2028, 2023-2027
3.	IT534P Data Warehousing and Data Mining	CIA - 50 ESE - 50 Theory + practical	CIA -70 ESE - 30 Question paper setting for ESE is 100 marks Theory + practical	Credit change from 3 to 4 credit	2024-2028, 2023-2027
4.	CSE641PE01 Datacenter Virtualization	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory	Follow equality in elective basket	2024-2028, 2023-2027
5.	CSE351 Extended Realities	Practical	Theory	Change to elective basket	2024-2028, 2023-2027

6.	CSEIOT741PE0 Ethical Hacking	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2024-2028, 2023-2027, 2022-2026
7.	CSEAM843PE04 Computer Vision	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2024-2028, 2023-2027
8.	CSEDS743PE0 3 Data Modeling and Visualization.	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2024-2028, 2023-2027
9.	CSEIOT742P E02 Penetration Testing and Vulnerability Assessment	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2024-2028, 2023-2027
10.	CSEIOT744PE02 Web Application Security	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2024-2028, 2023-2027
11.	CSEDS744PE03 Text and Speech Analysis	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory	Follow same credit distribution in elective basket	2024-2028, 2023-2027

			Theory		
12.	CS743E02 Ethical Hacking (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2022-2026
13.	DS741PE03 Big Data Analytics	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2022-2026
14.	CS743E06 Image and Video Analytics (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2022-2026
15.	CS744E03 Deep Learning (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow same credit distribution in elective basket	2022-2026
16.	CS743E02 Penetration Testing and Vulnerability Assessment (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
17.	CS743E03 Business Intelligence and Analytics(2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks	Follow common credit distribution in elective basket	2022-2026

			Only theory Theory		
18.	CS743E04 Natural Language Processing (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
19.	CS743E05 Mobile Application Development (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
20.	CS744E02 Cyber Forenscis(2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
21.	CS744E03 Data Modeling and Visualization	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
22.	CS744E04 Game Programming	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
23.	CS846E02 Mobile Forensics	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50	Follow common credit distribution in elective basket	2022-2026

			Question paper setting for ESE is 100 marks Only theory Theory		
24.	CS846E05 DevOps	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
25.	CS846E07 Industrial IoT 4.0	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE is 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026

9. Course Type Theory/Practical

SN	*Existing Code and Course*	*Existing Details*	*Proposed Change*	*Reasons for Change*	*Applicable to Batch*
1.	CSE531P Artificial Intelligence and Machine Learning	CIA - 50 ESE - 50	CIA -70 ESE - 30 Question paper setting for ESE is 100 marks	Credit change from 3 to 4 credit	2024-2028, 2023-2027
2.	CSE632P Design and analysis of algorithms	CIA -70 ESE - 30 Theory + practical	CIA -50 ESE -50 converted theory +practical to only theory	Credit change from 4 to 3	2024-2028, 2023-2027
3.	IT534P Data Warehousing and Data Mining	CIA - 50 ESE - 50 Theory + practical	CIA -70 ESE - 30 Question paper setting for ESE to be 100 marks Theory + practical	Credit change from 3 to 4 credit	2024-2028, 2023-2027
4.	CSE641PE01 Datacenter Virtualization	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE to be 100 marks Only theory	Follow equality in elective basket	2024-2028, 2023-2027
5.	CSE351 Extended Realities	Practical	Theory	Change to elective basket	2024-2028, 2023-2027
6.	CSEIOT741PE0 Ethical Hacking	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE to be 100 marks Only theory Theory	Follow same credit distribution in elective basket	2024-2028, 2023-2027, 2022-2026
7.	CSEAM843PE04 Computer Vision	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE o be 100 marks Only theory Theory	Follow same credit distribution in elective basket	2024-2028, 2023-2027
8.	CSEDS743PE0 3 Data Modeling and Visualization.	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE to be 100 marks	Follow same credit distribution in elective basket	2024-2028, 2023-2027

			Only theory Theory		
9.	CSEIOT742P E02 Penetration Testing and Vulnerability Assessment	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE to be 100 marks Only theory Theory	Follow same credit distribution in elective basket	2024-2028, 2023-2027
10.	CSEIOT744PE02 Web Application Security	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE to be 100 marks Only theory Theory	Follow same credit distribution in elective basket	2024-2028, 2023-2027
11.	CSEDS744PE03 Text and Speech Analysis	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE to be 100 marks Only theory Theory	Follow same credit distribution in elective basket	2024-2028, 2023-2027
12.	CS743E02 Ethical Hacking (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE to be 100 marks Only theory Theory	Follow same credit distribution in elective basket	2022-2026
13.	DS741PE03 Big Data Analytics	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE to be 100 marks Only theory Theory	Follow same credit distribution in elective basket	2022-2026
14.	CS743E06 Image and Video Analytics (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE to be 100 marks Only theory Theory	Follow same credit distribution in elective basket	2022-2026
15.	CS744E03 Deep Learning (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50	Follow same credit distribution in elective basket	2022-2026

			Question paper setting for ESE to be 100 marks Only theory Theory		
16.	CS743E02 Penetration Testing and Vulnerability Assessment (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE to be 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
17.	CS743E03 Business Intelligence and Analytics(2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE to be 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
18.	CS743E04 Natural Language Processing (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE to be 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
19.	CS743E05 Mobile Application Development (2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE to be 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
20.	CS744E02 Cyber Forenscis(2+1)	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE to be 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
21.	CS744E03 Data Modeling and Visualization	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE to be 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026

22.	CS744E04 Game Programming	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE to be 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
23.	CS846E02 Mobile Forensics	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE to be 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
24.	CS846E05 DevOps	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE to be 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026
25.	CS846E07 Industrial IoT 4.0	CIA -50 ESE - 50 Theory + practical	CIA -50 ESE - 50 Question paper setting for ESE to be 100 marks Only theory Theory	Follow common credit distribution in elective basket	2022-2026

Note: Please enclose the Programme structure along with the syllabus of the courses with changes.

Chairperson, BOS
Date: 2/4/25

Secretary, BOS
Date 2/4/25

Dean
Date: 2/4/25

Registrar
Date:

Verified and entered in the Knowledge Pro/ERP
Name:
Date:
Signature:

CHRIST
(DEEMED TO BE UNIVERSITY)
BANGALORE, INDIA

Format for Submitting Changes in Curriculum

School: School of Engineering and Technology
Department: Computer Science and Engineering
Programme: M.Tech (CSE)

Section I (Summary)

Table 1: The summary sheet of curriculum/a changes
Note: For Table 1 please provide only basic/essential information of changes as mentioned in the column heads. Do not elaborate.

SN	Particulars I: Change in	Indicate "Yes"/ "No"	Particulars II	Brief Detail (if changes are incorporated)
	Course Code	No		
	Course Title	No		
3.	Course Outcome	Yes	**Batch 2024-26:** **Semester I** MTCS132 Advanced Database systems MTMC125 Research Methodology and IPR	**Batch 2025-27 changes incorporated** **Semester I** MTCS132 Advanced Database systems MTMC125 Research Methodology and IPR
4	Semester/s	No		
5	Credits	No		

6	Marks	No		
7	CIA Pattern	No		
8	ESE Pattern	No		
9	Course Type: Theory/Practical	No		
10	Syllabus	Yes	**Semester I:** MTCS132 Advanced Database systems	**Batch 2025-27 changes incorporated** MTCS132 Advanced Database systems (unit 5 removed one topic)

Section II (Detailed)

Note: In Section II, do not combine the tables. If a particular field table is not applicable, please leave it blank.

1. Course Code Change - NA

SN	*Existing Semester, Code and Course Title*	*Proposed Code*	*Reasons for Change*	*Applicable to Batch*
1.				

2. Course Title Change - NA

SN	*Existing Code and Course Title*	*Proposed Change*	*Reasons for Change*	*Applicable to Batch*
1.				

3. Course Outcome Change - NA

SN	*Existing Code and Course Title*	*Proposed Change*	*Reasons for Change (Kindly justify using the programme outcomes)*	*Applicable to Batch*
1.				

4. Semester Change - NA

SN	*Existing Semester Details with Course Code*	*Proposed Change in Semester*	*Reasons for Change*	*Applicable to Batch*
1.				Batch

5. Credits Change - NA

SN	*Existing Credit Details with Course Codes*	*Proposed Credit Change*	*Reasons for Change*	*Applicable to Batch*
1				

6. Marks Change : NA

SN	*Existing Code and Course*	*Existing Marks Details*	*Proposed Marks Change*	*Reasons for Change*	*Applicable to Batch*
1					

7. CIA Pattern - NA

SN	*Existing Code and Course*	*Existing Details*	*Proposed Change*	*Reasons for Change*	*Applicable to Batch*
1					

8. ESE Pattern - NA

SN	Existing Code and Course	Existing Details	Proposed Change	Reasons for Change	Applicable to Batch
1					

9. Course Type Theory/Practical - NA

SN	Existing Code and Course	Existing Details	Proposed Change	Reasons for Change	Applicable to Batch
1					

Note: Please enclose the Programme structure along with the syllabus of the courses with changes.

Chairperson, BOS
Date: 2/4/24

Secretary, BOS
Date 2/4/24

Dean
Date:

Registrar
Date:

Verified and entered in the Knowledge Pro/ERP
Name:
Date:
Signature:

CHRIST
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BANGALORE, INDIA

Format for Submitting Changes in Curriculum

School: School of Engineering and Technology
Department: Computer Science and Engineering
Programme: M.Tech (CSE-DS)

Section I (Summary)

Table 1: The summary sheet of curriculum/a changes
Note: For Table 1 please provide only basic/essential information of changes as mentioned in the column heads. Do not elaborate.

SN	Particulars I: Change in	Indicate "Yes"/ "No"	Particulars II	Brief Detail (if changes are incorporated)
	Course Code	No		
	Course Title	No		
3.	Course Outcome	Yes	**Batch 2024-26:** **Semester I** MTDS151 Advanced Data Structures and Algorithms Lab MTDS131 Advanced Data Structures and Algorithms MTCS132 Advanced Database systems MTMC125 Research Methodology and IPR **Semester II** MTDS233 Machine Learning for Data Science	**Batch 2025-27 changes incorporated** **Semester I** MTDS151 Advanced Data Structures and Algorithms Lab MTDS131 Advanced Data Structures and Algorithms MTCS132 Advanced Database systems MTMC125 Research Methodology and IPR **Semester II** MTDS233 Machine Learning for Data Science
4	Semester/s	No		
5	Credits	No		

6	Marks	No		
7	CIA Pattern	No		
8	ESE Pattern	No		
9	Course Type: Theory/Practical	No		
10	Syllabus	Yes	**Semester I:** MTCS132 Advanced Database systems MTDS151 Advanced Data Structures and Algorithms Lab MTDS131 Advanced Data Structures and Algorithms **Semester II** MTDS233 Machine Learning for Data Science	**Batch 2025-27 changes incorporated** MTCS132 Advanced Database systems (unit 5 removed one topic) MTDS151 Advanced Data Structures and Algorithms Lab (Added few more experiments) MTDS131 Advanced Data Structures and Algorithms (unit-wise contents are rearranged) **Semester II** MTDS233 Machine Learning for Data Science (Unit-wise contents are rearranged)

1. Course Code Change - NA

SN	*Existing Semester, Code and Course Title*	*Proposed Code*	*Reasons for Change*	*Applicable to Batch*
1.				

2. Course Title Change - NA

SN	*Existing Code and Course Title*	*Proposed Change*	*Reasons for Change*	*Applicable to Batch*
1.				

3. Course Outcome Change - NA

SN	*Existing Code and Course Title*	*Proposed Change*	*Reasons for Change (Kindly justify using the programme outcomes)*	*Applicable to Batch*
1.				

4. Semester Change - NA

SN	*Existing Semester Details with Course Code*	*Proposed Change in Semester*	*Reasons for Change*	*Applicable to Batch*
1.				Batch

5. Credits Change - NA

SN	*Existing Credit Details with Course Codes*	*Proposed Credit Change*	*Reasons for Change*	*Applicable to Batch*
1				

6. Marks Change : NA

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BANGALORE, INDIA

Format for Programme wise Changes in Course Content - Syllabus Revision

School : School of Engineering and Technology

Department : Department of Computer Science and Engineering

Programme : B-Tech in Computer Science and Engineering

Semester : III **Course Name :** Python Programming **Course Code** : CSE351

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
1	Installing a complete Python environment, Python Introduction, Keywords and Identifiers, Statements and comments, Python Data types, Python I/O and import, Python Operators, Basic Mathematics, Variables, Strings and text, Interacting with users. Illustrative Programs using Variables and Data Types: Numeric, Lists, Strings, and Illustrative Programs using Operators: Arithmetic, Comparison, Assignment, Logical, Bitwise, Membership, and Identity.	Installing a complete Python environment, Python Introduction, Keywords and Identifiers, Statements and comments, Python Data types, Python I/O and import, Python Operators, Basic Mathematics, Variables, Strings and text, Interacting with users. Illustrative Programs using Variables and Data Types: Numeric, Lists, Strings, and Illustrative Programs using Operators: Arithmetic, Comparison, Assignment, Logical, Bitwise		Applicable for Batch 2024-2028
2	Looping and logic, Python Flow Control, if-else, for loop, while loop, break and continue, Illustrative programs, Python Functions, function argument, python recursion, python module, python package. and Illustrative Programs using Conditional Statements: If, Elif and Else; Loops: While, for and nested loops; Functions.	Looping and logic, Python Flow Control, if-else, for loop, while loop, break and continue, Illustrative programs, Python Functions, function argument, and Illustrative Programs using Conditional Statements: If, Elif and Else; Loops: While, for and nested loops; Functions	Repetitive topics were removed	Applicable for Batch 2024-2028
5	Python Basics for Data Analysis and Visualization: Loading, Cleaning and Exploring and Visualization.	Python Libraries (NumPy, Pandas, Matplotlib, Seaborn, Scikit-Learn), Machine Learning and its Use Cases.	Specific topics have been mentioned	Applicable for Batch 2024-2028

Semester : III **Course Name :** Object Oriented Programming **Course Code** : CSE335P

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
2	Overview of Object-oriented Program - Classes and Objects – Constructors – Multiple constructors - Encapsulation and access modifiers, -Overriding-Inheritance and polymorphism, - Real life examples of polymorphism and inheritance -Abstract classes and Interfaces	Classes and Objects – Constructors – Multiple constructors - Encapsulation and access modifiers, -Overriding-Inheritance and polymorphism, - Real life examples of polymorphism and inheritance -Abstract classes and Interfaces	Overview of Object-oriented concepts covering in Unit -1	Applicable for Batch 2024-2028

Semester: V **Course:** Design and Analysis of Algorithms **Course Code:** CSE533

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
Unit 3	Experiment 3: Implement Heap sort using Divide and Conquer method.	Experiment 3: Implementation of Sorting Algorithms Using Divide and Conquer method. a. Quick Sort b. Merge Sort c. Heap Sort	**As suggested by the stakeholders**	**Applicable for 2023, 2024**
Unit 4	Experiment 4: Implement 0/1 Knapsack using Dynamic Programming. Experiment 5: Implement Horspool string matching algorithm. Experiment 6: Implement All-Pairs Shortest Paths problem using Floyd's algorithm. Experiment 7: Find Minimum Cost Spanning Tree of a given connected undirected graph using Kruskal's algorithm and calculate its time complexity.	Experiment 4: Implement Horspool string matching algorithm. Experiment 5: Implement All-Pairs Shortest Paths problem using Floyd's algorithm. Experiment 6: Find Minimum Cost Spanning Tree of a given connected undirected graph using Kruskal's algorithm and calculate its time complexity. Experiment 7: Find Minimum Cost Spanning Tree of a given undirected graph using Prim's algorithm and calculate its time complexity.	**As suggested by the stakeholders**	**Applicable for 2023, 2024**

	Experiment 8: Find Minimum Cost Spanning Tree of a given undirected graph using Prim's algorithm and calculate its time complexity. Experiment 9: Implement Dijkstra's algorithm to find the shortest path to other vertices in a weighted connected graph and calculate its time complexity.	Experiment 8: Implement Dijkstra's algorithm to find the shortest path to other vertices in a weighted connected graph and calculate its time complexity.		
Unit 5	Experiment 10: Find a subset of a given set S = {Sl, S2,.....,Sn} of n positive integers whose SUM is equal to a given positive integer d using Backtracking principle. Experiment 11: Find all Hamiltonian Cycles in a connected undirected Graph G of n vertices using backtracking principle. Experiment 12: Implement Traveling Salesman problem using Branch and Bound principle.	Experiment 9: Find a subset of a given set S = {Sl, S2,.....,Sn} of n positive integers whose SUM is equal to a given positive integer d using Backtracking principle. Experiment 10: Implement Traveling Salesman problem using Branch and Bound principle.	**As suggested by the stakeholders**	**Applicable for 2023, 2024**

Semester : VI **Course Name :** Quantum Computing **Course Code :** CSEIOT641E06

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
4	Quantum Information: Introduction, Quantum noise and Quantum Operations, Representations, Examples, Applications, Distance Measures for Quantum information, Quantum Entropy, Quantum Fourier transforms, Quantum Phase estimation, Quantum search algorithms, Deutsch and	Quantum Information: Introduction, Quantum noise and Quantum Operations, Representations, Examples, Applications, Distance Measures for Quantum information, Quantum Entropy, Quantum Fourier transforms, Quantum Phase estimation, Quantum search algorithms, Deutsch	As per stakeholder holder feedback	Applicable for Batch 2024-2028, 2023-2027

	Deutsch Josza Algorithm. Introduction, Quantum noise and Quantum Operations, Representations, Examples, Applications, Distance Measures for Quantum information. Theory of Quantum Error Correction, Constructing Quantum Codes, Stabilizer codes, Bit flip and phase flip error correction codes, The Shor code, Quantum Fourier transforms, Quantum Phase estimation, Quantum search algorithms, Quantum counting Algorithms. Deutsch and Deutsch Josza Algorithm. Ex: Implementation of Quantum Error Correction Codes	and Deutsch Josza Algorithm. Introduction, Quantum noise and Quantum Operations, Representations, Examples, Applications, Distance Measures for Quantum information. Quantum Fourier transforms, Quantum Phase estimation, Quantum search algorithms. Deutsch and Deutsch Josza Algorithm. Ex 1: Implementation of Quantum search Algorithms		
5	Secure Communication Quantum Algorithms Introduction to Quantum Cryptography, Polarisation Encoding, No-Cloning Theorem, Super Dense Coding, Quantum Teleportation, Quantum Key Distribution – The BB84 Protocol, The Ekert Protocol, Real-World Implementation.	Theory of Quantum Error Correction, Bit flip and phase flip error correction codes, The Shor code. Introduction to Quantum Cryptography, Polarisation Encoding, No-Cloning Theorem, Super Dense Coding, Quantum Teleportation, Quantum Key Distribution – The BB84 Protocol, The Ekert Protocol, Real-World Implementation.	To consider security using quantum, topics were added	Applicable for Batch 2024-2028, 2023-2027

Semester : VIII **Course Name :** Generative AI **Course Code :** CSEAM844E03

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
1	Overview of Generative AI and its significance in various domains. Basic principles of generative models. Types of Generative AI, Applications of generative AI in industry and research.	Overview of Generative AI and its significance in various domains. Basic principles of generative models. Types of Generative AI, Key challenges in training and optimizing generative models, Ethical concerns and societal impact of Generative AI, Applications of generative AI in industry and research.	Based on stakeholders feedback the content is added	Applicable for the batches 2022 - 2026 2023 – 2027 2024 - 2028

2	Understanding probability distributions and sampling methods. Introduction to Markov chains and their relevance in generative AI. Bayesian probability Hands-on exercises on basic probabilistic models.	Understanding probability distributions and sampling methods. Introduction to Markov chains and their relevance in generative AI. Bayesian generative models.	Hands-on session is offered as part of practical	Applicable for the batches 2022 - 2026 2023 – 2027 2024 - 2028
4	Variational Autoencoders (VAEs): Understanding the encoder-decoder architecture of VAEs. Training VAEs for generating data and learning latent representations. Learning latent representations using VAEs, Applications of VAEs in image generation, data compression, and anomaly detection.	Variational Autoencoders (VAEs) and Diffusion models: Understanding the encoder-decoder architecture of VAEs. Training VAEs for generating data and learning latent representations. Learning latent representations using VAEs, Applications of VAEs in image generation, data compression, and anomaly detection. Diffusion models, The Diffusion Process, Training Diffusion Models, Applications of Diffusion Models, Advanced Diffusion Models	Diffusion models were added,	Applicable for the batches 2022 - 2026 2023 – 2027 2024 - 2028
5	Unit 5 Reinforcement Learning for Generative Tasks: Reinforcement Learning techniques for generative tasks. Policy gradient methods and actor-critic algorithms. Practical implementation of reinforcement learning for generative tasks.	Transformer Models and Reinforcement Learning for Generative Tasks: Introduction to Transformer Models. Reinforcement Learning techniques for generative tasks. Policy gradient methods and actor-critic algorithms. Practical implementation of reinforcement learning for generative tasks.	Transformer topics were included for better understanding	Applicable for the batches 2022 - 2026 2023 – 2027 2024 - 2028

Note:

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Format for Programme wise Changes in Course Content - Syllabus Revision

School: **Engineering and Technology**
Department: **Computer Science and Engineering**

Programme: B.Tech in Computer Science and Engineering - AIML

Semester: 5th
Course: Machine Learning
Course Code: CSEAM531P

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
Unit-1	**Supervised Learning** Basic methods: Distance-based methods, Nearest-Neighbours, Decision Trees, Naive Bayes. Linear models: Linear Regression,	**Introduction to ML** Machine Learning, Types of Machine Learning, ML Workflow, **Key Concepts: -** Bias-Variance trade-off, Overfitting and Under fitting, **Dataset Types :-** Structured	As suggested by the stakeholders, Experts, Basics of ML to is included, since its not taught	Applicable for — batches 2023-2027

	Logistic Regression, Generalized Linear Models, Support Vector Machines.	vs. Unstructured Data, Imbalanced Data Handling- Oversampling, Under sampling, SMOTE , **Data Pre-processing:-** Handling Missing Data, Data Scaling - Normalization & Standardization, Categorical Encoding- One-Hot, Label Encoding & Target Encoding. Applications of Machine Learning	in the previous semesters.	2024-2028 2025-2029
Unit 2:	**Unsupervised Learning** Clustering: K-means/Kernel K-means, Dimensionality Reduction: PCA and kernel PCA, Matrix Factorization and Matrix Completion.	**Supervised Learning** **Classification Algorithms: -** Decision tree, KNN, Random forest, Support Vector machine, Naïve Bayes, Ensembles, **Regression Algorithms: -** Linear (Simple & Multiple), Polynomial regression, Random Forest Regression. **Evaluation Metrics:-** Classification- Confusion Matrix, Accuracy, Precision, Recall, F1-score, AUC-ROC, Log Loss, Regression- MSE, RMSE, MAE, R^2 Score	Supervised learning moved to Unit 2 with more content to explore the various ML programs and their metrics.	**Applicable for — batches** **2023-2027** **2024-2028** **2025-2029**

Unit 3:	**Neural Networks** Neural Network Representation – Problems – Perceptrons – Multilayer Networks and Back Propagation Algorithms – Advanced Topics.	**Semi-Supervised:** - Self-Training and Co-Training Algorithms, Graph-based & Low-density separation methods, **Unsupervised Learning**: - Clustering: Partition-Based Methods: K-means, Hierarchical Clustering: Agglomerative Clustering vs Divisive, Density Based: DBSCAN, Mean-shift Clustering, **Association Rules Learning:** - Apriori & FP-Growth algorithm. **Evaluation Metrics:** -Clustering- Silhouette Score, Davies–Bouldin Index.	Semisupervised Learning is introduced, and more unsupervised learning algorithms are introduced. Neural Network is removed completely since it will be taught in the higher semester under Deep Learning Course	**Applicable for — batches** **2023-2027** **2024-2028** **2025-2029**
Unit 4:	**Bayesian and Computational Learning** Bayes Theorem – Concept Learning – Maximum Likelihood – Minimum Description Length Principle – Bayes Optimal Classifier – Gibbs Algorithm – Naïve Bayes Classifier – Bayesian Belief Network – EM Algorithm.	**Reinforcement Learning** Foundations of Reinforcement learning, **Dynamic Programming**: Policy Evaluation, Policy Iteration, Value Iteration, **Monte Carlo Methods**: First-Visit and Every-Visit Monte Carlo, **Temporal Difference (TD) Learning**: TD (0), SARSA, Q-learning, **Advanced RL Algorithms:** Deep Q- Networks.	The fourth type of ML is introduced, that is R,L which was not there in Unit 4 of the previous syllabus	**Applicable for — batches** **2023-2027** **2024-2028** **2025-2029**

Unit 5:	**Instance-Based, Analytical Learning and Inductive based Learning** K- Nearest Neighbour Learning – Locally weighted Regression – Radial Basis Functions – Case Based Learning- Learning from perfect domain theories-Explanation based learning-Search control knowledge.	**Optimization Techniques in ML** **Generalization:** Feature Selection for Pre-processing: - (PCA, Mutual Information, Recursive Feature Elimination (RFE), Feature Importance from Tree-based Models, **Regularization** (L1 (Lasso), L2 (Ridge), Elastic Net, **Dimensionality Reduction:** Linear Techniques: - PCA, LDA and SVD. Model **Performance:** -Cross-Validation Methods (K-Fold, Stratified K-Fold, Leave-One-Out (LOO), Time Series Split).	Students need to learn how optimization can be done in ML programs	**Applicable for — batches** **2023-2027** **2024-2028** **2025-2029**
				Applicable for — batches **2023-2027** **2024-2028** **2025-2029**

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Format for Programme wise Changes in Course Content - Syllabus Revision

School : School of Engineering and Technology

Department : Department of Computer Science and Engineering

Programme : B-Tech in Computer Science and Engineering (Data Science)

Semester : III **Course Name :** Python Programming **Course Code** : CSE351

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
1	Installing a complete Python environment, Python Introduction, Keywords and Identifiers, Statements and comments, Python Data types, Python I/O and import, Python Operators, Basic Mathematics, Variables, Strings and text, Interacting with users. Illustrative Programs using Variables and Data Types: Numeric, Lists, Strings, and Illustrative Programs using Operators: Arithmetic, Comparison, Assignment, Logical, Bitwise, Membership, and Identity.	Installing a complete Python environment, Python Introduction, Keywords and Identifiers, Statements and comments, Python Data types, Python I/O and import, Python Operators, Basic Mathematics, Variables, Strings and text, Interacting with users. Illustrative Programs using Variables and Data Types: Numeric, Lists, Strings, and Illustrative Programs using Operators: Arithmetic, Comparison, Assignment, Logical, Bitwise		Applicable for Batch 2024-2028
2	Looping and logic, Python Flow Control, if-else, for loop, while loop, break and continue, Illustrative programs, Python Functions, function argument, python recursion, python module, python package. and Illustrative Programs using Conditional Statements: If, Elif and Else; Loops: While, for and nested loops; Functions.	Looping and logic, Python Flow Control, if-else, for loop, while loop, break and continue, Illustrative programs, Python Functions, function argument, and Illustrative Programs using Conditional Statements: If, Elif and Else; Loops: While, for and nested loops; Functions	Repetitive topics were removed	Applicable for Batch 2024-2028
5	Python Basics for Data Analysis and Visualization: Loading, Cleaning and Exploring and Visualization.	Python Libraries (NumPy, Pandas, Matplotlib, Seaborn, Scikit-Learn), Machine Learning and its Use Cases.	Specific topics have been mentioned	Applicable for Batch 2024-2028

Semester: III **Course Name :** Object Oriented Programming **Course Code :** CSE335P

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
2	Overview of Object-oriented Program - Classes and Objects – Constructors – Multiple constructors - Encapsulation and access modifiers, -Overriding-Inheritance and polymorphism, - Real life examples of polymorphism and inheritance -Abstract classes and Interfaces	Classes and Objects – Constructors – Multiple constructors - Encapsulation and access modifiers, -Overriding-Inheritance and polymorphism, - Real life examples of polymorphism and inheritance -Abstract classes and Interfaces	Overview of Object-oriented concepts covering in Unit -1	Applicable for Batch 2024-2028

Semester: V Course: Design and Analysis of Algorithms Course Code: CSE533

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
Unit 3	Experiment 3: Implement Heap sort using Divide and Conquer method.	Experiment 3: Implementation of Sorting Algorithms Using Divide and Conquer method. a. Quick Sort b. Merge Sort c. Heap Sort	**As suggested by the stakeholders**	**Applicable for 2023, 2024**
Unit 4	Experiment 4: Implement 0/1 Knapsack using Dynamic Programming. Experiment 5: Implement Horspool string matching algorithm.	Experiment 4: Implement Horspool string matching algorithm. Experiment 5: Implement All-Pairs Shortest Paths problem using Floyd's algorithm. Experiment 6: Find Minimum Cost Spanning Tree of a given connected undirected graph	**As suggested by the stakeholders**	**Applicable for 2023, 2024**

	Experiment 6: Implement All-Pairs Shortest Paths problem using Floyd's algorithm. Experiment 7: Find Minimum Cost Spanning Tree of a given connected undirected graph using Kruskal's algorithm and calculate its time complexity. Experiment 8: Find Minimum Cost Spanning Tree of a given undirected graph using Prim's algorithm and calculate its time complexity. Experiment 9: Implement Dijkstra's algorithm to find the shortest path to other vertices in a weighted connected graph and calculate its time complexity.	using Kruskal's algorithm and calculate its time complexity. Experiment 7: Find Minimum Cost Spanning Tree of a given undirected graph using Prim's algorithm and calculate its time complexity. Experiment 8: Implement Dijkstra's algorithm to find the shortest path to other vertices in a weighted connected graph and calculate its time complexity.		
Unit 5	Experiment 10: Find a subset of a given set S = {Sl, S2,.....,Sn} of n positive integers whose SUM is equal to a given positive integer d using Backtracking principle. Experiment 11: Find all Hamiltonian Cycles in a connected undirected Graph G of n vertices using backtracking principle. Experiment 12: Implement Traveling Salesman problem using Branch and Bound principle.	Experiment 9: Find a subset of a given set S = {Sl, S2,.....,Sn} of n positive integers whose SUM is equal to a given positive integer d using Backtracking principle. Experiment 10: Implement Traveling Salesman problem using Branch and Bound principle.	**As suggested by the stakeholders**	**Applicable for 2023, 2024**

Semester : VI **Course Name :** Quantum Computing **Course Code :** CSEIOT641E06

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
4	Quantum Information: Introduction, Quantum noise and Quantum Operations, Representations, Examples, Applications, Distance Measures for Quantum information, Quantum Entropy, Quantum Fourier transforms, Quantum Phase estimation, Quantum search algorithms, Deutsch and Deutsch Josza Algorithm. Introduction, Quantum noise and Quantum Operations, Representations, Examples, Applications, Distance Measures for Quantum information. Theory of Quantum Error Correction, Constructing Quantum Codes, Stabilizer codes, Bit flip and phase flip error correction codes, The Shor code, Quantum Fourier transforms, Quantum Phase estimation, Quantum search algorithms, Quantum counting Algorithms. Deutsch and Deutsch Josza Algorithm. Ex: Implementation of Quantum Error Correction Codes	Quantum Information: Introduction, Quantum noise and Quantum Operations, Representations, Examples, Applications, Distance Measures for Quantum information, Quantum Entropy, Quantum Fourier transforms, Quantum Phase estimation, Quantum search algorithms, Deutsch and Deutsch Josza Algorithm. Introduction, Quantum noise and Quantum Operations, Representations, Examples, Applications, Distance Measures for Quantum information. Quantum Fourier transforms, Quantum Phase estimation, Quantum search algorithms. Deutsch and Deutsch Josza Algorithm. Ex 1: Implementation of Quantum search Algorithms	As per stakeholder holder feedback	Applicable for Batch 2024-2028, 2023-2027
5	Secure Communication Quantum Algorithms Introduction to Quantum Cryptography, Polarisation Encoding, No-Cloning Theorem, Super Dense Coding, Quantum Teleportation, Quantum Key Distribution – The BB84 Protocol, The Ekert Protocol, Real-World Implementation.	Theory of Quantum Error Correction, Bit flip and phase flip error correction codes, The Shor code. Introduction to Quantum Cryptography, Polarisation Encoding, No-Cloning Theorem, Super Dense Coding, Quantum Teleportation, Quantum Key Distribution – The BB84 Protocol, The Ekert Protocol, Real-World Implementation.	To consider security using quantum, topics were added	Applicable for Batch 2024-2028, 2023-2027

Semester : VIII **Course Name :** Generative AI **Course Code** : CSEAM844E03

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
1	Overview of Generative AI and its significance in various domains. Basic principles of generative models. Types of Generative AI, Applications of generative AI in industry and research.	Overview of Generative AI and its significance in various domains. Basic principles of generative models. Types of Generative AI, Key challenges in training and optimizing generative models, Ethical concerns and societal impact of Generative AI, Applications of generative AI in industry and research.	Based on stakeholders feedback the content is added	Applicable for the batches 2022 - 2026 2023 – 2027 2024 - 2028
2	Understanding probability distributions and sampling methods. Introduction to Markov chains and their relevance in generative AI. Bayesian probability Hands-on exercises on basic probabilistic models.	Understanding probability distributions and sampling methods. Introduction to Markov chains and their relevance in generative AI. Bayesian generative models.	Hands-on session is offered as part of practical	Applicable for the batches 2022 - 2026 2023 – 2027 2024 - 2028
4	Variational Autoencoders (VAEs): Understanding the encoder-decoder architecture of VAEs. Training VAEs for generating data and learning latent representations. Learning latent representations using VAEs, Applications of VAEs in image generation, data compression, and anomaly detection.	Variational Autoencoders (VAEs) and Diffusion models: Understanding the encoder-decoder architecture of VAEs. Training VAEs for generating data and learning latent representations. Learning latent representations using VAEs, Applications of VAEs in image generation, data compression, and anomaly detection. Diffusion models, The Diffusion Process, Training Diffusion Models, Applications of Diffusion Models, Advanced Diffusion Models	Diffusion models were added,	Applicable for the batches 2022 - 2026 2023 – 2027 2024 - 2028

5	Unit 5 Reinforcement Learning for Generative Tasks: Reinforcement Learning techniques for generative tasks. Policy gradient methods and actor-critic algorithms. Practical implementation of reinforcement learning for generative tasks.	Transformer Models and Reinforcement Learning for Generative Tasks: Introduction to Transformer Models. Reinforcement Learning techniques for generative tasks. Policy gradient methods and actor-critic algorithms. Practical implementation of reinforcement learning for generative tasks.	Transformer topics were included for better understanding	Applicable for the batches 2022 - 2026 2023 – 2027 2024 - 2028

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Format for Programme wise Changes in Course Content - Syllabus Revision

School:**Engineering and Technology**
Department: **Computer Science and Engineering**

Programme: B.Tech in Computer Science and Engineering - IOT
Semester: VI
Course: Advance Internet of Things
Course Code: CSEIOT631P

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
Unit 1	**Project 1:** Smart Parking System **Project 2:** Smart Gas Leakage detection and Alert System through bot.	**Experiment 1:** Demonstrate the difference between IoT and IIoT by simulating an industrial environment. **Experiment 2:** Designing a Wireless Sensor Network (WSN) for IoT Applications	**As suggested by the stakeholders**	**Applicable for — batches** **2023-2024** **2024-2025**
Unit 2	**Project 3:** Air Pollution Monitoring and Alert System **Project 4:** Face Recognition bot system	Experiment 3: Implement CoAP on NodeMCU ESP8266 for Lightweight Communication. Experiment 4: Implementing AMQP for Secure and Reliable Messaging with Data Integrity and Message Queuing in IIoT	**As suggested by the stakeholders**	**Applicable for — batches** **2023-2024** **2024-2025**

Unit 3	Project 5: IoT based Weather Reporting System Project 6: Smart Home Automation System	Experiment 5: Experiment on Descriptive and Diagnostic Analytics of IIoT Data. Experiment 6: Implement Real-Time Analytics on IIoT Data Using Apache Kafka to Understand the Importance of Immediate Data Insights	**As suggested by the stakeholders**	**Applicable for — batches** **2023-2024** **2024-2025**
Unit 4	Project 7: Smart Agriculture System Project 8: Liquid Level Monitoring System	Experiment 7: Implement mechanisms for ensuring message integrity in IIoT communications using MQTT, hashing techniques, and digital signatures. Experiment 8: Analyze the Role of REST APIs in Industrial IoT Architectures	**As suggested by the stakeholders**	**Applicable for — batches** **2023-2024** **2024-2025**
Unit 5	Project 9: Smart Alarm Clock System Project 10: Smart Health Monitoring System	Experiment 9: Develop a Basic Asset Tracking System Utilizing RFID Tags to Enable Real-Time Location Monitoring of Hospital Equipment Experiment 10: Development of a Smart Medicinal Package for Reminder Notifications and Dispensing Simulation.	**As suggested by the stakeholders**	**Applicable for — batches** **2023-2024** **2024-2025**

Semester: III
Course: Digital Systems And Computer Architecture
Course Code: CSEIOT331

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks

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Format for Programme wise Changes in Course Content - Syllabus Revision

School:**Engineering and Technology**
Department: **Computer Science and Engineering**

Programme: B.Tech in Computer Science and Engineering - IOT
Semester: VI
Course: Advance Internet of Things
Course Code: CSEIOT631P

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
Unit 1	**Project 1:** Smart Parking System **Project 2:** Smart Gas Leakage detection and Alert System through bot.	**Experiment 1:** Demonstrate the difference between IoT and IIoT by simulating an industrial environment. **Experiment 2:** Designing a Wireless Sensor Network (WSN) for IoT Applications	**As suggested by the stakeholders**	**Applicable for — batches** **2023-2024** **2024-2025**
Unit 2	**Project 3:** Air Pollution Monitoring and Alert System **Project 4:** Face Recognition bot system	Experiment 3: Implement CoAP on NodeMCU ESP8266 for Lightweight Communication. Experiment 4: Implementing AMQP for Secure and Reliable Messaging with Data Integrity and Message Queuing in IIoT	**As suggested by the stakeholders**	**Applicable for — batches** **2023-2024** **2024-2025**

Unit 3	Project 5: IoT based Weather Reporting System Project 6: Smart Home Automation System	Experiment 5: Experiment on Descriptive and Diagnostic Analytics of IIoT Data. Experiment 6: Implement Real-Time Analytics on IIoT Data Using Apache Kafka to Understand the Importance of Immediate Data Insights	**As suggested by the stakeholders**	**Applicable for — batches** **2023-2024** **2024-2025**
Unit 4	Project 7: Smart Agriculture System Project 8: Liquid Level Monitoring System	Experiment 7: Implement mechanisms for ensuring message integrity in IIoT communications using MQTT, hashing techniques, and digital signatures. Experiment 8: Analyze the Role of REST APIs in Industrial IoT Architectures	**As suggested by the stakeholders**	**Applicable for — batches** **2023-2024** **2024-2025**
Unit 5	Project 9: Smart Alarm Clock System Project 10: Smart Health Monitoring System	Experiment 9: Develop a Basic Asset Tracking System Utilizing RFID Tags to Enable Real-Time Location Monitoring of Hospital Equipment Experiment 10: Development of a Smart Medicinal Package for Reminder Notifications and Dispensing Simulation.	**As suggested by the stakeholders**	**Applicable for — batches** **2023-2024** **2024-2025**

Semester: III
Course: Digital Systems And Computer Architecture
Course Code: CSEIOT331

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks

1	Overview of Digital Systems, Boolean Algebra and Logic Gates, Combinational Logic: Design and Analysis, Sequential Logic: Flip-Flops and Registers	Overview of Digital Systems – Conversion of different number systems, Simplification of Boolean Algebra, Logic Gates, Combinational Logic: Design and Analysis, Adder, Subtractor, Multiplexer, Sequential Logic: Flip-Flops and Registers.	**As suggested by the stakeholders**	**2023, 2024**
2	NA	Complement in Digital System - Unsigned Multiplication, Signed Multiplication with Booths Algorithm – Restoring and Non Restoring Techniques for Division	**As suggested by the stakeholders**	**2023, 2024**
5	Memory Hierarchy - Memory Technologies – Cache Memory – Measuring and improving cache performance – Virtual memory, TLB - Hard Disk Drives and Solid-State Drives, File Systems and Storage Technologies and Trends, Accessing I/O Devices – Interrupts – Direct Memory Access – Bus structure – Bus operation – Arbitration	Memory Hierarchy - Memory Technologies – Cache Memory – Measuring and improving cache performance – Virtual memory, TLB - Accessing I/O Devices – Interrupts – Direct Memory Access – Bus structure – Bus operation – Arbitration	**As suggested by the stakeholders**	**2023, 2024**

Semester: V
Course: Cryptography and Network Security
Course Code: IOT532

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks

4	NA	Topics Added : Secure Electronic Transaction	**As suggested by the stakeholders**	**2024**
5	NA	Topics Added : Firewall Design Principles – Trusted Systems	**As suggested by the stakeholders**	**2024**

Semester: V
Course: Design and Analysis of Algorithms
Course Code: CSE533

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
Unit 3	Experiment 3: Implement Heap sort using Divide and Conquer method.	Experiment 3: Implementation of Sorting Algorithms Using Divide and Conquer method. a. Quick Sort b. Merge Sort c. Heap Sort	**As suggested by the stakeholders**	**Applicable for 2023, 2024**
Unit 4	Experiment 4: Implement 0/1 Knapsack using Dynamic Programming. Experiment 5: Implement Horspool string matching algorithm. Experiment 6: Implement All-Pairs Shortest Paths problem using Floyd's algorithm. Experiment 7: Find Minimum Cost Spanning Tree of a given connected undirected graph using Kruskal's	Experiment 4: Implement Horspool string matching algorithm. Experiment 5: Implement All-Pairs Shortest Paths problem using Floyd's algorithm. Experiment 6: Find Minimum Cost Spanning Tree of a given connected undirected graph using Kruskal's algorithm and calculate its time complexity. Experiment 7: Find Minimum Cost Spanning Tree of a given undirected graph using Prim's algorithm and calculate its time complexity.	**As suggested by the stakeholders**	**Applicable for 2023, 2024**

	algorithm and calculate its time complexity. Experiment 8: Find Minimum Cost Spanning Tree of a given undirected graph using Prim's algorithm and calculate its time complexity. Experiment 9: Implement Dijkstra's algorithm to find the shortest path to other vertices in a weighted connected graph and calculate its time complexity.	Experiment 8: Implement Dijkstra's algorithm to find the shortest path to other vertices in a weighted connected graph and calculate its time complexity.		
Unit 5	Experiment 10: Find a subset of a given set S = {Sl, S2,.....,Sn} of n positive integers whose SUM is equal to a given positive integer d using Backtracking principle. Experiment 11: Find all Hamiltonian Cycles in a connected undirected Graph G of n vertices using backtracking principle. Experiment 12: Implement Traveling Salesman problem using Branch and Bound principle.	Experiment 9: Find a subset of a given set S = {Sl, S2,.....,Sn} of n positive integers whose SUM is equal to a given positive integer d using Backtracking principle. Experiment 10: Implement Traveling Salesman problem using Branch and Bound principle.	**As suggested by the stakeholders**	**Applicable for 2023, 2024**

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Format for Programme wise Changes in Course Content - Syllabus Revision

School:**Engineering and Technology**
Department: **Computer Science and Engineering**

Programme: **Information Technology**

Semester: III
Course: Python Programming
Course Code: CSE351

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
1	Installing a complete Python environment, Python Introduction, Keywords and Identifiers, Statements and comments, Python Data types, Python I/O and import, Python Operators, Basic Mathematics, Variables, Strings and text, Interacting with users. Illustrative Programs using Variables and Data Types: Numeric, Lists, Strings, and Illustrative	Installing a complete Python environment, Python Introduction, Keywords and Identifiers, Statements and comments, Python Data types, Python I/O and import, Python Operators, Basic Mathematics, Variables, Strings and text, Interacting with users. Illustrative Programs using Variables and Data Types: Numeric, Lists, Strings, and Illustrative		Applicable for Batch 2024-2028

	Programs using Operators: Arithmetic, Comparison, Assignment, Logical, Bitwise, Membership, and Identity.	Programs using Operators: Arithmetic, Comparison, Assignment, Logical, Bitwise		
2	Looping and logic, Python Flow Control, if-else, for loop, while loop, break and continue, Illustrative programs, Python Functions, function argument, python recursion, python module, python package. and Illustrative Programs using Conditional Statements: If, Elif and Else; Loops: While, for and nested loops; Functions	Looping and logic, Python Flow Control, if-else, for loop, while loop, break and continue, Illustrative programs, Python Functions, function argument, and Illustrative Programs using Conditional Statements: If, Elif and Else; Loops: While, for and nested loops; Functions	Repetitive topics were removed	Applicable for Batch 2024-2028
5	Python Basics for Data Analysis and Visualization: Loading, Cleaning and Exploring and Visualization.	Python Libraries (NumPy, Pandas, Matplotlib, Seaborn, Scikit-Learn), Machine Learning and its Use Cases.	Specific topics have been mentioned	Applicable for Batch 2024-2028

School:**Engineering and Technology**
Department: **Computer Science and Engineering**

Programme: **Information Technology**

Semester: VIII
Course: Generative AI
Course Code: CSEAM844E03

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
1	Overview of Generative AI and its significance in various domains. Basic principles of generative models. Types of Generative AI, Applications of generative AI in industry and research.	Overview of Generative AI and its significance in various domains. Basic principles of generative models. Types of Generative AI, Key challenges in training and optimizing generative models, Ethical concerns and societal impact of Generative AI, Applications of generative AI in industry and research.	Based on stakeholders feedback the content is added	Applicable for the batches 2024-2028,2023-2027,2022-2026
2	Understanding probability distributions and sampling methods. Introduction to Markov chains and their relevance in generative AI.	Understanding probability distributions and sampling methods. Introduction to Markov chains and their relevance in generative AI. Bayesian generative models.	Hands-on session is offered as part of practical	Applicable for the batches 2024-2028,2023-2027,2022-2026

	Bayesian probability Hands-on exercises on basic probabilistic models.			
4	Variational Autoencoders (VAEs) Understanding the encoder-decoder architecture of VAEs. Training VAEs for generating data and learning latent representations. Learning latent representations using VAEs, Applications of VAEs in image generation, data compression, and anomaly detection.	Unit 4: Variational Autoencoders (VAEs) and Diffusion models Understanding the encoder-decoder architecture of VAEs. Training VAEs for generating data and learning latent representations. Learning latent representations using VAEs, Applications of VAEs in image generation, data compression, and anomaly detection. Diffusion models, The Diffusion Process, Training Diffusion Models, Applications of Diffusion Models, Advanced Diffusion Models	Diffusion models were added,	Applicable for the batches 2024-2028,2023-2027,2022-2026
5	Unit 5 Reinforcement Learning for Generative Tasks : Reinforcement Learning techniques for generative tasks. Policy gradient methods	Unit 5 Transformer Models and Reinforcement Learning for Generative Tasks : Introduction to Transformer Models. Reinforcement Learning techniques	Transformer topics were included for better understanding	Applicable for the batches 2024-2028,2023-2027,2022-2026

	and actor-critic algorithms. Practical implementation of reinforcement learning for generative tasks.	for generative tasks. Policy gradient methods and actor-critic algorithms. Practical implementation of reinforcement learning for generative tasks.		

School:**Engineering and Technology**
Department: **Computer Science and Engineering**

Programme: **Information Technology**

Semester: III
Course: Object Oriented Programming
Course Code: CSE335P

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
2	Overview of Object oriented Program - Classes and Objects – Constructors – Multiple constructors - Encapsulation and access modifiers, -Overriding-Inheritance and polymorphism, - Real life examples of polymorphism and inheritance -Abstract classes and Interfaces	Classes and Objects – Constructors – Multiple constructors - Encapsulation and access modifiers, -Overriding-Inheritance and polymorphism, - Real life examples of polymorphism and inheritance -Abstract classes and Interfaces	Overview of Object oriented concepts covering in Unit -1	Applicable for Batch 2024-2028

School:**Engineering and Technology**

Department: **Computer Science and Engineering**

Programme: **Information Technology**

Semester: IV
Course: Quantum Computing
Course Code: CSEIOT641E06

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
4	Unit 4 : Quantum Information Introduction, Quantum noise and Quantum Operations, Representations, Examples, Applications, Distance Measures for Quantum information, Quantum Entropy, Quantum Fourier transforms, Quantum Phase estimation, Quantum search algorithms, Deutsch and Deutsch Josza Algorithm. Introduction, Quantum noise and Quantum Operations, Representations, Examples, Applications, Distance Measures for Quantum information. Theory of Quantum Error	Unit 4 : Quantum Information Introduction, Quantum noise and Quantum Operations, Representations, Examples, Applications, Distance Measures for Quantum information, Quantum Entropy, Quantum Fourier transforms, Quantum Phase estimation, Quantum search algorithms, Deutsch and Deutsch Josza Algorithm. Introduction, Quantum noise and Quantum Operations, Representations, Examples, Applications, Distance Measures for Quantum information.	As per stakeholder holder feedback	Applicable for Batch 2024-2028, 2023-2027

	Correction, Constructing Quantum Codes, Stabilizer codes, Bit flip and phase flip error correction codes, The Shor code, Quantum Fourier transforms, Quantum Phase estimation, Quantum search algorithms, Quantum counting Algorithms. Deutsch and Deutsch Josza Algorithm. Ex : Implementation of Quantum Error Correction Codes	Quantum Fourier transforms, Quantum Phase estimation, Quantum search algorithms. Deutsch and Deutsch Josza Algorithm. Ex 1: Implementation of Quantum search Algorithms		
5	Unit 5 : Secure Communication Quantum Algorithms Introduction to Quantum Cryptography, Polarisation Encoding, No-Cloning Theorem, Super Dense Coding, Quantum Teleportation, Quantum Key Distribution - The BB84 Protocol, The Ekert Protocol, Real-World Implementation.	Unit 5: Quantum Error Correction and Quantum Cryptography Theory of Quantum Error Correction, Bit flip and phase flip error correction codes, The Shor code. Introduction to Quantum Cryptography, Polarisation Encoding, No-Cloning Theorem, Super Dense Coding, Quantum Teleportation, Quantum Key Distribution - The BB84 Protocol, The Ekert Protocol, Real-World Implementation.	To consider security using quantum, topics were added	Applicable for Batch 2024-2028, 2023-2027

Note:

1. Each sheet is programme specific. Hence kindly use different sheets for different programmes.
2. Kindly avoid mentioning units that do not have any changes.

HOD/Dept Coordinator
Date: 2/4/25

Dean/Associate Dean
Date: 2/4/25

Registrar
Date:

CHRIST
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BANGALORE, INDIA

Format for Programme wise Changes in Course Content - Syllabus Revision

School:**Engineering and Technology**
Department: **Computer Science and Engineering**
Programme: MTech

Semester: I
Course: Advanced Database systems
Course Code: MTCS132

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
5	Transaction Processing Transaction Processing: Introduction to Transaction Processing, Transaction and System concepts, Desirable properties of Transactions, Characterizing schedules based on recoverability, Characterizing schedules based on Serializability, Transaction support in SQL. Concurrency Control in Databases: Two-phase locking techniques for Concurrency control, Concurrency control based on Timestamp ordering, Multiversion Concurrency control techniques, Validation Concurrency control techniques, Granularity of Data items and Multiple Granularity Locking.	Transaction Processing Transaction Processing: Introduction to Transaction Processing, Transaction and System concepts, Desirable properties of Transactions, Characterizing schedules based on recoverability, Characterizing schedules based on Serializability, Transaction support in SQL. Concurrency Control in Databases: Two-phase locking techniques for Concurrency control, Concurrency control based on Timestamp ordering, Multiversion Concurrency control techniques, Validation Concurrency control techniques, Granularity of Data items and Multiple Granularity Locking. Recovery Concepts, NO-UNDO/REDO recovery based on Deferred update, Recovery techniques	As suggested by the stakeholders	Applicable for Batch 2025

	Recovery Concepts, NO-UNDO/REDO recovery based on Deferred update, Recovery techniques based on immediate update, Shadow paging, Database backup and recovery from catastrophic failures. Introduction to OQL, Additional Forms of OQL Expressions, Object Assignment and Creation in OQL, User-Defined Types in SQL, Operations on Object-Relational Data	based on immediate update, Shadow paging, Database backup and recovery from catastrophic failures.		

Semester:
Course:
Course Code:

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
1				
2				
3				
4				
5				

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Format for Programme wise Changes in Course Content - Syllabus Revision

School:**Engineering and Technology**
Department: **Data Science**
Programme: MTech

Semester: I
Course: Advanced Database systems
Course Code: MTCS132

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
5	Transaction Processing Transaction Processing: Introduction to Transaction Processing, Transaction and System concepts, Desirable properties of Transactions, Characterizing schedules based on recoverability, Characterizing schedules based on Serializability, Transaction support in SQL. Concurrency Control in Databases: Two-phase locking techniques for Concurrency control, Concurrency control based on Timestamp ordering, Multiversion Concurrency control techniques, Validation Concurrency control techniques, Granularity of Data items and Multiple Granularity Locking.	Transaction Processing Transaction Processing: Introduction to Transaction Processing, Transaction and System concepts, Desirable properties of Transactions, Characterizing schedules based on recoverability, Characterizing schedules based on Serializability, Transaction support in SQL. Concurrency Control in Databases: Two-phase locking techniques for Concurrency control, Concurrency control based on Timestamp ordering, Multiversion Concurrency control techniques, Validation Concurrency control techniques, Granularity of Data items and Multiple Granularity Locking. Recovery Concepts, NO-UNDO/REDO recovery based on Deferred update, Recovery techniques	As suggested by the stakeholders	Applicable for Batch 2025

	Recovery Concepts, NO-UNDO/REDO recovery based on Deferred update, Recovery techniques based on immediate update, Shadow paging, Database backup and recovery from catastrophic failures. Introduction to OQL, Additional Forms of OQL Expressions, Object Assignment and Creation in OQL, User-Defined Types in SQL, Operations on Object-Relational Data	based on immediate update, Shadow paging, Database backup and recovery from catastrophic failures.		

Semester: I
Course: Advanced Data Structures and Algorithms Lab
Course Code: MTDS151

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
1	Write programs for implementing the following searching techniques. a. Linear search b. Binary search c. Fibonacci search	Implement the following searching techniques. a. Linear search b. Binary search	As suggested by the stakeholders	Applicable for Batch 2025
2	Write programs for implementing the following sorting techniques to arrange a list of integers in ascending order. a. Bubble sort b. Insertion sort c. Selection sort d. Quick sort e. Merge sort	Implement the following sorting techniques a. Insertion sort b. Quick sort c. Merge sort		
3	Write programs to a. Design and implement Stack and its operations using List. b. Design and implement Queue and its operations using List	Implement Matrix multiplication, inversion and determinant.		
4	Write programs for the following: a. Uses Stack operations to convert infix expression into postfix expression. b. Uses Stack operations for evaluating the postfix expression.	Implement string matching algorithm.		
5	Write programs for the following operations on Single Linked List. (i)	Singly linked list: Traverse/print, count number of nodes, insertions at various		

	Creation (ii) insertion (iii) deletion (iv) traversal b. To store a polynomial expression in memory using single linked list.	positions, deletion from various positions, search, reverse print (recursive), delete a node with a given key.		
6	Write programs for the following operations on Circular Linked List. (i) Creation (ii)insertion (iii) deletion (iv) traversal	Operations on Circular Linked List. (i) Creation (ii)insertion (iii) deletion (iv) traversal		
7	Write programs for the following: Uses functions to perform the following operations on Double Linked List. (i) Creation (ii) insertion (iii) deletion (iv) traversal in both ways.	Implement Queue operations – Linear array, circular array, linked list.		
8	Write a program to implement Stack using linked list	Implement basic stack operations – array, linked list.		
9	Write a program to implement Linear Queue using linked list.	Implement post fix evaluation and infix to postfix.		
10	Write programs to implement graph traversal algorithms: a. Depth-first search. b. Breadth-first search.	Recursive and non-recursive tree traversal algorithms.		
11	Write a program to perform the following: a. Create a binary search tree. b. Traverse the above binary search tree recursively in pre-order, post-order and in-order. c. Count the number of nodes in the binary search tree.	Binary search tree: Insertion, deletion and search operations		
12		AVL tree insertion and deletion.		
13		Insertion, deletion and search – Red-black tree		
14		Implement hashing		
15		Heap sort		
16		Any one minimum spanning tree algorithm.		
17		Any one single source shortest path algorithm.		
18		BFS and DFS		

Semester: I

Course: Advanced Data Structures and Algorithms
Course Code: MTDS131

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
1	COMPLEXITY ANALYSIS Time and Space complexity of algorithms, asymptotic analysis, average and worst case analysis, asymptotic notation, the importance of efficient algorithms.	ALGORITHMS ANALYSIS: Algorithm: Performance Analysis complexity, time complexity, asymptotic notations, recurrences, probabilistic analysis. Analysis of sequential search, binary search, recursive factorial function, recursive binary search, insertion sort, and matrix multiplication. Sorting using divide-and-conquer strategy (merge sort), recursive sort algorithm (Quick sort). Matrix - determinant and inverse. String matching; Knuth-Morris-Pratt algorithm.	As suggested by the stakeholders	Applicable for
2	LISTS, STACKS AND QUEUES The Queue ADT: Definition, Array representation of queue, Types of queues: Simple queue, circular queue, double ended queue (de-queue) priority queue, operations on all types of Queues. The List ADT: singly linked list implementation, insertion, deletion and searching operations on linear list, circular linked list implementation, Double linked list implementation, insertion, deletion and searching operations. Applications of Linked List.	LIST AND QUEUES: The List ADT: singly linked list implementation, Operations on SLL, Double linked list implementation, basic operations, Circular linked list, Doubly linked list, Linked list with Header – Application – Sparse matrix representation with Linked List, sparse matrix addition. The Queue ADT; Array and linked implementation of Linear and circular queue, double-ended queue (de-queue). Any one application of Queue.		
3	TREES Preliminaries – Binary Trees – The Search Tree ADT – Binary Search Trees – AVL Trees – Tree Traversals – Hashing – General Idea – Hash Function – Separate Chaining – Open Addressing –Linear Probing – Priority Queues (Heaps) –	STACK AND BINARY TREES Stack: Array and linked implementation, application: Postfix expression evaluation, infix to postfix expressions, and Postfix to infix. Binary trees – basic definitions; Tree traversal (recursive and non-recursive),		

	Model – Simple implementations – Binary Heap.	Binary search tree (insertion, deletion, search), AVL trees (insertion and deletion),		
4	SORTING Insertion Sort, Selection sort – Shell sort – Heap sort – Merge sort – Quicksort – External Sorting.	ADVANCED SEARCH TREES, HASHING AND BINARY HEAP Red-black tree; Ball tree and KD tree. Hashing – General Idea – Hash Function – Separate Chaining – Open Addressing –Linear Probing. Heaps, Implementation of Binary heaps, Heap sort, Priority Queues with Heap.		
5	GRAPHS Introduction to Graphs, Definitions –DFS, BFS, Minimum Spanning Tree – Prim's and Kruskal's Algorithm. Single-Source Shortest Paths – Bellman-Ford algorithm and Dijkstra's Algorithm – – Applications of Graphs.	GRAPHS Introduction to Graphs, Definitions –DFS, BFS, Greedy Algorithms; Minimum Spanning Tree – Prim's and Kruskal's Algorithm. Dynamic Programming; Single-Source Shortest Paths – Bellman-Ford algorithm and Dijkstra's Algorithm. All pairs shortest path: Floyd-Warshall		

Semester: II
Course: Machine Learning for Data Science
Course Code: MTDS233

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
1	Introduction to Machine Learning and Learning Theory Need for Machine Learning, Machine Learning in relation to other fields, Types of Machine Learning, Challenges of Machine Learning, Machine Learning Process and Applications, Data, Data Analytics, Descriptive Statistics, Univariate, Bivariate and Multivariate Data, Feature Engineering, Dimensionality Reduction techniques, Learning and its Types.	Basics of machine learning Types of learning, types of data, data preprocessing, distance measures, basics of classification, Discriminative vs generative classification models, Maximum Likelihood Function (MLE), Naïve Bayes classifier, Logistic regression, , Instance based learning, KNN classifier, basics of feature selection, Recursive feature elimination. Practical Experiments / Experiential Learning	As suggested by the stakeholders	Applicable for —-batches

		Experiment 1: Naïve Bayes classifier – implementation and study with different data set. Experiment 2: Logistic regression – implementation and study with different data sets. Experiment 3: KNN classifier-implementation. Case study 1 : Image feature extraction and classification		
2	Similarity based Learning and Regression Analysis Introduction to Similarity based Learning, Nearest Neighbor Learning, Weighted K-Nearest Neighbor Algorithm, Nearest Centroid Classifier, Locally weighted Regression, Introduction to Regression, Linearity, Correlation and Causation, Linear Regression, Multiple Linear Regression. Experiment 1: Implementation of Linear Regression, KNN Algorithm	Classification and Regression Linear Regression models, Ridgee and Lasso regression, Concepts in classification – Occam's razor, Overfitting, Bias, Variance, regularization, model evaluation, Ensemble learning. Data imbalance problem, Enhancing classification. Decision tree, CART, Random Forest, XGBoost, PCA and LDA, basics of SVM, Overview explainable AI – example. Practical Experiments / Experiential Learning Experiments 4 : Model building and analysis i. DT, CART, RF and XGBoost. ii. SVM iii. Addressing data imbalance problem iv. Classification with data reduction Case study 2: text feature extraction and classification Term paper: Ethical issues in Machine learning		
3	Decision Tree and Bayesian Learning Decision Tree learning Model, Decision Tree Induction Algorithms: ID3 Tree Construction, C4.5 Construction, Classification and Regression Trees Construction, Regression Trees, Validating and Pruning of Decision Trees. Probability based Learning, Bayes	Clustering Types – partitioning, K Means. Density based and Hierarchical clustering (one algorithm each), Fuzzy clustering, Cluster evaluation, Applications, outlier analysis and its application. Overview of Frequent pattern mining. Concepts in Reinforcement learning, Q		

	Theorem, Classification using Bayes Model, Naïve Bayes Algorithm for Continuous Attributes, Other Naïve Bayes Classifiers. Experiment 2: Implementation of Decision Tree and Naïve Bayes Algorithm	Learning. Overview of Knowledge graph and its applications. Practical Experiments / Experiential Learning: Experiment 5: Implementation and analysis of the different clustering algorithms. Experiment 6: Study of Frequent pattern mining with any ML tool. Case study 3: Implementation of a recent paper on clustering or Application of FPM algorithm or Implementation and demonstration of a reinforcement learning algorithm or Implementation and demonstration of Knowledge Graph.		
4	Clustering Algorithms and reinforcement Learning Introduction to Clustering Approaches, Proximity Measures, Hierarchical Clustering Algorithms, Partitional Clustering Algorithm, Overview of Reinforcement Learning, Components, Markov Decision Process. Experiment 3: Implementation of Decision Clustering Algorithm Experiment 4: Implementation of Reinforcement Algorithm	Introduction to Neural Network Artificial Neurons, Basic architectures - Perceptron – Perceptron learning, multilayer NN – parameters and hyper parameters, concept of Feed forward nets, Vectorized implementation, , training, Loss functions, Gradient descent optimization, back propagation; Binary and multi class classification with perceptron. Overview of Auto encoders and Boltzmann machine. Practical Experiments / Experiential Learning: Experiment 7: Implementation of a simple Multilayer perceptron model (basic coding) Case study 4 : Classification with MLP		
5	R Essentials Programming: Commands and Syntax, Packages and Libraries, Introduction to Data Types, Data Structures in R, Importing and Exporting Data. Data exploration, Qualitative and Quantitative Data, Measure of Central Tendency (Mean, Median and Mode), Measure of Positions (Quartiles, Deciles, Percentiles and Quantiles), Measure of Dispersion (Range, Median, Absolute	Unit 5: Fundamentals of Deep Learning Training deep NN: Back propagation; set up and initialization issues; Vanishing and exploding gradient problems; Gradient descent strategies; Batch normalization. Bias-variance tradeoff; Generalization issues in model tuning and evaluation; penalty- based regularization; Ensemble methods; early stopping. Convolutional Neural Network:-		

	deviation about median, Variance and Standard deviation), Other Measures: Quartile and Percentile, Interquartile Range. Experiment 5: Case study on Data Visualization for any Application	Introduction; Basic structure, training; architecture - Case studies. Recurrent Neural Network:- Introduction; Architecture; Challenges in training; Echo-state nets, LSTM, GRUs; Applications of Recurrent nets Practical Experiments / Experiential Learning: Case study 5: Build a CNN or RNN or a hybrid model for a given problem.		

Semester:
Course:
Course Code:

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
1				
2				
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