



**Department of Artificial Intelligence and Data Science**  
**6<sup>th</sup> BOARD OF STUDIES MEETING**

FXEC\AI&DS\2023-2024\BOS-6 Minutes

Mode: Blended Mode

Venue: CSE Lab 3

Google meet Link: <https://meet.google.com/frw-kxjy-eaj>

Date & Time: 12.12.2023 & 10.00 A.M

**AGENDA**

BoS / AI&DS 6.1: Welcome address and Opening Remarks by Chairman, Board of studies in the Department of Artificial Intelligence and Data science.

BoS/AI&DS 6.2: Confirmation of the Minutes of the 5<sup>th</sup> meeting of Board of studies in the department of Artificial Intelligence and Data science on 12.06.2023 and Action taken report of 5<sup>th</sup> meeting of Board of studies.

BoS /AI&DS 6.3: Business brought forward by the Chairman, Board of Studies

6.3.1 R 2021 Industry Supported Course Revamp

6.3.2 R 2021 New Laboratory Establishment

6.3.3 R 2021 Student's Progress Parameters and Outcomes

6.3.4 R 2021 Skill Based Value added Courses Revamp

6.3.5 List of NPTEL Course Approval(R 2021)

6.3.6 Plan for R2024 Curriculum B.Tech Artificial Intelligence and data science

BoS / AI&DS 6.4: Suggestions given by the BOS Members

BoS / AI&DS 6.5: Any other items for discussion



**DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND DATA SCIENCE  
MINUTES OF THE MEETING**

The 6<sup>th</sup> Meeting of the Board of studies of the Department of Artificial Intelligence and Data Science was held on 12<sup>th</sup> December 2023 at 10.00 AM.

The following members were present:

1. Head of BOS  
**Prof. Dr.G.Aravind Swaminathan, Professor/Head,**  
Department of Computer Science and Engineering,  
Francis Xavier Engineering College,  
Tirunelveli
2. University Nominee  
**Dr.C. Senthil Kumar,**  
Associate Professor,  
Department of Computer Science and Engineering,  
Thiagarajar College of Engineering.
3. Academic Experts  
**Dr.E.Ilavarasan**  
Professor/CSE,  
Pudhucherry Technological University (Formally Pondicherry Engineering College),  
Pondicherry- 605014.
4. **Dr.D Murugan**  
Professor/CSE,  
Manonmanium Sundaranar University,  
Tirunelveli-627012
5. Industrial Experts  
**Mr.Prabagar Ramamurthy**  
Head,  
Information Security Management,  
Tata Consultancy Services,  
1/G1,Sipcot,IT Park,  
Siruchery,  
Chennai -600006
6. Alumni Members  
**Mr.Abishek Stephen**  
Senior Backend Engineer,  
Turing,  
Palo Alto, California,  
USA

## 7. Internal Members

S. No	Name of the Member	Designation
1.	Dr.A.Anitha	Professor & Head / AIDS
2.	Mrs.S. Poornam	AP / AIDS
3.	Mrs.R.Gomathi selvi	AP / AIDS
4.	Mr.Sivanaintha Perumal	AP / AIDS
5.	Ms.S.Angel	AP / AIDS
6.	Ms.S.V.Lincy	AP / AIDS
7.	Ms.B.Varshath Nikila	AP / AIDS
8.	Ms.R.Jothi Jeyashree	AP / AIDS
9.	Ms.Sujithra Jenifer	AP / AIDS

**Members Absent - Nil**

### **BoS / AI&DS 6.1: WELCOME ADDRESS AND OPENING REMARKS BY CHAIRMAN, BOARD OF STUDIES IN THE DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND DATA SCIENCE**

The Chairman, BOS of the Artificial Intelligence and Data Science welcomed and introduced the members of 6<sup>th</sup> Board of Studies and thanked each of them for sparing their valuable time to attend the meeting.

### **BoS / AI&DS 6.2: TO CONFIRM THE MINUTES OF FIFTH BOS MEETING HELD ON 12.06.2023 AND ACTION TAKEN**

- ✓ The minutes of the FIFTH Board of Studies meeting held on 12.06.2023 were communicated to the members. Annexure-III

### **BoS / AI&DS 6.3: Business brought forward by the Chairman, Board of Studies**

#### **BoS / AI&DS 6.3.1: TO CONFIRM AND APPROVE THE INDUSTRY SUPPORTED COURSE FOR R2021 B.TECH ARTIFICIAL INTELLIGENCE AND DATA SCIENCE**

Curriculum R2021, the Industry Supported Course were framed and it was presented by the chairman BOS

- ✓ Machine learning Operations (ML Ops) with 3 credits as Theory cum Practical course
- ✓ Theory – 30 hrs, Practical – 30 hrs which is Replacement for Professional Elective IV

**BoS / AI&DS 6.3.2: NEW LABORATORY ESTABLISHMENT**

Board Members recommended establishment of

Lab name	Course Name
Machine learning lab	21AI6611-Machine learning Laboratory
Deep learning lab	21AI7611-Deep Learning Laboratory
Internet of Things lab	From Reg 2024

for conducting higher Semester Practical Courses.

**BoS / AI&DS 6.3.3: STUDENT'S PROGRESS PARAMETERS AND OUTCOMES**

S.No	Attainment Vertical	No. of students completed/ Progress	Outcome
1	NPTEL Courses	14	Credit transfer and good progress in doing minor course
2	Internship	70	Industrial exposure on live projects
3	Value added course	55	Skill development
4	Skill based value added course	286	International level achievements in product development
5	Industry Supported Courses	62	Product
6	Minor specialization degree	24	Acquired pre placement offers
7	Industrial training (inhouse)	62+6	MSME Product development

**BoS / AI&DS 6.3.4: TO CONFIRM AND APPROVE THE SYLLABUS FOR SKILL BASED VALUE ADDED COURSE FROM 2023-2024 ACADEMIC YEAR ONWARDS FOR R2021 B.TECH ARTIFICIAL INTELLIGENCE AND DATA SCIENCE**

Revamping Syllabus for Skill Based value added courses from 2022-2023 Academic Year onwards was presented by the chairman BOS

- ✓ RESOLVED TO APPROVE the Curriculum & Syllabus of Skill Based value added course from II<sup>nd</sup> semester – 5<sup>th</sup> Semester R2021 from 2022-2023

Academic Year onwards for R2021 B.Tech Artificial Intelligence and Data Science.

**Batch 2022-2026**

Course Code	Semester	Skill Course	L	T	P	C
21AI2V01	II	Contemporary Coding Techniques	0	0	2	1
21AI3V01	III	Advanced Python Programming	0	0	4	2
21AI4V01	IV	ML model Deployment	0	0	4	2
21AI5V01	V	OpenCV applications with Python	0	0	4	2

**Batch 2023-2027**

Course Code	Semester	Skill Course	L	T	P	C
21AI2V01	II	Data Reporting with Excel and SAS	0	0	2	1
21AI3V01	III	Advanced Python Programming	0	0	4	2
21AI4V01	IV	ML model Deployment	0	0	4	2
21AI5V01	V	Open CV applications with Python	0	0	4	2

**BOS / AI&DS 6.3.5: List of NPTEL COURSE APPROVAL**

- ✓ The list of NPTEL Course for credit transfer was presented for the academic Year 2023-2024. Annexure-I

**BOS / AI&DS 6.3.6: Plan for R2024 Curriculum B.Tech Artificial Intelligence and data science**

- ✓ The need for getting into new regulation was presented.
- ✓ The Framework for R2024 were discussed with the Chairman BOS.

- ✓ To meet global needs inclusion of subjects related to advancement in technology domains like prompt Engineering, Generative AI, AI Frameworks, data Analytics and Dashboard creations.
- ✓ Advancement in Machine Learning to integrate in Production site.
- ✓ To met local needs in data science expertization for acquiring jobs in ISRO Mahendragiri, Atos, Zoho etc.,
- ✓ APPROVED TO RESOLVED to go for R 2024 Curriculum Framing.

**BoS / AI&DS 6.4: Suggestions Given by the Members**

- 6.4.1 Mr.Abishek Stephen suggested to add the topic python with database connectivity in The Industry supported course Machine Learning Operations Syllabus Content.
- 6.4.2 Dr.D Murugan suggested to add Machine Learning Basic principles can be given in Lower Semester.
- 6.4.3 Mr.Prabagar Ramamurthy Real-time application on IoT integrated with AI can be given as Practical Component
- 6.4.4 **Dr.C. Senthil Kumar** Prompt Engineering can be offered as professional core course in the next Regulation
- 6.4.5 NPTEL Course in Cyber Security is suggested for Open Elective for Credit Transfer

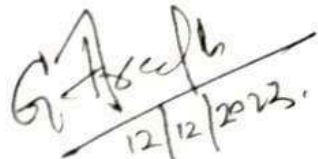









Dr.G.Aravind Swaminathan, Professor/HOD thanked all the members for their kind cooperation and the meeting came to an end.

*G. Aravind Swaminathan*  
12/12/2023  
CHAIRMAN  
BOARD OF STUDIES

Attendance Sheet Table of Members:

S. No	Members as per UGC Norms	Members Nominated	Signature
1	Head of the Department concerned (Chairman)	<b>Dr.G.Aravind Swaminathan,</b> Professor/Head, Department of Computer Science and Engineering, Francis Xavier Engineering College, Tirunelveli	 12/12/2023.
2	One Expert nominated by the Vice Chancellor from a panel of six recommended by the college Principal	<b>Dr.C. Senthil Kumar,</b> Associate Professor, Department of Computer Science and Engineering, Thiagarajar College of Engineering.	
3	Two experts in the subject from outside the college nominated by the Academic Council	<b>Dr.E.Ilavarasan</b> Professor/AI&DS, Pudhucherry Technological University(Formerly Pondicherry Engineering College), Pondicherry- 605014.	
		<b>Dr.D Murugan</b> Professor/AI&DS, Manonmanium Sundaranar University, Tirunelveli-627012	
4	One representative from industry/corporate sector/allied area relating to placement	<b>Mr.Prabagar Ramamurthy</b> Head, Information Security Management, Tata Consultancy Services, 1/G1,Sipcot,IT Park, Siruchery,Chennai -600006	 12/12/2023
5	One Post Graduate meritorious aluminous nominated by the Principal	<b>Mr.Abishek Stephen</b> Senior Backend Engineer, Turing, Palo Alto, California, USA	 12/12/23



## Attendance Sheet of Internal Members

S. No	Name of the Member	Designation	Signature
1.	Dr.A.Anitha	Professor & Head / AIDS	A. Anitha
2.	Mrs.S.Poornam	AP / AIDS	S. Poornam
3.	Mrs.I.Noor Mohammed	AP / AIDS	I. Noor
4.	Mrs.R.Gomathi selvi	AP / AIDS	R. Gomathi
5.	Ms.R.Jothi Jeyashree	AP / AIDS	R. Jothi
6.	Ms.M.Sujithra Jenifer	AP / AIDS	M. Sujithra
7.	Ms.S.Angel	AP / AIDS	S. Angel
8.	Ms.S.V.Lincy	AP / AIDS	S. V. Lincy
9.	Ms.B.Varshath Nikila	AP / AIDS	B. Varshath
10.	Mr.Sivananaitha perumal	AP / AIDS	P. Sivananaitha

## Annexure-I

S.No	Course Id	Course Name	Duration	Replacement Suggested	Applicable NPTEL Domain
1.	noc24-cs29	Getting Started With Competitive Programming	12 Weeks	Professional Elective	<a href="https://onlinecourses.nptel.ac.in/noc24_cs29/preview">https://onlinecourses.nptel.ac.in/noc24_cs29/preview</a>
2.	noc24-cs01	Foundations of Cryptography	12 Weeks	Professional Elective	<a href="https://onlinecourses.nptel.ac.in/noc24_cs01/preview">https://onlinecourses.nptel.ac.in/noc24_cs01/preview</a>
3.	noc24-cs04	Privacy and Security in Online Social Media	12 weeks	Professional Elective	<a href="https://onlinecourses.nptel.ac.in/noc24_cs04/preview">https://onlinecourses.nptel.ac.in/noc24_cs04/preview</a>
4.	noc24-cs05	Basics of Computational Complexity	12 weeks	Professional Elective	<a href="https://onlinecourses.nptel.ac.in/noc24_cs05/preview">https://onlinecourses.nptel.ac.in/noc24_cs05/preview</a>
5.	noc24-cs07	Secure Computation: Part I	12 weeks	Professional Elective	<a href="https://onlinecourses.nptel.ac.in/noc24_cs07/preview">https://onlinecourses.nptel.ac.in/noc24_cs07/preview</a>
6.	noc24-cs12	Affective Computing	12 weeks	Professional Elective	<a href="https://onlinecourses.nptel.ac.in/noc24_cs12/preview">https://onlinecourses.nptel.ac.in/noc24_cs12/preview</a>
7.	noc24-cs32	Introduction to Automata, Languages and Computation	12 weeks	Professional Elective	<a href="https://onlinecourses.nptel.ac.in/noc24_cs32/preview">https://onlinecourses.nptel.ac.in/noc24_cs32/preview</a>
8.	noc24-cs34	Introduction To Industry 4.0 And Industrial Internet Of Things	12 weeks	Open Elective	<a href="https://onlinecourses.nptel.ac.in/noc24_cs34/preview">https://onlinecourses.nptel.ac.in/noc24_cs34/preview</a>
9.	noc24-cs44	Programming in Modern C++	12 weeks	Professional Elective	<a href="https://onlinecourses.nptel.ac.in/noc24_cs44/preview">https://onlinecourses.nptel.ac.in/noc24_cs44/preview</a>
10.	noc24-cs46	Selected Topics in Algorithms	12 weeks	Professional Elective	<a href="https://onlinecourses.nptel.ac.in/noc24_cs46/preview">https://onlinecourses.nptel.ac.in/noc24_cs46/preview</a>
11.	noc24-cs61	Digital Design with Verilog	12 weeks	Open Elective	<a href="https://onlinecourses.nptel.ac.in/noc24_cs61/preview">https://onlinecourses.nptel.ac.in/noc24_cs61/preview</a>

## Annexure-II

### 21AI6703- Machine Learning Operations

#### Industry Supported Course

<b>21AI6703</b>	<b>Machine Learning Operations</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
		<b>2</b>	<b>0</b>	<b>1</b>	<b>3</b>

**Preamble**

This course enables the student to learn the fundamentals of MLOps with Python programming. They will be able to create, manipulate and operate on classes and objects to utilize them for real world problem solving and will be able to deploy an end to end system of MLOps.

**Prerequisites for the course**

- Basics Of Programming

**Objectives**

- To understand the Machine Learning algorithms, features and Fundamentals of MLOps.
- To implement MLOps architecture efficiently.
- To understand the end to end architecture of an MLOps system.
- To develop an ML model optimize, deploy and visualize it on the dashboard.

<b>UNIT I</b>	<b>INTRODUCTION TO MLOPS AND ITS KEY CONCEPTS</b>	<b>6</b>
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Overview of MLOps and its importance - Key concepts: DevOps vs. MLOps

Understanding the machine learning lifecycle - Database Management systems - What is Artificial Intelligence - Machine Learning - Deep Learning - Types of Machine Learning - Concept of Regression, Classification - Supervised Learning - Unsupervised Learning

**Suggested Activities:**

- Practical Implementation of basic regression & Classification programs
- Understand the structure of the MLOps

- Assignment programs
- Quiz

**UNIT II**

**VERSION CONTROL FOR ML AND ML ALGORITHMS**

**6**

Branching strategies for ML projects - Handling large datasets - Machine Learning Algorithms - Random Forest - Support Vector Machine - KNN - Unsupervised Learning : PCA - realtime implementation of the above algorithms - Data Preprocessing.

Hands on Algorithms

**Suggested Activities:**

- Implement ML Algorithms
  - Support Vector Machine
  - Random Forest
  - KNN
  - Unsupervised Learning : PCA
- Dataset preprocessing

**SUGGESTED EVALUATION METHODS:**

- Assignment programs
- Quiz

**UNIT III**

**TRAINING, TESTING AND MODEL ANALYSIS**

**6**

Training - testing - validation for machine learning models - Deployment strategies and best practices - performance analysis - Graphical representations - Hands on Training - Testing and Deployment

**Suggested Activities:**

- Practical usage of ML models
- Training the model
- Testing the model
- Performance analysis of multiple algorithms
- Deployment strategies to be applied

**UNIT IV**

**CONTINUOUS INTEGRATION AND DEPLOYMENT (CI/CD) , DESIGN DASHBOARDS& INTEGRATIONS**

**6**

Setting up CI/CD pipelines for ML projects - Dashboards - types of Databases - MySQL - Data reading - exporting - Building tables - read data - Dashboard connections - Python DB interactions.

**Suggested Activities:**

- Build CI/CD pipelines
- Build MySQL DB
- DB integrations

**SUGGESTED EVALUATION METHODS:**

- Assignment programs
- Quiz

<b>UNIT V</b>	<b>MODEL MONITORING AND MANAGEMENT</b>	<b>6</b>
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Introduction to model monitoring - Implementing monitoring tools for ML models - DBMS - Grafana Visualization - Hands on Visualization - Hands on End to End development and deployment of the problem statement

**Suggested Activities:**

- DB Integration
- Dashboard Integration
- End to development, Deployment and Visualization of a problem statement

**SUGGESTED EVALUATION METHODS:**

- Assignment programs
- Quiz

<b>Total Periods</b>	<b>30</b>
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**Suggestive Assessment Methods**

<b>Continuous Assessment Test (20 Marks)</b>	<b>Formative Assessment Test (20 Marks)</b>	<b>End Semester Exams (60 Marks)</b>
<b>DESCRIPTIVE QUESTIONS</b>	1.ASSIGNMENT PROGRAMS 2. ONLINE MCQ 3. PROBLEM SOLVING ACTIVITIES	1.DESRIPTIVE QUESTIONS 2.PROGRAMMING AND PROBLEM SOLVING QUESTIONS.....

S.No	List of Experiments	CO
1	Programs on SVM	CO
2	Programs on Random Forest	CO2
3	Programs on KNN	CO2
4	Programs on Unsupervised Learning : PCA	CO2
5	Programs on Dataset Handling	CO3
6	Programs on Training, Testing, Graphical visualization and deployment	CO3
7	Programs on Performance analysis	CO3
8	Programs on MySQL DB handling	CO4
9	Programs python - DB connections	CO4
10	Programs to integrate ML - DB - Grafana .	CO5
11	Task to build Grafana Dashboards	CO5
12	Build real time MLOps systems for end to end product deployment and monitoring purposes	CO5
<b>Total Periods</b>		<b>30 Theory +30 Lab</b>
<b>Laboratory Requirements</b>		
<ul style="list-style-type: none"> <li>60 Systems with windows/LINUX operating system with python IDLE.</li> </ul>		
<b>Continuous Assessment Test (30 Marks)</b>	<b>Lab Components Assessments (20 Marks)</b>	<b>End Semester Exams (50 Marks)</b>

**Course Outcomes**

Upon completion of the course, the students will be able to:

- CO1:** To understand the structure of MLOps.(Understand)
- CO2:** To build ML algorithms and their version controls (Apply)
- CO3:** To train, test, visualize graphically, deploy and make performance analysis of the model (Apply)
- CO4:** To build CI/CD platforms and dashboard structures (Apply).
- CO5:** To Develop and deploy MLOps systems completely using the above strategies and integrate with DB and visualize using Dashboard .(Apply)

**Text Books**

1. "Building Machine Learning Powered Applications: Going from Idea to Product" by Emmanuel Ameisen:
  - a. *Description:* This book provides practical insights into transitioning from machine learning models to real-world, production-ready applications. It covers various aspects of the machine learning pipeline, including data collection, feature engineering, model training, deployment, and monitoring. The author shares valuable experiences and best practices for implementing MLOps in a production environment.
2. "Data Science on AWS" by Chris Fregly and Antje Barth:
  - a. *Description:* While not exclusively focused on MLOps, this book covers a broad range of topics related to building end-to-end data science solutions on Amazon Web Services (AWS). It includes sections on deploying machine learning models at scale, integrating with AWS services, and managing the entire machine learning lifecycle. The authors provide practical guidance on implementing MLOps practices within the AWS ecosystem.

**Reference Books**

1. Building Machine Learning Pipelines" by Hannes Hapke and Catherine Nelson:
  - a. *Description:* This book emphasizes the importance of building effective machine learning pipelines. It covers topics like data preparation, model training, deployment, and monitoring, offering insights into creating robust and scalable MLOps workflows.
2. Production-Ready Machine Learning" by Matthew D. Russell and Jerry Overton:

- a. *Description:* Focused on the practical challenges of deploying machine learning models to production, this book provides real-world examples and best practices. It covers topics such as model governance, monitoring, and maintaining ML systems in production environments.
3. Machine Learning Engineering" by AndriyBurkov:  
 a. *Description:* While not exclusively about MLOps, this book provides valuable insights into the engineering aspects of machine learning. It covers topics such as data engineering, model training, and deployment, offering a holistic view of the end-to-end machine learning process.
4. Building Machine Learning Powered Applications: Unleash the Power of Artificial Intelligence by Creating, Training, and Deploying" by Michael Manapat:  
 a. *Description:* This book covers the practical aspects of building machine learning applications and deploying them into production. It includes case studies and examples that help readers understand the challenges and solutions in operationalizing machine learning.

### Web Resources

1. <https://nptel.ac.in/courses/106/105/106105191/>

### CO Vs PO Mapping and CO Vs PSO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	2	3	3									3		
2	3	3	3	3									3		
3	3	3	2	3									3		
4	3	3	2	3									3		
5	3	3	3	3									3		

### BLOOMS LEVEL ASSESSMENT PATTERN

BLOOMS	CAT 1	CAT 2	FAT 1	FAT 2	END SEM
REMEMBER	20	10	5	5	10
UNDERSTAND	40	20	10	10	20
APPLY	40	50	5	5	50
ANALYZE		20	5	5	20
EVALUATE					
CREATE					



## **COURSE LEVEL ASSESSMENT QUESTIONS**

### **Course Outcome 1 : Introduction to MLOps and its key concepts**

Participants will gain an overview of MLOps and understand its significance, including key concepts such as the difference between DevOps and MLOps. They will also explore the machine learning lifecycle, database management systems, and fundamental concepts in artificial intelligence, machine learning, deep learning, and types of machine learning with a focus on regression and classification.

### **Course Outcome 2 : Version Control for ML and ML Algorithms**

This module covers version control strategies for ML projects, handling large datasets, and delves into machine learning algorithms, including Random Forest Regressor, Support Vector Machine, KNN and PCA in unsupervised learning. Participants will engage in hands-on algorithmic exercises.

### **Course Outcome 3 : Training Testing and model analysis**

This module covers training the model, testing the model, realtime and best practices for ML model deployments including graphical representation and algorithmic performance analysis. Which enables the candidates to build a ML model, train, test, analyze the performance and deploy suitably.

### **Course Outcome 4 : Continuous Integration and Deployment (CI/CD) , Dashboards, DBMS & Integrations**

Participants will learn to set up CI/CD pipelines for ML projects, involving training, testing, and deploying machine learning models. The module emphasizes deployment strategies, best practices, and includes hands-on training, testing, and deployment exercises. This module introduces participants to dashboards, types of databases, specifically MySQL, and covers data reading, exporting, building tables, reading data, dashboard connections, and Python DB interactions.

### **Course Outcome 5 : Model Monitoring and Management**

Participants will be introduced to model monitoring and its implementation, including monitoring tools for ML models, database management systems, and Grafana visualization. The module includes hands-on visualization exercises and an end-to-end development and deployment project.

**Department of Artificial Intelligence and Data Science****Annexure-III****Action Taken Report for 5<sup>th</sup> Board of Studies Meeting Minutes**

S.No	Suggestions	Action Taken	Reflection in the Curriculum
1.	5.4.1 In Professional Core 21AI4601 Data Reporting with Excel and SAS can be incorporated in syllabus.	Skill based Value Added course changed from C Programming to Data Reporting. Incorporate as Skill based Value Added course	Skill Curriculum Book- Pg.No 1
2.	5.4.2 In Regulation 2024 Prompt Engineering can be included as a Professional elective courses in Seventh Semester		Added in R - 2024 Curriculum
3.	5.4.3 In Professional Elective -IV Recent Edition Book for Software Testing and Tools to be included.	Recent Edition books are included	Page No:333
4.	5.4.5 For open elective delivering the basic concepts, prerequisite need not be mentioned	In Open Elective -I,II,III & IV prerequisites are removed.	Page No:-224
5.	5.4.6 In Professional Elective- IV 21AI6703 – Machine Learning Operations the abbreviation elaborated the words specified in the syllabus.	In Professional Elective- IV 21AI6703 – Machine Learning Operations changed as Machine learning Operations specified in the syllabus. Included as Industry Supported Course.	Page No:316

6.	5.4.9 In Semester- VI, 21AI6603- Cloud Computing and Big Data Analytics Unit-III the concepts of Docker, Container, Hypervisor, kubernetes is to be included	The Topics Docker, Container, Hypervisor, kubernetes included in Unit-III of Cloud Computing and Big Data Analytics	Page No:292
7.	5.4.8 In Professional Elective IV, 21CS7706 - Full Stack Application Development Recent Frameworks	Recent Frameworks included in Unit II as installation 18.16.1 LTS, Unit-III MongoDB 6.0.7, Unit-IV Implementing Express 4.18.1 and Unit-V Basic React 18.2.0	Page No:284
8.	5.4.10 In Professional Elective VI, 21CS7708 - Information Security, In Unit-IV the old ISO 27001/BS, ISO 27017, ISO 27018 is to be replaced with latest ISO 17799/BS 7799, VISA International Security Model can be replaced with Payment Card Industry Data Security Standard (PCIDSS), Intrusion Prevention System(IPS) can be added in Logical Design	In Unit-IV ISO 17799/BS 7799, Payment Card Industry Data Security Standard (PCIDSS) and Intrusion Prevention System(IPS) were included	Page No:342
9.	5.4.11 In Professional Elective -VI 21CS7602-Cryptography and Network Security, 3D Encryption is to be included	The topic 3D Encryption included in Unit-IV	Page No:359
10.	9.4.12 In Practical Courses, 21CS7611- Cloud Computing Laboratory, Windows 10 or 11 Version is to be installed. Installation of Docker from Dockerhub and creating Containers using Dockers and uploading the containers in cloud is to be done. Also Replace Private Cloud with Secure Cloud.	Included Windows 10 or 11 Version in exp no.1, Installation of Docker from Dockerhub and creating Containers using Dockers and uploading the containers in cloud are included in ex.no.3 and Private Cloud with Secure Cloud is replaced in ex.no.5	Page No:292