VIGNAN'S
Founoation for Science, Technology & Research
(Deemed to be University)
-Estd. u/s 3 of UGC Act 1956

Department of Advanced Computer Science & Engineering

Date: 20-03-2024

The department of ACSE is conducting a Board of Studies (BoS) meeting to review the B. Tech CSE Data Science program curriculum on 03.04.2024 from 09:30 AM in blended mode. (Physical meeting: ACSE Department HoD room, 6th floor, Nagarjuna Block, VFSTR and virtual meeting link:

https://us06web.zoom.us/j/82338354359?pwd=GDhZJOSRuNBxB8TMD7IRkxaNk5yS5I.1

We request all members of the BTech-CSE AIML Board of Studies to make it convenient to attend, your presence and valuable inputs are essential for the success of this meeting.

Sl. No	Name of the member	Designation and Address	Role
1	Dr. Venkatesulu Dondeti	Professor & Head, Department of ACSE, VFSTR Deemed to be University Contact: +91 98408 50744 Mail: hod_acse@vignan.ac.in	Chair person
2	Prof. C. Raghavendra Rao	Retired Professor SCIS, University of Hyderabad, Hyderabad, Telangana, Email: crrcs@uohyd.ac.in Mobile: +91 92474 65125	External member (Academia)
3	Dr. Y Raghu Reddy	Associate Professor, IIIT Hyderabad Mobile: +91 9849371681 Email: Raghu.reddy@iiit.ac.in	External member (Academia)
4	Dr. Vinay Kumar N	Data and Analytics Managing Consultant, DIF AIML Team, NTT DATA Services D7 White field Bangalore-66 Mobile: 9632454934 Email: vinaykumar.natraj@gmail.com	Invited member (Research)
5	Mr. Ramanamurthy Saripalli	Director of Vardaan Data Sciences Pvt. Ltd., Hyderabad. Mobile: +919885970645 Mail: ramana.sv@vardaanglobal.com	Invited member (Industry)

6	Dr. Nirupama Bhat	Professor, Department of ACSE, VFSTR Deemed to be University Contact: +91 9908823834 Mail: drmnb_acse@vignan.ac.in	Internal member
7	Dr. D. Radha Rani	Associate Professor, Department of ACSE, VFSTR Deemed to be University Contact: +91 9676354404 Mail: drdrr_acse@vignan.ac.in	Internal member (R&D nominee)
8	Dr. Jyotsna Devi Bodapati	Associate Professor, Department of ACSE, VFSTR Deemed to be University Contact: +91 7358209553 Mail: bjd_acse@vignan.ac.in	Internal member (School nominee)
9	Dr. Britto Manoj	Assistant Professor, Department of ACSE, VFSTR Deemed to be University Contact: +91 9550367172 Mail: drbn_acse@vignan.ac.in	Internal member
10	Dr. Sivadi Balakrishna	Assistant Professor, Department of ACSE, VFSTR Deemed to be University Contact: +91 9441540580 Mail: drsbk_acse@vignan.ac.in	Member Secretary

The primary agenda of this Board of Studies (BoS) meeting is to:

1. Analysis of the feedback collected from various stakeholders such as Alumni, Employers, Faculty, Parents and Students during the academic year 2022-23

2. Approval of R22 Revision-1, Review the proposed first-year course structure for the Revised R22 regulation

3. Finalize the course structure for the remaining courses.

4. Approval of NPTEL courses.

5. Approval of L-T-P structure change or any credit change courses, if any

6. Approval of Honor/minor/department elective/open elective courses, if any

7. Discussion of results-FA, SA, grades

8. Discussion of attainments process, rubrics, CO/PO/PSO and SO values.

(Chair Person)
Dr. Venkatesulu Dondeti
Dept. of Advanced Computer Science & Engineering
VIGNAN'S FOUNDATION
FOR SCIENCE, TECHNOLOGY AND RESEARCH
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DEPARTMENT OF ADVANCED COMPUTER SCIENCE & ENGINEERING

Date: 03-04-2024

Minutes of Board of Studies Meeting

The department of ACSE is conducted a Board of Studies (BoS) meeting to review the B. Tech CSE Data Science program curriculum on 03.04.2024 from 09:30 AM to 11:00AM in blended mode. (Physical meeting: ACSE Department HoD room, 6th floor, Nagarjuna Block, VFSTR and virtual meeting link:

https://us06web.zoom.us/j/82338354359?pwd=GDhZJOSRuNBxB8TMD7lRkxaNk5yS5I.1

Agenda of the BoS Meeting:

1. Reviewing the course structure and content introduced in R22 regulation
2. Discussion on revision of Course contents.
3. Discussion on L-T- P-C structure of various courses.
4. Discussion on addition of the department electives, open electives and the fulfillment of pre-requisites for the department electives.
5. SWAYAM-NPTEL courses identification
6. Formative and summative assessment results
7. Discussion on CO-PO-PSO
8. Fixing the CO-PO-PSO-PEO target values
9. Any other points based on the requirements with the permission of Chair.

The following members were present either thorough offline or online:

S.No.	Name of the Member	Designation & Affiliation	Role	Mode of presence/ Signature
1	Dr. Venkatesulu Dondeti	Professor & Head, Department of ACSE, VFSTR (Deemed to be University) Contact: +91 98408 50744 Mail: hod_acse@vignan.ac.in	Chair Person	
2	Dr. Sivadi Balakrishna	Asst. Professor, Department of ACSE,VFSTR (Deemed to be University) Contact: +91 9441540580 Mail: drsbk_acse@vignan.ac.in	Secretary (Ex-officio)	

3	Prof. C. Raghavendra Rao	Professor (Retired) SCIS, University of Hyderabad, Hyderabad, Telangana, Mobile: +91 92474 65125 Email: crrcs@uohyd.ac.in	External Member	Online
4	Mr. Ramanamurthy Saripalli	Director of Vardaan Data Sciences Pvt. Ltd., Hyderabad. Mobile: +91 98859 70645 Mail: ramana.sv@vardaanglobal.com	Invited member (Industry)	Online
5	Dr. Nirupama Bhat	Professor, Department of ACSE, VFSTR Deemed to be University Contact: +91 9908823834 Mail: drmnb_acse@vignan.ac.in	Internal member	
6	Dr. D. Radha Rani	Associate Professor, Department of ACSE, VFSTR Deemed to be University Contact: +91 9676354404 Mail: drdrr_acse@vignan.ac.in	Internal member (R&D nominee)	
7	Dr. Jyotsna Devi Bodapati	Associate Professor, Department of ACSE, VFSTR Deemed to be University Contact: +91 7358209553 Mail: bjd_acse@vignan.ac.in	Internal member (School nominee)	
8	Dr. Britto Manoj	Assistant Professor, Department of ACSE, VFSTR Deemed to be University Contact: +91 9550367172 Mail: drbn_acse@vignan.ac.in	Internal member	

Dr. Sivadi Balakrishna, Secretary, B. Tech CSE-DS program initiated the meeting by welcoming and introducing the board members and presented program curriculum along with course content to the board.

The following points were discussed in the BoS meeting:

1. Reviewed Revised R22 CSE-AIML program curriculum
2. Discussed on L-T- P-C structure of various courses.
3. SWAYAM-NPTEL courses identification for department, open electives and honors
4. Presented Formative and summative assessment results
5. Discussed on CO-PO-PSO
6. CO-PO-PSO-PEO target values finalization

The following resolutions are incorporated after the discussion:

1. Dr. Sivadi Balakrishna initiated the presentation on the R22 CSE-DS Curriculum. The External Board members expressed their opinion that the overall course structure of the program and the content of the courses are well-designed and are sufficient for the program at under graduate level. They provided a few suggestions to further improve the quality of the existing curriculum.

2. Prof. CR Rao asked about assessment on Orientation Session I and II. The board has clarified that the orientation session is offered in both I-semester and II- semester of First year.

3. Prof. CR Rao suggested to offer Optimization Techniques course under Department Elective/Honors in II-II and Advanced Statistical Methods course with the L-T-P-C structure of 3-0-2-4 during II-II. The board accepts this suggestion as DS programs require the knowledge of Optimization Techniques along with Probability and statistics.

4. Prof. CR Rao recommended updating the contents of the Data Warehousing and Data Mining course to align with GATE Syllabus of the DSAI stream. The board accepted this recommendation and Module 2 of the course is updated with advanced data mining concepts such as web mining and Temporal mining topics.

5. Mr. Ramanamurthy Saripalli suggested offering Generative AI as modular course in III year. The board has agreed to offer the same for DS students as it is essential and emerging technology these days.

6. After thorough discussions, the board suggested to consider the several SWAYAM-NPTEL courses, Value added courses and honors courses details of which are provided in the following sections.

7. At the end there was a discussion on Course Outcomes (CO), Program Outcomes (PO), Program Specific Outcomes (PSO), Formative Assessment results, Summative Assessment results, and the target values for CO-PO-PSO-PEO were decided.

Based on the suggestions given by the members, the Chairperson of BoS told that, these fruitful suggestions would be considered in the curriculum and syllabi of the revised R22 regulation.

There being no further points for discussion, the Chairperson thanks all the external, internal, invited members and announced that the meeting was adjourned.

Member Secretary

Chairperson
HoD
Dept. of Advanced Computer Science & Engineering
VIGNAN'S FOUNDATION
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VIGNAN'S FOUNDATION FOR SCIENCE, TECHNOLOGY AND RESEARCH

Program: CSE – Data Science (DS)   **Regulation:** R22

CURRICULUM STRUCTURE

I Year I Semester

Sl. No.	Course Code	Course Title	L	T	P	C	Course Category
1		Mathematics-I				4	Basic Sciences
2		Physics				4	Basic Sciences
3		Basics of Electrical and Electronics Engineering				3	Basic Engineering
4		Programming in C				4	Basic Engineering
5		IT Tools and Cyber Security				2	Basic Engineering
6		English Proficiency and Communication Skills(PET)				1	Humanities
7		Environmental Studies				3	Basic Engineering
8		Constitution of India				1	Audit Course
9		Orientation Session -1				1	Audit Course
10		Physical Fitness				1	Audit Course
		Total				24	
		Total				24	

L=Lecture; T= Tutorial; P= Practical; C=Credits

I Year II Semester

Sl. No.	Course Code	Course Title	L	T	P	C	Course Category
1		Mathematics-II				4	Basic Sciences
2		Chemistry				4	Basic science
3		Engineering Graphics				3	Basic Engineering
4		Python Programming				3	Basic Engineering
5		Technical English Communication				3	Humanities
6		Management Science				3	Professional core
7		Indian Knowledge Systems –Dept Specific				1	Audit Course
8		Orientation Session -2				1	Audit Course
		Universal Human Values				1	Audit Course
		Total				23	
		Total				23	

II Year I Semester

Sl. No.	Course Code	Course Title	L	T	P	C	Course Category
1	22MT107	Discrete Mathematical Structures	2	2	0	3	Basic Sciences
2	22TP***	Data Structures and Algorithms	3	0	2	4	Basic Engineering
3	22ST203	Probability and Statistical Analysis	3	0	2	4	Basic Sciences
4	********	Data Handling and Visualization	2	0	2	3	Professional core
5	********	Digital Logic and Computer Organization	3	0	2	4	Professional core
6	********	Database Management Systems	2	2	2	4	Professional core
7		Design Thinking & Engineering Orientation	0	2	0	1	Basic Engineering
8		Life Skills /UHV	2	0	0	1	Audit Course
		Total	17	6	12	25	
		Total		35		25	

II Year II Semester

Sl. No.	Course Code	Course Title	L	T	P	C	Course Category
1	22ST203	Advanced Statistical Methods	3	0	2	4	Basic Sciences
2		Field Projects / IDP	0	0	2	1	Project
3	*******	Algorithm Design and Analysis	2	2	2	4	Professional core
	22AM201	Artificial Intelligence: Search Methods for Problem Solving	2	2	2	4	Professional core
4	22AM205	Object Oriented Programming	2	0	4	4	Professional core
5		Open Elective – 1 (NPTEL)	3	0	0	3	Open Elective
		Total	13	2	12	20	
6		Minor / Honors – 1	3	0	2	4	
		Total	16	2	14	24	
		Total		32		24	

L=Lecture; T= Tutorial; P= Practical; C=Credits

III Year I Semester

Sl. No.	Course Code	Course Title	L	T	P	C	Course Category
1		BEC Certification	0	0	2	1	Humanities
2	22AM204	Machine Learning	3	0	2	4	Professional core
3	*******	Web Technologies	2	0	4	4	Professional core
4		Soft Skills Laboratory	0	0	2	1	Humanities
5		Industry Interface Course (Modular Course)	1	0	0	1	Binary Grades
6		Department Elective – 1	3	0	2	4	Department Elective
7		Department Elective – 2	2	0	2	3	Department Elective
8		Open Elective – 2	3	0	0	3	Open Elective
		Total	14	0	14	21	
9		Minor / Honors – 2	3	0	2	4	
		Total	17	0	16	25	
		Total		33		25	

III Year II Semester

Sl. No.	Course Code	Course Title	L	T	P	C	Course Category
1		Quantitative Aptitude & Logical Reasoning	0	2	0	2	Humanities
2	22CS402	Big Data Analytics	3	0	2	4	Professional core
3	22CY204	Computer Networks	3	0	2	4	Professional core
4	*******	Operating Systems	2	0	2	3	Professional core
5		Field Project / Inter-Disciplinary Project	0	0	2	1	Project
6		Department Elective – 3	3	0	2	4	Department Elective
7		Open Elective – 3	3	0	0	3	Open Elective
		Total	14	2	10	21	
8		Minor / Honors – 3	3	2	2	4	
		Total	17	4	12	25	
		Total		33		25	

L=Lecture; T= Tutorial; P= Practical; C=Credits

IV Year I Semester

Sl. No.	Course Code	Course Title	L	T	P	C	Course Category
1	22CS401	Cryptography and Network Security	3	0	2	4	Professional core
2	22A.M801	Cloud Computing	3	0	2	4	Professional core
		Professional ethics	2	0	0	2	Humanities
3	*******	Fundamentals of Image Processing	2	0	2	3	Professional core
4		Department Elective – 5	3	0	2	4	Department Elective
5		Department Elective – 5	3	0	2	4	Department Elective
		Total	**14**	**0**	**12**	**21**	
6		Minor / Honors – 4	3	0	2	4	
		Total	**17**	**0**	**14**	**25**	
		Total		**31**		**25**	

IV Year II Semester

Sl. No.	Course Code	Course Title	L	T	P	C	Course Category
1	22AM403	Project Work	0	2	22	12	Project
		Total	**0**	**2**	**22**	**12**	
2		Minor / Honors – 5	0	2	6	4	
		Total	**0**	**4**	**28**	**16**	
		Total		**32**		**16**	

L=Lecture; T= Tutorial; P= Practical; C=Credits

Department Electives

Sl. No.	Course Code	Course Title	L	T	P	C
1	22DS801	Data Wrangling	2	0	4	4
2	22DS802	Multi-modal Data Processing & Learning	3	0	2	4
3	22DS803	Knowledge Representation and Reasoning	3	2	0	4
4	22DS804	Security aspects of Data and Machine Learning Models	3	0	2	4
5	22DS805	Speech Analytics	3	0	2	4
6	22DS806	Biometrics Applications	3	0	2	4
7	22DS807	Artificial Intelligence search strategies	2	2	2	4
8	22AM802	Compiler Design	3	2	0	4
9	22AM806	Data Warehousing and Data Mining	3	0	2	4
10	22AM807	Nature Inspired Computing Methods	3	2	0	4
11	22AM808	Soft Computing	3	2	0	4
12	22AM810	Software Engineering principles	3	0	2	4
13	22DS808	Time series analysis and Forecasting	3	0	2	4
14	22DS809	Parallel and Distributed Computing	3	0	2	4
15	22DS810	Evolutionary Computing	3	2	0	4
16	22CS801	Advanced Data Structures (DE-II)	2	2	2	4
17	22CS803	Advanced JAVA Programming	2	2	2	4
18	22CS806	Text Analytics and Natural Language Processing (DE- III)	3	0	2	4
19	22CS810	Internet of Things	3	0	2	4
20	22CS811	Mobile Application Development (DE-I)	2	0	4	4
21	22DS304	Computer Vision	2	0	2	3
22	22AM301	Deep Learning	3	0	2	4
23		Graph Theory	2	0	2	4
24		Theory of Computation	2	0	2	3
25	22CS803	Computer Graphics	2	2	2	4
26		Federated Machine Learning	3	0	2	4
27		Artificial Neural Networks	3	0	2	4
28		Distributed Systems	3	0	2	4
29		Parallel and Distributed Computing	3	0	2	4
30	22AM401	Reinforcement Learning	2	0	2	3

Suggested Value Added Courses

Agile Methodologies
MLOps
Research Methodologies
Large Language Models
Prompt Engineering
Business Intelligence
Generative AI

Honours for CSE - DS

Sl.No	Course Code	Course Title	L	T	P	C
1	22CS815	Optimization Techniques	3	2	0	4
2	22AM960	Intelligent Application Development	3	2	0	4
3	22DS951	Multi-Variate Analysis	3	-	2	4
4	22DS952	Visual Analytics	3	-	2	4
5	22DS953	Data Clustering	3	-	2	4
6	22DS954	Kernel Methods for Pattern Analysis	3	-	2	4
7	22CS909	Capstone Project	-	2	6	4

List of Minor Courses

Sl. No.	Course Code	Course Title	L	T	P	C
1		Data Analytics using R programming	3	2	0	4
2		Capstone Project	0	2	6	4

LIST OF NPTEL Courses:

- Business analytics and data mining Modeling using R
- Data Analytics with Python,
- Computer Vision and Image Processing - Fundamentals and Applications
- Applied Accelerated Artificial intelligence
- Modern Computer Vision
- Deep Learning for Computer Vision