SETHU INSTITUTE OF TECHNOLOGY

(An Autonomous Institution | Accredited with 'A' Grade by NAAC)

Pulloor, Kariapatti – 626 115.

B.TECH ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

REGULATIONS 2021

CHOICE BASED CREDIT SYSTEM

CURRICULUM

(1st SEMESTER to 8th SEMESTER)

CHAIRPERSON

Chairperson
Board of Studies
Computer Science & Engineering
Sethu Institute of Technology
Kariapatti - 626 115

CHAIRMAN
ACADEMIC COUNCIL

CHAIRMAN
ACADEMIC COUNCIL
Sethu Institute of Technology
Pulloor, Kariapatti - 625 115

SETHU INSTITUTE OF TECHNOLOGY

DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

Department Vision

To produce high quality technologists for the dynamic societal needs in the field of Artificial Intelligence and Data Science.

Department Mission

- Providing quality education and support innovation in expert systems and data science to meet industry expectations.
- Offering holistic learning ambience.
- Developing the skills of the students to make successful engineers and entrepreneurs.
- Creating relationship with the industries for mutual knowledge transfer.
- Encouraging Research activities related to industry and society.

Core Values

✓ Excellence ✓ Loyalty ✓ Novelty ✓ Commitment ✓ Courtesy

PROGRAM EDUCATIONAL OBJECTIVES	
PEO – I	Graduates will succeed as successful engineers in the field of Artificial Intelligence and Data Science for pursuing inter disciplinary projects for the development of the nation**.[Core Competence]**
PEO – II	Graduates will work as team leaders and members with professional behaviour and ethics**.[Professionalism]**
PEO – III	Graduates will enrich their professional skills through higher studies, employability, and research activities for the benefit of the society. [**Life-Long Learning]**

PROGRAM SPECIFIC OUTCOMES	
PSO – 1 (Artificial Intelligence)	Interpret data, use software tools to conduct experiments, and apply AI & machine learning techniques to solve multi-disciplinary problems.
PSO – 2 (Data Science)	Apply standard practices, strategies and use appropriate models of data analytics to discover knowledge.

PROGRAM OUTCOMES	
1.	Apply the knowledge of mathematics, basic sciences, engineering fundamentals, and Computer Science and Design to the solution of complex engineering problems. **(Engineering Knowledge)**
2.	Identify, formulate, review research literature and analyze complex engineering problems requiring computing solutions to reach substantiated conclusions using first principles of mathematics, basic sciences, and Computer Science and Design. **(Problem analysis)**
3.	Design solutions for computer applied complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations. **(Design/development of solutions)**
4.	Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions. **(Conduct investigations of complex problems)**
5.	Create, Select and apply appropriate techniques, resources, and modern IT tools including prediction and modeling to computing related complex engineering activities with an understanding of the limitations. **(Modern tool usage)**
6.	Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional computer science and engineering practice. **(The Engineer and society)**
7.	Understand the impact of the professional computer science and design solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development. **(Environment and sustainability)**
8.	Apply ethical principles and commit to professional ethics and responsibilities and norms of the computer science and design practice. **(Ethics)**
9.	Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings. **(Individual and team work)**
10.	Communicate effectively on complex computer science and design activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions. **(Communication)**
11.	Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage cost effective projects in multidisciplinary environments.**(Project management and finance)**
12.	Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. **(Life-long learning)**

SETHU INSTITUTE OF TECHNOLOGY

Pulloor, Kariapatti – 626 115

B.Tech. Degree Programme

CBCS CURRICULUM

Regulations 2021

B.TECH ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

OVERALL COURSE STRUCTURE

Category	Total No. of Courses	Credits	Percentage
Humanities & Social Sciences	5	9	5.63
Basic Sciences	10	28	17.5
Engineering Sciences	8	20.5	12.81
Professional Core	23	59.5	37.19
Professional Elective	6	18	11.25
Open Electives	4	12	7.5
Project Work	3	13	8.13
Mandatory Course	9		
TOTAL	68	160	100

COURSE CREDITS – SEMESTER WISE

Branch	I	II	III	IV	V	VI	VII	VIII	TOTAL
CSD	21	17	22	21	19	25	21	14	160

Employability Courses
Skill Development Courses
Entrepreneurship Development Courses
Any two or all of the above

SEMESTER I

Course Code	Category	Course Title	L	T	P	C
THEORY						
21UEN101	HS	English for Technical Communication (Common to All Branches Except CSBS)	2	0	0	2
21UMA102	BS	Matrix And Calculus (Common to All Branches Except CSBS)	3	1	0	4
21UPH103	BS	Engineering Physics (Common to All Branches Except CSBS)	3	0	0	3
21UCY105	BS	Applied Chemistry(CSE,ECE,EEE,IT, BME ,BT,AI&DS,CSD and CSE(AI&ML)	3	0	0	3
21UCS108	ES	Problem Solving and PYTHON programming (Common to All Branches Except CSBS)	3	0	0	3
21UCS107	ES	Problem Solving and C Programming (Common to All Branches)				
21UEE125	ES	Principles of Electrical Engineering (Common to CSBS,AI&DS and CSE(AI&ML)	3	0	0	3
PRACTICAL						
21UCS110	ES	Problem Solving and PYTHON programming Laboratory (Common to All Branches Except CSBS)	0	0	2	1
21UCS111	ES	Problem Solving and C Programming Laboratory(Common to All Branches)	0	0	2	1
21UEE128	ES	Electrical Engineering Laboratory (Common to CSBS,AI&DS and CSE(AI&ML)	0	0	2	1
21UGS113	BS	Basic Sciences Laboratory I (Common to All Branches Except CSBS)	0	0	2	1
MANDATORY COURSES						
21UGM131	MC	Induction Programme (Common to All Branches)	0	0	3	0
		TOTAL	**17**	**1**	**6**	**21**
Total No. of Credits – 21						

SEMESTER II

Course Code	Category	Course Title	L	T	P	C
THEORY						
21UEN201	HS	Communication Skills for Professionals (Integrated Course) (Common to All Branches Except CSBS)	1	0	1	1.5
21UMA210	BS	Differential Equations, Fourier series and Transforms(Common to AI&DS,CSD)	3	1	0	4
21UPH205	BS	Physics for Information Science (CSE,ECE,EEE,IT, BME ,AI&DS, CSD and CSE(AI&ML)	3	0	0	3
21UAD204	ES	Foundations of Data Science	3	0	0	3
21UAD205	ES	Digital Logic and Design (Common to AI&DS and CSE(AI&ML))	3	0	0	3
PRACTICAL						
21UGS210	BS	Basic Sciences Laboratory – II (COMMON TO ALL, EXCEPT CSBS)	0	0	2	1
21UAD211	ES	Data Science using Python Laboratory	0	0	3	1.5
21UAD212	ES	Data Science using R Programming				
MANDATORY COURSES						
21UGM231	MC	Environmental Science (Common to All Branches)	3	0	0	P/F
21UGM331		Biology for Engineers	2	0	0	P/F
		TOTAL	**16**	**1**	**6**	**17**
Total No. of Credits – 17						

SEMESTER III

COURSE CODE	CATE GORY	COURSE TITLE	L	T	P	C
THEORY COURSES						
21UMA328	BS	Discrete Mathematics (Common to AI& DS,CSD)	3	1	0	4
21UIT302	PC	Data Structures (Common to CSE, IT, AI&DS, CSD)	3	0	0	3
21UAD303	PC	Object Oriented Programming using Python (Integrated Course)	3	0	2	4
21UIT304	PC	Principles of Operating Systems (Common to CSE, IT, AI&DS, CSD)	3	0	0	3
21UCS305	ES	Computer Organization	3	0	0	3
21UCD306	PC	Database System Design (Common to CSE, IT, AI&DS, CSD)	3	0	0	3
PRACTICAL COURSES						
21UIT307	PC	Data Structures Laboratory (Common to CSE, IT, AI&DS, CSD)	0	0	2	1
21UCD308	PC	Database System Design Laboratory (Common to CSE, IT, AI&DS, CSD)	0	0	2	1
MANDATORY COURSE						
21UGM331	MC	Biology for Engineers	2	0	0	P/F
21UGM431		Gender Equality	1	0	0	P/F
		TOTAL	**20**	**1**	**6**	**22**
Total No. of Credits – 22						

SEMESTER IV

COURSE CODE	CATE GORY	COURSE TITLE	L	T	P	C
THEORY COURSES						
21UMA426	BS	Probability and Statistical Techniques (Common to AI & DS,CSD)	3	1	0	4
21UAD402	PC	Artificial Intelligence (Common to AI&DS and CSE (AI&ML))	3	0	0	3
21UCS403	PC	Algorithm Analysis (Common to CSE,IT,CSD,AI&DS, CSE (AI&ML))	3	0	0	3
21UAD404	PC	Data Mining and Warehousing	3	0	0	3
21UAD405	PC	Internet of Things and Sensors	3	0	0	3
21UAD406	PC	Computer Network and Security	3	0	0	3
PRACTICAL COURSES						
21UAD407	PC	Data Mining Tools Laboratory	0	0	2	1
21UAD408	PC	Artificial Intelligence Laboratory (Common to AI&DS and CSE (AI&ML))	0	0	2	1
MANDATORY COURSE						
21UGM431	MC	Gender Equality	1	0	0	P/F
21UGM231		Environmental Science (Common to All Branches)	3	0	0	P/F
		TOTAL	**19**	**1**	**6**	**21**
Total No. of Credits – 21						

SEMESTER V

COURSE CODE	CATEGORY	COURSE TITLE	L	T	P	C
THEORY COURSES						
	21UMA501	Linear Algebra	3	0	0	3
	21UAD502	Formal languages and Computation (Common to AI&DS and CSE (AI&ML))	3	0	0	3
	21UAD503	Machine Learning Techniques	3	0	0	3
	PE	Professional Elective – I	3	0	0	3
	OE	Open Elective – I	3	0	0	3
21UGS531	BS	Reasoning and Aptitude (Common to CSE, ECE, IT, CSBS, AI&DS, CSD, AI&ML)	1	0	0	1
PRACTICAL COURSES						
21UAD507	PW	Creative Thinking and Innovation	0	0	2	1
21UAD508	PC	Machine Learning Techniques Laboratory	0	0	2	1
21UGS532	HS	Soft Skills Laboratory (Common to CSE, EEE, IT, AGRI, CSBS, AI&DS, CSD)	0	0	2	1
MANDATORY COURSE						
21UGM531	MC	Tamil Literature, Culture, and Civilization through Archeology	1	0	0	P/F
		TOTAL	**16**	**1**	**8**	**19**
Total No. of Credits – 20						

SEMESTER VI

COURSE CODE	CATEGORY	COURSE TITLE	L	T	P	C
THEORY COURSES						
21UAM601	PC	Intelligent Computer Vision (Common to AI&DS and CSE (AI&ML))	3	0	0	3
21UAD602	PC	Deep Learning	3	0	0	3
21UAD603	PC	Thinking in Java	2	0	2	3
	PE	Professional Elective – II	3	0	0	3
	PE	Professional Elective – III	3	0	0	3
	OE	Open Elective – II	3	0	0	3
PRACTICAL COURSES						
21UAD606	PC	Deep Learning Laboratory	0	0	3	1.5
21UAD607	PW	Product Development Project	0	0	8	4
21UGS633	HS	Interpersonal Skills Development Laboratory (Common to CSE, EEE, IT, AGRI, CSBS, AI&DS, CSD)	0	0	3	1.5
MANDATORY COURSE						
21UGM631	MC	Indian Constitution (Common to ALL)	1	0	0	P/F
		TOTAL	**18**	**0**	**16**	**25**
Total No. of Credits – 25						

SEMESTER VII

COURSE CODE	CATE GORY	COURSE TITLE	L	T	P	C
THEORY COURSES						
21UME701	HS	Project Management and Finance (Common to ALL except CSBS)	3	0	0	3
21UAD702	PC	Natural Language Processing (Common to AI&DS and CSE (AI&ML))	3	0	0	3
21UAD603	PC	Big data visualization	3	0	0	3
	PE	Professional Elective – IV	3	0	0	3
	PE	Professional Elective – V	3	0	0	3
	OE	Open Elective – III	3	0	0	3
PRACTICAL COURSES						
21UAD707	PC	Natural Language Processing Lab (Common to AI&DS and CSE (AI&ML))	0	0	3	1.5
21UAD708	PC	Intelligence and Analytics lab	0	0	3	1.5
MANDATORY COURSES						
21UGM731	MC	Sports and Social Development	0	0	0	P/F
21UGM732	MC	Skill Development	0	0	0	P/F
		TOTAL	**18**	**0**	**4**	**21**
Total No. of Credits – 21						

SEMESTER VIII

COURSE CODE	CATE GORY	COURSE TITLE	L	T	P	C
THEORY COURSES						
	PE	Professional Elective – VI	3	0	0	3
	OE	Open Elective – IV	3	0	0	3
PRACTICAL COURSE						
21UAD801	PW	Project Work	0	0	16	8
MANDATORY COURSE						
21UGM831	MC	Professional Ethics and human values (Common to ALL)	2	0	0	0
		TOTAL	**8**	**0**	**16**	**14**
Total No. of Credits – 14						

TOTAL CREDITS – 160