

1.2.2 List of Programs offered through Choice Based Credit System (CBCS)/Electives Course System Department of CSE-AI&ML INDEX

S.No	Description of the document	Page No
1	AR21 Curriculum	1
2	1st BoS Minutes	7

Department of CSE-AI&ML

Minimum Credits to be earned: 160 (for Regular Students)

123 (for Lateral Entry Students)

S.No	Course Code	Course Name	POs	L	T	P	С
Firs	t Semester						
1	21HSX01	Communicative English	10, 12	2	-	-	2
2	21MAX01	Engineering Mathematics I	1	3	-	-	3
3	21PYX01 21CYX01	Engineering Physics / Engineering Chemistry	1/1	3/3	-	-	3/3
4	21BEX01	Basics of Engineering / IT Workshop	1,12/1,12	3/-	-	-/3	3/1.5
5	21BEX06 21BEX02	Problem Solving and Programming Skills	1, 12	3	_		3
6	21BEX03	Problem Solving and Programming Skills Lab	4	-	-	3	1.5
7	21BEX04/	Engineering Drawing /	1,5,10/1,9,10			3	
	21BEX05 [′]	Engineering Workshop		-	-	3/3	1.5/1.5
8	21PYX02/ 21CYX02	Engineering Physics Lab /Engineering Chemistry Lab	4/4	-	-	3/3	1.5
9	21HSX02/-	Communicative English Lab/-	10,12	-	-	3/-	1.5/-
			Total	14/11	-	12/12	20/17
	cond Semester				1		
1		Language Elective	10,12	2	-	-	2
2	21MAX02	Engineering Mathematics II	1	3	-	-	3
3	21CYX01/ 21PYX01	Engineering Chemistry /Engineering Physics	1/1	3/3	-	-	3/3
4	21BEX01/ 21BEX06	Basics of Engineering/ IT Workshop	1,12/1,12	-/3	-	3/-	1.5/3
5	21BEX07	Python Programming	1,12	3	-	-	3
6	21BEX08	Python Programming Lab	4	-	-	3	1.5
7	21BEX05/ 21BEX04	Engineering Workshop / Engineering Drawing	1,9,10/1,5,10	-	-	3/3	1.5/1.5
8	21CYX02/ 21PYX02	Engineering Chemistry Lab/Engineering Physics Lab	4/4	-	-	3/3	1.5/1.5
9	-/21HSX02	-/Communicative English Lab	-/10,12	-	_	-/3	-/1.5
	, = = = = = =	/ comment and and	Total	11/14	-	12/12	17/20
Th	ird Semester						,
1	21MA304	Probability and Statistics using Python	1,4, 12	3	-	2	4
2	21ML302	Artificial Intelligence	1,2,3	3	-	-	3
3	21CS303	Data Structures	1,2,12	3	-	-	3
4	21CS304	Digital Logic Design	1, 4	3	-	2	4
5	21DS305	Mathematical Foundation for Computer Science and Data Science		3	-	-	3
6	21CS306		1,2,3	3	-	-	3
7	21CS307	Data Structures Lab	2,3,4,5	-	-	3	1.5
8	21CS308		2,3,4,5	-	-	3	1.5
9	21BEA01	Environmental Studies	1,7	-	-	-	-
10	21ESX01	Employability Skills I	1,2,5,8,10, 12	0	-	2	-
11	21HSX11	CC & EC Activities I	6,7, 9,10	-	-	1	-
Ec	urth Semester		Total	18	-	13	23
1	21IT304	Database Management Systems	1,4,12	3	-	-	3
2	21IT403	Operating Systems	1,12	3	-	-	3
3	21CS403		1,12	3	-	-	3
4	21CS403 21CS404		2,3	3	_	2	4
5	21ML405	Foundations of Machine learning	2, 3, PSO1, PSO2	3	-	-	3
6	21IT308	Database Management Systems Lab	4	-	_	3	1.5
7	2111300 21ML407		4,5,8	-	_	3	1.5
8	21ESX01	Employability Skills I	1,2,5,8,10, 12	0	-	2	2
9	21HSX11		6,7, 9,10	-		1	1
,	21110/111	GG & EG MCHVILLES I	Total	15	-	11	22
		1	Iotal	13		**	

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Fift	th Semester						
1	21IT405	Web Technologies (Integrated)	3,5,PSO1	3	-	2	4
2	21ML502	Neural Networks	1,2,4,5,12	3	-	-	3
3	21DS503	Data Analytics & Visualization Techniques	1,4,PSO1	3	-	2	4
		(Integrated)					
4	21ML504	Computer Networks	1, 2,3	3	-	-	3
5		Elective I (Professional Elective)		3	-	-	3
6		Elective II (Open Elective I)		3	-	-	3
7	21ML507	Neural Networks Lab	4,5,8	-	-	3	1.5
8	21TPX01	Term Paper	1,4,10,12	-	-	3	1.5
9	21ESX02	Employability Skills II	1,2,5,8,10,12	0	-	2	-
10	21HSX12	CC & EC Activities II	6,7, 9,10	-	-	1	-
11	21SIX01	Summer Internship I	1,2,8,10,12	-	-	-	1
			Total	18	-	12	24
Sixt	h Semester						
1	21ML601	Deep Learning Techniques	1, 2,4,12,PSO1	3	-	-	3
2	21IT602	Automata and Compiler Design	1,2,3	3	-	-	3
3	21CS603	Software Engineering	4,5,8,11, PSO1	3	-	-	3
4		Elective III (Professional Elective)		3	-	2	4
5		Elective IV (Open Elective II)		3	-	-	3
6	21ML606	Deep Learning Techniques Lab	4, 5,08	-	-	3	1.5
7	21MPX01	Mini Project	All Pos & PSOs	-	-	3	1.5
8	21ESX02	Employability Skills II	1,2,3,5,6,8,10,12	0	-	2	2
9	21HSX12	CC & EC Activities II	6,7,9,10	-	-	1	1
10	21ATX01	Environmental Studies	1,7	-	-	-	-
11	21ATX02	Professional Ethics and Human Values		-	-	-	-
12	21ATX	Audit Course	12	-	-	-	-
			Total	15	-	8	22
Sevei	nth Semester-	· AI & ML					
1		Elective V (Professional Elective)					
2		Elective VI (Professional Elective)					
3		Elective VII (Open Elective III)					
4	21SIX02	Summer Internship II					
5	21PWX01	Project					
			Total	9	-	16	18
Eight	h Semester-A	I & ML					
1		Elective VIII (Professional Elective)					
2		Elective IX (Open Elective IV)					
3	21FIX01	Full Semester Internship (FSI)	1,2,5,8,9,10, PSO1,PSO2	-	-	-	8
			Total	6	-		14
		1	2000		1		

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T		CE	
LIS	TΩ	TH	lectives

	uage Electives	Contact Hours						
No.	Course Code	Course	POs	L	T	P	С	
1	21HSX03	Advanced Communicative English		2	-	-	2	
2	21HSX04	Communicative German		2	-	-	2	
3	21HSX05	Communicative French		2	-	-	2	
4	21HSX06	Communicative Japanese	10,12	2	-	-	2	
5	21HSX07	Communicative Spanish		2	-	-	2	
6	21HSX08	Communicative Korean		2	-	-	2	
7	21HSX09	Communicative Hindi		2	-	-	2	

Comment [s1]: Approved 1st BOS on 20-06-2022

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Comment [s6]: Approved 1st BOS on 20-06-2022

Career Path I, II, III	7	21HSX09	Communicative Hindi		2	-	-	2
Career Path I, II, III								
1								
2 21CSC21	Care	er Path I, II, III						
	1	21MLC11	Computer Vision & Pattern Recognition	1,3,PSO1,PSO2		-	-	3
3	2	21CSC21		1,2,7,12	3	-	-	3
Section Computing Section Se	3	21MLC31	Fundamentals of Cloud Computing	2,6,7,8	3	-	-	3
Elective II: Open Elective 1	4	21CS004		1, 2, 3, 4	3	-	-	3
Elective II: Open Elective 1	5	21CS005	Mobile Computing	3, 8	3	-	-	3
	6	21CS006	Distributed Operating Systems		3	-	-	3
1	7		MOOCs/Honors		3	-	-	3
1	Elect	ive II: Open Ele						
3				2, 7	3	-	-	3
3	2	21EE001	0	,	3	-	-	3
Section Sensors for Engineering Applications 1, 2	3	21DS001			3	-	-	3
Section Sensors for Engineering Applications 1, 2						-	-	3
Career Path I, II, III	5	21EC001		I '	3	-	-	3
Table	6	21CS001		I '	3	-	-	3
Career Path I, II, III						-	-	
Table Tabl	Elect			_, _, .				
2 21CSC22 Web Application Developments Framework (Full Stack Developer) 1, 3, 4 3 - 2 4 4 21CSC22 Cloud Services using AWS 3 - 2 4 4 21CSO07 Cloud Computing Essentials 2,5,6,7,8 3 - 2 4 4 21CSO08 Cryptography and Network Security 3, 6,8 3 - 2 4 4 21CSC02 Air Pollution and Environmental Impact 6,7,12 3 - 3 3 - 2 3 4 21CEO02 Air Pollution and Environmental Impact 6,7,12 3 - 3 3 3 21MEO02 Principles of Entrepreneurship 1,11 3 - 3 3 3 3 4 21ECO02 Electronics for Agriculture 1,2 3 - 3 3 3 4 21ECO02 Electronics for Agriculture 1,2 3 - 3 3 3 4 21ECO02 Fundamentals of Machine Learning 2,3 3 - 3 3 3 4 21ECO02 Fundamentals of Machine Learning 2,6,7,8 3 - 3 3 3 - 3 3 4 21ESO02 Advanced Numerical Techniques 1,7 3 - 3 3 3 4 21ESO02 Advanced Numerical Techniques 1,2 3 - 3 3 5 21ESO02 Advanced Numerical Techniques 1,2 3 - 3 3 5 21ESO02 Web Application Databases (Full Stack 2,3 3 - 3 3 3 21MLC33 Cloud Security Essentials 2,3 3 - 3 3 3 4 21ITO08 Social Network Analysis 2,4,5 3 - 3 3 5 21CSO12 Wireless Adhoc Networks 2,3 3 - 3 3 3 - 3 3 5		-						
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3 21MLC32 Cloud Services using AWS 3 - 2 4 4 21CS007 Cloud Computing Essentials 2,5,6,7,8 3 - 2 4 5 21CS008 Cryptography and Network Security 3,6,8 3 - 2 4 Elective IV: Open Elective II 1 21CE002 Air Pollution and Environmental Impact Assessment Assessment 2,7 3 - 3 2 21EE002 Renewable Energy Sources 2,7 3 - 3 3 21ME002 Principles of Entrepreneurship 1,11 3 - 3 4 21EC002 Electronics for Agriculture 1,2 3 - 3 5 21CS002 Fundamentals of Machine Learning 2,3 3 - 3 6 21CH002 Industrial Safety and Hazard Management 2,6,7,8 3 - 3 7 21IT002 Fundamentals of Cloud Computing 1,7 3 - 3 8 21BS002 Advanced Numerical Techniques 1,2 3 - 3 9 21BS003 Functional Materials and Applications 1,2 3 - 3 Elective V Career Path I, II, III 1 21MLC13 Conversational AI 1,2,4,12,PS01 3 - 3 2 21CSC23 Web Application Databases (Full Stack 2,3 3 - 3 Developer 3 21MLC33 Cloud Security Essentials 2,3 3 - 3 4 21IT008 Social Network Analysis 2,4,5 3 - 3 5 21CS011 Optimization Techniques 2,3,5 3 - 3 6 21CS012 Wireless Adhoc Networks 2,3 3 - 3	2	21CSC22		1, 3,4	3	-	2	4
4 21CS007 Cloud Computing Essentials 2,5,6,7,8 3 - 2 4 5 21CS008 Cryptography and Network Security 3,6,8 3 - 2 4 Elective IV: Open Elective II 1 21CE002 Air Pollution and Environmental Impact Assessment 6,7,12 3 - 3 2 21EE002 Renewable Energy Sources 2,7 3 - 3 3 21ME002 Principles of Entrepreneurship 1,11 3 - 3 4 21EC002 Electronics for Agriculture 1,2 3 - 3 5 21CS002 Fundamentals of Machine Learning 2,3 3 - 3 6 21CH002 Industrial Safety and Hazard Management 2,6,7,8 3 - 3 7 21IT002 Fundamentals of Cloud Computing 1,7 3 - 3 8 21BS002 Advanced Numerical Techniques 1,2 3 - 3 9 21BS003 Functional Materials and Applications 1,2 3 - 3 Elective V Career Path I, II, III 1 21MLC13 Conversational AI 1,2,4,12,PS01 3 - 3 2 21CSC23 W	3	21MLC32			3	T-	2	4
Selective IV: Open Elective II	4	21CS007		2,5,6,7,8	3	-	2	4
1 21CE002 Air Pollution and Environmental Impact Assessment 6, 7,12 3 - - 3 2 21EE002 Renewable Energy Sources 2, 7 3 - - 3 3 21ME002 Principles of Entrepreneurship 1,11 3 - - 3 4 21EC002 Electronics for Agriculture 1,2 3 - - 3 5 21CS002 Fundamentals of Machine Learning 2,3 3 - - 3 6 21CH002 Industrial Safety and Hazard Management 2,6,7,8 3 - - 3 7 21IT002 Fundamentals of Cloud Computing 1,7 3 - - 3 8 21BS002 Advanced Numerical Techniques 1,2 3 - - 3 9 21BS003 Functional Materials and Applications 1,2 3 - - 3 Elective V Career Path I, II, III 1 21MLC13 Conversational AI 1,2,4,12,PS01 3 - 3	5	21CS008		3, 6,8	3	-	2	4
1 21CE002 Air Pollution and Environmental Impact Assessment 6, 7,12 3 - - 3 2 21EE002 Renewable Energy Sources 2, 7 3 - - 3 3 21ME002 Principles of Entrepreneurship 1,11 3 - - 3 4 21EC002 Electronics for Agriculture 1,2 3 - - 3 5 21CS002 Fundamentals of Machine Learning 2,3 3 - - 3 6 21CH002 Industrial Safety and Hazard Management 2,6,7,8 3 - - 3 7 21IT002 Fundamentals of Cloud Computing 1,7 3 - - 3 8 21BS002 Advanced Numerical Techniques 1,2 3 - - 3 9 21BS003 Functional Materials and Applications 1,2 3 - - 3 Elective V Career Path I, II, III 1 21MLC13 Conversational AI 1,2,4,12,PS01 3 - 3	Elect	ive IV: Open Ele	ective II					
2 21EE002 Renewable Energy Sources 2, 7 3 - 3 3 21ME002 Principles of Entrepreneurship 1,11 3 - - 3 4 21EC002 Electronics for Agriculture 1, 2 3 - - 3 5 21CS002 Fundamentals of Machine Learning 2, 3 3 - - 3 6 21CH002 Industrial Safety and Hazard Management 2, 6, 7,8 3 - - 3 7 21IT002 Fundamentals of Cloud Computing 1, 7 3 - - 3 8 21BS002 Advanced Numerical Techniques 1, 2 3 - - 3 9 21BS003 Functional Materials and Applications 1, 2 3 - - 3 Elective V Career Path I, II, III 1 21MLC13 Conversational AI 1,2,4,12,PS01 3 - - 3 2 21CSC23 Web Application Databases (Full Stack Developer) 2,3 3 - - 3			Air Pollution and Environmental Impact	6, 7,12	3	-	-	3
3	2	21EE002		2. 7	3	-	-	3
4 21EC002 Electronics for Agriculture 1, 2 3 - - 3 5 21CS002 Fundamentals of Machine Learning 2, 3 3 - - 3 6 21CH002 Industrial Safety and Hazard Management 2, 6, 7,8 3 - - 3 7 21IT002 Fundamentals of Cloud Computing 1, 7 3 - - 3 8 21BS002 Advanced Numerical Techniques 1, 2 3 - - 3 9 21BS003 Functional Materials and Applications 1, 2 3 - - 3 Elective V Career Path I, II, III 1 21MLC13 Conversational AI 1,2,4,12,PS01 3 - - 3 2 21CSC23 Web Application Databases (Full Stack Developer) 2,3 3 - - 3 3 21MLC33 Cloud Security Essentials 2,3 3 - - 3 4 21IT008 </td <td></td> <td></td> <td></td> <td>,</td> <td></td> <td>-</td> <td>-</td> <td></td>				,		-	-	
5 21CS002 Fundamentals of Machine Learning 2, 3 3 - - 3 6 21CH002 Industrial Safety and Hazard Management 2, 6, 7,8 3 - - 3 7 21IT002 Fundamentals of Cloud Computing 1, 7 3 - - 3 8 21BS002 Advanced Numerical Techniques 1, 2 3 - - 3 9 21BS003 Functional Materials and Applications 1, 2 3 - - 3 Elective V Career Path I, II, III 1 21MLC13 Conversational AI 1,2,4,12,PS01 3 - - 3 2 21CSC23 Web Application Databases (Full Stack Developer) 2,3 3 - - 3 3 21MLC33 Cloud Security Essentials 2,3 3 - - 3 4 21IT008 Social Network Analysis 2, 4, 5 3 - - 3 5 21CS012 <td>-</td> <td></td> <td></td> <td></td> <td></td> <td>-</td> <td>-</td> <td></td>	-					-	-	
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7 21IT002 Fundamentals of Cloud Computing 1, 7 3 - - 3 8 21BS002 Advanced Numerical Techniques 1, 2 3 - - 3 9 21BS003 Functional Materials and Applications 1, 2 3 - - 3 Elective V Career Path I, II, III 1 21MLC13 Conversational AI 1,2,4,12,PS01 3 - - 3 2 21CSC23 Web Application Databases (Full Stack Developer) 2,3 3 - - 3 3 21MLC33 Cloud Security Essentials 2,3 3 - - 3 4 21IT008 Social Network Analysis 2, 4, 5 3 - - 3 5 21CS011 Optimization Techniques 2, 3, 5 3 - - 3 6 21CS012 Wireless Adhoc Networks 2, 3 3 - - 3						-	-	
8 21BS002 Advanced Numerical Techniques 1, 2 3 - - 3 9 21BS003 Functional Materials and Applications 1, 2 3 - - 3 Elective V Career Path I, II, III 1 21MLC13 Conversational AI 1,2,4,12,PS01 3 - - 3 2 21CSC23 Web Application Databases (Full Stack Developer) 2,3 3 - - 3 3 21MLC33 Cloud Security Essentials 2,3 3 - - 3 4 21IT008 Social Network Analysis 2, 4, 5 3 - - 3 5 21CS011 Optimization Techniques 2, 3, 5 3 - - 3 6 21CS012 Wireless Adhoc Networks 2, 3 3 - - 3							-	
9 21BS003 Functional Materials and Applications 1, 2 3 - 3 Elective V Career Path I, II, III 1 21MLC13 Conversational AI 1,2,4,12,PS01 3 - 3 2 21CSC23 Web Application Databases (Full Stack Developer) 2,3 3 - - 3 3 21MLC33 Cloud Security Essentials 2,3 3 - - 3 4 21IT008 Social Network Analysis 2, 4, 5 3 - - 3 5 21CS011 Optimization Techniques 2, 3, 5 3 - - 3 6 21CS012 Wireless Adhoc Networks 2, 3 3 - - 3						-	-	3
Career Path I, II, III	-			,		_	-	
Career Path I, II, III 1 21MLC13 Conversational AI 1,2,4,12,PSO1 3 - - 3 2 21CSC23 Web Application Databases (Full Stack Developer) 2,3 3 - - 3 3 21MLC33 Cloud Security Essentials 2,3 3 - - 3 4 21IT008 Social Network Analysis 2,4,5 3 - - 3 5 21CS011 Optimization Techniques 2,3,5 3 - - 3 6 21CS012 Wireless Adhoc Networks 2,3 3 - - 3	Elect		F F	-, -				
1 21MLC13 Conversational AI 1,2,4,12,PSO1 3 - - 3 2 21CSC23 Web Application Databases (Full Stack Developer) 2,3 3 - - 3 3 21MLC33 Cloud Security Essentials 2,3 3 - - 3 4 21IT008 Social Network Analysis 2,4,5 3 - - 3 5 21CS011 Optimization Techniques 2,3,5 3 - - 3 6 21CS012 Wireless Adhoc Networks 2,3 3 - - 3								
2 21CSC23 Web Application Databases (Full Stack Developer) 2,3 3 - - 3 3 21MLC33 Cloud Security Essentials 2,3 3 - - 3 4 21IT008 Social Network Analysis 2,4,5 3 - - 3 5 21CS011 Optimization Techniques 2,3,5 3 - - 3 6 21CS012 Wireless Adhoc Networks 2,3 3 - - 3			Conversational AI	1 2 4 12 PSO1	3	_	_	3
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4 21IT008 Social Network Analysis 2, 4, 5 3 - - 3 5 21CS011 Optimization Techniques 2, 3, 5 3 - - 3 6 21CS012 Wireless Adhoc Networks 2, 3 3 - - 3			Developer)	,				
5 21CS011 Optimization Techniques 2, 3, 5 3 - 3 6 21CS012 Wireless Adhoc Networks 2, 3 3 - 3				,		-	-	
6 21CS012 Wireless Adhoc Networks 2, 3 3 3			Social Network Analysis			-	-	
	5					-	-	
7 MOOCs/Honors 3 3	6	2100012	Wireless Adhac Networks	2 3	3	-		3
		2103012		2, 3		_		

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Elect	ive VI								
1	21CS014	Green Computing	2,3,6,7	3	-	-	3		
2	21CS015	Software Project Management	3,6	3	-	-	3		
3	21CS016	Soft Computing	1,2,3,4	3	-	-	3		
4		MOOCs/Honors		3	-	-	3		
Elective VII: Open Elective III									
1	21CE003	Solid Waste Management	2,3,12	3	-	-	3		
2	21EE003	Fundamentals of Electrical Vehicle Technology	2,3,12	3	-	-	3		
3	21ME003	Industrial Engineering and Management	1,11	3	-	-	3		
4	21EC003	Interfacing and Programming with Arduino	1,2	3	-	-	3		
5	21CS003	Data Science for Engineering Applications	2,3,4	3	-	-	3		
6	21CH003	Industrial Ecology for Sustainable Development	2,6,7	3	-	-	3		
7	21IT003	Fundamentals of Mobile Computing	1,7	3	-	-	3		
8	21BS004	Advanced Materials of Renewable Energy	1,7	3	-	-	3		
9	21BS005	Applied Linear Algebra for Engineers	1,12	3	-	-	3		
Electiv	Elective VIII: Professional Elective								
1	21CS017	Fundamentals of Social Network Analysis	2, 4,5	-	-	-	3		

Electiv	ve VIII: Profes	sional Elective					
1	21CS017	Fundamentals of Social Network Analysis	2, 4,5	-	-	-	3
2	21CS018	Information Retrieval Systems	1,2,3,4	-	-	-	3
3	21CS019	Fundamentals of Devops	1,3, 5,8,10	-	-	-	3
4		MOOCs/Honors		-	-	-	3

Elect	ive IX: Open E	lective IV					
1	21CE019	Green Buildings	2,3,4,5,7	-	-	-	3
2	21EE017	Sustainable Energy	1,2,12	-	-	-	3
3	21ME004	Total Quality Management	1,11	-	-	-	3
4	21EC011	Communication Technologies	1,2	-	-	-	3
5	21CS020	Applications of Artificial Intelligence	2,3,6,7	-	-	-	3
6	21CH016	Green Technologies	1,6,7	-	-	-	3
7	21IT015	Human Computer Interaction	1,7	-	-	-	3
8	21BS006	Handling of Industrial Waste and Wastewater	1,7	-	-	-	3

Audit	t Course						
1	21AT001	Communication Etiquette in Workplaces	-	-	-	-	-
2	21AT002	Contemporary India: Economy, Policy and Society	-	-	-	-	-
3	21AT003	Design The Thinking	-	-	-	-	-
4	21AT004	Ethics and Integrity	-	-	-	-	-
5	21AT005	Indian Heritage and Culture	-	-	-	-	-
6	21AT007	Intellectual Property Rights and Patents	-	-	-	-	-
7	21AT008	Introduction to Journalism	-	-	-	-	-
8	21AT009	Mass Media Communication	-	-	-	-	-
9	21AT010	Science, Technology and Development	-	-	-	-	-
10	21AT011	Social Responsibility	-	-	-	-	-
11	21AT012	The Art of Photography and Film Making	-	-	-	-	-
12	21AT013	Gender Equality for Sustainability	-	-	-	-	-
13	21AT014	Women in Leadership	-	-	-	-	-
14	21AT015	Introduction to Research Methodology	-	-	-	-	-
15	21AT016	Climate Change and Circular Economy	-	-	-	-	-

B. Te	ch. (Honors)						
Dom	ain I (Data Eng	gineering)					
1	21CSH11	Advanced Data Structures	2,3,4	4	-	-	4
2	21CSH12	Advanced Databases	2,3,4	4	-	-	4
3	21CSH13	Programming, Data Structures and Algorithms Using Python	2,3,4,5	4	-	-	4
4	21CSH14	Bioinformatics	2,3	4	-	-	4
Dom	ain II (Modern						
1	21CSH21	Dev0ps	1,3,5,8,10	4	-	-	4

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Comment [s9]: Approved 1st BOS on 20-06-2022

Comment [s10]: Approved 1st BOS on 20-06-2022

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2	21CSH22	Design Patterns	2,3	4	-	-	4
3	21CSH23	Advanced Software Engineering	1,3,4, PSO1	4	-	-	4
4	21CSH24	Robotic Process Automation	3,5, 8, PSO2	4	-	-	4
Dom	ain III (Securit	y)					
1	21CSH31	Fundamentals of Systems Security	1,2	4	-	-	4
2	21CSH32	Python Programming for Security	2,3,4	4	-	-	4
3	21CSH33	Management of Information Security	3,6,7	4	-	-	4
4	21CSH34	Computer Forensics	2,3	4	-	-	4
Dom	ain IV (User In	terface Design)					
1	21CSH41	Computer Graphics	1,2,3,4	4	-	-	4
2	21CSH42	Multimedia Systems	3,4	4	-	-	4
3	21CSH43	Human Computer Interaction	2,3	4	-	-	4
4	21CSH44	Mobile Programming	3,4	4	-	-	4

	(Minors)						
Energy	Science & Techn	ology					
1	21CHM11	Foundation of Energy Science and Technology	1,2,3,5,7,12	4	-	-	4
2	21CHM12	Energy Generation from Waste	1,2,3,4,5	4	-	-	4
3	21CHM13	Energy Storage Systems	1,2,3,6,7	4	-	-	4
4	21CHM14	Hydrogen Energy and Fuel Cells	1,2,3,7	4	-	-	4
Nano Sc	ience & Technol	ogy					
1	21CHM21	Introduction and Characterization of Nano Materials	1,2,3,7	4	-	-	4
2	21CHM22	Carbon Nanostructures and Applications	1,3,4,5	4	-	-	4
3	21CHM23	Energy, Environment & Biomedical Nanotechnology	1,2,3,7	4	-	-	4
4	21CHM24	Industrial Applications of Nano Technology	2,3,5,,7	4	-	-	4
Environ	mental Enginee	ring					
1	21CEM11	Watershed Management	6.7	4	-	-	4
2	21CEM12	Industrial Pollution Control and Engineering	3,6,7,12	4	-	-	4
3	21CEM13	Solid and Hazardous Waste Management	1,3,6,7	4	-	-	4
4	21CEM14	Ecology and Environmental Assessment	1,3,6,7	4	-	-	4
Artificia	l Intelligence &	Machine Learning					
1	21CSM11	Fundamentals of AI & Machine Learning	1,12	4	-	- 1	4
2	21CSM12	Feature Engineering for Machine Learning	1,2,3	4	-	-	4
3	21CSM13	Exploratory Data Analytics	1,4	4	-	-	4
4	21CSM14	Foundations of Deep Learning	1,2,4	4	-	-	4
Cyber S	ecurity	1 0					
1	21CSM21	Fundamentals of Security	1.2	4	-	- 1	4
2	21CSM22	Management of Information Security	3,6,7	4	-	-	4
3	21CSM23	Cyber Security	1,3,4	4	-	-	4
4	21CSM24	Fundamentals of Cloud Security	2,3	4	-	-	4
Data Sci	ience & Analytic	<u> </u>					
1	21CSM31	Data Cleaning	2,3,4	4	Τ.	- 1	4
2	21CSM31 21CSM32	Data Engineering	1,2,3,4	4	-	-	4
3	21CSM33	Text Analytics	1,2,4	4	-	-	4
4	21CSM34	Social Network and Semantic Analysis	2, 4	4	-	_	4
Comput	er Systems Prog	-	_, _,				-
1	21CSM41	Programming Fundamentals	1,2,3	4	Ι.	_	4
2	21CSM41	Data Structures & Algorithms	1,2,3,4	4	-	-	4
3	21CSM41 21CSM41	Fundamentals of Databases	1,4	4	H	-	4
	21C3M1+1	Fundamentals of Computer Networks & Operating	1,1	4	H		
4	21CSM41	Systems	1,2,3	4	-	-	4
Digital l	C Design						
1	21ECM11	Fundamentals of VLSI Design	1,2,3	4	-	-	4
2	21ECM12	Digital Design using HDL	1,2,3	4	-	-	4
3	21ECM13	FPGA Technology	1,2	4	-	-	4

V

 $Department \ of \ Computer \ Science \ and \ Engineering, GMRIT |\ Al\&ML-Curriculum\ |\ Regulation\ 2021$

4	21ECM1	4	Analog and Mixed Signal Design	1,2	4	-	-	4
Industr	ial Automati				-			
1	21ECM2	1	Microcontrollers and Interfacing	1,2,3	4	-	-	4
2	21ECM2	2	Sensors and Data Acquisition System	1,2	4	-	-	4
3	21ECM2	3	Fundamentals of Labview	1,2	4	-	-	4
4	21ECM2	4	Medical Robotics	1,2,3	4	-	-	4
Commu	nicationsand	l Netv	vorking					
1	21ECM3	1	Principles of Communications	1,2	4	-	-	4
2	21ECM3	2	Coding Theory and Practice	1,2	4	-	-	4
3	21ECM3	3	Ad-hoc and Wireless Sensor Networks	1,2,3	4	-	-	4
4	21ECM3	4	Fundamentals of Multimedia Networking	1,2,3	4	-	-	4
Avionic	S							
1	21ECM4	1	Principles of Aerodynamics	1,2	4	-	-	4
2	21ECM4		Aircraft Electrical Systems	1,2	4	-	-	4
3	21ECM4		Aircraft Instrument Systems	1,2	4	-	-	4
4	21ECM4		Aircraft Communication and Navigational Systems	1,2	4	-	-	4
Geogra	phic Informa							
1	21ECM5		Sensors and Sensing Technology	1,2	4	-	-	4
2	21ECM5		Geographic Information Systems	1,2	4	-	-	4
3	21ECM5		Digital Image Processing	1,2	4	-	-	4
4	21ECM5		Lidar Systems	1,2	4	-	-	4
Electric	Vehicles Tec	chnol						
1	21EEM1	1	Introduction to Electric Vehicles Technologies	2,3	4	Τ-	-	4
2	21EEM1	2	Electrical Drives and Controllers for Electric Vehicles	2,3	4	٦.	-	4
3	21EEM1	3	Charging Technology in Electric Vehicles	2,3	4	١.	-	4
4	21EEM1	4	Computer Vision in Electric Vehicles	2,3	4	١.	-	4
Electric	Vehicles Te	chnol	ogy					
1	21EEM2	1	Fundamentals of Smart City	2,3	4	Τ-	-	4
2	21EEM2	2	Smart City Infrastructure	2,3	4	-	-	4
3	21EEM2	3	Computational Methods for Smart City Management	2,3	4	-	-	4
4	21EEM2	4	Communication Technologies and Mobility for Smart City	2,3	4	-	-	4
Electric	Vehicles Te	chnol	ogy					
1	21EEM3	1	Modelling and Simulations of Industrial Applications	2,3	4	-	-	4
2	21EEM3	2	Industrial Sensors and Actuators	2,3	4	-	-	4
3	21EEM3	3	Programmable Logic Controllers	2,3	4	-	-	4
4	21EEM3		Control Design for Industrial Applications	2,3	4	-	-	4
	pplication D							
1	21ITM11		oduction to Cloud Computing	6, 7, 12	4	-	-	4
2	21ITM12		oduction to Web Development with HTML, CSS, Script	1, 2, 3, 9, 12	4	-	-	4
3	21ITM13	Deve	eloping Cloud Native Applications	5, 8, 10	4	-	-	4
4	21ITM14		eloping Cloud Apps with Node.js and React	5, 8, 10	4	-	-	4
Robotio	s and Autom	ation						
1	21MEM1	.1	Introduction to Robotics	1,2,3	4	-	-	4
2	21MEM1	2	Drives and Sensors	1,2,3,4	4	-	-	4
3	21MEM1	.3	Control Systems for Robotics	1,2,3,4	4	-	-	4
4	21MEM1		Machine Learning for Robotics	2,5	4	-	-	4
Industr	ial Systems E	Engin						
1	21MEM2	21	Industrial Management	1,10,11,12	4	-	-	4
2	21MEM2	22	Fundamentals of Operations Research	1,2,3,5	4	-	-	4
3	21MEM2	23	Enterprise Resource Planning	1,2,3,5,11,12	4	1-	-	4
	21MEM2		Production Planning and Control	1,2,3,5,11,12	4	١.	-	4



Department of Computer Science & Engineering Specialization in CSE- Artificial Intelligence & Machine Learning (CSE- AIML)

1st BOS - MINUTES OF MEET

Person in Chair: Dr A Venkata Ramana, HoD CSE, GMRIT

Venue: Online Teams

Dated: 20.06.2022 (Monday)

Time(s): 03.00 PM TO 4.30 PM

S.No	Points Discussed		
1	Agenda: Review of the Curriculum and Course Titles of AR21 Academic Regulation. Review of Titles and Syllabus of 3rd and 4th Semester Curriculum under AR2. Finalization of Course Titles of Electives under Academic Regulations 2021. Review of B.Tech Honors & Minors. Any Other Item		
	 Preamble and the context is set for the 1st BOS Meeting by the Principal Dr CLVRSV Prasad requesting the Academia/ Alumni and Industry to suggest in designing the best, distinct-industry driven curriculum for the specialization course CSE-AIML. HOD CSE welcomed all the Experts of Academia / Industry and Alumni for todays 1st-BOS Meet by throwing some glimpse on the AR21 Course Structure, Career Paths and 3rd & 4th Sem Syllabus. 		
2	 AIML Curriculum: a) External BOS Members suggested to have syllabus only upto 2nd Year in advance for BOS meetings, as these specializations are emerging trends and need revision on timely basis. b) Suggested to add the concern POs and PSOs applicable for the core courses of the stream. c) Suggested to have No Subjects in 8th Semester as per JNTUK Norms. d) Suggested to have Seminar/ Project/ Internship in the 8th Semester e) Suggested not to have any courses under MOOCs, except from Swayam/ NPTEL Platform, not exceeding more than 6 Credits. f) Suggested to add a mandate course in the Curriculum, i.e., Universal Human Values II- 3 Credit Course. (Reference Link is Given) 		

.3	III rd Semester Subjects:	
	a) Foundations of AI & ML:	Syllabus is Good and
	Revise the Subject Name from Foundations of AI & ML to Fundamentals of AI & ML. b) Statistical Analysis using Python	Fine.
	b) Statistical Analysis using Python	100,000,000,000
	c) Data Structures	
	d) Digital Logic Design	
5 4	e) Object Oriented through Java	
	Mathematical Foundation for Computer Science	
	receded thorough changes syllabus sooms to look it	Suggested for a
	towards linear algebra, matrix theory and Calculus for machine learning. IVth Semester Subjects:	revision.
4	1vth Semester Subjects:	
	a) Data Visualization for Machine Learning	Need Revision
	Suggested to add 3D Surface Visualization Control	
	b) Data visualization for Machine Learning Lab	
	 Suggested to add two or three experiments related to 3D Surfaces in Lab Component. Suggested to use PEP tool for Python 	
	• Suggested to use PEP tool for Python	
	Suggested to work on the Guidelines provided by the state of the	
	 Suggested to work on the Guidelines provided by the Industries for Visualization. Suggested to add programs for Code Correction and Code Correction. 	
	Source. Source	
	IVth Semester Subjects:	
		Syllabus is Good and
	Operating Systems	Fine.
	Computer Architecture and Organization	
	Design and Analysis of Algorithms	
5 .	Other Items Discussed:	
	a) Observed 30% of Changes from CSE Co	
	a) Observed 30% of Changes from CSE Curriculum w.r.t CSE-AIML Curriculum b) External BOS Members informed to add Mathematical Control of the	
	c) Thoroughly check the Credit Balancing Component as suggested by AICTE(in LTPC structure).	
	d) Credit is completely based on Weekly Contact Hours. Tutorials also should carry credit, if included in the	
	e) Display of all the career path assured in the	
	e) Display of all the career path courses as needed and took suggestions. f) Suggested to refer syllabus from UTV 8 UT Park 1 to 1 to 2 to 3	
1	f) Suggested to refer syllabus from IITK & IIT Roorkee for specializations. g) Suggested to go through this Reference Link:)
	of the control of the	
	https://docs.google.com/viewer?a=v&pid=sites&srcid= am50dWNlay5hYy5pbnxqbnR1Y2VrX3ZpY2UtcHJpbmNpcGFsfGd4OjZhNDQyY2RhZmI4ZDNiN2E	1
	John John John John John John John John	•

Prepared By: Dr.V.Prasad

Board Chairman- HOD- CSE