



# COURSE BOOK DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

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Department Vision , Mission, PEOs, PSOs, PO's



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Suggestive Pedagogy for Course (Category wise)



Course Category with objective and outcome

# DEPARTMENT VISION

"To become a department of international relevance in the field of Artificial Intelligence and Machine learning"

# DEPARTMENT MISSION

To nurture students with sound engineering knowledge through the effective use of modern tools with a focus on local and global employability as an AI &ML professional by imbibing leadership qualities, ethical attitude, lifelong learning and social sensitivity.

# 720S

PEO 1:To attain good technical Knowledge and Research competency in conception, design, and implementation of engineering systems with a strong commitment to lifelong learning.

PEO 2:To adapt and continuously innovate within a rapidly evolving local and globaleconomic and technological landscape while upholding professional discipline and maintaining the highest ethical standards.

PEO 3:To develop leadership qualities for engaging diverse teams by collaborating with industry, academic and research institutes of repute through effective communication, strong inter-personal and project management skills to establish themselves as professional engineers in the international arena.

# **PSOS**

PSO 1: Ability to identify interdisciplinary problems related to various sectors in order to evolve novel and Sustainable solutions by using research techniques and concepts of Artificial Intelligence and Machine Learning

PSO 2: Ability to apply practices of Artificial Intelligence and Machine Learning by appropriate selection of tools and technologies for different use cases to build new-age products and services for Society.

PSO 3: Ability to pre-process data sets to extract insights by applying various data pre-processing techniques

PSO 4: Ability to use Artificial Intelligence and Machine Learning models on data for enabling better decision making.

# 70'S

# PO1 ENGINEERING KNOWLEDGE:

Apply Knowledge of Mathematics, Science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems

# PO 2 PROBLEM ANALYSIS:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

# PO 3 DESIGN / DEVELOPMENT OF SOLUTIONS:

Design solutions for complex engineering problems and design system components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.

# PO 4 CONDUCT INVESTIGATIONS OF COMPLEX PROBLEMS:

Using research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of information to provide valid conclusions

# PO 5 MODERN TOOL USAGE:

Create, select, and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.

# PO 6 THE ENGINEER AND SOCIETY:

Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice.

# PO 7 ENVIRONMENT AND SUSTAINABILITY:

Understand the impact of professional engineering solutions in societal and environmental context and demonstrate knowledge of and need for sustainable development.

### PO 8 ETHICS:

Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.

# PO 9 INDIVIDUAL AND TEAM WORK:

Function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings.

# PO 10 COMMUNICATION:

Communicate effectively on complex engineering 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.

# PO 11 LIFE-LONG LEARNING:

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.

# PO 12 PROJECT MANAGEMENT & FINANCE:

Demonstrate knowledge and understanding of engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects in multidisciplinary environments.

#### Scheme HME 2023

### Semester-I / B.E. (IT/ MECH / E&TC / M&ME) / B.Tech. (AI&ML) Choice Based Credit Grading Scheme with Holistic and Multidisciplinary Education (CBCGS-HME 2023) Proposed TCET Autonomy Scheme (w.e.f. A.Y. 2023-24)

		Anna Description		T	- Aliza Cal	· · · · · · / / · · · · ·		Examination scheme (Academic)							
		Course Description		10	eaching Sci	neme (Acade	mic)			E	xamination scheme	(Academic)			
			M	fodes of Te	eaching / Lo	earning / Wei	ghtage		M	odes of Ca	ontinuous Assessme	nt / Evaluatio	n		
Sr.	Course				Hours P	er Week			Theor	y (100)	Practical/Oral/	Term			
No.	Code	Course Title						40/20 60 Presentation (25)			Presentation (25)	Work (25)			
		Course True	Hours Per Week			Contact		IA					Total		
			Theory	Tutorial	Practical	Hours	Credits	ISE	IE	ESE	PR / OR	TW			
1	BSC1201	Chemistry	3		2	5	4	20	20	60	25	25	150		
2	BSC1202	Mathematics-I	4	1		5	5	20	20	60	25	125			
3	ESC1201	Programming for Problem-Solving#	3		2	5	4	20	20	60	25	25	150		
4	ESC1202	Engineering Mechanics	3		2	5	4	20	20	60	25	25	150		
5	ESC1203	Workshop & ManufacturingPractices-I			2	2	1				25		25		
6	HSMC1201	Introduction to Indian Knowledge System	2	•	2	4	3	20	20	60	25		125		
		Total	15	1	10	10 26 21					Total marks (Ac	ademic)	725		
	(	Course Description			Conductio	n Scheme				Pres	entation	Report	Term Work		
1	MC1201	Attitude & Aptitude Development 1	1	-	-	1	Non Credit					25	25		
2	HME-P\$1201	Professional Skills I (Object Oriented Programming)	-		2	2	1			15		10	25		
	(	Course Description	Contact Hr	s. during W	eek End / Se	emester Break	End of Seme	ster (B	tween	21st and 2:	5th Week) / During Se	mester			
1	AP1201	Activity Points				48@									
		Total	16	1	12	29	22			Gra	and Total marks:		775		

#### • Guidelines for the Semester:

- 1. During Academic conduct, practical load & tutorial load shall be conducted in three & two batches respectively.
- 2. For continuous evaluation, examination shall be conducted under two heads: IA In-Semester Assessment, ESE End Semester Examination. Under IA, 20 marks of ISE (In-Semester Examination) shall be conducted for 1 hour. 20 marks of IE (Innovative Examination) shall also be conducted under IA. ESE shall be conducted for 60 marks with duration of 2 hours.
- 3.Other activities shall also be considered are: Workshops/ Training, Festival (Technical/Business/Others) Events, Contributions in Incubation/ Innovation / Entrepreneurship Cell/ Institutional Innovation Council, and Learning at Departmental Lab/Tinkering lab/Institutional Workshop.
- 4. For the above Activities mentioned in point 4, if student is a part of Organizing Committee or participating in a Competition at University/ State/ National/ International Level then it will be considered as Internship else it will be considered an Activity Points.
- 5. @ As per AICTE, Student has to earn 100 Activity Points by participating in 400 Hrs. of activities during 4 years of Engineering. After completing 48 hrs. of Activities, Students can earn 12 Points. These Points shall not be reflected in Grade Card. Separate transcripts shall be issued to students after the completion of the Final Year.
- 6. # Programming for Problem Solving is mapped with syllabus of Certificate in Computer Applications [CCA]. The course will set the fundamentals which will help the learner to acquire further skills (in self learning mode) necessary for qualification pack. The student who clears the qualification pack as per the NSQF levels is eligible for multiple entry-multiple exit as per the guidelines of Government of Maharashtra & AICTE

#### Scheme HME 2023

### Semester-II/ B.E. (IT/ MECH / E&TC / M&ME) / B.Tech. (AI&ML) Choice Based Credit Grading Scheme with Holistic and Multidisciplinary Education (CBCGS-HME 2023) Proposed TCET Autonomy Scheme (w.e.f. A.Y. 2023-24)

		Course Description		Te	aching Sch	eme (Acade	mic)	Examination scheme (Academic)							
			M	lodes of Te	eaching / Le	arning / We	ightage		N	lodes of C	Continuous Assessm	nent / Evaluatio	on		
Sr. No	Course Code	Course Title			Hours Pe	r Week		4	Theor 40/20	y (100) 60	Practical/Oral/ Presentation (25)	Term Work (25)			
		Course Hue	H	Iours Per V	Veek	Contact			IA				Total		
			Theory	Tutorial	Practical	Hours	Credits	ISE	IE	ESE	PR / OR	TW			
1	BSC2201	Physics	3		2	5	4	20	20	60	25	25	150		
2	BSC2202	Mathematics-II	3	1	-	4	4	20	20	60	-	25	125		
3	ESC2201	Basic ElectricalEngineering	3		2	5	4	20	20	60	25	25	150		
4	ESC2202	Engineering Graphics& Design	2		4	6	4	20	20	60	25	25	150		
5	ESC2203	Workshop & ManufacturingPractices-II			2	2	1	-	-	-		25			
6	HSMC2201	English for General & Professional Communication	2	•	2	4	3	20	20	60	25	•	125		
		Total	13	1	12	12 26 20					Total marks (A	cademic)	725		
		Course Description			Conduction	n Scheme		Presentation				Report	Term Work		
1	SI2201	Summer Internship	Internsl dur	hip will be ing the ser	conducted nester break	40*	1	10			15	25			
2 MC2201 Attitude & Aptitude Development 2				-	-	1	Non Credit			-		25	25		
		Course Description		Contact	Hrs. Durin	g Week End	Semester Br	eak/Env	d of Ser	mester (Bet	tween 21st and 25thW	eek)/During Se	mester		
1	AP2201	Activity Points	-			52@	-	-			-	-			
		Total	14 1 12 27 21 Grand Total marks:						and Total marks:		775				

- Guidelines for the Semester:
  - 1. Student Induction Training program shall be conducted for one week before the start of the first semester and 2 weeks during the semester with the regular timetable.
  - 2. During Academic conduct, practical load & tutorial load shall be conducted in three & two batches respectively.
  - 3.For continuous evaluation, examination shall be conducted under two heads: IA In-Semester Assessment, ESE End Semester Examination. Under IA, 20 marks of ISE (In-Semester Examination) shall be conducted for 1 hour and Engineering Graphics & Design shall be conducted for 20 marks with duration of 1.5 hours. Under IA, 20 marks of IE (Innovative Examination) shall also be conducted. ESE shall be conducted for 60 marks with duration of 2 hours and Engineering Graphics & Design shall be conducted for 3 hours.
  - 4.\*Under the head of Summer Internship, students can complete the internship during summer break with 40 hours. The Summer Internship will be conducted in the form of in-house internship which is mandatory for all students in summer semester break. Credits will be reflected in the Grade Card of Second Semester. Students shall submit a report to earn Term work marks in internship
  - 5.@As per AICTE, Student has to earn 100 Activity Points by participating in 400 Hrs. of activities during 4 years of Engineering. After completing 52 hrs. of Activities, Students can earn 13 Points. These Points shall not be reflected in Grade Card. Separate transcripts shall be issued to students after the completion of Final Year

#### S.T. Semester –III

# Choice Based Credit Grading Scheme with Holistic and Multidisciplinary Education (CBCGS-HME 2023) TCET Autonomy Scheme (w.e.f. A.Y. 2023-24)

		ourse Description		Teaching	Scheme (Pro	gram Specific)	)				Examination sel	heme		
			2	Modes of T	eaching / Leas	ming / Weight	age			Modes of C	ontinuous Assess	ment / Evaluat	tion	
Sr. No.	Course Code	Course Title		Hou	rs Per Week		Credits	Т 40 1/	heory (10 20	0/50) 60/30	Practical / Oral / Presentation (25)	Term Work (25)	т	otal
			Theory	Tutorial	Practical	Contact Hours		ISE	IE	ESE	PR/OR	TW		
1	HSMC-301	Universal Human Values-II	2	1		3	3	20	20	60		25	1	25
2	BSC-AIML301	Mathematics-III	3	1		4	4	20	20	60		25	1	25
3	ESC-AIML301	Python Programming(Core and Advanced)	3	-	2	5	4	20	20	60	25	25	1	50
4	PCC-AIML301	Computer Organization and Operating System	3		2	5	4	20	20	60	25	25	1	50
5	PCC-AIML302	Data Structures and Algorithms Using JAVA	3	1	2	6	5	20	20	60	25	25	1	50
			14	3	6	23	20 Total marks (Academic)							700
	C	ourse Description			Non Credited	Mandatory Co	urse (Passin	g is mandat	tory for th	ás course)		Term Work		
1	MC-301	Attitude & Aptitude Development 3	1	-	-	1	(Non Credit)					25	1	25
		ourse Description	Contact H	ts. during \	Veek End / Se	mester Break/	End of Sem	ester (Bet	ween 21	" and 25th W	eek)			
1	SI-AIML301	Summer Internship	•			120*	-			-	-	-		
		ourse Description		Cont	act Hrs. during	Week End / S	Semester Bro	ak/ End o	f Semes	ter (Between	21" and 25" We	ek)/During Ser	nester	
1	AP-AIMIL301	Activity Points				45#								
			Teaching	scheme (H	lolistic and M	ultidisciplinary	Education-			As	sessment Evaluatio	n Scheme		
	c	ourse Description	- country		HME)		Loosentu	<u> </u>	Presenta	tion		Report		Term Work
	UN OF				1				AC			AC		
1	AIMLP\$301	Professional Skills II (AI-Data Quality Analyst)	-	-	2	2	1		15			10		25
2	2 HME -IP301 Industry Practise-I (Employability Skills) Application Developer (HTML & CSS)				2	2	1		15			10		25
		Total			4	4	2	Total marks (HME)				50		
		Total	15	3	10	28	22			Gra	nd Total marks			775

#### **Guidelines for the Semester:**

- 1. During Academic conduct, practical load shall be conducted in batches.
- 2. For continuous evaluation, examination shall be conducted under two heads: IA In-Semester Assessment, ESE – End Semester Examination. Under IA, 20 marks of ISE (In-Semester Examination) shall be conducted for 1 hour. 20 marks of IE (Innovative Examination) shall also be conducted under IA. ESE shall be conducted for 60 marks with duration of 2 hours. The assessment and evaluation process a common paper can be set up for AI&ML and AI&DS having the same syllabus for Mathematics -III
- 3. Three In-Semester Examinations (ISE) will be conducted during each semester. Average of Three exam will be considered and passing is mandatory in ISE 3.
- 4. Innovative Examination (IE) will be accessed based on the project report with presentation.
- 5. Professional Skills & Industry Practice-III activity will run in the form of integrated theory and practical course & syllabus is linked with level 6 of NSQF.
- 6.\* Under the head of Summer Internship, students can complete an internship from winter to summer with 40 hours and acquire 1 credit till the end of Semester 2. The summer Internship will be conducted in the form of in-house internship which is mandatory for all students in summer semester break. The content for Internship can be mapped with Industry practice required for multiple entry-multiple exit.

Following activities should be considered for Summer Internship: 1) Participation in inhouse internship at the end of 3rd and 4th Semester of 2 weeks each.
 2) Other activities which also will be considered are : Participation in Hackathon, Development of new Product/ Business Plan / Registration of start-up, Participation in IPR workshop/Leadership talks/Idea/ Design / Innovation/Technical Expos, Internship with Industry / Govt. / NGO/ PSU/MSME/Online Internship, Long Term Goals under Rural Internship

Note:- For Above Activities mentioned in point 2, if Student is part of Organizing Committee or Participating in a Competition at University/State/National/international Level then it will be considered as Internship else it will be considered as Activity Points. 7.

# As per AICTE, Students have to earn 100 Points by participating in 400 Hrs. of activities during 4 years of Engineering. After Completing 48 hrs. of Activities, Students can earn 12 Points. These Points will not be reflected in the Grade Card. Separate transcripts will be issued to students after completion of Final Year

#### S.T. Semester –IV

### Choice Based Credit Grading Scheme with Holistic and Multidisciplinary Education (CBCGS-HME 2023) Proposed TCET Autonomy Scheme (w.e.f. A.Y. 2023-24)

	Cour	se Description		Teaching	Scheme (Pro:	tram Specific)		Examination scheme						
Sr.	Course Code	Course Title		Modes of Te	eaching / Lear	ning / Weightage				Modes o	Continuous Assess	ment / Evaluation	1	
No.				Hour	s Per Week		Credits	40 1	heory (1 /20 A	60/30	Practical / Oral / Presentation (25)	Term Work (25)	Total	
<u> </u>			Theory	Tutorial	Practical	Contact Hours		ISE	IE	ESE	PR/OR	TW		
1	BSC-AIML401	Mathematics-IV	3	1		4	4	20	20	60		25	125	
2	PCC-AIML401	Computer Networks and 5G Technologies	3	-	2	5	4	20	20	60	25	25	150	
3	PCC-AIML402	Data Management and Mining	3		2	5	4	20	20	60	25	25	150	
4	PCC-AIML403	Basics of Artificial Intelligence	3		2	5	4	20	20	60	25	25	150	
		Total	12	1	6	19	16			Total m	arks (Academic)		575	
	Cour	se Description		N	on-Credited M	fandatory Course (	Passing is m	andatory	for this	course)		Term Work		
1	MC-401	Environmental Studies					(Non Credit)					25	25	
	Cour	se Description	Contact Hrs. during Week End / Semester Break/ End of Semester(Between 21" and 25" Week)									Term Work		
1	SI-AIML401	Summer Internship	-		-	120*	3					50	50	
	Cour	se Description		Conta	act Hrs. during	Week End / Sem	ester Break/ I	End of S	emester	(Between 2	1" and 25 <sup>th</sup> Week)/I	Juring Semester		
1	AP-AIML401	Activity Points				52@	-							
											Assessment Evaluatio	n Scheme		
	Cour	se Description	Teaching	scheme (Holis	tic and Multid	lisciplinary Educat	hon-HME)		Presenta	tion	Rep	ort	Term Work	
			(Cee	aducted in the be	ginning of Sem	ester during first 3 W	(eeks)		AC		A	C		
1	HME -AIMLPS401	Professional Skills III (AI-Data Quality Analyst)		-	2	2	1		15		10	)	25	
2	HME -IP401	Industry Practise-I (Employability Skills) Application Developer (Java Script/React)	-		2	2	1		15		10	)	25	
3	HME -ABL401	Activity Based Learning			2	2	1		15		10	)	25	
		Total			6	6	3			Total	marks (HME)		75	
		Total	12	1	12	25	22			Gran	d Total marks		725	

#### **Guidelines for the Semester:**

- 1. During Academic conduct, practical load shall be conducted in batches.
- 2. For continuous evaluation, examination shall be conducted under two heads: IA In-Semester Assessment, ESE – End Semester Examination. Under IA, 20 marks of ISE (In-Semester Examination) shall be conducted for 1 hour. 20 marks of IE (Innovative Examination) shall also be conducted under IA. ESE shall be conducted for 60 marks with duration of 2 hours.
- 3. Three In-Semester Examinations (ISE) will be conducted during each semester. Average of Three exam will be considered and passing is mandatory in ISE 3.
- 4. Innovative Examination (IE) will be accessed based on the project report with presentation.
- 5. Professional Skills & Industry Practice-III activity will run in the form of integrated theory and practical course & syllabus is linked with level 6 of NSQF.
- 6.\* Under the head of Summer Internship, students can complete an internship from winter to summer with 40 hours and acquire 1 credit till the end of Semester 2. The summer Internship will be conducted in the form of in-house internship which is mandatory for all students in summer semester break. The content for Internship can be mapped with Industry practice required for multiple entry-multiple exits.

7. Following activities should be considered for Summer Internship: 1) Participation in inhouse internship at the end of 3rd and 4th Semester of 2 weeks each.
2) Other activities which also will be considered are: Participation in Hackathon, Development of new Product/ Business Plan / Registration of start-up, Participation in IPR workshop/Leadership talks/Idea/ Design / Innovation/Technical Expos, Internship with Industry / Govt. / NGO/ PSU/MSME/Online Internship, Long Term Goals under Rural Internship

Note: - For Above Activities mentioned in point 2, if Student is part of Organizing Committee or Participating in a Competition at University/State/National/international Level then it will be considered as Internship else it will be considered as Activity Points.

# As per AICTE, Students have to earn 100 Points by participating in 400 Hrs. of activities during 4 years of Engineering. After Completing 48 hrs. of Activities, Students can earn 12 Points. These Points will not be reflected in the Grade Card. Separate transcripts will be issued to students after completion of Final Year

#### T.T. Semester –V

### Choice Based Credit Grading Scheme with Holistic and Multidisciplinary Education (CBCGS- HME 2023) Proposed TCET Autonomy Scheme (w.e.f. A.Y. 2023-24)

	_	Course Description		Teachin	g Scheme (Pr	rogram Specif	ic)					Examination sche	eme	
				Modes of 1	eaching / Lea	arning / Weig	htage			٨	Modes of Co	ontinuous Assessm	ent / Evaluation	_
Sr. No.	Course Code	Course Title		Нос	rs Per Week			Credits	TP 40/	eory (10 /20 A	60/30	Practical / Oral / Presentation (25)	Term Work (25)	Total
			Theory	Tutorial	Practical	Contact Hours			ISE	IE	ESE	PR/OR	TW	1
1	HSMC-501	Soft Skill & Interpersonal Communication	2		2 4			3	20	20	60			100
2	ESC-AIML501	Automata Theory and Compiler Design	3	1	- 4		4	20	20	60	25	25	150	
3	PCC-AIML501	Machine Learning	3		2 5		4	20	20	60		25	125	
4	PCC-AIML502	Web and App Development	3		2	2 5		4	20	20	60	25	25	150
5	PCC-AIML503	Computer Vision	3		- 2 5			4	20	20	60	25	25	150
		Total	15 1 6 22 19 Total marks (Academic)										675	
		Course Description		Non-Credited Mandatory Course (Passing is mandatory for this course)										
1	MC-501	Indian Constitution	1			1		(Non-Credit)					25	25
		Course Description	Contact Hrs.	during Semes	ter Break/ End	of Semester (B	etwee	n 21" and 25*	Week)					
1	SI-AIML501	Summer Internship			-	120*		-				-		
		Course Description		Contact F	Irs. during W	eek End / Sen	nester	Break/ End	of Seme	ster (Be	tween 21st	and 25 <sup>th</sup> Week) / (	During Semester	
1	AP-AIML501	Activity Points		-		48#								
			Teaching	schome (He)	lette and the	Halashallasaa	Educe	tion titers			Asse	ssment/Evaluation	n Scheme	
		Course Description	/Cond	scheme (Ho fucted in the b	eelening of Se	mester during	Educa first 33	Weeks)	P	resenta	ition	Rep	port	Term Work
			feen	,	- Burning or se					AC		A	IC	Term Work
1	HME – AIMLPS501	Professional Skills IV (Machine Learning Tools & Technologies)			2	2		1		15		1	0	25
2	HME-IP501	Industry Practise-III(Employability Skills) Application Architect (Futuristic Web Development)			2	2		1		15		1	.0	25
3	HME -PBL501	Project Based Learning (Mini- Project)			2	2		1		15		1	0	25
		Total	-		6	6		3	Total marks (HME)					75
		Total	16	1	12	29		22			Gran	d Total marks		775

#### • Guidelines for this semester:

1. During Academic conduct, practical load shall be conducted in batches.

2. For continuous evaluation, examination shall be conducted under two heads: IA – In-Semester Assessment, ESE – End Semester Examination. Under IA, 20 marks of ISE (In-Semester Examination) shall be conducted for 1 hour. 20 marks of IE (Innovative Examination) shall also be conducted under IA. ESE shall be conducted for 60 marks with duration of 2 hours.

3. Three In-Semester Examinations (ISE) will be conducted during each semester. Average of Three exam will be considered and passing is mandatory in ISE 3.

4. Innovative Examination (IE) will be accessed based on the project report with presentation.

5. Professional Skills & Industry Practice-III activity will run in the form of integrated theory and practical course & syllabus is linked with level 6 of NSQF.

6. Under the head of Summer Internship, students can complete an internship from winter to summer with 40 hours and acquire 1 credit till the end of Semester 2 The summer Internship will be conducted in the form of in-house internship which is mandatory for all students in summer semester break. The content for Internship can be mapped with Industry practice required for multiple entrymultiple exits.

7. Following activities should be considered for Summer Internship: -

- Participation in inhouse internship at the end of 3rd and 4th Semester of 2 weeks each.
- Other activities which also will be considered are: Participation in Hackathon, Development of new Product/ Business Plan / Registration of start-up, Participation in IPR workshop/Leadership talks/Idea/ Design / Innovation/Technical Expos, Internship with Industry / Govt. / NGO/ PSU/MSME/Online Internship, Long Term Goals under Rural Internship

9. Note: - For Above Activities mentioned in point 2, if Student is part of Organizing Committee or Participating in a Competition at University/State/National/international Level then it will be considered as Internship else it will be considered as Activity Points.

10. As per AICTE, Students have to earn 100 Points by participating in 400 Hrs. of activities during 4 years of Engineering. After Completing 48 hrs. of Activities, Students can earn 12 Points. These Points will not be reflected in the Grade Card. Separate transcripts will be issued to students after completion of Final Year.

#### T.T. Semester –VI

### Choice Based Credit Grading Scheme with Holistic and Multidisciplinary Education (CBCGS- HME 2023) Proposed TCET Autonomy Scheme (w.e.f. A.Y. 2023-24)

Course I	Description	Teaching	Scheme	(Program S	pecific)		Examination scheme						
Sr.	Course Code	Course Title	Modes of	f Teachin	ıg / Learnin	g / Weightage		Mode	s of Co	ntinuous A	Assessment / Evaluatio	n	
No.			н	ours Per \	Neek		Credits	Theor	y (100/	50)	Practical / Oral / Presentation (25)	Term Work (25)	Total
			Theory	Tutorial	Practical	Contact	1	40/	20	60/30			1
						Hours		L/	A		PR/OR	TW	
	USMC 601	Madalace Mental Linghts	2			2	2	ISE	10	ESE		25	76
1	MSMC-601	workplace Mental Health	2	-	-	2	2	10	10	30	•	25	/5
2	PCC-AIML601	Soft Computing	3	-	2	5	4	20	20	60	25	25	150
3	PCC-AIML602	Software Engineering	3	-	2	5	4	20 20 60		60	25	25	150
4	PEC- AIML601X	Professional Elective-I	3	-		3	3	20	20	60		25	125
5	OEC-601X	Open Elective-I	3	-	-	3	3	20	20	60		25	125
		Total	14	-	4	18	16		-	-	Total marks (Academi	c)	650
Course I	Description		1	on-Cred	lited Manda	atory Course (Pas	sing is man	datory	Term Work				
Course I	Description		Contact H	rs. during	Semester Br	eak/ End of Semes	er (Between	21" an	Term Work				
1	SI-AIML601	Summer Internship	-	-	-	120*	3		-		-	50	50
	c	ourse Description		Contact Hrs. during Week End / Semester Break/ End of Semester (Between 21st and 25th Week) / During Seme									er
1	AP-AIML601	Activity Points	-	-		52#	•		-	•		•	
Course I	Description		Teac	hing sch	eme (Holist	ic and		Asses	sment/	Evaluation	n Scheme		
					Multidis	ciplinary Educati	on-	Prese	ntation		Rep	ort	Term
					HME)				AC		A	с	Work
		Den de carlo en el dela Martin	(Conducte	d in the b	eginning of 5	emester during fir	st 3 Weeks)	-					
1	HIME -MINICPOOL	(Machine Learning Tools & Technologies)	-	-	2	2	1			15		10	25
<u> </u>	HME-IP601	Industry Practise-IV (Employability Skills)											<u> </u>
2		Application Architect (Database		-	2	2	1	15 10				10	25
		forModern Application)											
3	HME -RBL601	Research Based Learning (Minor-Project)		-	2	2	1		15		1	D	25
		Total	-	-	6	6	3	Total	marks (	HME)			75
		Total	14	-	10	24	22	Grand	i Total ı	marks:			775

IA- In-Semester Assessment, ESE- End Semester Examination, PR- Practical Examination, TW - Term Work Examination, OR- Oral Examination, AC- Activity evaluation

]	PROFESSIONAL ELECTIVE I
Course Code	Course name
PEC-AIML6011	AI in Digital Signal and Image Processing
PEC-AIML6012	High Performance Computing in AI
PEC-AIML6013	AI in Cloud Computing
PEC-AIML6014	Big data analytics using ML
PEC-AIML6015	ML with AR VR

		SEM-VI Emerging Technologies
		OPEN ELECTIVE I
	To be conducted by dept. for	other dept. students (e.g., Not for COMP/IT background students if completed as
		a core or PE course)
Sr.No	Course Code- OEC601X	Course name
	(Dept. Name)	
1	COMP	Basics of Social Network Analysis (SNA)
2	IT	Basics of Robotic Process Automation (RPA)
3	EXTC	Fundamentals of Communication Engineering
4	E&CS	Introduction to Eco-design of Sustainable Electronic Products
5	CIVIL	Fundamentals of Development Engineering
6	MECH	Introduction to Industry 4.0
7	AIDS	Introduction to Artificial Intelligence and Data Science
8	IOT	Introduction to IoT Applications
9	AIML	Introduction to Blockchain
10	CS&E	Basics of Cyber Security and Laws
11	MME	Introduction to Robotics
12	EH&S	English for Competitive Exams

#### Guidelines for the Semester:

1. During Academic conduct, practical load shall be conducted in batches.

2.For continuous evaluation, examination shall be conducted under two heads: IA – In-Semester Assessment, ESE – End Semester Examination. Under IA, 20 marks of ISE (In-Semester Examination) shall be conducted for 1 hour. 20 marks of IE (Innovative Examination) shall also be conducted under IA. ESE shall be conducted for 60 marks with duration of 2 hours.

3.Three In-Semester Examinations (ISE) will be conducted during each semester. Average of Three exam will be considered and passing is mandatory in ISE 3.

4.Innovative Examination (IE) will be accessed based on the project report with presentation.

5.@-Professional Elective Courses Lab will be conducted in the form of Capstone Project

6.Professional Skills & Industry Practice-VI activity will run in the form of integrated theory and practical course & syllabus is linked with level 7 of NSQF.

7.Research Based Learning activity will run in the form of integrated theory and practical course.

8.\* Under the head of Summer Internship, student can complete internship from winter to summer with 80 hours and acquire 2 credits till the end of Semester 6. The summer Internship will be conducted in the form of in-house internship which is mandatory for all students in summer semester break. Credits will be awarded at the end of 6th Semester and will be reflected in the Grade Card of 6th Semester. Student will get 1-year span to acquire the credits and complete total contact hours. Student shall submit a report to earn Term work marks in internship.

9. Following activities should be considered for Summer Internship:

10. Participation in inhouse internship at the end of 5th and 6th Semester of 2 week each.

11. Other activity which also will be considered are: Participation in Hackathon, Development of new Product/ Business Plan / Registration of start-up, Participation in IPR workshop/Leadership talks/Idea/ Design / Innovation/Technical Expos, Internship with Industry / Govt. / NGO/ PSU/MSME/Online Internship, Long Term Goals under Rural Internship

12. Note: - For Above Activities mentioned in point 2, if Student is part of Organizing Committee or Participating a Competition at University/State/National/international Level then it will be considered as Internship else it will be considered as Activity Points.

13. (a) As per AICTE, Students has to earn 100 Points by participating in 400 Hrs. of activities during 4 years of Engineering. After Completing 52 hrs. of Activities, Students can earn 13 Points. This Points will not be reflected in Grade Card. Separate transcript will be issued to students after completion of Final Year.

#### B.T. Semester –VII

### Choice Based Credit Grading Scheme with Holistic and Multidisciplinary Education (CBCGS- HME 2023) Proposed TCET Autonomy Scheme (w.e.f. A.Y. 2023-24)

	Course D	Description	Teac	hing Sch	eme (Pro	gram Spe	cific)	Examination scheme							
Sr.	Course Code	Course Title	Mod	es of Teach	hing / Lean	ning / Weis	htage			Modes	of Continuous Asses	sment / Evaluation			
No.				Hours F	Per Week		Credits	40/	20	60/30	Practical/Oral	Term Work	Total		
								1/			(25/75)	(25/50)			
			Theory	Tutorial	Practical	Contact Hours		ISE	IE	ESE)	PR/OR	TW			
1	PCC- AIML701	Natural Language Processing	3		2	5	4	20	25	150					
2	PCC- AIML702	Deep Learning	3		2	5	4	20	20	150					
3	PEC- AIML701X	Professional Elective-II	3	-	2@	5	4	20	20	150					
4	PEC- AIML702X	Professional Elective-III	3	•	-	3	3	20 20 60 25 25					150		
5	OEC-701X	Open Elective-II	3	-	-	3	3	20	20	25	125				
6	PROJ- AIML701	Project-I			4	4	2				25	25	50		
		Total	15	-	10	25	20					Total marks	775		
	Course I	escription		Cont	act Hrs. duri	ng Week Er	d / Semeste	r Break	/End	of Semester (E	etween 21" and 25 <sup>th</sup> W	eek) / During Semester	,		
1	AP-AIML701	Activity Points				48#									
	Course D	Description	Teac	hing sche	eme (Holi	istic Stud	ent			A	ssessment/Evaluat	tion Scheme			
				Develo	pment - I	HSD)		I	reser	ntation	Report		Term Work		
			(Conducted	in the beginni	ng of Semeste	er during first	3 Weeks)	AC AC							
1	HME- AIMLPS701	Industry Linked Certification			4	4	2	25 25					50		
		Total	-	-	4	4	2	Total marks					50		
		Total	15		14	29	22			G	rand Total marks:		\$25		

IA- In-Semester Assessment, ESE- End Semester Examination, PR- Practical Examination, TW – Term Work Examination, OR- Oral Examination, AC- Activity evaluation

PROFESSIONAL EL	ECTIVE II		PROFESSIONAL ELECTIVE III							
Course Code	Course name	Sectors	Course Code	Course name	Sectors					
PEC-AIML7011	AI&ML in Healthcare	Healthcare	PEC-AIML7021	Soft Computing and Computer Vision in Medical Diagnosis	Healthcare					
PEC-AIML7012	AI&ML in Agritech	Agritech	PEC-AIML7022	Prediction Analysis & IoT in Agro	Agritech					
PEC-AIML7013	Information Security	Security	PEC-AIML7023	AI in BlockChain	Security					
PEC-AIML7014	Game Programming	Gaming	PEC-AIML7024	3D Graphics and Animation	Gaming					
PEC-AIML7015	Human Machine Interaction	Societal Benefits	PEC-AIML7025	Social Media Analytics	Societal Benefits					

Tracks	OE-II(Sem VII)
Sectors Specific Courses	1. Product Design and development
	2. Alternative Fuels
	<ol><li>Food Safety and Management</li></ol>
	<ol><li>Design Thinking</li></ol>
Research Based Courses	1. Research Methodology
	<ol> <li>Innovation &amp; Entrepreneurship development and management</li> </ol>
	<ol><li>Intellectual Property Rights-Laws and Practice</li></ol>
	<ol> <li>Contemporary Technology Development (Industry Case Study Based)</li> </ol>
Management Courses	1. Business Intelligence
	<ol><li>Supply Chain Management</li></ol>
	<ol><li>Digital Marketing and E commerce</li></ol>
	<ol> <li>Industrial Safety and Management</li> </ol>
Sustainable	1. Renewable Energy Technologies
Development Courses	<ol><li>Sustainable Agriculture</li></ol>
	<ol><li>Fundamentals of Disaster Management</li></ol>
	<ol> <li>Waste Management and Energy Recovery</li> </ol>
Foreign Languages	1. German Language 1
	<ol><li>French Language 1</li></ol>
	<ol> <li>Japanese Language 1</li> </ol>

#### **Guidelines for the Semester:**

1. During Academic conduct, practical load shall be conducted in batches.

2. For continuous evaluation, examination shall be conducted under two heads: IA – In-Semester Assessment, ESE – End Semester Examination. Under IA, 20 marks of ISE (In-Semester Examination) shall be conducted for 1 hour. 20 marks of IE (Innovative Examination) shall also be conducted under IA. ESE shall be conducted for 60 marks with duration of 2 hours.

3. Three In-Semester Examinations (ISE) will be conducted during each semester. Average of Three exam will be considered and passing is mandatory in ISE 3.

4. @-Professional Elective Courses Lab will be conducted in the form of Capstone Project

5. Professional Skills & Industry Practise-VII activity will run in the form of integrated theory and practical course.

6. **#** As per AICTE, Students has to earn 100 Points by participating in 400 Hrs. of activities during 4 years of Engineering. After Completing 48 hrs. of Activities, Students can earn 12 Points. This Points will not be reflected in Grade Card. Separate transcript will be issued to students after completion of Final Year.

#### B.T. Semester –VIII

### Choice Based Credit Grading Scheme with Holistic Student Development (CBCGS- HME 2023) Proposed TCET Autonomy Scheme (w.e.f. A.Y. 2023-24)- Category-1

Course	Description		Teaching S	cheme (Progr	am Specific)			E	xaminati	on Scheme			
			Modes of 7	Teaching / Lea	ming / Weigh	stage		Modes	of Cont	inuous Assess	ment / Evaluation		
Sr.	Course Code	Course Title	Hours Per	Week			Contin	40/ L/	20 A	60/30	Practical/Oral (25/50)	Term Work (25/100)	Taul
INO.			Theory	Tutorial	Practical	Contact Hours	Credits	ISE	IE	(ESE)	PR/OR	TW	10011
1	PCC- AIML801	Cognitive Computing	3			3	3	20	20	60	-	25	125
2	PCC- AIML802	Reinforcement Learning	3			3	3	20	20	60		25	125
3	PEC- AIML801X	Professional Elective-IV	3	-	@2	5	4	20	20	60	25	25	150
4	OEC-801X	Open Elective-III	3		-	3	3	20	20	60			100
6	PROJ- AIML801	Project-II	-		12	12	6		-		50	50	100
		Total	12		14	26	19		-		Total marks		600
	Course De	escription		Contact H	rs. during We	ek End / Ser	mester Break/	End of	f Semest	er (Between 2	1st and 25th Week) /	During Semester	
1	AP-AIML801	Activity Points				52#	-						
			Teaching	chama (Holist	in Student De	valopment	HED	Assess	ment/Ev	aluation Scher	ne		
Course	e Description		(Conducted	in the beginning	of Semester d	weiopinein -	(eeks)	Present	tation		Report		Term
			(commerces	an and o cy,mining	, er semerter u	and an or o	comp,		AC		AC		Work
1	HME-	Industry			4	4	2		25		25		50
	AIMLPS801	Linked	-	-									
		Certification											
		Total		-	4	4	2				Total marks		50
		Total	12	-	18	30	21	Grand Total marks:					650

#### B.T. Semester –VIII

Choice Based Credit Grading Scheme with Holistic Student Development(CBCGS- HME 2023) Proposed TCET Autonomy Scheme (w.e.f. A.Y. 2023-24)-Category-2 (Full sem Internship)

Course	Description		Teaching S	eaching Scheme (Program Specific) Examination Scheme									
		Course Title	Modes of T	eaching / Lear	ming / Weigh	tage		Modes	of Con	tinuous Assessa	nent / Evaluation		
Sr.	Course Code		Hours Per Week				Contine .	40/2 IA	20	60/30	Practical/Oral (25/50)	Term Work (25/100)	
NO.			Theory	Tutorial	Practical	Contact Hours	Credits	ISE	IE	ESE	PR/OR	TW	10041
1	*PEC- AIML801X	Professional Elective-IV	3	-	@2	5	4	20	20	60	25	25	150
2	*OEC-801X	Open Elective-III	3	-		3	3	20	20	60			100
		Total	6		2	8	7			Total marks		250	
Course	Description		Contact Hrs. during Semester Break/ End of Semester(Between 21st and 25th Week)										
1	SI-AIML\$01	Industry oriented professional Internship		-	-	480	12				350	350	
	Course De	scription		Contact F	Irs. during We	eek End / Se	mester Break/	End of	Semes	ter (Between 2)	1st and 25th Week) /	During Semester	
1	AP-AIML801	Activity Points				52#							
			Traching	Acres (Tables)	Condona Da		LICEN	Assessment/Evaluation Scheme					
Course	Description		Conducted in	neme (Piolisu	of Sementar da	velopment -	nsD)	Present	tation		Report		Term
			(Conducted I	n the oeginning	or Semester du	ring mu 5 w	eeks)		AC		AC		Work
1	HME-	Industry Linked			4	4	2	25		25		50	
	AIMLIC801	Certification		-									
		Total		-	4	4	2				Total marks		50
		Total	15		6	12	21				Grand Total marks:		650

# PROFESSIONAL ELECTIVE IV

Course Code	Course name	Sector
PEC-AIML8011	Intelligent Embedded System	Healthcare
PEC-AIML8012	Intelligent Robots and Drone Technology	Agritech
PEC-AIML8013	Bioinformatics	Security
PEC-AIML8014	Game Engine and Architecture	Gaming
PEC-AIML8015	Generative AI	Societal Benefit

Tracks	OE-III(Sem VIII)
Sectors Specific	1. Engineering Optimization
Courses	2. Biofuels
	<ol><li>Hi. Tech Horticulture</li></ol>
	4. Game Design
Research Based	1. Research & Publication Ethics
Courses	<ol> <li>Business development</li> </ol>
	<ol> <li>Patent Drafting</li> </ol>
	<ol> <li>Sustainable research practice</li> </ol>
Management	1. Project Management
Courses	<ol> <li>Human Resource Management</li> </ol>
	<ol> <li>Knowledge Management</li> </ol>
	<ol> <li>Pollution and its Management</li> </ol>
Sustainable	1. Green Technology
Development	<ol><li>Climate change and Sustainability</li></ol>
Courses	3. Smart Cities
	<ol> <li>Sanitation and Water Management</li> </ol>
Foreign Languages	1. German Language 2
	<ol><li>French Language 2</li></ol>
	3. Japanese Language 2

#### **Guidelines for the Semester:**

1. During Academic conduct, practical load shall be conducted in batches.

2. For continuous evaluation, examination shall be conducted under two heads: IA – In-Semester Assessment, ESE – End Semester Examination. Under IA, 20 marks of ISE (In-Semester Examination) shall be conducted for 1 hour. 20 marks of IE (Innovative Examination) shall also be conducted under IA. ESE shall be conducted for 60 marks with duration of 2 hours

3. Three In-Semester Examinations (ISE) will be conducted during each semester. Average of Three exam will be considered and passing is mandatory in ISE 3.

4. @-Professional Elective Courses Lab will be conducted in the form of Capstone Project

5. Professional Skills & Industry Practice-VIII activity will run in the form of integrated theory and practical course.

6. There will be two categories for students in semester VIII:

7. Category-1 Students doing major projects through regular curriculum (06 Credits).

8. Category 2 Students doing full Semester Industry Internship (06 Credits).

9. Industry Internship evaluation should be done twice in the semester by the Internal Faculty and 1 quality paper publication can be done by students as outcome (marks of which can be included as part of term work)

10. \*Category 2 courses to be completed online mode or allied courses from MOOCs

11. @ As per AICTE, Students has to earn 100 Points by participating in 400 Hrs. of activities during 4 years of Engineering. After Completing 52 hrs. of Activities, Students can earn 13 Points. This Points will not be reflected in Grade Card. Separate transcript will be issued to students after completion of Final Year.

# Semester Wise Course Distribution

Sr.	Category	No.Of Courses/Semester								Total	
No											
		Ι	II	III	IV	V	VI	VII	VIII		
1	HSMC	1	1	1	-	1	1	-	-	5	
2	BSC	2	2	1	1	-	-	-	-	6	
3	ESC	3	3	1	-	1	-	-	-	8	
4	PCC	-	-	2	3	3	2	2	2	14	
5	PEC	-	-	-	-	-	1	2	1	4	
6	OEC	-	-	-	-	-	1	1	1	3	
7	EEC	-	1	-	1	-	1	1	1	5	
8	MC*	1	1	1	1	1	-	-	-	5	
9	HME-	0	0	0	1	1	1	-	-	3	
	ABL/PBL/										
	RBL										
10	HME-PSIP	0	0	2	2	2	2	1	1	10	
Total		7	8	8	9	9	9	7	6	63	

Sr.	Category		Credit per semester							Total	
No		Ι	II	III	IV	V	VI	VII	VIII		Credit
									Group	Group 2(I)	
							•		1(P)		
1	HSMC	3	3	3		3	2				14
2	BSC	9	8	4	4						25
3	ESC	9	9	4	-	4					26
4	PCC			9	12	12	8	8	6		55*
5	PEC						3	7	4	4	15
6	OEC						3	3	3	3	9
7	EEC		1		3		3	2	6	12	15
	(Internship								(P:06)	(I:12)	
	+Project)										
8	Non-Credit	N	Ń	Ń	V	V					
	Mandatory										
9	Total HME	-	-	2	3	3	3	2	2		15
	Credits										
	(skillbased)										
Total Credits		21	21	22	22	22	22	22	2	21	174

# Suggestive Pedagogy for Courses (Categorywise)

Sr.	Level	Name of Pedagogy	Sr.	Level	Name of Pedagogy
No			No		
1	Р	Classroom Lecture using chalk and	11	S	Use of project work and fieldwork
		talk technique			
2	Р	Content-based instruction	12	S	Scenario planning
3	Р	Activity-based learning	13	Т	Storytelling
4	Р	Case study examples and Learning	14	Т	Dramatization/Role plays
		by design situations			
5	Р	Use of practical exercises using ICT	15	Т	Real-life problems allowing reflection
		tools and software			time
6	S	Jigsaws/Quiz	16	Т	Debate
7	S	Mind-Mapping	17	Т	Analysis of critical incidents originating
					familiar and non-familiar
8	S	Self-reflection	18	Т	Interact with a diverse group
9	S	Peer teaching & think a loud pair	19	Т	Exploration
		problem-solving			
10	S	Group discussion with	20	Т	Reframing problems
		Brainstorming			

Sr. No	Category	No. Of Courses	Suggestive Pedagogical Approach					
110		Courses	Brimogr	Cocondami	Testing			
			Pfilliary	Secondary	Teruary			
1	HSMC	5	1,4,5	6,8	15,20,18,16,14			
2	BSC	6	1,2,3,	10,6,9,12	13			
3	ESC	8	1,3,2,	10,7,9,	19,13,14			
4	PCC	15	1,2,3,5	8,10,11	13,15,20			
5	PEC	4	1,4	7,9	15,16,17,19			
6	OEC	3	1,4	7,9,10,12	17,19			
7	EEC	5	4,3,2,5	8,11	18,19,			
9	HME-	3	2,3,5	8,11	13,14, 16,19,15,20			
	ABL/PBL/RBL							
10	HME-PSIP	8	2,4,5,8,9	7,10,11,12	17			
11	MC	4	4,5	10	19			

# Course Category with Objective and Outcome

S.No	Course Category with Objective & Outcome	Subject Name	Semester	Credits	Total Credits
1	HSMC	Introduction to Indian Knowledge System	I	3	14
	Objective: Exposure to a new domain. Outcome: Developing effective	English for General & Professional Communication	Ш	3	
CC el	communication, teamwork, and leadership	Universal Human Values-II	III	3	-
	in technology-related fields.	Soft Skill & Interpersonal Communication	V	3	
	in technology related heros.	Workplace Mental Health	VI	2	
2	BSC	Chemistry	I	4	25
	Objective: To improve fundamental	Mathematics-I	1	5	
	understanding of subjects	Physics	II	4	
	Basics and Foundations	Mathematics-II		4	
	Duries and Foundations	Mathematics-III	III	4	_
2	FCC	Mathematics-IV Programming for Broblem Colving	10	4	26
2	Objective: To provide a strong	Frogramming for Problem-Solving		4	26
	foundation in the principles and theories	Engineering Mechanics	4	4	- 1
	of	Workshop & Manufacturing Practices-1		1	- 1
	engineering.	Basic Electrical Engineering	- "	4	- 1
	Outcome: Bridging the gap between	Workshop & Mapufacturing Practices II	4	4	- 1
	scientific theory and engineering	Puthon Programming(Core and Advanced)	ш	4	-
	applications.	Automata Theory and Compiler Design	V	4	- 1
4	PCC	Computer related Foundation Courses		1.	55
•	Objective: To Strengthen Engineering	Data Structures and Algorithms Using JAVA	III	5	
	Core.	Computer Organization and Operating System	1	4	
	Outcome: Make curriculum Globally	Computer Networks and 5G Technologies	IV	4	
	Competitive.	Web and App Development	V	4	
		AI&ML related Foundation Courses			
		Data Management and Mining	IV	4	-
		Basics of Artificial Intelligence		4	
		Software Engineering with MLops	V V	4	
		Computer Vision With Location-I	VI	4	
		Computer Vision with Location-II	· · ·	4	
		Natural Language Processing	VII	4	
		Deep Learning	1	4	1 1
		Reinforcement Learning		3	]
		Cognitive Computing	VIII	3	
5	PEC	Professional Elective-I	VI	3	14
	Objective: To Improve the technical	Al in Digital Signal and Image Processing			
	domains	AI in Cloud Computing			
	Outcome: Enhance research skills and	Big data analytics using ML			
	utilize advanced computing tools	ML with AR VR			
		Professional Elective –II	VII	4	7
		Sectors			
		Healthcare-Al&ML in Healthcare			
		Security-Information Security			
		Gaming-Game Programming			
		Societal Benefits-Human Machine Interaction			
		Professional Elective-III	VII	3	
		Sectors			
		Vision in Medical Diagnosis			
		Agritech-Prediction Analysis & IoT in Agro			
		Security-AI in BlockChain			
		Gaming-3D Graphics and Animation			
		Societal Benefits-Social Media Analytics			
		Professional Elective-IV	VIII	4	

6	OEC Objective: To inculcate research aspects	Healthcare-Intelligent Embedded System Agritech-Intelligent Robots and Drone Technology Bioinformatics Security Game Engine and Architecture Generative AI Open Elective –I Basics of Social Network Analysis (SNA)	VI	3	9
	problem solving and managerial skills <b>Outcome:</b> Promote interdisciplinary and multidisciplinary learning among students.	Basics of Robotic Process Automation (RPA) Basics of Robotic Process Automation (RPA) Fundamentals of Communication Engineering Introduction to Eco-design of Sustainable Electronic Products Fundamentals of Development Engineering Introduction to Industry 4.0 Introduction to Industry 4.0 Introduction to Artificial Intelligence and Data Science Introduction to IoT Applications Introduction to Blockchain Basics of Cyber Security and Laws Introduction to Robotics English for Competitive Exams Sectors Specific Courses			
		Open Elective –II         Sector Specific Courses         1.       Product Design and development         2.       Alternative Fuels         3.       Food Safety and Management         4.       Design Thinking         Research Based Courses       1.         1.       Research Methodology         2.       Innovation & Entrepreneurship         development and management       3.         3.       Intellectual Property Rights-Laws and         Practice       4.         4.       Contemporary Technology Development         (Industry Case Study Based)         Management Courses         1.       Business Intelligence         2.       Supply Chain Management         3.       Digital Marketing and E commerce         4.       Industrial Safety and Management         Sustainable Development Courses       1.         1.       Renewable Energy Technologies         2.       Sustainable Agriculture         3.       Fundamentals of Disaster Management         4.       Waste Management and Energy Recovery         Foreign Language 1       2.         3.       Japanese Language 1	VII	3	
		Open Elective-III Sector -Specific Courses 1. Engineering Optimization 2. Biofuels 3. Hi. Tech Horticulture 4. Game Design Research Based Courses 1. Research & Publication Ethics 2. Business development	VIII	3	
		<ol> <li>Patent Drafting</li> <li>Sustainable research practice</li> </ol>			

		Management Courses         1. Project Management         2. Human Resource Management         3. Knowledge Management         4. Pollution and its Management         Sustainable Development Courses         1. Green Technology         2. Climate change and Sustainability         3. Smart Cities         4. Sanitation and Water Management         Foreign Languages         1. German Language 2         2. French Language 2         3. Japanese Language 2					
7	EEC	Industry Linked Certification			15		
	Objective: To provide industry exposure.	Industry Linked Certification	VIL& VIII	4(2+2)			
	Apply engineering knowledge to provide	Summer Internship	vir ce vin	1(2:2)			
	solutions of real life and societal	Summer Internship	ILIILIV.V.VI	7(1+3+3)			
	problems. Outcome: Utilize multi-disciplinary knowledge required for satisfying industry requirements.			(((())))			
8	PS,IP	Professional Skills					
	Objective: To provide employability and professional skills as per Industry requirements Outcome: Make students locally relevant and globally competent	Professional Skills I(Object Oriented Programming)	I	1	13		
		Professional Skills II &III (AI-Data Quality Analyst)	III & IV	2(1+1)	1		
		Professional Skills IV & V (AI-Machine Learning Engineer )	V & VI	2(1+1)			
		Industry Practise					
		Industry Practise-I & II (Employability Skills) Application Developer (HTML & CSS	III & IV	2(1+1)			
		Industry Practise-III & IV(Employability Skills) Application Architect(Database for Modern Application)	V & VI	2(1+1)			
9	HME	Activity Based Learning	IV	1	3		
	Objective: To expose students	Project Based Learning(Mini-Project)	V	1			
	systematically for experiential learning	Research Based Learning(Minor-Project)	VI	1	1		
	through various activities. Outcome: Overall Holistic Development of students						
10	MC	Attitude & Aptitude Development- 1, Attitude	I, II, III	0	0		
	Objective: To expose students to societal and lifelong	& Aptitude Development-2, Attitude & Aptitude Development-3					
	learning.	Environmental Studies	IV				
	Outcome: Develop Lifelong learning skills	Indian Constitution	V				