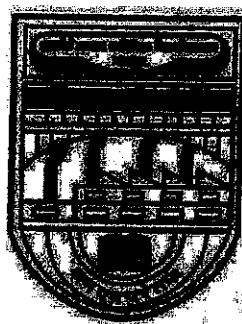


Course Curriculum
For
B. Tech. CSE- Artificial Intelligence and Machine Learning



Academic Session: 2026-27

Department of Computer Science & Engineering

Harcourt Butler Technical University
Kanpur (208002)
As per NEP 2020

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Department of Computer Science & Engineering

Course Structure (Semester wise)

B. Tech. CSE - Artificial Intelligence and Machine Learning

(Applicable w.e.f. the Session 2026-2027)

Components of the Curriculum

(Program curriculum grouping based on course components)

Sr. No.	Curriculum Content			
	Course Component	% of total number of credits of the Program	Total number of contact hours	Total number of Credits
1	Basic Sciences (BSC)	11.62	21	20
2	Engineering Sciences (ESC)	10.46	05	18
3	Skill Enhancement (SEC)	2.32	08	04
4	Humanities and Social Sciences (HMSC)	5.23	11	9
5	Program Core (PCC)	59.88	135	103
6	Mandatory Course (MC)	0.00	00	00
7	Program Electives (PEC)	6.98	12	12
8	Open Electives (OEC)	3.49	06	06
	Total	100.00	214	172

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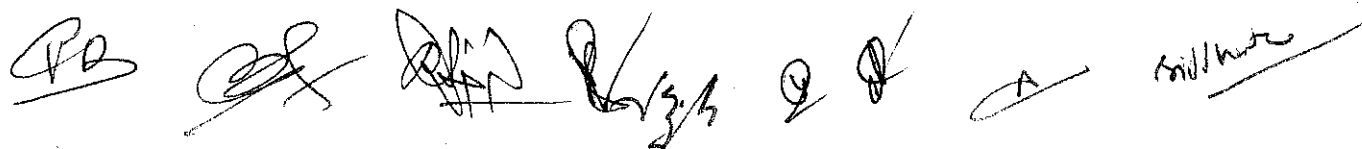
Department of Computer Science & Engineering
Course Structure (Semester wise)
B. Tech. CSE- Artificial Intelligence and Machine Learning
(Applicable w.e.f. the Session 2026-2027)

I Semester

Sr. no.	Course Type	Category	Subject Code	Course Title	Credits (L-T-P)	Sessional Marks				ESE	Total Marks
						MS E	TA	Lab	Total		
1	BSC	Multidisciplinary	DMA 101	Mathematics-I	4(3-1-0)	30	20	-	50	50	100
2	BSC	Multidisciplinary	DPH101	Physics	4(3-0-2)	15	20	15	50	50	100
3	ESC	Multidisciplinary	DCS101	Programming for Problem Solving	4(3-1-0)	30	20	-	50	50	100
4	ESC	Multidisciplinary	DEE101	Basic Electrical Engineering	4(3-0-2)	15	20	15	50	50	100
5	SEC	Skill Enhancement	DCE101	Engineering Graphics & Design	2(0-0-4)	-	20	30	50	50	100
6	HSMC	Value Added Course Basket	DHS101	Universal Human Value	2(2-0-0)	30	20	-	50	50	100
7	HSMC	Ability Enhancement	DHS102	English for Technical Writing	2						100
8	MC	Mandatory Course	MC101	Induction Program	0(0-0-0)						
Total Credits						22					700

II Semester

Sr. no.	Course Type	Category	Subject Code	Course Title	Credits (L-T-P)	Sessional Marks				ESE	Total Marks
						MSE	TA	Lab	Total		
1	BSC	Multidisciplinary	DCY201	Chemistry	4(3-0-2)	15	20	15	50	50	100
2	ESC	Multidisciplinary	DET201	Basic Electronics Engineering	3(2-1-0)	30	20	-	50	50	100
3	ESC	Multidisciplinary	DME101/201	Basic Engineering Mechanics	4(3-1-0)	30	20	-	50	50	100
4	ESC	Value Added Course Basket	DCE201	Environmental Science and Engineering	3(2-1-0)	30	20	-	50	50	100
5	SEC	Skill Enhancement	DME202	Digital Fabrication/ Workshop/ Manufacturing Practices	2(0-0-4)	-	20	30	50	50	100
6	HSMC	Ability Enhancement	DHS203	Communication Skills	3(2-0-2)	15	20	15	50	50	100
7	PCC	Core	DCS201	Python Programming	3(2-0-2)	15	20	15	50	50	100
8	MC	Mandatory Course	MC202	NSS/Physical Activity/ Meditation & Yoga/ Photography/Nature Club	0(0-0-0)						
Total Credits						22					700



III Semester

Sr. no.	Course Type	Category	Subject Code	Course Title	Credits (L-T-P)	Sessional Marks				ESE	Total Marks
						MS E	TA	Lab	Total		
1	BSC	Multidisciplinary	DMA303	Computer Oriented Numerical Methods	4(3-0-2)	15	20	15	50	50	100
2	PCC	Core	DCS301	Computer Organization and Architecture	4(3-1-0)	30	20	-	50	50	100
3	PCC	Skill Enhancement	DCS302	Cyber Security	3(3-0-0)	30	20	-	50	50	100
4	PCC	Core	DCS303	Discrete Mathematics	3(3-0-0)	30	20	-	50	50	100
5	PCC	Core	DCS304	Software Engineering	4(3-0-2)	15	20	15	50	50	100
6	PCC	Ability Enhancement	DCS305	Data Structures	4(3-0-2)	15	20	15	50	50	100
7	MC	Mandatory Course	MC301	NSS/Physical Activity/ Meditation & Yoga/ Photography/ Nature Club	0(0-0-0)						
Total Credits					22					600	

IV Semester

Sr. no.	Course Type	Category	Subject Code	Course Title	Credits (L-T-P)	Sessional Marks				ESE	Total Marks
						MSE	TA	Lab	Total		
1	BSC	Multidisciplinary	DMA 403	Mathematics-II	4(3-1-0)	30	20	-	50	50	100
2	PCC	Core	DCS401	Object Oriented Programming System	4(3-0-2)	15	20	15	50	50	100
3	PCC	Core	DCS402	Design and Analysis of Algorithms	4(3-0-2)	15	20	15	50	50	100
4	PCC	Core	DCS403	Operating System	4(3-1-0)	30	20	-	50	50	100
5	PCC	Skill Enhancement	DCS404	Data Science and Big Data Analytics	4(3-0-2)	15	20	15	50	50	100
6	HSMC	Value Added Course Basket			2						
7	MC	Mandatory Course	MC401	NSS/Physical Activity/Meditation & Yoga/ Photography / Nature Club	0(0-0-0)						
Total Credits					22					500	

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V Semester

Sr. no.	Course Type	Category	Subject Code	Course Title	Credits (L-T-P)	Sessional Marks				ESE	Total Marks
						MSE	TA	Lab	Total		
1	PCC	Core	DCS501	Computer Networks	3(3-0-0)	30	20	-	50	50	100
2	PCC	Core	DCS502	Database Management Systems	4(3-0-2)	15	20	15	50	50	100
3	PCC	Core	DAI501	Cloud Computing	4(3-1-0)	30	20	-	50	50	100
4	PCC	Core	DCS504	Artificial Intelligence	3(3-0-0)	30	20	-	50	50	100
5	PCC	Core	DCS505	Machine Learning	4(3-0-2)	15	20	15	50	50	100
6	PCC	Skill Enhancement	DIT501	Web Technology	4(3-0-2)	15	20	15	50	50	100
7	MC	Mandatory Course	MC501	NSS/Physical Activity/Meditation & Yoga/Photography/Nature Club	0(0-0-0)						
Total Credits						22					600

VI Semester

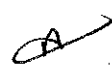
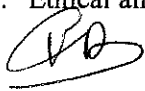
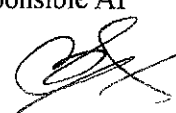
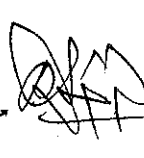
Sr. no.	Course Type	Category	Subject Code	Course Title	Credits (L-T-P)	Sessional Marks				ESE	Total Marks
						MS E	TA	Lab	Total		
1	PCC	Skill Enhancement	DCS601	Deep Learning	4(3-0-2)	15	20	15	50	50	100
2	PCC	Core	DAI601	Internet of Things	4(3-1-0)	30	20	-	50	50	100
3	PCC	Skill Enhancement	DCS603	Digital Image Processing	4(3-0-2)	15	20	15	50	50	100
4	PCC			Independent Study and Project	2(0-0-4)	-	-	50	50	50	100
5	PEC-I			Program Elective-I	4(3-1-0)	30	20	-	50	50	100
6	PEC-II			Program Elective-II	4(3-1-0)	30	20	-	50	50	100
7	MC	Mandatory Course	MC601	NSS/Physical Activity/Meditation & Yoga/Photography/Nature Club	0(0-0-0)						
Total Credits						22					600

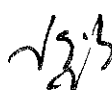
PEC-I

1. Theory of Computation
2. Software Testing
3. Soft Computing
4. Data Mining & Warehousing
5. Human- Centric AI
6. Ethical and Responsible AI

PEC-II

1. Compiler Design
2. Embedded System
3. Cryptography & Network Security
4. Edge Computing
5. Advanced Computer Architecture
6. Generative Adversarial Network (GAN)





VII Semester

Sr. no.	Course Type	Category	Subject Code	Course Title	Credits (L-T-P)	Sessional Marks				ESE	Total Marks
						MSE	TA	Lab	Total		
1	PCC	Skill Enhancement	DCS701	Mobile Application Development	3(3-0-0)	30	20	-	50	50	100
2	PCC		DAI701	Natural Language Processing	3(3-0-0)	30	20	-	50	50	100
3	PEC-III			Program Elective-III	3(3-0-0)	30	20	-	50	50	100
4	PEC-IV			Program Elective-IV	3(3-0-0)	30	20	-	50	50	100
5	PCC	Mini/Minor PROJECT	DAI795	Project	6(0-0-12)	-	50	-	50	50	100
6	PCC	INTERNSHIP	DAI786	Summer Internship/ Industrial Training and Seminar	4(0-0-8)	-	50	-	50	50	100
Total Credits					22					600	

PEC-III

1. Pattern Recognition
2. Quantum Computing
3. Virtual and Augmented Reality
4. Foundation of Generative AI, Agentic AI and Large Language Model
5. Software Project Management

PEC-IV

1. Mobile Computing
2. Computer Vision
3. Business Intelligence
4. Blockchain Technology
5. GPU Architecture
6. Distributed Systems

VIII Semester

Sr. no.	Course Type	Category	Subject Code	Course Title	Credits (L-T-P)	Sessional Marks				ESE	Total Marks
						MSE	TA	Lab	Total		
1	PCC	Major Project	DAI891	Project	12 (0-0-24)	-	50	-	50	50	100
2	PCC	OEC-I		NPTEL/MO OC/SWAYA M	3(3-0-0)	-	-	-	-	-	100
3	PCC	OEC-II		NPTEL/MO OC/SWAYA M	3(3-0-0)	-	-	-	-	-	100
Total Credits					18					300	

OEC-I

1. Cyber Security (DCS 811)

OEC-II

1. Machine Learning (DCS 821)