

Program Schemes for [Computer Science and Engineering] (Hons.) (with specialization in Artificial Intelligence and Machine Learning in association with IBM]

Cluster: Engineering Institute: AIT-CSE Department: AIML Type of Program: UG

First Year				Second Year			
Semester-1	Course Name	Course Category	Credits	Semester-3	Course Name	Course Category	Credits
	Logical thinking & problem Solving	Major Core	4		Computer Organization and Architecture	Major Core	3
	Mathematics-I	Major Core	5		Advanced Data Structures	Major Core	4
	Communication Skills-I	Skill Enhancement	2		Database Management System	Major Core	4
	Semiconductor physics and applications	Major Core	3		Major Elective-1	Major Elective	4
	Universal human values, ethics and life skills-1	Value Education	1		Major Elective-2	Major Elective	2
	Academic & career pathway planning	Value Education	0		Probability and Statistics	Major Core	4
	Emerging & disruptive technologies workshop	Major Core	2		Universal Human Values, Ethics and Life Skills-2	Value Education	2
	Engineering Physics	Major Core	4		Social Internship	Internship	2
					Gender Equity and Empowerment	Value Education	1
			Aptitude-I	Ability Enhancement	1		

					Entrepreneurship Mindset	Ability Enhancement	1
					Critical Enquiry and Research Methodology	Ability Enhancement	1
					General Proficiency-II	Ability Enhancement	1
Semester -2	Data Structures and Algorithms	Major Core	4	Semester-4	Operating System	Major Core	4
	Design Thinking and Innovation	Skill Enhancement	1		Computer Networks	Major Core	4
	Programming Practice	Major Core	1		Advanced Database Management System	Skill Enhancement	1
	Digital Electronics	Major Core	4		Minor Electives -I	Minor Electives	4
	AI Applications Lab	Ability Enhancement	1		Statistical Methods for AI	Major Core	4
	General Proficiency-I	Ability Enhancement	1		Python for Machine Learning	Minor Core	2
	Computer Graphics Lab	Major Core	1		RIE-1	Ability Enhancement	1
	Communications Skills - II	Skill Enhancement	1		RIE-2	Skill Enhancement	1
	Mathematics-II	Major Core	5		General Proficiency-III	Skill Enhancement	1
	Biology for Engineers	Major Core	3		Competitive Coding – I	Skill Enhancement	1
Soft Skills-I	Skill Enhancement	1	Mid-Grade Project-1	Project	1		

Third Year				Fourth Year			
	Course Name	Course Category	Credits		Course Name	Course Category	Credits
Semester -5	Major Elective-3	Major Elective	4	Semester-7	Deep Learning	Minor Core	4
	Full Stack Development - I	Skill Enhancement	2		Minor Electives-VI	Minor Electives	3
	Design and Analysis of Algorithms	Major Core	4		Capstone Project – II	Project	4
	Neural Network Design and Optimization	Minor Core	4		Open Elective-I	Open Electives	3
	Competitive Coding – II	Skill Enhancement	1		Environmental Science, Waste and Disaster Management	Value Education	2
	Minor Electives -II	Minor Electives	1		Professional Ethics	Ability Enhancement	1
	Minor Electives -III	Minor Electives	3		Introduction to SDGs	Value Education	1
	Technical Internship	Internship	1		Industrial Internship	Internship	1
	RIE-3	Skill Enhancement	1		Competitive Coding – IV	Skill Enhancement	1
	RIE-4	Ability Enhancement	1				
	General Proficiency-IV	Skill Enhancement	1				
Semester-	Full Stack Development - II	Skill Enhancement	2	Semester-	Intelligent Agents and Agentic AI	Minor Core	4

Reinforcement Learning and XAI	Minor Core	4	Capstone AI Project – III	Project	8
System Design	Major Core	3	Open Elective-II	Open Electives	3
Theory of Computation	Major Core	3	Open Elective-III	Open Electives	3
Minor Electives-IV	Minor Electives	3			
Minor Electives-V	Minor Electives	3			
Mid-Grade Project-2	Project	1			
RIE-5	Skill Enhancement	1			
RIE-6	Ability Enhancement	1			
Competitive Coding – III	Skill Enhancement	1			
Software Engineering	Major Core	2			

Elective Basket Name			
Semester	Course Name	Course Category	Credits
3	Agile Development Methodologies	Major Elective	4
3	Foundation of DevOps	Major Elective	4
3	Object Oriented Programming using JAVA	Major Elective	2
3	Linux Programming	Major Elective	2
4	Data Preprocessing and Feature Engineering	Minor Electives	4
4	Introduction to Data Science	Minor Electives	4
4	Data Mining and Data Warehouse	Minor Electives	4
5	Foundations of Machine Learning	Major Elective	4
5	Soft Computing	Major Elective	4
5	Exploratory Data Analysis	Minor Electives	1



5	Docker and Kubernetes	Minor Electives	1
5	Programming in R	Minor Electives	1
5	Big Data & Hadoop	Minor Electives	3
5	Predictive Analytics Modelling	Minor Electives	3
5	Fundamentals of Quantum Computing	Minor Electives	3
6	MLOps for Data Scientists	Minor Electives	3
6	AI Ethics & Responsible AI	Minor Electives	3
6	Natural Language Processing	Minor Electives	3
6	Artificial Intelligence	Minor Electives	3
6	Edge AI and Tiny Machine Learning	Minor Electives	3
6	Computer Vision	Minor Electives	3
7	Large Language Models and Generative AI	Minor Electives	3
7	Quantum Machine Learning	Minor Electives	3
7	Security and Data Privacy Laws and Standards	Minor Electives	3
7	Prompt Engineering	Minor Electives	3
7	Open Elective-I	Open Electives	3
8	Open Elective-II	Open Electives	3
8	Open Elective-III	Open Electives	3