

Maulana Abul Kalam Azad University of Technology, West Bengal
(Formerly West Bengal University of Technology)

Syllabus for

B. Tech in Artificial Intelligence and Machine Learning

(Applicable from the Academic Session 2020-2021)

Curriculum Structure

First Year First Semester

Mandatory Induction Program- 3 week's duration

Sl No.	Category	Subject Code	Subject Name	Total Number of Contact hours			Credits
				L	T	P	
Theory							
1	Basic Science Course	BS-PH101/	Physics-I (Gr-A)/	3	1	0	4
		BS-CH101	Chemistry-I(Gr-B)				
2	Basic Science Course	BS-M101/	Mathematics –IA*/	3	1	0	4
		BS-M102	Mathematics –IB *				
3	Engineering Science Courses	ES-EE101	Basic Electrical Engineering	3	1	0	4
		Total Theory		9	3	0	12
Practical							
1	Basic Science Course	BS-PH191/ BS-CH191	Physics-I Laboratory(Gr-A) / Chemistry-I Laboratory (Gr-B)	0	0	3	1.5
2	Engineering Science Courses	ES-EE191	Basic Electrical Engineering Laboratory	0	0	2	1
3	Engineering Science Courses	ES-ME191/ ES-ME192	Engineering Graphics & Design(Gr-B)/ Workshop/Manufacturing Practices(Gr-A)	1	0	4	3
		Total Practical		1	3	9	5.5
		Total credit for First Semester		10	3	9	17.5

* **Mathematics –IA (BS-M101) - CSE, IT, AI&ML and DS**
Mathematics –IB (BS-M102) - All stream except CSE, IT, AI&ML and DS

B. Tech. (AI-ML) – Curriculum Structure (from Academic Session: 2020 – 2021)

Second Semester							
Sl No.	Category	Subject Code	Subject Name	Total Number of Contact hours			Credits
				L	T	P	
Theory							
1	Basic Science Course	BS-PH201/ BS-CH201	Physics-I (Gr-B)/ Chemistry-I (Gr-A)	3	1	0	4
2	Basic Science Course	BS-M201/ BS-M202	Mathematics –IIA#/ Mathematics –IIB #	3	1	0	4
3	Engineering Science Courses	ES-CS201	Programming for Problem Solving	3	0	0	3
4	Humanities and Social Sciences including Management Courses	HM-HU201	English	2	0	0	2
		Total Theory		11	2	0	13
Practical							
1	Basic Science courses	BS-PH291/ BS-CH291	Physics-I Laboratory (Gr-B)/ Chemistry-I Laboratory (Gr-A)	0	0	3	1.5
2	Engineering Science Courses	ES-CS291	Programming for Problem Solving	0	0	4	2
3	Engineering Science Courses	ES-ME291/ ES-ME292	Engineering Graphics & Design(Gr-A)/ Workshop/Manufacturing Practices(Gr-B)	1	0	4	3
4	Humanities and Social Sciences including Management courses	HM-HU291	Language Laboratory	0	0	2	1
		Total Practical		1	0	13	7.5
		Total of Second Semester		12	2	13	20.5

Mathematics –II (BS-M201) - CSE, IT, AI&ML and DS

Mathematics –II (BS-M202) - All stream except CSE, IT, AI&ML and DS

	Group-A	Group-B
1st Year 1st Semester	Physics-I (BS-PH101); Workshop/Manufacturing Practices (ES-ME192)	Chemistry-I (BS-CH101); Engineering Graphics & Design (ES-ME191)
1st Year 2nd Semester	Chemistry-I (BS-CH201); Engineering Graphics & Design (ES-ME291)	Physics-I (BS-PH201); Workshop/Manufacturing Practices (ES-ME292)

Semester III (Second year)								
Sl No		Type of Course	Code	Course Title	Hours per week			Credits
					L	T	P	
1	THEORY	Engineering Science Course	ESC301	Analog and Digital Electronics	3	0	0	3
2		Professional Core Course	PCCCS301	Data Structure and Algorithms	3	0	0	3
3		Professional Core Course	PCCCS302	Computer Organization	3	0	0	3
4		Basic Science Course	BSCAIML301	Linear Algebra	2	0	0	2
5		Humanities Social Science including Management Course	HSMC301	Economics for Engineers (Humanities II)	3	0	0	3
6	PRACTICAL	Professional Core Course	PCCCS391	Data Structure and Algorithms	0	0	4	2
7		Engineering Science Course	ESC391	Analog and Digital Electronics	0	0	4	2
8		Professional Core Course	PCCCS392	Computer Organization	0	0	4	2
9		Professional Core Course	PCCCS393	IT Workshop (Python I)	0	0	4	2
TOTAL CREDITS								22

Semester IV (Second year)								
Sl No		Type of Course	Code	Course Title	Hours per week			Credits
					L	T	P	
1	THEORY	Professional Core Course	PCCCS401	Discrete Mathematics	3	0	0	3
2		Professional Core Course	PCCAIML401	Artificial Intelligence	3	0	0	3
3		Professional Core Course	PCCAIML402	Optimization Techniques	3	0	0	3
4		Professional Core Course	PCCCS404	Design and Analysis of Algorithm	3	0	0	3
5		Basic Science Course	BSC401	Biology	2	0	0	2
6		Mandatory Course	MC401	Environmental Science	2	0	0	2
7	PRACTICAL	Professional Core Course	PCCAIML491	Artificial Intelligence	0	0	4	2
8		Professional Core Course	PCCCS494	Design and Analysis of Algorithm	0	0	4	2
9		Professional Core Course	PCCAIML492	Python II / R Programming Language	0	0	4	2
TOTAL CREDITS								22

Semester V (Third year)								
Sl No		Type of Course	Code	Course Title	Hours per week			Credits
					L	T	P	
1	THEORY	Professional Core Course	PCCAIML 501	Probability and Statistics	3	0	0	3
2		Professional Core Course	PCCCS50 2	Operating System	3	0	0	3
3		Professional Core Course	PCCCS50 3	Object Oriented Programming & Java	3	0	0	3
4		Professional Core Course	PCCAIML 502	Machine Learning Foundations	3	0	0	3
5		Humanities and Social Sciences including Management	HSMC501	Introduction to Industrial Management	2	0	0	2
6		Professional Elective	PECAIML 501 (A/B/C/D)	Soft Computing Cloud Computing Pattern Recognition Graph Theory	3	0	0	3
7	PRACTICAL	Professional Core Course	PCCCS59 2	Operating System	0	0	4	2
8		Professional Core Course	PCCCS59 3	Object Oriented Programming & Java	0	0	4	2
9		Professional Core Course	PCCAIML 592	Machine Learning Foundations	0	0	4	2
TOTAL CREDITS								23

Semester VI (Third year)								
Sl No		Type of Course	Code	Course Title	Hours per week			Credits
					L	T	P	
1	THEORY	Professional Core Course	PCCAIML 601	Machine Learning Applications	2	0	0	2
2		Professional Core Course	PCCAIML 602	Deep Learning	3	0	0	3
3		Professional Core Course	PCCAIML 603	Soft Computing	3	0	0	3
4		Professional Core Course	PCCCS60 2	Computer Networks	3	0	0	3
5		Professional Elective	PECAIML 601 (A/B/C/D)	Big Data Data Mining Distributed System Game Theory	3	0	0	3
		Open Elective	OECAIML 601 (A/B/C/D)	Database Management System Human Computer Interaction Neural Network Cryptography and Network Security	3	0	0	3
7	PRACTICAL	Professional Core Course	PCCAIML 691	Machine Learning Applications	0	0	4	2
8		Professional Core Course	PCCAIML 693	Soft Computing	0	0	4	2
9		Professional Core Course	PCCCS69	Computer	0	0	4	2

B. Tech. (AI-ML) – Curriculum Structure (from Academic Session: 2020 – 2021)

		Course	2	Networks				
TOTAL CREDITS								23

Semester VII (Fourth year)								
Sl No		Type of Course	Code	Course Title	Hours per week			Credits
					L	T	P	
1	THEORY	Professional Elective Course	PECAIML 701 (A/B/C/D)	Social Network Analysis Computer Vision Quantum Computing Multi Agent System	3	0	0	3
2		Professional Elective Course	PECAIML 702 (A/B/C/D)	Ecommerce and ERP Information Theory and Coding Computer Aided Design Digital Signal Processing	3	0	0	3
3		Open Elective Course	OECAIML 701 (A/B/C/D)	Internet of Things Bio Informatics Robotics Compiler Design	3	0	0	3
4		Humanities and Social Sciences including	HSMC701	Project Management and Entrepreneurship	2	0	0	2

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		Management						
5		Project	PROJAIM L781	Project I	0	0	12	6
TOTAL CREDITS								17

Semester VIII (Fourth year)								
Sl No		Type of Course	Code	Course Title	Hours per week			Credits
					L	T	P	
1	THEORY	Professional Elective Course	PECAIML 801 (A/B/C)	Natural language Processing Cyber Law and Ethics Mobile Computing	3	0	0	3
2		Open Elective Course	OECAIML 801 (A/B/C)	Economic Policies in India Microelectronics and VLSI Software Engineering	3	0	0	3
3		Open Elective Course	OECAIML 802 (A/B/C)	Organization Behaviour Research Methodology Soft skill and Interpersonal Communication	3	0	0	3
4		Project	PROJAIM L881	Project II	0	0	12	6
TOTAL CREDITS								15