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

Syllabus for

B. Tech. in Artificial Intelligence and Data Science
(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/ BS-CH101	Physics-I (Gr-A)/ Chemistry-I(Gr-B)	3	1	0	4
2	Basic Science Course	BS-M101/ BS-M102	Mathematics –IA*/ Mathematics –IB *	3	1	0	4
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

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)
1stYear 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	BSCAIDS301	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/Matlab/R I)	0	0	4	2
TOTAL CREDITS								22

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	PCCAIDS401	Artificial Intelligence	3	0	0	3
3		Professional Core Course	PCCCS403	Formal Language and Automata Theory	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	PCCAIDS491	Artificial Intelligence	0	0	4	2
8		Professional Core Course	PCCCS494	Design and Analysis of Algorithm	0	0	4	2
9		Professional Core Course	PCCAIDS492	Python/Matlab/R II	0	0	4	2
TOTAL CREDITS								22

Semester IV (Second year)

					Hours per week			Credits
Sl No		Type of Course	Code	Course Title	L	T	P	
1	THEORY	Professional Core Course	PCCAIDS501	Probability and Statistics	3	0	0	3
2		Professional Core Course	PCCCS502	Operating System	3	0	0	3
3		Professional Core Course	PCCCS503	Object Oriented Programming & Java	3	0	0	3
4		Professional Core Course	PCCAIDS502	Data Science	3	0	0	3
5		Humanities and Social Sciences including Management	HSMC501	Introduction to Industrial Management	2	0	0	2
6		Professional Elective	PECAIDS501 (A/B/C/D)	Soft Computing Cloud Computing Pattern Recognition Graph Theory	3	0	0	3
7	PRACTICAL	Professional Core Course	PCCCS592	Operating System	0	0	4	2
8		Professional Core Course	PCCCS593	Object Oriented Programming & Java	0	0	4	2
9		Professional Core Course	PCCAIDS592	Data Science	0	0	4	2
TOTAL CREDITS								23

Semester V (Third year)

SI No		Type of Course	Code	Course Title	Hours per week			Credits
					L	T	P	
1	THEORY	Professional Core Course	PCCAIDS601	Data Preparation and Analysis	2	0	0	2
2		Professional Core Course	PCCAIDS602	Big Data	3	0	0	3
3		Professional Core Course	PCCCS601	Database Management System	3	0	0	3
4		Professional Core Course	PCCCS602	Computer Networks	3	0	0	3
5		Professional Elective	PECAIDS601 (A/B/C/D)	Machine Learning Foundation / Data Mining / Distributed System / Game Theory	3	0	0	3
6		Open Elective	OECAIDS601 (A/B/C/D)	Optimization and Multi valued Analysis / Human Computer Interaction / Neural Network / Cryptography and Network Security	3	0	0	3
7	CTIC	Professional Core Course	PCCAIDS691	Big Data	0	0	4	2

Semester VI (Third year)

8		Professional Core Course	PCCCS691	Database Management System	0	0	4	2
9		Professional Core Course	PCCCS692	Computer Networks	0	0	4	2
TOTAL CREDITS								23

					Hours per week			
Sl No		Type of Course	Code	Course Title	L	T	P	Credits
				Semester VII (Fourth year)				
1	THEORY	Professional Elective Course	PECAIDS701 (A/B/C/D)	Social Network Analysis Computer Vision Data Visualization Deep Learning	3	0	0	3
2		Professional Elective Course	PECAIDS702 (A/B/C/D)	Ecommerce and ERP Information Theory and Coding Data Security and Access Control Digital Signal Processing	3	0	0	3
3		Open Elective Course	OECAIDS701 (A/B/C/D)	Internet of Things Bio Informatics Robotics Compiler Design	3	0	0	3
4		Humanities and Social Sciences including Management	HSMC701	Project Management and Entrepreneurship	2	0	0	2
5		Project	PROJAIDS	Project I	0	0	12	6

			781					
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	PECAIDS801 (A/B/C)	Natural language Processing Cyber Law and Ethics Mobile Computing	3	0	0	3
2		Open Elective Course	OECAIDS801 (A/B/C)	Economic Policies in India Knowledge Discovery Software Engineering	3	0	0	3
3		Open Elective Course	OECAIDS802 (A/B/C)	Organization Behaviour Research Methodology Soft skill and Interpersonal Communication	3	0	0	3
4		Project	PROJAIDS881	Project II	0	0	12	6
TOTAL CREDITS								15