



REGULATIONS 2019
FLEXIBLE CHOICE BASED CREDIT SYSTEM
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
B.Tech., Artificial Intelligence and Data Science
CURRICULUM

S.No.	Category	Course Code	Course Title	Contact Hours per Week			Credits	Prerequisite
				L	T	P		
1	HS	19EN101	Communicative English	3	0	2	4	-
2	HS	19EN104	Technical Writing	3	0	0	3	-
3	HS	19EN105	Public Speaking	0	0	6	3	-
4	HS	19MS154	Basic Financial Accounting	3	0	0	3	-
5	HS	19MS156	Human Resource Management and Team Building	3	0	0	3	-
6	HS	19MS155	Stock Market and Company Operations	3	0	0	3	-
7	BS	19MA222	Probability and Queueing Models	3	0	2	4	-
8	BS	19MA220	Mathematics for Artificial Intelligence	4	0	0	4	-
9	BS	19MA221	Linear Algebra Laboratory	0	0	4	2	-
10	BS	19CY205	Principles of Chemistry in Engineering	3	0	2	4	-
11	BS	19PH214	Physics for Quantum Computing	3	0	0	3	-
12	BS	19MA219	Transforms and its Applications	3	1	0	4	-
14	ES	19AI301	Python Programming	2	0	2	3	-
15	ES	19AI302	Engineering Design and Modelling	0	0	6	3	-
16	ES	19AI303	Engineering Mechanics and Product Development	2	0	2	3	-
17	ES	19AI306	Object Oriented Programming using C++ (#)	2	0	2	3	19AI304
18	ES	19AI307	Object Oriented Programming using Java (#)	2	0	2	3	19AI304
19	ES	19AI308	Object Oriented Programming using C#	2	0	2	3	19AI304
20	ES	19EE404	Digital Electronics	3	0	2	4	-
21	ES	19EE305	Basic Electrical, Electronics and Measurement Engineering	2	0	2	3	-
22	ES	19EE309	Programming Microcontrollers	2	0	2	3	-
23	ES	19AI304	Fundamentals of C Programming	2	0	2	3	-
24	ES	19AI305	Advanced C Programming	2	0	2	3	19AI304
13	PC	19MA211	Statistics and Numerical Methods	3	0	2	4	-
25	PC	19AI401	Fundamentals of Web Technology	3	0	0	3	-
26	PC	19AI402	Web Technology Laboratory	0	0	4	2	-
27	PC	19CS405	Operating System	3	0	2	4	-
28	PC	19CS406	Computer Networks	3	0	2	4	-
29	PC	19CS404	Database Management System and Its Applications	3	0	2	4	19AI301/19AI304/19CS301/19CS302/19CS303
30	PC	19AI408	Data Structures	2	0	2	3	19AI305
31	PC	19AI404	Analysis Of Algorithms	2	0	2	3	19AI408
32	PC	19AI405	Fundamentals of Artificial Intelligence	2	0	2	3	19AI301/19MA220
33	PC	19AI406	Digital Image Processing Techniques	2	0	2	3	19AI301
34	PC	19AI407	Parallel Computing Architecture	3	0	2	4	-
35	PC	19AI403	Introduction to Data Science	2	0	2	3	19AI301/19CS301
36	PC	19AI409	Applied Artificial Intelligence	2	0	2	3	19AI301/19MA220/19AI405/19CS301
37	PC	19AI410	Introduction to Machine Learning	2	0	2	3	-
38	PC	19AI411	Neural Networks	2	0	2	3	-
39	PC	19AI412	Web Data Mining	3	0	2	4	-
40	PC	19AI413	Deep Learning and its Applications	2	0	2	3	-
41	PE	19AI501	Applications of AI	2	0	2	3	-
42	PE	19AI502	Applied Natural Language Processing	2	0	2	3	-
43	PE	19AI503	Computer Vision	2	0	2	3	19AI406/19AI301/19CS301

44	PE	19AI504	Mobile Robotics	2	0	2	3	-
45	PE	19AI505	Reinforcement Learning	2	0	2	3	19AI301/19MA218/19MA211/19AI410/19CS301
46	PE	19AI506	Speech Processing	2	0	2	3	-
47	PE	19AI507	Special Topics In Artificial Intelligence	2	0	2	3	-
48	PE	19AI508	Soft Computing	2	0	2	3	-
49	PE	19AI509	Concepts of Virtual and Augmented Reality	2	0	2	3	-
50	PE	19AI510	Mobile VR and AI In Unity	2	0	2	3	19AI304/19AI410/19AI408/19CS302
51	PE	19AI511	Scientific and Engineering Data Visualization	2	0	2	3	-
52	PE	19AI512	NoSQL Database Design	2	0	2	3	19AI301/19CS301
53	PE	19AI513	Game Programming	2	0	4	4	19AI306/19CS401
54	PE	19AI514	Self Driving Car	2	0	4	4	19AI301/19AI304/19CS301/19AI406/19AI410
55	PE	19AI515	Smart Manufacturing Technology	2	0	2	3	-
56	PE	19CS523	Information Retrieval	3	0	0	3	19AI410/19AI405/19CS501/19CS413
57	PE	19AI516	Bigdata Analytics	2	0	2	3	19AI408/19CS410
58	PE	19AI517	Business Analytics	2	0	2	3	-
59	PE	19AI518	Cognitive Systems	3	0	0	3	-
60	PE	19AI519	Distributed Database	3	0	0	3	19CS404
61	PE	19AI520	Data Warehousing And Data Mining	2	0	2	3	-
62	PE	19AI521	Expert Systems	3	0	0	3	-
63	PE	19AI522	Knowledge Engineering	3	0	0	3	19AI408/19CS410
64	PE	19AI523	Mobile Database	3	0	0	3	-
65	PE	19AI524	Multimedia Database	3	0	0	3	19AI408 / 19CS410
66	PE	19AI525	Video Processing	2	0	2	3	19AI301 / 19CS301
67	PE	19AI526	Database Security and Access Control	2	0	2	3	19AI527
68	PE	19AI527	Security Assessment and Risk Analysis	3	0	2	4	-
69	PE	19CS407	Theory of Computation	3	0	0	3	19MA220/19MA206
70	PE	19CS408	Software Engineering	3	0	2	4	-
71	PE	19CS409	Compiler Design	3	0	2	4	-
72	PE	19AI528	Advanced Graph Theory and Applications	2	0	2	3	19AI404/19CS402
73	PE	19AI529	Advanced Data Structures	2	0	2	3	19AI408/19CS401
74	PE	19AI530	Control of Robotic Systems	2	0	2	3	-
75	PE	19AI531	Cryptography and Security	2	0	2	3	-
76	PE	19AI532	Information Theory for Cyber Security	2	0	2	3	-
77	PE	19AI533	Introduction to Robotics	2	0	2	3	-
78	PE	19AI534	Kinematics and Dynamics of Robots	2	0	2	3	-
79	PE	19AI535	Robotic Sensors	2	0	2	3	-
80	PE	19AI536	Steganography And Digital Watermarking	2	0	2	3	-
81	PE	19AI537	Computer Graphics For Virtual Reality	2	0	2	3	-
82	PE	19AI538	Mathematical Modelling and Computer Aided Engineering	2	0	2	3	-
83	PE	19AI539	Mobile User Interface Development	2	0	2	3	19AI306/19AI307/19AI308/19CS401
84	PE	19AI540	Programming Mobile Devices	2	0	2	3	19AI306/19AI307/19AI308/19CS401
85	PE	19AI541	Cloud Computing	3	0	2	4	19AI401/19CS406
86	PE	19AI542	Agile Software Development	3	0	2	4	19AI301/19AI304/19CS301
87	PE	19AI543	Software Testing	2	0	2	3	19AI301/19AI304

88	PE	19AI544	Virtualization And Containerization	2	0	2	3	19AI301/19CS405/19CS406
89	PE	19AI545	Modern Web Application Development	2	0	2	3	19AI306/19AI307/19AI308/19CS410
90	PE	19AI546	Web Server Programming	2	0	2	3	19AI306/19AI307/19AI308/19CS410
91	PE	19AI547	Blockchain for Business	2	0	2	3	19AI301/19AI304/19CS301
92	OE	19AG601	Principles of Crop Production	2	0	2	3	-
93	OE	19AG514	Food Packaging Technology	2	0	2	3	-
94	OE	19AG509	Human Engineering and Safety	2	0	2	3	-
95	OE	19AG424	Remote Sensing and GIS Applications	2	0	2	3	-
96	OE	19AG421	Dairy and Food Engineering	2	0	2	3	-
97	OE	19BM601	Fundamentals of Nutrition	3	0	0	3	-
98	OE	19BM602	Biomedical Waste Management	3	0	0	3	-
99	OE	19BM603	Healthcare Technologies	3	0	0	3	-
100	OE	19BM604	Prosthetic Engineering	3	0	0	3	-
101	OE	19BM605	Medical Devices	3	0	0	3	-
102	OE	19BM606	Biology for Engineers	3	0	0	3	-
103	OE	19CE510	Integrated Water Resources Management	3	0	0	3	-
104	OE	19CE521	Air Pollution Engineering	3	0	0	3	-
105	OE	19CE525	Traffic Engineering	3	0	0	3	-
106	OE	19CE527	Construction Engineering and Occupational Safety	3	0	0	3	-
107	OE	19CE528	Contract Laws and Regulations	3	0	0	3	-
108	OE	19CS601	Database Management Systems	3	0	0	3	-
109	OE	19CS602	Business Intelligence and its Applications	3	0	0	3	-
110	OE	19CS603	Object Oriented Analysis and Design	3	0	0	3	-
111	OE	19CS516	Software Testing and Quality Assurance	3	0	0	3	-
112	OE	19CS525	Industrial IOT	3	0	0	3	-
113	OE	19EE601	Embedded Based Product Design and Development	3	0	0	3	-
114	OE	19EE602	Electrical Safety	3	0	0	3	-
115	OE	19EE603	Renewable Energy Sources	3	0	0	3	-
116	OE	19EE604	Fundamentals of Electric Power Utilization	3	0	0	3	-
117	OE	19EE605	Industrial Automation and Robotics	3	0	0	3	-
118	OE	19EE606	Solar Photovoltaic Energy	2	0	2	3	-
119	OE	19EC601	Electronic Packaging	3	0	0	3	-
120	OE	19EC602	Introduction to Micro Electro Mechanical Systems	3	0	0	3	-
121	OE	19EC603	Fuzzy Logic Systems and ANN	3	0	0	3	-
122	OE	19EC604	Consumer Electronics	3	0	0	3	-
123	OE	19EC605	Electronic System Design	3	0	0	3	-
124	OE	19EC606	Drones for Agriculture	3	0	0	3	-
125	OE	19EI601	Electrical and Electronic Measurements	3	0	0	3	-
126	OE	19EI602	Instrumentation and Control Systems	3	0	0	3	-
127	OE	19EI504	Environmental Instrumentation	3	0	0	3	-
128	OE	19EI508	SCADA Systems and Applications	3	0	0	3	-
129	OE	19EI511	Telemetry and Tele Control	3	0	0	3	-
130	OE	19BY201	Introduction to Biology	2	0	0	2	-
131	OE	19ME505	Computer Aided Design	2	0	2	3	-
132	OE	19ME511	Automobile Engineering	2	0	2	3	-
133	OE	19ME524	Sustainable and Green Manufacturing	2	0	2	3	-
134	OE	19ME529	Process Planning and Cost Estimation	2	0	2	3	-
135	OE	19ME531	Intellectual Property Rights	2	0	2	3	-
136	OE	19ME601	Mechatronics and Robotics	2	0	2	3	-
137	OE	19ME602	Hydraulic Drives and Controls	2	0	2	3	-
138	OE	19ME533	3D Printing Processes	3	0	2	4	-
139	OE	19MD501	Tele Health Technology	3	0	0	3	-
140	OE	19MD509	Bio MEMS	3	0	0	3	-
141	OE	19MD512	Medical Wearable Systems	3	0	0	3	-
142	OE	19MD601	Biomedical Sensors and Measurements	3	0	0	3	-
143	OE	19MD602	Biomedical Optics	3	0	0	3	-

144	OE	19CH503	Energy Technology	3	0	0	3	-
145	OE	19CH505	Green Technology	3	0	0	3	-
146	OE	19CH511	Food Technology	3	0	0	3	-
147	OE	19CH512	Drugs and Pharmaceutical Technology	3	0	0	3	-
148	OE	19CH516	Corrosion Technology	3	0	0	3	-
149	OE	19IT517	Data Security	3	0	0	3	-
150	OE	19IT518	Game Theory	3	0	0	3	-
151	OE	19IT519	Data Analysis using R Programming	3	0	0	3	-
152	OE	19IT520	Linux Fundamentals	3	0	0	3	-
153	OE	19IT521	Internet Technologies	3	0	0	3	-
154	OE	19IT522	Fundamentals of Databases	3	0	0	3	-
155	OE	19EN601	Creative Writing	2	0	0	2	-
156	OE	19EN602	English through Media	2	0	0	2	-
157	OE	19EN603	Introduction to Design	0	0	4	2	-
158	OE	19EN604	Design Thinking	2	0	0	2	-
159	OE	19EN605	Modern Trends in Physical Education and Sports Sciences	0	0	4	2	-
160	OE	19EN606	Psychology for Professionals	2	0	0	2	-
161	OE	19EN607	Heritage Studies	0	0	4	2	-
162	OE	19EN608	Mime Theatre Art	0	0	4	2	-
163	OE	19EN609	Gender Sensitization	2	0	0	2	-
164	OE	19EN610	French Basic	0	0	4	2	-
165	OE	19EN611	French Advanced	0	0	4	2	19EN610
166	OE	19EN612	German Basic	0	0	4	2	-
167	OE	19EN613	German Advanced	0	0	4	2	19EN612
168	OE	19EN614	Japanese Basic	0	0	4	2	-
169	OE	19EN615	Japanese Advanced	0	0	4	2	19EN614
170	OE	19EN616	Yoga and Meditation	0	0	2	1	-
171	OE	19EN617	Product Design for Future	0	0	4	2	-
172	OE	19EN618	Indian Astronomy and Mathematics	2	0	0	2	-
173	OE	19EN619	Inventions and Discoveries	2	0	0	2	-
174	OE	19EN620	Mandarin	0	0	4	2	-
175	OE	19EN621	Spanish Basic	0	0	4	2	-
176	OE	19EN622	Spanish Advanced	0	0	4	2	19EN621
177	OE	19EN623	Dream, Draw and Create	0	0	4	2	-
178	OE	19MA601	Resource Management Techniques	3	0	0	3	-
179	OE	19MA602	Statistics for Engineers	3	0	0	3	-
180	OE	19XXXXX	Online Course I	0	0	0	2	-
181	OE	19XXXXX	Online Course II	0	0	0	2	-
182	EEC	19AI701	Mini Project	0	0	2	1	-
183	EEC	19AI702	Project Work Phase I	0	0	6	3	-
184	EEC	19AI703	Project Work Phase II	0	0	12	6	-
185	EEC	19EY701	Soft Skills	0	0	2	1	-
186	EEC	19EY702	Creative Skills for Communication	0	0	2	1	-
187	EEC	19EY703	System of Numerical and Logical Terminologies	0	0	2	1	-
188	EEC	19EY704	Advanced Quantitative and Logical Reasoning	0	0	2	1	-
189	EEC	19EY705	Employment Enhancement Skills	0	0	2	1	-
190	EEC	19EY706	Company Specific Assessments for Employability	0	0	2	1	-
191	MC	19MC801	Professional Ethics	3	0	0	0	-
192	MC	19MC802	Environmental Science	3	0	0	0	-
193	MC	19MC803	Constitution of India	3	0	0	0	-
194	MC	19MC804	Internship/Entrepreneurship/Consultancy	0	0	0	2	-
195	MC	19MC805	Inplant Training	0	0	0	1	-
196	MC	19MC806	Paper Publication	0	0	0	1	-
197	MC	19MC807	National Service Scheme	0	0	0	0	-
198	MC	19MC808	National Sports Organization	0	0	0	0	-
199	MC	19MC809	Youth Red Cross	0	0	0	0	-

CREDIT SUMMARY

CATEGORY	REGULAR		LATERAL ENTRY	
	Credits	Credit%	Credits	Credit%

Humanities and Social Science Courses	12	7.45	3	2.48
Basic Science Courses	21	13.04	14	11.57
Engineering Science Courses	28	17.39	12	9.92
Professional Core Courses	56	34.78	48	39.67
Professional Elective Courses	16	9.94	16	13.22
Open Elective Courses	12	7.45	12	9.92
Employability Enhancement Courses	16	9.94	16	13.22
Total	161	100	121	100
Mandatory Courses	4		4	

LEGEND

#	Any one course to be taken
	Courses exempted for Lateral Entry students

