



EXCEL ENGINEERING COLLEGE

(Autonomous)

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai
Accredited by NBA, NAAC with "A⁺" and Recognised by UGC (2f & 12B)
KOMARAPALAYAM – 637303

DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND DATA SCIENCE
B Tech – Artificial Intelligence and Data Science
REGULATION 2020
I to VIII Semesters Curriculum

I SEMESTER									
Code No.	Course	Category	Periods /Week			C	Maximum Marks		
			L	T	P		CA	FE	Total
Theory Course(s)									
20MA103	Mathematics – I for Computing Sciences	BS	3	2	0	4	40	60	100
20CS101	Computer Hardware and Networking	ES	3	0	0	3	40	60	100
Theory with Practical Course(s)									
20ENEXX	Language Elective – I*	HSS	2	0	2	3	50	50	100
20PH101	Physics for Computing Sciences	BS	3	0	2	4	50	50	100
20CS102	Problem Solving using Python	ES	3	0	2	4	50	50	100
Practical Course(s)									
20CS103	Computer Practices Laboratory	ES	0	0	2	1	50	50	100
Mandatory Course									
20MC101	Induction Programme	MC	2 Weeks			0	100	-	100
TOTAL			14	2	8	19	380	320	700

*Language Electives – I

Code No.	Course	Category	Periods /Week			C	Maximum Marks		
			L	T	P		CA	FE	Total
20ENE01	Communicative English	HSS	2	0	2	3	50	50	100
20ENE02	Advanced Communicative English	HSS	2	0	2	3	50	50	100

II SEMESTER									
Code No.	Course	Category	Periods /Week			C	Maximum Marks		
			L	T	P		CA	FE	Total
Theory Course(s)									
20MA203	Mathematics – II for Computing Sciences	BS	3	2	0	4	40	60	100
20AI201	Programming and Data Structures	PC	3	0	0	3	40	60	100
Theory with Practical Course(s)									
20ENEXX	Language Elective – II*	HSS	2	0	2	3	50	50	100
20CH201	Chemistry for Computing Sciences	BS	3	0	2	4	50	50	100
20ME203	Engineering Graphics	ES	1	0	4	3	50	50	100
Practical Course(s)									
20AI202	Programming and Data Structures Laboratory	PC	0	0	4	2	50	50	100
Mandatory Course									
20MC202	Interpersonal Skills	MC	0	0	2	0	100	-	100
TOTAL			12	2	14	19	380	320	700

*Language Electives – II									
Code No.	Course	Category	Periods /Week			C	Maximum Marks		
			L	T	P		CA	FE	Total
20ENE02	Advanced Communicative English	HSS	2	0	2	3	50	50	100
20ENE03	Hindi	HSS	2	0	2	3	50	50	100
20ENE04	French	HSS	2	0	2	3	50	50	100
20ENE05	German	HSS	2	0	2	3	50	50	100

III SEMESTER									
Code No.	Course	Category	Periods /Week			C	Maximum Marks		
			L	T	P		CA	FE	Total
Theory Course(s)									
20MA303	Discrete Mathematics and Graph Theory	BS	3	2	0	4	40	60	100
20AI301	Foundations of Artificial Intelligence	PC	3	0	0	3	40	60	100
Theory with Practical Course(s)									
20EC306	Digital Logics and Microprocessor	ES	3	0	2	4	50	50	100
20AI302	Operating System	PC	3	0	2	4	50	50	100
20AI303	Database Management System	PC	3	0	2	4	50	50	100
Practical Course(s)									
20AI304	Intelligent Systems Laboratory	PC	0	0	4	2	50	50	100
Mandatory Course									
20MC301	Environmental Sciences	MC	2	0	0	0	100	-	100
TOTAL			17	2	10	21	380	320	700

IV SEMESTER									
Code No.	Course	Category	Periods /Week			C	Maximum Marks		
			L	T	P		CA	FE	Total
Theory Course(s)									
20MA403	Probability and Statistical Methods	BS	3	2	0	4	40	60	100
20AI401	Data warehousing and data Mining	ES	3	0	0	3	40	60	100
20AI402	Concepts in Data Science	ES	3	0	0	3	40	60	100
20AI403	Formal Language and Automata Theory	PC	3	2	0	4	40	60	100
20AI404	Object Oriented Programming	PC	3	0	0	3	40	60	100
Practical Course(s)									
20AI405	Data mining Tools Laboratory	PC	0	0	4	2	50	50	100
20AI406	R Programming Laboratory	PC	0	0	4	2	50	50	100
20AI407	Object Oriented Programming Laboratory	PC	0	0	4	2	50	50	100
Mandatory Course									
20MC401	Soft Skills	MC	2	0	0	0	100	-	100
TOTAL			17	4	12	23	450	450	900

V SEMESTER									
Code No.	Course	Category	Periods /Week			C	Maximum Marks		
			L	T	P		CA	FE	Total
Theory Course(s)									
20AI501	Data Analytics	PC	3	0	0	3	40	60	100
20AI502	Machine Learning Techniques	PC	3	0	0	3	40	60	100
20AIEXX	Professional Elective – I	PE	3	0	0	3	40	60	100
20YYOXX	Open Elective – I	OE	3	0	0	3	40	60	100
Theory with Practical Course(s)									
20AI503	Computer Networks and Management	ES	3	0	2	4	50	50	100
20AI504	Object Oriented Analysis and Design	PC	3	0	2	4	50	50	100
Practical Course(s)									
20AI505	Machine Laboratory	PC	0	0	4	2	50	50	100
20AI506	Data Analytics Laboratory	PC	0	0	4	2	50	50	100
TOTAL			18	0	12	24	360	440	800

VI SEMESTER									
Code No.	Course	Category	Periods /Week			C	Maximum Marks		
			L	T	P		CA	FE	Total
Theory Course(s)									
20AI601	Professional Ethics and Human Values	HSS	3	0	0	3	40	60	100
20AIEXX	Professional Elective - II	PE	3	0	0	3	40	60	100
20YYOXX	Open Elective – II	OE	3	0	0	3	40	60	100
Theory with Practical Course(s)									
20AI602	Data Visualization	PC	3	0	2	4	50	50	100
20AI603	IoT Fundamentals and Architecture	PC	3	0	2	4	50	50	100
20AI604	Cloud Computing Services	PC	3	0	2	4	50	50	100
Practical Course(s)									
20AI605	Mini project	EEC	0	0	2	1	50	50	100
20AI606	Internship	EEC	2 Weeks			1	100	-	100
TOTAL			18	0	8	23	420	380	800

VII SEMESTER									
Code No.	Course	Category	Periods /Week			C	Maximum Marks		
			L	T	P		CA	FE	Total
Theory Course(s)									
20AI701	Deep Learning Algorithm and Architectures	PC	3	0	0	3	40	60	100
20AI702	Software Testing and Quality Assurance	PC	3	0	0	3	40	60	100
20AIEXX	Professional Elective - III	PE	3	0	0	3	40	60	100
20AIEXX	Professional Elective - IV	PE	3	0	0	3	40	60	100
20YYOXX	Open Elective - III	OE	3	0	0	3	40	60	100
Theory with Practical Course(s)									
20AI703	Cryptography and Network Security	PC	3	0	2	4	50	50	100
Practical Course									
20AI704	Design Project	EEC	0	0	2	1	50	50	100
TOTAL			18	0	4	20	300	400	700

VIII SEMESTER									
Code No.	Course	Category	Periods /Week			C	Maximum Marks		
			L	T	P		CA	FE	Total
Theory Course(s)									
20AIEXX	Professional Elective - V	PE	3	0	0	3	40	60	100
20AIEXX	Professional Elective - VI	PE	3	0	0	3	40	60	100
Practical Course(s)									
20AI801	Major project	EEC	0	0	20	10	50	50	100
TOTAL			6	0	20	16	130	170	300

Open Electives (OE)									
Code No.	Course	Category	Periods /Week			C	Maximum Marks		
			L	T	P		CA	FE	Total
20AIO01	Game Programming	OE	3	0	0	3	40	60	100
20AIO02	CISCO- Routing and Switching	OE	3	0	0	3	40	60	100
20AIO03	Foundations of Artificial Intelligence	OE	3	0	0	3	40	60	100
20AIO04	Content Based Image and Video Retrieval	OE	3	0	0	3	40	60	100
20AIO05	Mobile Computing	OE	3	0	0	3	40	60	100
20AIO06	Human Computer Interaction	OE	3	0	0	3	40	60	100
20AIO07	Database management System and Administration	OE	3	0	0	3	40	60	100
20AIO08	Advanced Java Programming	OE	3	0	0	3	40	60	100
20AIO09	Soft Computing	OE	3	0	0	3	40	60	100
20AIO10	Data Science for Engineers	OE	3	0	0	3	40	60	100

Professional Electives (PE)									
Stream I : Computer Automation									
Code No.	Course	Category	Periods /Week			C	Maximum Marks		
			L	T	P		CA	FE	Total
20AIE01	Intelligent Information Retrieval	PE	3	0	0	3	40	60	100
20AIE02	Advanced Artificial Intelligence Systems	PE	3	0	0	3	40	60	100
20AIE03	Neural Networks	PE	3	0	0	3	40	60	100
20AIE04	Robotic Process Automation	PE	3	0	0	3	40	60	100
20AIE05	Natural Language Processing	PE	3	0	0	3	40	60	100
20AIE06	Augmented Reality & Virtual Reality	PE	3	0	0	3	40	60	100
20AIE07	Pattern Recognition	PE	3	0	0	3	40	60	100
20AIE08	Statistical Decision Making	PE	3	0	0	3	40	60	100
20AIE09	Computer Vision	PE	3	0	0	3	40	60	100
20AIE10	Geometric Modelling	PE	3	0	0	3	40	60	100

Stream II : Cyber Security and Forensics									
Code No.	Course	Category	Periods /Week			C	Maximum Marks		
			L	T	P		CA	FE	Total
20AIE21	Cyber Law and Ethics	PE	3	0	0	3	40	60	100
20AIE22	Cyber Forensics	PE	3	0	0	3	40	60	100
20AIE23	Ethical Hacking Fundamentals	PE	3	0	0	3	40	60	100
20AIE24	Secure Cloud Computing	PE	3	0	0	3	40	60	100
20AIE25	Information Security	PE	3	0	0	3	40	60	100
20AIE26	Quantum Cryptography	PE	3	0	0	3	40	60	100
20AIE27	Blockchain and Cryptocurrency Technologies	PE	3	0	0	3	40	60	100
20AIE28	Cyber Crime and Computer Ethics	PE	3	0	0	3	40	60	100
20AIE29	Mobile Application Security	PE	3	0	0	3	40	60	100
20AIE30	Intrusion Detection and Prevention	PE	3	0	0	3	40	60	100

Stream III : Internet of Things									
Code No.	Course	Category	Periods /Week			C	Maximum Marks		
			L	T	P		CA	FE	Total
20AIE41	Principles of Sensors and Signal Conditioning	PE	3	0	0	3	40	60	100
20AIE42	Data Acquisition	PE	3	0	0	3	40	60	100
20AIE43	Wireless sensor Networks	PE	3	0	0	3	40	60	100
20AIE44	EDGE Computing Technologies	PE	3	0	0	3	40	60	100
20AIE45	Mobile Computing	PE	3	0	0	3	40	60	100
20AIE46	Wearable Computing	PE	3	0	0	3	40	60	100
20AIE47	IoT Programming	PE	3	0	0	3	40	60	100
20AIE48	IoT Security and Trust	PE	3	0	0	3	40	60	100
20AIE49	IoT Applications and Web development	PE	3	0	0	3	40	60	100
20AIE50	Industrial IoT	PE	3	0	0	3	40	60	100

ONE CREDIT COURSES									
Code No.	Course	Category	Periods /Week			C	Maximum Marks		
			L	T	P		CA	FE	Total
20AIA01	Hadoop -Map Reduce	EEC	0	0	2	1	100	0	100
20AIA02	Maya Tool	EEC	0	0	2	1	100	0	100
20AIA03	TensorFlow	EEC	0	0	2	1	100	0	100
20AIA04	CMS web development	EEC	0	0	2	1	100	0	100
20AIA05	Eclipse	EEC	0	0	2	1	100	0	100
20AIA06	ORANGE Tool	EEC	0	0	2	1	100	0	100
20AIA07	WEKA Tool	EEC	0	0	2	1	100	0	100
20AIA08	MangoDB	EEC	0	0	2	1	100	0	100
20AIA09	RaspberryPi	EEC	0	0	2	1	100	0	100
20AIA10	Rapidminer	EEC	0	0	2	1	100	0	100

S. No	Category	CREDITS PER SEMESTER								Total Credit (AICTE)	Credits in %
		I	II	III	IV	V	VI	VII	VIII		
1	HSS	3	3				3			9 (10-14)	5.45%
2	BS	8	8	4	4					24 (22-28)	14.55%
3	ES	8	3	4	6	4				25 (24)	15.15%
4	PC		5	13	13	14	12	10		67 (48)	40.60%
5	PE					3	3	6	6	18 (18)	10.91%
6	OE					3	3	3		9	5.45%
7	EEC						2	1	10	13 (12-16)	7.87%
8	MC	0	0	0	0					0	0%
Total		19	19	21	23	24	23	20	16	165	100.00%

HSS - Humanities and Social Sciences

BS - Basic Sciences

ES - Engineering Sciences

PC - Professional Core

PE - Professional Electives

OE - Open Electives

EEC - Employability Enhancement Courses

MC - Mandatory Courses (Non-Credit Courses)

CA - Continuous Assessment

FE - Final Examination