

Department of Information Technology, School of Computing and IT, Manipal University Jaipur
Course Structure for B. Tech (Data Science and Engineering) Program from Academic Session
2020-2021

Year	FIRST SEMESTER						SECOND SEMESTER					
	Sub. Code	Subject Name	L	T	P	C	Sub. Code	Subject Name	L	T	P	C
I	MA1101	Engineering Mathematics-I	3	1	0	4	MA1201	Engineering Mathematics-II	3	1	0	4
	PY1001	Engineering Physics	3	1	0	4	CY1001	Engineering Chemistry	2	1	0	3
	CV1001	Basic Civil Engineering	2	1	0	3	EE1001	Basic Electrical Technology	2	1	0	3
	CY1002	Environmental Studies	3	0	0	3	CS1001	Problem Solving Using Computers	2	1	0	3
	EC1001	Basic Electronics	2	1	0	3	ME1001	Basic Mechanical Engineering	2	1	0	3
	ME1002	Engineering Graphics	0	0	6	3	LN1001	Communication Skills in English	2	0	0	2
	PY1030	Engineering Physics Lab	0	0	2	1	CS1030	Problem Solving Using Computers Lab	0	0	2	1
	ME1030	Workshop Practice	0	0	2	1	CY1030	Engineering Chemistry Lab	0	0	2	1
							DA1001	Experiential Learning	0	0	4	2
			13	4	10	22			13	5	8	22
	Total Contact Hours (L + T + P)		27			Total Contact Hours (L + T + P)		26				
	THIRD SEMESTER						FOURTH SEMESTER					
II	MA****	Mathematical Foundations for Data Science-I	3			3	MA****	Mathematical Foundations For Data Science-II	3			3
	HS****	Finance & Econometrics	3			3	DS2201	Database Systems	3	1		4
	DS2101	Introduction to Data Analytics	3			3	DS2202	Machine Learning	3	1		4
	DS2102	Object Oriented Programing	3	1		4	DS2203	Design & Analysis of Algorithms	3	1		4
	DS2103	Data Structures	3	1		4	DS2204	Data Communications and Networks	3			3
	DS2104	Computer System Architecture	3			3	****	Open Elective – I	3			3
	DS2130	Data Analytics Lab			2	1	DS2230	Database Lab			2	1
	DS2131	Object Oriented Programming Lab			2	1	DS2231	Machine Learning Lab			2	1
	DS2132	Data Structures Lab			2	1	DS2232	Design & Analysis of Algorithms Lab			2	1
			18	2	6	23			18	3	6	24
	Total Contact Hours (L + T + P)		26			Total Contact Hours (L + T + P) + OE		27				
III	FIFTH SEMESTER						SIXTH SEMESTER					
	MA***	Mathematical Foundations For Data Science-III	3			3	HS****	Operations Research	3			3
	DS3101	Deep Learning	3	1		4	DS3201	Artificial Intelligence	3	1		4
	DS3102	Operating Systems	3			3	DS3202	Parallel Programming	3	1		4
	DS3103	Natural Language Processing	3			3	DS3203	Big Data Analytics	3	1		4
	DS3104	Cloud Computing	3			3	DS3204	Data Privacy & Security	3			3
	****	Open Elective – II	3			3	****	Open Elective – III	3			3
	DS3130	Deep Learning Lab			2	1	DS3230	Artificial Intelligence lab			2	1
	DS3131	Operating Systems Lab			2	1	DS3231	Parallel Programming Lab			2	1
DS3132	Web Technologies Lab		1	2	2	DS3232	Big Data Analytics Lab			2	1	
			18	2	6	23			18	3	6	24

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	Total Contact Hours (L+T+P) +					26	Total Contact Hours (L + T + P) + OE					27
IV	SEVENTH SEMESTER						EIGHTH SEMESTER					
	Sub. Code	Subject Name	L	T	P	C	Sub. Code	Subject Name	L	T	P	C
	DS41* ***	Program Elective - I	3			3	DS4270	Project work/ Practice School				12
	DS41* ***	Program Elective - II	3			3						
	DS41* ***	Program Elective - III	3			3						
	DS41* ***	Program Elective - IV	3			3						
	DS41* ***	Program Elective - V	3			3						
	DS41* ***	Program Elective - VI	3			3						
	DS41 70	Industrial Training				1						
			18			19						12
	Total Contact Hours (L + T + P)					18	Total Contact Hours (L + T + P)					-

PROGRAM ELECTIVES:

Sub. Code	Subject Name	Sub. Code	Subject Name
DS4140	Advanced Data Structures and Algorithms	DS4141	Software Engineering
DS4142	Block chain Technologies	DS4143	Internet of Things
DS4144	Quantum Computing	DS4145	Social Network Analysis
DS4146	Data Forensics	DS4147	Information Retrieval
DS4148	Soft Computing Techniques	DS4149	Enterprise Data Architecture
DS4150	Computer Vision	DS4151	Robotics & Automation
DS4152	Finance & Accounting	DS4153	Risk Analytics
DS4154	Financial Market Analytics	DS4155	Business & Economic Analytics
DS4156	Fundamentals of Business Analytics	DS4157	Digital Marketing
DS4158	Supply Chain Management	DS4159	Health Informatics
DS4160	Bioinformatics	DS4161	Medical Image Processing
DS4162	Biostatistics	DS4163	Algorithmic Trading
DS4164	Applied Econometrics		

PROGRAM ELECTIVE BASED MINOR SPECIALIZATION:

- Finance & Security Analytics** – DS4152, DS4153, DS4154, DS4155
- Business Analytics** – DS4152, DS4156, DS4157, DS4158
- Health Care Analytics** – DS4159, DS4160, DS4161, DS4162