



MANAV RACHNA UNIVERSITY
DEPARTMENT OF COMPUTER SCIENCE & TECHNOLOGY
B.TECH COMPUTER SCIENCE ENGINEERING WITH SPECIALIZATION IN Cloud, DevOps & Automation (CSU03)
3 Weeks Induction Programme (Mandatory)

SEMESTER - 1											
SUBJECT CODES	SUBJECT NAME	PRE-REQUISITE	**OFFERING DEPARTMENT	*COURSE NATURE (Hard/Soft/ Workshop/ NTCC/Audit/Outcome)	COURSE TYPE (Core/Elective)	L	T	P	O	NO. OF CONTACT HOURS PER WEEK	NO. OF CREDITS
CHH144-T&P	CHEMISTRY-I	NIL	CH	HARD	CORE	3	1	2	0	6	5
ECH103B-T/P	Basics Of Electrical & Electronics	NIL	EC	HARD	CORE	3	1	2	0	6	5
CSH101B-T&P	PROGRAMMING FOR PROBLEM SOLVING USING C	NIL	CS	HARD	CORE	3	1	2	0	6	5
CSH105B-T&P	DIGITAL PRODUCT ENGINEERING AND DESIGN THINKING	NIL	CS	HARD	CORE	3	1	2	0	6	5
MEW102B	ENGINEERING GRAPHICS & DRAWING	NIL	ME	WORKSHOP	CORE	0	0	3	0	3	1.5
TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)						12	4	11	0	27	21.5

SEMESTER - 2											
SUBJECT CODES	SUBJECT NAME	PRE-REQUISITE	**OFFERING DEPARTMENT	*COURSE NATURE (Hard/Soft/ Workshop/ NTCC/Audit/Outcome)	COURSE TYPE (Core/Elective)	L	T	P	O	NO. OF CONTACT HOURS PER WEEK	NO. OF CREDITS
PHH101B -T&P	QUANTAM MECHANICS FOR ENGINEER	NIL	PY	HARD	CORE	3	1	2	0	6	5
CSH106B-T&P	AGILE SOFTWARE DEVELOPMENT	NIL	CS	HARD	CORE	3	1	2	0	6	5
HLS104B/HLS103B	PROFESSIONAL ENGLISH BASIC/ PROFESSIONAL ENGLISH ADVANCE	NIL	HM	SOFT	ELECTIVE	2	0	2	0	4	3
CSW208B	PROGRAMMING FOR PROBLEM SOLVING USING PYTHON	NIL	CS	Workshop	CORE	0	0	3	0	3	1.5
MAH101B-T & P	CALCULUS & LINEAR ALGEBRA	NIL	MH	HARD	CORE	3	1	2	0	6	5
CHH137	ENVIRONMENTAL STUDIES	NIL	CH	AUDIT	CORE	2	0	0	2	2	0
TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)						13	3	11	2	27	19.5

CSO104B	Post 2nd Sem Summer Training (Mandatory) (Project Management)										2
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SEMESTER - 3											
SUBJECT CODES	SUBJECT NAME	PRE-REQUISITE	OFFERING DEPARTMENT	COURSE NATURE (Hard/Soft/ Workshop/ NTCC/Audit/Outcome)	(Core/Elective)	L	T	P	O	NO. OF CONTACT HOURS PER WEEK	NO. OF CREDITS
MAH202B-T & P	PROBABILITY & STATISTICS	NIL	MH	HARD	CORE	3	1	2	0	6	5
CSH103B-T&P	DATA STRUCTURES & ALGORITHMS	NIL	CS	HARD	CORE	3	1	2	0	6	5

CSH202B-T&P	DATABASE MANAGEMENT SYSTEM	NIL	CS	HARD	CORE	3	1	2	0	6	5
CSH210B-T&P	SOFTWARE CRAFTMANSHIP	NIL	CS	HARD	CORE	3	1	2	0	6	5
EDS 288/EDS 289/EDS 235	APP. PHILOSOPHY/APP. PSYCHOLOGY/ APP. SOCIOLOGY	NIL	ED	SOFT	ELECTIVE	1	0	2	0	3	2
FLS101B/FLS102B/FLS103B	FOREIGN LANGUAGE	NIL	FL	AUDIT	ELECTIVE	1	0	0	0	1	0
CDO201	CDC	NIL	CDC	OUTCOME	CORE	0	0	1	0	1	0.5
TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)						14	4	11	0	29	22.5

SEMESTER - 4

SUBJECT CODES	SUBJECT NAME	PRE-REQUISITE	**OFFERING DEPARTMENT	*COURSE NATURE (Hard/Soft/ Workshop/ NTCC/Audit/Outcome)	COURSE TYPE (Core/Elective)	L	T	P	O	NO. OF CONTACT HOURS PER WEEK	NO. OF CREDITS
CSH205B-T&P	COMPUTER NETWORKS	NIL	CS	HARD	CORE	3	0	2	0	5	4
CSH206B-T&P	OPERATING SYSTEMS	NIL	CS	HARD	CORE	3	1	2	0	6	5
CSH201B-T&P	OOPS USING JAVA	NIL	CS	HARD	CORE	3	1	2	0	6	5
CSH211B-T&P	MODERN WEB AND MOBILE FRAMEWORKS	NIL	CS	HARD	CORE	3	1	2	0	6	5
FLS104/FLS105/FLS106	FOREIGN LANGUAGE	NIL	FL	AUDIT	ELECTIVE	1	0	0	0	1	0
LWH324	INDIAN CONSTITUTION	NIL	ED	AUDIT	CORE	1	0	0	0	1	0
MC7	ESSENCE OF INDIAN TRADITIONAL KNOWLEDGE	NIL	ED	AUDIT	CORE	1	0	0	0	1	0
CDO202	CDC	NIL	CDC	OUTCOME	CORE	0	0	1	0	1	0.5
TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)						15	3	9	0	27	19.5
CSO209B	SUMMER TRAINING POST 4TH SEMESTER										2

SEMESTER - 5

SUBJECT CODES	SUBJECT NAME	PRE-REQUISITE	**OFFERING DEPARTMENT	*COURSE NATURE (Hard/Soft/ Workshop/ NTCC/Audit/Outcome)	COURSE TYPE (Core/Elective)	L	T	P	O	NO. OF CONTACT HOURS PER WEEK	NO. OF CREDITS
CSH321B-T&P	DEVOPS and TEST AUTOMATION	NIL	CS	HARD	CORE	3	1	2	0	6	5
CSH204-B-T&P	THEORY OF AUTOMATA & COMPILER DESIGN	NIL	CS	HARD	CORE	3	1	2	0	6	5

ECH308B-T/P	DIGITAL ELECTRONICS & MICROCONTROLLER	NIL	EC	HARD	CORE	3	1	2	0	6	5
CSW308B	ADVANCED JAVA	OOPs using JAVA	CS	WORKSHOP	CORE	0	0	3	0	3	1.5
CHS234/ECS306B/CSS325B-T&P	DEVELOPMENT/ GREEN COMPUTING/ E-WASIE MANAGEMENT	NIL	CH/EC	SOFT	ELECTIVE	1	0	2	0	3	2
MCS368B	ENTREPRENEURSHIP	NIL	MC	SOFT	ELECTIVE	1	0	2	0	3	2
SS328B	(Copyright/Patent/Startup/Project Work)	NIL	CS	AUDIT	CORE	0	0	2	0	2	0
CDO305	PROFESSIONAL COMPETANCY ENHANCEMENT-III	NIL	CDC	OUTCOME	CORE	0	0	1	0	1	0.5
TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)						11	3	16	0	30	21

SEMESTER - 6

SUBJECT CODES	SUBJECT NAME	PRE-REQUISITE	**OFFERING DEPARTMENT	*COURSE NATURE (Hard/Soft/ Workshop/ NTCC/Audit/Outcome)	COURSE TYPE (Core/Elective)	L	T	P	O	NO. OF CONTACT HOURS PER WEEK	NO. OF CREDITS
CSH322B-T&P	MODERN ARCHITECTURE PATTERNS	NIL	CS	HARD	CORE	3	1	2	0	6	5
CSH314B-T&P	Machine Learning	NIL	CS	HARD	CORE	3	0	2	0	5	4
LWS321/LWS323	LAW RELATING TO INTELLECTUAL PROPERTY RIGHTS	NIL	LW	SOFT	ELECTIVE	2	0	0	0	2	2
CSW407B	USER EXPERIENCE	NIL	CS	WORKSHOP	CORE	0	0	3	0	3	1.5
ECW204B/MEW314B / MEW315B	Manufacturing Workshop/ 3-D Software/	NIL	EC/ME/CS	WORKSHOP	ELECTIVE	0	0	3	0	3	1.5
ECW310B/MEH439/MEW318B/M	Basic of Robotics/ 3 D Printing/	NIL	EC/ME/CS	WORKSHOP	ELECTIVE	0	0	3	0	3	1.5
CSS319B/CSS329B/CSS330B/CS	RESEARCH PAPER WRITING - II (Copyright/Patent/Startup/Project Work)	NIL	CS	AUDIT	CORE	0	0	2	0	2	0
CDO306	PROFESSIONAL COMPETANCY ENHANCEMENT-IV	NIL	CDC	OUTCOME	CORE	0	0	1	0	1	0.5
TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)						8	1	16	0	25	16

SUMMER TRAINING POST 6TH SEMESTER

CSO320B											3
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SEMESTER - 7

SUBJECT CODES	SUBJECT NAME	PRE-REQUISITE	OFFERING DEPARTMENT	COURSE NATURE (Hard/Soft/ Workshop/ NTCC/Audit/Outcome)	COURSE TYPE (Core/Elective)	L	T	P	O	NO. OF CONTACT HOURS PER WEEK	NO. OF CREDITS
CSH414B-T&P	Virtualization - Containers/Cloud	NIL	CS	HARD	CORE	3	1	2	0	5	5
CSH415B-T&P	Internet of Things	NIL	CS	HARD	CORE	3	1	2	0	6	5
EDH422	BIOLOGY	NIL	ED	SOFT	CORE	2	0	0	0	2	2

ECH403B/ ECH401B-T/P/ MEH401B/ MEH402B/MEH403B	SYSTEMS/ ROBOTICS IN AUTOMATION/ Non Conventional Energy Sources/ Heating, Ventilation and Air Conditioning (HVAC)/	NIL	EC/ME/CS	HARD	ELECTIVE	3	1	2	0	6	5
TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)						11	3	6	0	19	17

SEMESTER - 8

SUBJECT CODES	SUBJECT NAME	PRE-REQUISITE	**OFFERING DEPARTMENT	*COURSE NATURE (Hard/Soft/ Workshop/ NTCC/Audit/Outcome)	COURSE TYPE (Core/Elective)	L	T	P	O	NO. OF CONTACT HOURS PER WEEK	NO. OF CREDITS
MCS232/MCS231	INTRODUCTION TO FINANCE BASICS OF ECONOMICS	NIL	MC	SOFT	ELECTIVE	1	0	2	0	3	2
CSH413B-T&P	PROJECT	NIL	CS	NTCC	CORE	320 TO 360 HOURS				8	
CSH305B-T&P	NEURAL NETWORKS & FUZZY LOGIC	NIL	CS	HARD	ELECTIVE	3	0	2	0	5	4
CSH324B-T&P	NATURAL LANGUAGE PROCESSING	NIL	CS								
CSH416B-T&P	COMPUTER VISION & DATA VISUALIZATION	NIL	CS								
TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)						4	0	4	0	8	14

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Minimum Credit required for award of B.Tech CSE degree is 155-165.

*COURSE NATURE	Hard course (H): A course having L-T and P and/or O component ; L(Lecture), T(Tutorial), P(Practical) and O(Outcome)
	Soft Course (S): A course aimed at development of a person's emotional, social, ethical, professional and creative potentials. The course shall have L-P and/or O
	Workshop course(W): A completely 'hands on' course conducted in laboratory, aimed at developing application/ implementation/ designing skills of a person. The
	Audit Course (A): Are University compulsory courses for which no credit is assigned but are mandatory to earn the degree
	Non Teaching Credit Course(N): The course involves no teaching and has P and O component. Shall include projects, seminars, dissertations etc.

**OFFERING DEPARTMENT NAMES		A course shall be assigned credits as under:
EC	DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING	One credit for each lecture hour; One credit for each tutorial hour ; One credit for each Outcome hour; Two credits for each workshop/ laboratory/practical/project session of 3 hours; One credit for each laboratory or practical or project session of 2 hours NOTE: FOR ENGG PROGRAMS AS PER AICTE REGULATIONS - For all workshop/lab courses one credit shall be assigned to a 2 hours engagement.
PH	DEPARTMENT OF PHYSICS	
CS	DEPARTMENT OF COMPUTER SCIENCE & TECHNOLOGY	
HL	DEPARTMENT OF HUMANITIES & LANGUAGES	
CH	DEPARTMENT OF CHEMISTRY	
MA	DEPARTMENT OF MATHEMATICS	
ME	DEPARTMENT OF MECHANICAL ENGINEERING	
MC	DEPARTMENT OF MANAGEMENT & COMMERCE	
ED	DEPARTMENT OF EDUCATION	
LW	DEPARTMENT OF LAW	
MRCFL	MANAV RACHNA CENTRE OF FOREIGN LANGUAGES	

*** Electives are subject to change according to expertise available/ required.