



**MANAV RACH**  
**DEPARTMENT OF ELECTRONICS &**  
**B.TECH (ECU01) F**  
**SEME**

SUBJECT CODES	SUBJECT NAME	**OFFERING DEPARTMENT	*COURSE NATURE (Hard/Soft/ Workshop/ NTCC)
ECH101-T	ELECTRICAL ENGINEERING	EC	HARD
ECH101-P	ELECTRICAL ENGINEERING LAB		
PHH102-T	SEMICONDUCTOR PHYSICS	PH	HARD
PHH102-P	SEMICONDUCTOR PHYSICS LAB		
CHH101-T	GREEN CHEMISTRY	CH	HARD
CHH101-P	GREEN CHEMISTRY LAB		
MAH102-P	MATHEMATICS-I	MA	HARD
MAH102-T	MATHEMATICS-I LAB		
HLS101	BUSINESS ENGLISH	HL	SOFT
MEW102	WORKSHOP	ME	HARD
FLS103	FRENCH-I	MRCFL	NTCC
FLS101	SPANISH-I		
FLS102	GERMAN-I		
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>			

SUBJECT CODES	SUBJECT NAME	**OFFERING DEPARTMENT	*COURSE NATURE (Hard/Soft/ Workshop/ NTCC)
ECH102-T	ELECTRONIC DEVICES & CIRCUITS	EC	HARD
ECH102-P	ELECTRONIC DEVICES & CIRCUITS LAB		
PHH105-T	OPTICS & OPTICAL DEVICES	PH	HARD
PHH105-P	OPTICS & OPTICAL DEVICES LAB		
CSH101-T	STRUCTURED PROGRAMMING	CS	HARD
CSH101-P	STRUCTURED PROGRAMMING LAB		
MAH104-T	MATHEMATICS-II	MA	HARD
MAH104-P	MATHEMATICS-II LAB		
HLS102	COMMUNICATIVE ENGLISH	HL	SOFT
MEW103	ENGINEERING DRAWING/ GRAPHICS		WORKSHOP
CSW201	IMAGE EDITING & ANIMATION		
CSW101	HTML5 & CSS	CS	
CHS102	ENVIRONMENTAL SCIENCE	CH	NTCC

FLS107	FRENCH-II	MRCFL	NTCC
FLS105	SPANISH-II		
FLS106	GERMAN-II		
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>			
SUMMER TRAINING PC			

<b>SUBJECT CODES</b>	<b>SUBJECT NAME</b>	<b>**OFFERING DEPARTMENT</b>	<b>*COURSE NATURE (Hard/Soft/ Workshop/ NTCC)</b>
ECH206-T	ELECTROMAGNETIC FIELD & WAVES	EC	HARD
ECH206-P	ELECTROMAGNETIC FIELD & WAVES LAB		
ECH207-T	PRINCIPLES OF DIGITAL ELECTRONICS & CIRCUIT DESIGN	EC	HARD
ECH207-P	PRINCIPLES OF DIGITAL ELECTRONICS & CIRCUIT DESIGN LAB		
ECH208-T	SIGNALS & SYSTEMS	EC	HARD
ECH208-P	SIGNALS & SYSTEMS LAB		
MAH207-T	MATHEMATICS-III	MA	HARD
MAH207-P	MATHEMATICS-III LAB		
	BASKET OF COURSES BY HUMANITIES DEPTT.	HL	SOFT
ECW209	PCB DESIGNING	EC	WORKSHOP
FLS211	FRENCH-III	MRCFL	NTCC
FLS209	SPANISH-III		
FLS210	GERMAN-III		
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>			

<b>SUBJECT CODES</b>	<b>SUBJECT NAME</b>	<b>**OFFERING DEPARTMENT</b>	<b>*COURSE NATURE (Hard/Soft/ Workshop/ NTCC)</b>
ECH210-T	ANALOG & DIGITAL COMMUNICATION		

ECH210-P	ANALOG & DIGITAL COMMUNICATION LAB	EC	HARD
ECH211-T	NETWORK ANALYSIS & SYNTHESIS	EC	HARD
ECH211-P	NETWORK ANALYSIS & SYNTHESIS LAB		
ECH212-T	ANALOG INTEGRATED CIRCUITS	EC	HARD
ECH212-P	ANALOG INTEGRATED CIRCUITS LAB		
ECH213-T	ELECTRONIC MEASUREMENT & INSTRUMENTATION	EC	HARD
ECH213-P	ELECTRONIC MEASUREMENT & INSTRUMENTATION LAB		
	BASKET OF COURSES ON ENVIRONMENTAL ETHICS & SUSTAINABLE DEPARTMENT	ALL	SOFT
ECW216	LABVIEW	EC	WORKSHOP
CSW204	DATA STRUCTURES	CS	
CSW208	SCRIPTING LANGUAGES	CS	
FLS215	FRENCH-IV	MRCFL	NTCC
FLS213	SPANISH-IV		
FLS214	GERMAN-IV		
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>			

ECW217	SUMMER TRAINING PC
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<b>SUBJECT CODES</b>	<b>SUBJECT NAME</b>	<b>**OFFERING DEPARTMENT</b>	<b>*COURSE NATURE (Hard/Soft/ Workshop/ NTCC)</b>
ECH318-T	DIGITAL SYSTEM DESIGN	EC	HARD
ECH318-P	DIGITAL SYSTEM DESIGN LAB		
ECH319-T	DIGITAL SIGNAL PROCESSING	EC	HARD
ECH319-P	DIGITAL SIGNAL PROCESSING LAB		
ECH320-T	ANTENNA & WAVE PROPAGATION	EC	HARD
ECH320-P	ANTENNA & WAVE PROPAGATION LAB		
	INFOSYS CAMPUS CONNECT SOFTSKILLS	CS	SOFT
ECH321-T	MICROELECTRONIC CIRCUITS	EC	HARD
ECH322-T	VLSI	EC	
ECH323-T	FUNDAMENTALS OF INFORMATION THEORY & CODING	EC	
CSH204-T	COMPUTER ARCHITECTURE & ORGANISATION	CS	
CSH202-T	OOPS USING JAVA	CS	

CSH314-T	INFOSYS FOUNDATION PROGRAM FP 4.0	CS	
ECH321-P	MICROELECTRONIC CIRCUITS LAB	EC	HARD
ECH322-P	VLSI LAB	EC	
ECH323-P	FUNDAMENTALS OF INFORMATION THEORY & CODING LAB	EC	
CSH204-P	COMPUTER ARCHITECTURE & ORGANISATION LAB	CS	
CSH202-P	OOPS USING JAVA LAB	CS	
CSH314-P	INFOSYS FOUNDATION PROGRAM FP 4.0 LAB	CS	
ECW324	3D-EM (RF)	EC	WORKSHOP
ECW325	VERILOG	EC	
CSW202	WEB-SERVICES	CS	
FLS219	FRENCH-V	MRCFL	NTCC
FLS217	SPANISH-V		
FLS218	GERMAN-V		
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>			

<b>SUBJECT CODES</b>	<b>SUBJECT NAME</b>	<b>**OFFERING DEPARTMENT</b>	<b>*COURSE NATURE (Hard/Soft/ Workshop/ NTCC)</b>
ECH326-T	MICROPROCESSORS & INTERFACING	EC	HARD
ECH326-P	MICROPROCESSORS & INTERFACING LAB		
ECH327-T	CONTROL SYSTEMS	EC	HARD
ECH327-P	CONTROL SYSTEMS LAB		
ECH328-T	DIGITAL IMAGE PROCESSING	EC	HARD
ECH329-T	MICROWAVE ENGINEERING		
ECH330-T	CMOS VLSI DESIGN		
ECH328-P	DIGITAL IMAGE PROCESSING LAB	EC	HARD
ECH329-P	MICROWAVE ENGINEERING LAB		
ECH330-P	CMOS VLSI DESIGN LAB		
CSW303	INTRODUCTION TO .NET	CS	WORKSHOP
ECW331	SIMULINK	EC	
ECW332	SYSTEM VERILOG	EC	
MAS230	QUANTITATIVE APTITUDE	MA	SOFT
FLS222	FRENCH-VI	MRCFL	NTCC
FLS220	SPANISH-VI		
FLS221	GERMAN-VI		
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>			

ECW333	SUMMER TRAINING PC
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<b>SUBJECT CODES</b>	<b>SUBJECT NAME</b>	<b>**OFFERING DEPARTMENT</b>	<b>*COURSE NATURE (Hard/Soft/ Workshop/ NTCC)</b>
ECH434-T	WIRELESS COMMUNICATION	EC	HARD
ECH436-T	SPEECH SIGNAL PROCESSING		
ECH435-T	MEMS		
ECH434-P	WIRELESS COMMUNICATION LAB	EC	HARD
ECH436-P	SPEECH SIGNAL PROCESSING LAB		
ECH435-P	MEMS LAB		
ECH437-T	OPTICAL COMMUNICATION	EC	HARD
ECH438-T	ADVANCED CONTROL SYSTEMS		
ECH439-T	ADVANCED MICROPROCESSORS		
ECH437-P	OPTICAL COMMUNICATION LAB	EC	HARD
ECH438-P	ADVANCED CONTROL SYSTEMS LAB		
ECH439-P	ADVANCED MICROPROCESSORS LAB		
MAH412-T	OPERATION RESEARCH	MA	HARD
MAH411-T	NUMERICAL METHODS	MA	
	ELECTIVE FROM PHYSICS DEPTT	PH	
	ELECTIVE FROM CHEMISTRY DEPTT	CH	
MAH412-P	OPERATION RESEARCH LAB	MA	HARD
MAH411-P	NUMERICAL METHODS LAB	MA	
	ELECTIVE FROM PHYSICS DEPTT LAB	PH	
	ELECTIVE FROM CHEMISTRY DEPTT LAB	CH	
	BASKET OF COURSES BY MANAGEMENT DEPTT.	MC	SOFT
ECN440	MINOR PROJECT	EC	NTCC
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>			

<b>SUBJECT CODES</b>	<b>SUBJECT NAME</b>	<b>**OFFERING DEPARTMENT</b>	<b>*COURSE NATURE (Hard/Soft/ Workshop/ NTCC)</b>
ECH441-T	WIRELESS SENSOR NETWORK	EC	HARD
ECH442-T	DATA COMMUNICATION		
ECH443-T	DIGITAL SIGNAL PROCESSORS		
ECH444-T	FUZZYLOGIC, NEURAL NETWORK & APPLICATIONS		

ECH441-P	WIRELESS SENSOR NETWORK LAB	EC	HARD
ECH442-P	DATA COMMUNICATION LAB		
ECH443-P	DIGITAL SIGNAL PROCESSORS LAB		
ECH444-P	FUZZYLOGIC, NEURAL NETWORK & APPLICATIONS LAB		
ECH445-T	SATELLITE COMMUNICATION	EC	HARD
ECH446-T	INDUSTRIAL AUTOMATION		
ECH447-T	EMBEDDED SYSTEM DESIGN		
ECH445-P	SATELLITE COMMUNICATION LAB	EC	HARD
ECH446-P	INDUSTRIAL AUTOMATION LAB		
ECH447-P	EMBEDDED SYSTEM DESIGN LAB		
ECN448	MAJOR PROJECT	EC	NTCC
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>			

<b>*COURSE NATURE</b>	<b>Hard course (H):</b> A course having L-
	<b>Soft Course (S):</b> A course aimed at de
	<b>Workshop course(W):</b> A completely
	<b>Non Teaching Credit Course(N):</b> Th

<b>**OFFERING DEPARTMENT NAMES</b>	
EC	DEPARTMENT OF ELECTRONICS & COMM
PH	DEPARTMENT OF PHYSICS
CS	DEPARTMENT OF COMPUTER SCIENCE &
HL	DEPARTMENT OF HUMANITIES & LANGUA
CH	DEPARTMENT OF CHEMISTRY
MA	DEPARTMENT OF MATHEMATICS
ME	DEPARTMENT OF MECHANICAL ENGINEE
MC	DEPARTMENT OF MANAGEMENT & COM
MRCFL	MANAV RACHNA CENTRE OF FOREIGN LA

**INA UNIVERSITY**  
**& COMMUNICATION ENGINEERING**  
**FIRST YEAR SCHEME**  
**SEMESTER - 1**

<b>COURSE TYPE</b> <b>(Core/Elective /</b> <b>University</b> <b>Compulsory)</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>O</b>	<b>NO. OF CONTACT</b> <b>HOURS PER WEEK</b>	<b>NO. OF CREDITS</b>
CORE	3	1	0	0	4	4
	0	0	2	0	2	1
CORE	3	1	0	0	4	4
	0	0	2	0	2	1
CORE	3	1	0	0	4	4
	0	0	2	0	2	1
CORE	3	1	0	0	4	4
	0	0	2	0	2	1
CORE	1	0	2	0	3	2
CORE	0	0	3	0	3	2
UNIVERSITY COMPULSORY	1	1	0	0	2	0
	<b>14</b>	<b>5</b>	<b>13</b>	<b>0</b>	<b>32</b>	<b>24</b>

**SEMESTER - 2**

<b>COURSE TYPE</b> <b>(Core/Elective /</b> <b>University</b> <b>Compulsory)</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>O</b>	<b>NO. OF CONTACT</b> <b>HOURS PER WEEK</b>	<b>NO. OF CREDITS</b>
CORE	3	1	0	0	4	4
	0	0	2	0	2	1
CORE	3	1	0	0	4	4
	0	0	2	0	2	1
CORE	3	1	0	0	4	4
	0	0	2	0	2	1
CORE	3	1	0	0	4	4
	0	0	2	0	2	1
CORE	1	0	2	0	3	2
ELECTIVE	0	0	3	0	3	2
UNIVERSITY COMPULSORY	1	0	2	0	3	0

UNIVERSITY COMPULSORY	1	1	0	0	2	0
	<b>15</b>	<b>5</b>	<b>15</b>	<b>0</b>	<b>35</b>	<b>24</b>

DST 2nd SEMESTER	3
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### SEMESTER - 3

COURSE TYPE (Core/Elective / University Compulsory)	L	T	P	O	NO. OF CONTACT HOURS PER WEEK	NO. OF CREDITS
CORE	3	1	0	0	4	4
	0	0	2	0	2	1
CORE	3	1	0	0	4	4
	0	0	2	0	2	1
CORE	3	1	0	0	4	4
	0	0	2	0	2	1
CORE	3	1	0	0	4	4
	0	0	2	0	2	1
ELECTIVE	1	0	2	0	3	2
ELECTIVE	0	0	3	0	3	2
UNIVERSITY COMPULSORY	1	1	0	0	2	0
	<b>14</b>	<b>5</b>	<b>13</b>	<b>0</b>	<b>32</b>	<b>24</b>

### SEMESTER - 4

COURSE TYPE (Core/Elective / University Compulsory)	L	T	P	O	NO. OF CONTACT HOURS PER WEEK	NO. OF CREDITS
	3	1	0	0	4	4



CORE	0	0	2	0	2	1
CORE	3	1	0	0	4	4
	0	0	2	0	2	1
CORE	3	1	0	0	4	4
	0	0	2	0	2	1
CORE	3	1	0	0	4	4
	0	0	2	0	2	1
ELECTIVE	1	0	2	0	3	2
ELECTIVE	0	0	3	0	3	2
UNIVERSITY COMPULSORY	1	1	0	0	2	0
	<b>14</b>	<b>5</b>	<b>13</b>	<b>0</b>	<b>32</b>	<b>24</b>

DST 4TH SEMESTER	6
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#### SEMESTER - 5

COURSE TYPE (Core/Elective / University Compulsory)	L	T	P	O	NO. OF CONTACT HOURS PER WEEK	NO. OF CREDITS
CORE	3	1	0	0	4	4
	0	0	2	0	2	1
CORE	3	1	0	0	4	4
	0	0	2	0	2	1
CORE	3	1	0	0	4	4
	0	0	2	0	2	1
CORE	1	0	2	0	3	5
ELECTIVE	3	1	0	0	4	4

ELECTIVE	0	0	2	0	2	1
ELECTIVE	0	0	3	0	3	0
UNIVERSITY COMPULSORY	1	1	0	0	2	0
	<b>14</b>	<b>5</b>	<b>13</b>	<b>0</b>	<b>32</b>	<b>24</b>

**SEMESTER - 6**

<b>COURSE TYPE (Core/Elective / University Compulsory)</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>O</b>	<b>NO. OF CONTACT HOURS PER WEEK</b>	<b>NO. OF CREDITS</b>
CORE	3	1	0	0	4	4
	0	0	2	1	2	2
CORE	3	1	0	0	4	4
	0	0	2	1	2	2
ELECTIVE	3	1	0	0	4	4
ELECTIVE	0	0	2	1	2	2
ELECTIVE	0	0	3	0	3	2
CORE	1	0	2	0	3	2
UNIVERSITY COMPULSORY	1	1	0	0	2	0
	<b>11</b>	<b>4</b>	<b>11</b>	<b>3</b>	<b>26</b>	<b>22</b>

**OST 6TH SEMESTER**

**6**

**SEMESTER - 7**

<b>COURSE TYPE (Core/Elective / University Compulsory)</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>O</b>	<b>NO. OF CONTACT HOURS PER WEEK</b>	<b>NO. OF CREDITS</b>
ELECTIVE	3	1	0	0	4	4
ELECTIVE	0	0	2	0	2	1
ELECTIVE	3	1	0	0	4	4
ELECTIVE	0	0	2	0	2	1
ELECTIVE	3	1	0	0	4	4
ELECTIVE	0	0	2	0	2	1
ELECTIVE	1	0	2	0	3	2
CORE	0	0	2	0	2	2
	<b>15</b>	<b>5</b>	<b>15</b>	<b>0</b>	<b>21</b>	<b>19</b>

**SEMESTER - 8**

<b>COURSE TYPE (Core/Elective / University Compulsory)</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>O</b>	<b>NO. OF CONTACT HOURS PER WEEK</b>	<b>NO. OF CREDITS</b>
ELECTIVE	3	1	0	0	4	4

ELECTIVE	0	0	2	0	2	1
ELECTIVE	3	1	0	0	4	4
ELECTIVE	0	0	2	0	2	1
CORE	0	0	8	0	8	8
	<b>6</b>	<b>2</b>	<b>12</b>	<b>0</b>	<b>20</b>	<b>18</b>

T-P and/or O component

development of a person's emotional, social, ethical, professional and creative potentials. The 'hands on' course conducted in laboratory, aimed at developing application/ implementation/ ie course involves no teaching and has P and O component. Shall include projects, seminars,

	<b>A course shall be assigned credits as under:</b>
UNIFICATION ENGINEERING	• One credit for each lecture hour
	• One credit for each tutorial hour
TECHNOLOGY	• One credit for each Outcome hour
AGES	• Two credits for each workshop/ laboratory/ practical/project session of 3 hours
RING	• One credit for each laboratory or practical or project session of 2 hours
MERCE	
NGUAGES	



**MANAV RAC**  
**DEPARTMENT OF COMPL**  
**B.TECH**  
**SEM**

SUBJECT CODES	SUBJECT NAME	**OFFERING DEPARTMENT	*COURSE NATURE (Hard/Soft/ Workshop/ NTCC)
ECH101-T	ELECTRICAL ENGINEERING	EC	HARD
ECH101-P	ELECTRICAL ENGINEERING LAB	EC	HARD
CSH101-T	STRUCTURED PROGRAMMING	CS	HARD
CSH101-P	STRUCTURED PROGRAMMING LAB	CS	HARD
PHH104-T	PHYSICS OF MATERIALS	PH	HARD
PHH104-P	PHYSICS OF MATERIALS LAB	PH	HARD
MAH101-T	APPLIED MATHEMATICS	MA	HARD
MAH101-P	APPLIED MATHEMATICS LAB	MA	HARD
HLS101	BUSINESS ENGLISH	HL	SOFT
CSW102	HTML5 & CSS	CS	WORKSHOP
FLS103	FRENCH-I	MRCFL	NTCC
FLS101	SPANISH-I		
FLS102	GERMAN-I		
CHS102	ENVIRONMENTAL SCIENCE	CH	NTCC
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>			

SUBJECT CODES	SUBJECT NAME	**OFFERING DEPARTMENT	*COURSE NATURE (Hard/Soft/ Workshop/ NTCC)
CSH103-T	DATA STRUCTURES	CS	HARD
CSH103-P	DATA STRUCTURES LAB	CS	HARD
PHH105-T	OPTICS & OPTICAL DEVICES	PH	HARD
PHH105-P	OPTICS & OPTICAL DEVICES LAB	PH	HARD
CHH101-T	GREEN CHEMISTRY	CH	HARD
CHH101-P	GREEN CHEMISTRY LAB	CH	HARD
MAH106-T	DISCRETE MATHEMATICS	MA	HARD
MAH106-P	DISCRETE MATHEMATICS LAB	MA	HARD
HLS102	COMMUNICATIVE ENGLISH	HL	SOFT

MEW103	ENGINEERING DRAWING	ME	WORKSHOP
CSW151	iCARNEGIE WORKSHOP SDP02	CS	
ECW104	ELECTRONIC WORKSHOP	EC	
FLS107	FRENCH-II	MRCFL	NTCC
FLS105	SPANISH-II		
FLS106	GERMAN-II		
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>			

SUMMER TRAINING
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<b>SUBJECT CODES</b>	<b>SUBJECT NAME</b>	<b>**OFFERING DEPARTMENT</b>	<b>*COURSE NATURE (Hard/Soft/ Workshop/ NTCC)</b>
CSH205-T	DATABASE MANAGEMENT SYSTEMS	CS	HARD
CSH205-P	DATABASE MANAGEMENT SYSTEMS LAB	CS	HARD
CSH206-T	OBJECT ORIENTED PROGRAMMING USING JAVA	CS	HARD
CSH206-P	OBJECT ORIENTED PROGRAMMING USING JAVA LAB	CS	HARD
ECH207-T	PRINCIPLES OF DIGITAL ELECTRONICS & CIRCUIT DESIGN	EC	HARD
ECH207-P	PRINCIPLES OF DIGITAL ELECTRONICS & CIRCUIT DESIGN LAB	EC	HARD
MAH208-T	STATISTICAL AND NUMERICAL TECHNIQUES	MA	HARD
MAH208-P	STATISTICAL AND NUMERICAL TECHNIQUES LAB	MA	HARD
	BASKET OF COURSES ON ENVIRONMENTAL ETHICS & SUSTAINABLE DEPARTMENT	ALL	SOFT
CSW208	SCRIPTING LANGUAGES	CS	WORKSHOP
CSW207	IMAGE EDITING & ANIMATION	CS	WORKSHOP
FLS211	FRENCH-III	MRCFL	NTCC
FLS209	SPANISH-III		
FLS210	GERMAN-III		
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>			

<b>SUBJECT CODES</b>	<b>SUBJECT NAME</b>	<b>**OFFERING DEPARTMENT</b>	<b>*COURSE NATURE (Hard/Soft/ Workshop/ NTCC)</b>
CSH209-T	THEORY OF COMPUTATION & COMPILER DESIGN	CS	HARD
CSH209-P	THEORY OF COMPUTATION & COMPILER DESIGN LAB	CS	HARD
CSH210-T	COMPUTER ARCHITECTURE & ORGANISATION	CS	HARD
CSH210-P	COMPUTER ARCHITECTURE & ORGANISATION LAB	CS	HARD
CSH211-T	OPERATING SYSTEMS	CS	HARD
CSH211-P	OPERATING SYSTEMS LAB	CS	HARD
ECH434-T	WIRELESS COMMUNICATION	EC	HARD
ECH434-P	WIRELESS COMMUNICATION LAB	EC	HARD
	BASKET OF COURSES BY HUMANITIES DEPTT.	HL	SOFT
CSW213	UNIX & SHELL PROGRAMMING	CS	WORKSHOP
FLS215	FRENCH-IV	MRCFL	NTCC
FLS213	SPANISH-IV		
FLS214	GERMAN-IV		
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>			
CSW215	SUMMER TRAINING		

<b>SUBJECT CODES</b>	<b>SUBJECT NAME</b>	<b>**OFFERING DEPARTMENT</b>	<b>*COURSE NATURE (Hard/Soft/ Workshop/ NTCC)</b>
CSH316-T	ARTIFICIAL INTELLIGENCE & EXPERT SYSTEMS	CS	HARD
CSH316-P	ARTIFICIAL INTELLIGENCE & EXPERT SYSTEMS LAB	CS	HARD
CSH317-T	SOFTWARE ENGINEERING	CS	HARD
CSH317-P	SOFTWARE ENGINEERING LAB	CS	HARD
CSH318-T	COMPUTER NETWORKS	CS	HARD
CSH318-P	COMPUTER NETWORKS LAB	CS	HARD

CSH319-T	MOBILE COMPUTING WITH ANDROID	CS	HARD
CSH320-T	INTERNET STANDARDS & OPEN SOURCE SOFTWARE		
CSH321-T	DATA WAREHOUSING & DATA MINING		
CSH322-T	ADVANCED OPERATING SYSTEMS	CS	HARD
CSH319-P	MOBILE COMPUTING WITH ANDROID LAB		
CSH320-P	INTERNET STANDARDS & OPEN SOURCE SOFTWARE LAB		
CSH321-P	DATA WAREHOUSING & DATA MINING LAB		
CSH322-P	ADVANCED OPERATING SYSTEMS LAB	MA	SOFT
MAS230	QUANTITATIVE APTITUDE		
CSW324	INTRODUCTION TO MATLAB	CS	WORKSHOP
CSW325	WEB SERVICES		
FLS219	FRENCH-V	MRCFL	NTCC
FLS217	SPANISH-V		
FLS218	GERMAN-V		
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>			

<b>SUBJECT CODES</b>	<b>SUBJECT NAME</b>	<b>**OFFERING DEPARTMENT</b>	<b>*COURSE NATURE (Hard/Soft/ Workshop/ NTCC)</b>
CSH326-T	ANALYSIS & DESIGN OF ALGORITHMS	CS	HARD
CSH326-P	ANALYSIS & DESIGN OF ALGORITHMS LAB	CS	HARD
CSH327-T	COMPUTER GRAPHICS & MULTIMEDIA	CS	HARD
CSH327-P	COMPUTER GRAPHICS & MULTIMEDIA LAB	CS	HARD
CSH328-T	MULTI PLATFORM MOBILE DEVELOPMENT	CS	HARD
CSH329-T	NETWORK SECURITY & CRYPTOGRAPHY		
CSH330-T	BUSINESS INTELLIGENCE & ITS APPLICATIONS		
CSH331-T	SOFTWARE PROJECT MANAGEMENT		
CSH328-P	MULTI PLATFORM MOBILE DEVELOPMENT LAB		



CSH329-P	NETWORK SECURITY & CRYPTOGRAPHY LAB	CS	HARD
CSH330-P	BUSINESS INTELLIGENCE & ITS APPLICATIONS LAB		
CSH331-P	SOFTWARE PROJECT MANAGEMENT LAB		
ECH326-T	MICROPROCESSORS & INTERFACING	EC	HARD
ECH318-T	DIGITAL SYSTEM DESIGN		
ECH326-P	MICROPROCESSORS & INTERFACING LAB	EC	HARD
ECH318-P	DIGITAL SYSTEM DESIGN LAB		
	INFOSYS SOFTSKILLS	CS	SOFT
CSW332	INTRODEUCTION TO .NET	CS	WORKSHOP
CSW333	SOCKET PROGRAMMING		
CSW334	GAME PROGRAMMING		
FLS222	FRENCH-VI	MRCFL	NTCC
FLS220	SPANISH-VI		
FLS221	GERMAN-VI		
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>			
CSW335	SUMMER TRAINING		

<b>SUBJECT CODES</b>	<b>SUBJECT NAME</b>	<b>**OFFERING DEPARTMENT</b>	<b>*COURSE NATURE (Hard/Soft/ Workshop/ NTCC)</b>
CSH436-T	ADVANCED JAVA	CS	HARD
CSH436-P	ADVANCED JAVA LAB	CS	HARD
CSH437-T	IOS APP DEVELOPMENT	CS	HARD
CSH438-T	CLOUD COMPUTING		
CSH439-T	BIG DATA		
CSH440-T	NO SQL DATABASE MODELS		
CSH441-T	KNOWLEDGE REPRESENTATION AND MACHINE LEARNING		
CSH437-P	IOS APP DEVELOPMENT LAB		
CSH438-P	CLOUD COMPUTING LAB	CS	HARD
CSH439-P	BIG DATA LAB		
CSH440-P	NO SQL DATABASE MODELS LAB		
CSH441-P	KNOWLEDGE REPRESENTATION AND MACHINE LEARNING LAB		
	BASKET OF COURSES BY MANAGEMENT DEPTT.	MC	SOFT
CSW443	USER EXPERIENCE	CS	WORKSHOP

CSW442	SOFTWARE TESTING	CS	WORKSHOP
CSN444	MAJOR PROJECT- AGILE (STAGE-I)	CS	NTCC
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>			

SUBJECT CODES	SUBJECT NAME	**OFFERING DEPARTMENT	*COURSE NATURE (Hard/Soft/ Workshop/ NTCC)
CSH445-T	MOBILE APP ANALYTICS	CS	HARD
CSH446-T	INFORMATION RETREIVAL		
CSH447-T	BUSINESS ANALYTICS WITH R PROGRAMMING		
CSH448-T	NEURAL NETWORK & FUZZY LOGIC		
CSH449-T	ADVANCED COMPUTER ARCHITECTURE		
CSH445-P	MOBILE APP ANALYTICS LAB	CS	HARD
CSH446-P	INFORMATION RETREIVAL LAB		
CSH447-P	BUSINESS ANALYTICS WITH R PROGRAMMING LAB		
CSH448-P	NEURAL NETWORK & FUZZY LOGIC LAB		
CSH449-P	ADVANCED COMPUTER ARCHITECTURE LAB		
MAH310-T	OPERATION RESEARCH	MA	HARD
PHH401-T	RENEWABLE ENERGY SYSTEMS (ELECTIVE FROM PHYSICS DEPARTMENT )	PH	
	ELECTIVE FROM CHEMISTRY DEPARTMENT	CH	
MAH310-T	OPERATION RESEARCH LAB	MA	HARD
PHH401-P	RENEWABLE ENERGY SYSTEMS LAB (ELECTIVE FROM PHYSICS DEPARTMENT )	PH	
	ELECTIVE FROM CHEMISTRY DEPARTMENT LAB	CH	
CSN450	MAJOR PROJECT-AGILE (STAGE-II)	CS	NTCC
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>			

<b>*COURSE NATURE</b>	<b>Hard course (H):</b> A course having L-
	<b>Soft Course (S):</b> A course aimed at de
	<b>Workshop course(W):</b> A completely
	<b>Non Teaching Credit Course(N):</b> Th

<b>**OFFERING DEPARTMENT NAMES</b>	
<b>EC</b>	DEPARTMENT OF ELECTRONICS & COMM
<b>PH</b>	DEPARTMENT OF PHYSICS
<b>CS</b>	DEPARTMENT OF COMPUTER SCIENCE &
<b>HL</b>	DEPARTMENT OF HUMANITIES & LANGUA
<b>CH</b>	DEPARTMENT OF CHEMISTRY
<b>MA</b>	DEPARTMENT OF MATHEMATICS
<b>ME</b>	DEPARTMENT OF MECHANICAL ENGINEE
<b>MC</b>	DEPARTMENT OF MANAGEMENT & COM
<b>MRCFL</b>	MANAV RACHNA CENTRE OF FOREIGN LA

**PHNA UNIVERSITY**  
**COMPUTER SCIENCE & TECHNOLOGY**  
**-CSE (CSU01)**  
**SEMESTER - 1**

<b>COURSE TYPE</b> <b>(Core/Elective /</b> <b>University</b> <b>Compulsory)</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>O</b>	<b>NO. OF CONTACT</b> <b>HOURS PER WEEK</b>	<b>NO. OF CREDITS</b>
CORE	3	1	0	0	4	4
CORE	0	0	2	0	2	1
CORE	3	1	0	0	4	4
CORE	0	0	2	0	2	1
CORE	3	1	0	0	4	4
CORE	0	0	2	0	2	1
CORE	3	1	0	0	4	4
CORE	0	0	2	0	2	1
CORE	1	0	2	0	3	2
CORE	0	0	3	0	3	2
UNIVERSITY COMPULSORY	1	1	0	0	2	0
UNIVERSITY COMPULSORY	1	0	2	0	3	0
	<b>15</b>	<b>5</b>	<b>15</b>	<b>0</b>	<b>35</b>	<b>24</b>

**SEMESTER - 2**

<b>COURSE TYPE</b> <b>(Core/Elective /</b> <b>University</b> <b>Compulsory)</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>O</b>	<b>NO. OF CONTACT</b> <b>HOURS PER WEEK</b>	<b>NO. OF CREDITS</b>
CORE	3	1	0	0	4	4
CORE	0	0	2	0	2	1
CORE	3	1	0	0	4	4
CORE	0	0	2	0	2	1
CORE	3	1	0	0	4	4
CORE	0	0	2	0	2	1
CORE	3	1	0	0	4	4
CORE	0	0	2	0	2	1
CORE	1	0	2	0	3	2

ELECTIVE	0	0	3	0	3	2
UNIVERSITY COMPULSORY	1	1	0	0	2	0
	<b>14</b>	<b>5</b>	<b>13</b>	<b>0</b>	<b>32</b>	<b>24</b>

POST 2nd SEMESTER	3
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### SEMESTER - 3

COURSE TYPE (Core/Elective / University Compulsory)	L	T	P	O	NO. OF CONTACT HOURS PER WEEK	NO. OF CREDITS
CORE	3	1	0	0	4	4
CORE	0	0	2	1	2	2
CORE	3	1	0	0	4	4
CORE	0	0	2	0	2	1
CORE	3	1	0	0	4	4
CORE	0	0	2	0	2	1
CORE	3	1	0	0	4	4
CORE	0	0	2	0	2	1
CORE	1	0	2	0	3	2
ELECTIVE	0	0	3	0	3	2
ELECTIVE						
UNIVERSITY COMPULSORY	1	1	0	0	2	0
	<b>14</b>	<b>5</b>	<b>13</b>	<b>1</b>	<b>32</b>	<b>25</b>

**SEMESTER - 4**

<b>COURSE TYPE (Core/Elective / University Compulsory)</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>O</b>	<b>NO. OF CONTACT HOURS PER WEEK</b>	<b>NO. OF CREDITS</b>
CORE	3	1	0	0	4	4
CORE	0	0	2	0	2	1
CORE	3	1	0	0	4	4
CORE	0	0	2	0	2	1
CORE	3	1	0	0	4	4
CORE	0	0	2	0	2	1
CORE	3	1	0	0	4	4
CORE	0	0	2	0	2	1
CORE	1	0	2	0	3	2
CORE	0	0	3	0	3	2
UNIVERSITY COMPULSORY	1	1	0	0	2	0
	<b>14</b>	<b>5</b>	<b>13</b>	<b>0</b>	<b>32</b>	<b>24</b>

POST 4TH SEMESTER	6
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**SEMESTER - 5**

<b>COURSE TYPE (Core/Elective / University Compulsory)</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>O</b>	<b>NO. OF CONTACT HOURS PER WEEK</b>	<b>NO. OF CREDITS</b>
CORE	3	1	0	0	4	4
CORE	0	0	2	0	2	1
CORE	3	1	0	0	4	4
CORE	0	0	2	0	2	1
CORE	3	1	0	0	4	4
CORE	0	0	2	0	2	1

ELECTIVE	3	1	0	0	4	4
ELECTIVE	0	0	2	0	2	1
CORE	1	0	2	0	3	2
ELECTIVE	0	0	3	0	3	2
UNIVERSITY COMPULSORY	1	1	0	0	2	0
	<b>14</b>	<b>5</b>	<b>13</b>	<b>0</b>	<b>32</b>	<b>24</b>

**SEMESTER - 6**

<b>COURSE TYPE</b> <b>(Core/Elective /</b> <b>University</b> <b>Compulsory)</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>O</b>	<b>NO. OF CONTACT</b> <b>HOURS PER WEEK</b>	<b>NO. OF CREDITS</b>
CORE	3	1	0	0	4	4
CORE	0	0	2	0	2	1
CORE	3	1	0	0	4	4
CORE	0	0	2	1	2	2
ELECTIVE	3	1	0	0	4	4

ELECTIVE	0	0	2	0	2	1
ELECTIVE	3	1	0	0	4	4
ELECTIVE	0	0	2	0	2	1
CORE	1	0	2	0	3	2
ELECTIVE	0	0	3	0	3	2
UNIVERSITY COMPULSORY	1	1	0	0	2	0
	<b>14</b>	<b>5</b>	<b>13</b>	<b>0</b>	<b>32</b>	<b>25</b>

POST 6TH SEMESTER	6
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#### SEMESTER - 7

COURSE TYPE (Core/Elective / University Compulsory)	L	T	P	O	NO. OF CONTACT HOURS PER WEEK	NO. OF CREDITS
CORE	3	1	0	0	4	4
CORE	0	0	2	0	2	1
ELECTIVE	3	1	0	0	4	4
ELECTIVE	0	0	2	0	2	1
ELECTIVE	1	0	2	0	3	2
ELECTIVE	0	0	2	0	2	1



ELECTIVE	0	0	3	0	3	2
CORE	0	0	3	0	3	2
	<b>7</b>	<b>2</b>	<b>12</b>	<b>0</b>	<b>21</b>	<b>16</b>

**SEMESTER - 8**

COURSE TYPE (Core/Elective / University Compulsory)	L	T	P	O	NO. OF CONTACT HOURS PER WEEK	NO. OF CREDITS
ELECTIVE	3	1	0	0	4	4
ELECTIVE	0	0	2	0	2	1
ELECTIVE	3	1	0	0	4	4
ELECTIVE	0	0	2	0	2	1
CORE	0	0	8	0	8	8
	<b>6</b>	<b>2</b>	<b>12</b>	<b>0</b>	<b>20</b>	<b>18</b>

T-P and/or O component

development of a person's emotional, social, ethical, professional and creative potentials. The 'hands on' course conducted in laboratory, aimed at developing application/ implementation/ie course involves no teaching and has P and O component. Shall include projects, seminars,

	<b>A course shall be assigned credits as under:</b>
UNIFICATION ENGINEERING	• One credit for each lecture hour
	• One credit for each tutorial hour
TECHNOLOGY	• One credit for each Outcome hour
AGES	
	• Two credits for each workshop/ laboratory/ practical/project session of 3 hours
RING	
MERCE	• One credit for each laboratory or practical or project session of 2 hours
NGUAGES	



**MANAV RAC**  
**DEPARTMENT OF COMPL**  
**B.TECH**  
**SEM**

SUBJECT CODES	SUBJECT NAME	**OFFERING DEPARTMENT	*COURSE NATURE (Hard/Soft/ Workshop/ NTCC)
ECH101-T	ELECTRICAL ENGINEERING	EC	HARD
ECH101-P	ELECTRICAL ENGINEERING LAB	EC	HARD
CSH101-T	STRUCTURED PROGRAMMING	CS	HARD
CSH101-P	STRUCTURED PROGRAMMING LAB	CS	HARD
PHH104-T	PHYSICS OF MATERIALS	PH	HARD
PHH104-P	PHYSICS OF MATERIALS LAB	PH	HARD
MAH101-T	APPLIED MATHEMATICS	MA	HARD
MAH101-P	APPLIED MATHEMATICS LAB	MA	HARD
HLS101	BUSINESS ENGLISH	HL	SOFT
CSW102	HTML5 & CSS	CS	WORKSHOP
FLS103	FRENCH-I	MRCFL	NTCC
FLS101	SPANISH-I		
FLS102	GERMAN-I		
CHS102	ENVIRONMENTAL SCIENCE	CH	NTCC
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>			

SUBJECT CODES	SUBJECT NAME	**OFFERING DEPARTMENT	*COURSE NATURE (Hard/Soft/ Workshop/ NTCC)
CSH103-T	DATA STRUCTURES	CS	HARD
CSH103-P	DATA STRUCTURES LAB	CS	HARD
PHH105-T	OPTICS & OPTICAL DEVICES	PH	HARD
PHH105-P	OPTICS & OPTICAL DEVICES LAB	PH	HARD
CHH101-T	GREEN CHEMISTRY	CH	HARD
CHH101-P	GREEN CHEMISTRY LAB	CH	HARD
MAH106-T	DISCRETE MATHEMATICS	MA	HARD
MAH106-P	DISCRETE MATHEMATICS LAB	MA	HARD
HLS102	COMMUNICATIVE ENGLISH	HL	SOFT

MEW103	ENGINEERING DRAWING	ME	WORKSHOP
CSW151	iCARNEGIE WORKSHOP SDP02	CS	
ECW104	ELECTRONIC WORKSHOP	EC	
FLS107	FRENCH-II	MRCFL	NTCC
FLS105	SPANISH-II		
FLS106	GERMAN-II		
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>			

SUMMER TRAINING
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<b>SUBJECT CODES</b>	<b>SUBJECT NAME</b>	<b>**OFFERING DEPARTMENT</b>	<b>*COURSE NATURE (Hard/Soft/ Workshop/ NTCC)</b>
CSH205-T	DATABASE MANAGEMENT SYSTEMS	CS	HARD
CSH205-P	DATABASE MANAGEMENT SYSTEMS LAB	CS	HARD
CSH206-T	OBJECT ORIENTED PROGRAMMING USING JAVA	CS	HARD
CSH206-P	OBJECT ORIENTED PROGRAMMING USING JAVA LAB	CS	HARD
ECH207-T	PRINCIPLES OF DIGITAL ELECTRONICS & CIRCUIT DESIGN	EC	HARD
ECH207-P	PRINCIPLES OF DIGITAL ELECTRONICS & CIRCUIT DESIGN LAB	EC	HARD
MAH208-T	STATISTICAL AND NUMERICAL TECHNIQUES	MA	HARD
MAH208-P	STATISTICAL AND NUMERICAL TECHNIQUES LAB	MA	HARD
	BASKET OF COURSES ON ENVIRONMENTAL ETHICS & SUSTAINABLE DEPARTMENT	ALL	SOFT
CSW208	SCRIPTING LANGUAGES	CS	WORKSHOP
CSW207	IMAGE EDITING & ANIMATION	CS	WORKSHOP
FLS211	FRENCH-III	MRCFL	NTCC
FLS209	SPANISH-III		
FLS210	GERMAN-III		
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>			

<b>SUBJECT CODES</b>	<b>SUBJECT NAME</b>	<b>**OFFERING DEPARTMENT</b>	<b>*COURSE NATURE (Hard/Soft/ Workshop/ NTCC)</b>
CSH209-T	THEORY OF COMPUTATION & COMPILER DESIGN	CS	HARD
CSH209-P	THEORY OF COMPUTATION & COMPILER DESIGN LAB	CS	HARD
CSH210-T	COMPUTER ARCHITECTURE & ORGANISATION	CS	HARD
CSH210-P	COMPUTER ARCHITECTURE & ORGANISATION LAB	CS	HARD
CSH211-T	OPERATING SYSTEMS	CS	HARD
CSH211-P	OPERATING SYSTEMS LAB	CS	HARD
CSH206-T	ADVANCED DBMS	EC	HARD
CSH206-P	ADVANCED DBMS LAB	EC	HARD
	BASKET OF COURSES BY HUMANITIES DEPTT.	HL	SOFT
CSW213	UNIX & SHELL PROGRAMMING	CS	WORKSHOP
FLS215	FRENCH-IV	MRCFL	NTCC
FLS213	SPANISH-IV		
FLS214	GERMAN-IV		
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>			
CSW215	SUMMER TRAINING		

<b>SUBJECT CODES</b>	<b>SUBJECT NAME</b>	<b>**OFFERING DEPARTMENT</b>	<b>*COURSE NATURE (Hard/Soft/ Workshop/ NTCC)</b>
CSH316-T	ARTIFICIAL INTELLIGENCE & EXPERT SYSTEMS	CS	HARD
CSH316-P	ARTIFICIAL INTELLIGENCE & EXPERT SYSTEMS LAB	CS	HARD
CSH317-T	SOFTWARE ENGINEERING	CS	HARD
CSH317-P	SOFTWARE ENGINEERING LAB	CS	HARD
CSH318-T	COMPUTER NETWORKS	CS	HARD
CSH318-P	COMPUTER NETWORKS LAB	CS	HARD

CSH319-T	MOBILE COMPUTING WITH ANDROID	CS	HARD
CSH320-T	INTERNET STANDARDS & OPEN SOURCE SOFTWARE		
CSH321-T	DATA WAREHOUSING & DATA MINING		
CSH322-T	ADVANCED OPERATING SYSTEMS	CS	HARD
CSH319-P	MOBILE COMPUTING WITH ANDROID LAB		
CSH320-P	INTERNET STANDARDS & OPEN SOURCE SOFTWARE LAB		
CSH321-P	DATA WAREHOUSING & DATA MINING LAB		
CSH322-P	ADVANCED OPERATING SYSTEMS LAB	MA	SOFT
MAS230	QUANTITATIVE APTITUDE		
CSW324	INTRODUCTION TO MATLAB	CS	WORKSHOP
CSW325	WEB SERVICES		
FLS219	FRENCH-V	MRCFL	NTCC
FLS217	SPANISH-V		
FLS218	GERMAN-V		
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>			

<b>SUBJECT CODES</b>	<b>SUBJECT NAME</b>	<b>**OFFERING DEPARTMENT</b>	<b>*COURSE NATURE (Hard/Soft/ Workshop/ NTCC)</b>
CSH326-T	ANALYSIS & DESIGN OF ALGORITHMS	CS	HARD
CSH326-P	ANALYSIS & DESIGN OF ALGORITHMS LAB	CS	HARD
CSH327-T	COMPUTER GRAPHICS & MULTIMEDIA	CS	HARD
CSH327-P	COMPUTER GRAPHICS & MULTIMEDIA LAB	CS	HARD
CSH328-T	MULTI PLATFORM MOBILE DEVELOPMENT	CS	HARD
CSH329-T	NETWORK SECURITY & CRYPTOGRAPHY		
CSH330-T	BUSINESS INTELLIGENCE & ITS APPLICATIONS		
CSH331-T	SOFTWARE PROJECT MANAGEMENT		
CSH328-P	MULTI PLATFORM MOBILE DEVELOPMENT LAB		

CSH329-P	NETWORK SECURITY & CRYPTOGRAPHY LAB	CS	HARD
CSH330-P	BUSINESS INTELLIGENCE & ITS APPLICATIONS LAB		
CSH331-P	SOFTWARE PROJECT MANAGEMENT LAB		
ECH326-T	MICROPROCESSORS & INTERFACING	EC	HARD
ECH318-T	DIGITAL SYSTEM DESIGN		
ECH326-P	MICROPROCESSORS & INTERFACING LAB	EC	HARD
ECH318-P	DIGITAL SYSTEM DESIGN LAB		
	INFOSYS SOFTSKILLS	CS	SOFT
CSW332	INTRODEUCTION TO .NET	CS	WORKSHOP
CSW333	SOCKET PROGRAMMING		
CSW334	GAME PROGRAMMING		
FLS222	FRENCH-VI	MRCFL	NTCC
FLS220	SPANISH-VI		
FLS221	GERMAN-VI		
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>			
CSW335	SUMMER TRAINING		

<b>SUBJECT CODES</b>	<b>SUBJECT NAME</b>	<b>**OFFERING DEPARTMENT</b>	<b>*COURSE NATURE (Hard/Soft/ Workshop/ NTCC)</b>
CSH436-T	ADVANCED JAVA	CS	HARD
CSH436-P	ADVANCED JAVA LAB	CS	HARD
CSH437-T	IOS APP DEVELOPMENT	CS	HARD
CSH438-T	CLOUD COMPUTING		
CSH439-T	BIG DATA		
CSH440-T	NO SQL DATABASE MODELS		
CSH441-T	KNOWLEDGE REPRESENTATION AND MACHINE LEARNING		
CSH441-P	KNOWLEDGE REPRESENTATION AND MACHINE LEARNING LAB		
CSH437-P	IOS APP DEVELOPMENT LAB	CS	HARD
CSH438-P	CLOUD COMPUTING LAB		
CSH439-P	BIG DATA LAB		
CSH440-P	NO SQL DATABASE MODELS LAB		
CSH441-P	KNOWLEDGE REPRESENTATION AND MACHINE LEARNING LAB		
	BASKET OF COURSES BY MANAGEMENT DEPTT.	MC	SOFT
CSW443	USER EXPERIENCE	CS	WORKSHOP

CSW442	SOFTWARE TESTING	CS	WORKSHOP
CSN444	MAJOR PROJECT- AGILE (STAGE-I)	CS	NTCC
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>			

SUBJECT CODES	SUBJECT NAME	**OFFERING DEPARTMENT	*COURSE NATURE (Hard/Soft/ Workshop/ NTCC)
CSH445-T	MOBILE APP ANALYTICS	CS	HARD
CSH446-T	INFORMATION RETREIVAL		
CSH447-T	BUSINESS ANALYTICS WITH R PROGRAMMING		
CSH448-T	NEURAL NETWORK & FUZZY LOGIC		
CSH449-T	ADVANCED COMPUTER ARCHITECTURE		
CSH445-P	MOBILE APP ANALYTICS LAB	CS	HARD
CSH446-P	INFORMATION RETREIVAL LAB		
CSH447-P	BUSINESS ANALYTICS WITH R PROGRAMMING LAB		
CSH448-P	NEURAL NETWORK & FUZZY LOGIC LAB		
CSH449-P	ADVANCED COMPUTER ARCHITECTURE LAB		
MAH310-T	OPERATION RESEARCH	MA	HARD
PHH401-T	RENEWABLE ENERGY SYSTEMS (ELECTIVE FROM PHYSICS DEPARTMENT )	PH	
	ELECTIVE FROM CHEMISTRY DEPARTMENT	CH	
MAH310-T	OPERATION RESEARCH LAB	MA	HARD
PHH401-P	RENEWABLE ENERGY SYSTEMS LAB (ELECTIVE FROM PHYSICS DEPARTMENT )	PH	
	ELECTIVE FROM CHEMISTRY DEPARTMENT LAB	CH	
CSN450	MAJOR PROJECT-AGILE (STAGE-II)	CS	NTCC
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>			

<b>*COURSE NATURE</b>	<b>Hard course (H):</b> A course having L-
	<b>Soft Course (S):</b> A course aimed at de
	<b>Workshop course(W):</b> A completely
	<b>Non Teaching Credit Course(N):</b> Th



<b>**OFFERING DEPARTMENT NAMES</b>	
<b>EC</b>	DEPARTMENT OF ELECTRONICS & COMM
<b>PH</b>	DEPARTMENT OF PHYSICS
<b>CS</b>	DEPARTMENT OF COMPUTER SCIENCE &
<b>HL</b>	DEPARTMENT OF HUMANITIES & LANGUA
<b>CH</b>	DEPARTMENT OF CHEMISTRY
<b>MA</b>	DEPARTMENT OF MATHEMATICS
<b>ME</b>	DEPARTMENT OF MECHANICAL ENGINEE
<b>MC</b>	DEPARTMENT OF MANAGEMENT & COM
<b>MRCFL</b>	MANAV RACHNA CENTRE OF FOREIGN LA

**PHNA UNIVERSITY**  
**COMPUTER SCIENCE & TECHNOLOGY**  
**COMPUTER SYSTEMS (CSU02)**  
**SEMESTER - 1**

<b>COURSE TYPE</b> <b>(Core/Elective / University Compulsory)</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>O</b>	<b>NO. OF CONTACT HOURS PER WEEK</b>	<b>NO. OF CREDITS</b>
CORE	3	1	0	0	4	4
CORE	0	0	2	0	2	1
CORE	3	1	0	0	4	4
CORE	0	0	2	0	2	1
CORE	3	1	0	0	4	4
CORE	0	0	2	0	2	1
CORE	3	1	0	0	4	4
CORE	0	0	2	0	2	1
CORE	1	0	2	0	3	2
CORE	0	0	3	0	3	2
UNIVERSITY COMPULSORY	1	1	0	0	2	0
UNIVERSITY COMPULSORY	1	0	2	0	3	0
	<b>15</b>	<b>5</b>	<b>15</b>	<b>0</b>	<b>35</b>	<b>24</b>

**SEMESTER - 2**

<b>COURSE TYPE</b> <b>(Core/Elective / University Compulsory)</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>O</b>	<b>NO. OF CONTACT HOURS PER WEEK</b>	<b>NO. OF CREDITS</b>
CORE	3	1	0	0	4	4
CORE	0	0	2	0	2	1
CORE	3	1	0	0	4	4
CORE	0	0	2	0	2	1
CORE	3	1	0	0	4	4
CORE	0	0	2	0	2	1
CORE	3	1	0	0	4	4
CORE	0	0	2	0	2	1
CORE	1	0	2	0	3	2

ELECTIVE	0	0	3	0	3	2
UNIVERSITY COMPULSORY	1	1	0	0	2	0
	<b>14</b>	<b>5</b>	<b>13</b>	<b>0</b>	<b>32</b>	<b>24</b>

POST 2nd SEMESTER	3
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### SEMESTER - 3

COURSE TYPE (Core/Elective / University Compulsory)	L	T	P	O	NO. OF CONTACT HOURS PER WEEK	NO. OF CREDITS
CORE	3	1	0	0	4	4
CORE	0	0	2	1	2	2
CORE	3	1	0	0	4	4
CORE	0	0	2	0	2	1
CORE	3	1	0	0	4	4
CORE	0	0	2	0	2	1
CORE	3	1	0	0	4	4
CORE	0	0	2	0	2	1
CORE	1	0	2	0	3	2
ELECTIVE	0	0	3	0	3	2
ELECTIVE						
UNIVERSITY COMPULSORY	1	1	0	0	2	0
	<b>14</b>	<b>5</b>	<b>13</b>	<b>1</b>	<b>32</b>	<b>25</b>

**SEMESTER - 4**

<b>COURSE TYPE (Core/Elective / University Compulsory)</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>O</b>	<b>NO. OF CONTACT HOURS PER WEEK</b>	<b>NO. OF CREDITS</b>
CORE	3	1	0	0	4	4
CORE	0	0	2	0	2	1
CORE	3	1	0	0	4	4
CORE	0	0	2	0	2	1
CORE	3	1	0	0	4	4
CORE	0	0	2	0	2	1
CORE	3	1	0	0	4	4
CORE	0	0	2	0	2	1
CORE	1	0	2	0	3	2
CORE	0	0	3	0	3	2
UNIVERSITY COMPULSORY	1	1	0	0	2	0
	<b>14</b>	<b>5</b>	<b>13</b>	<b>0</b>	<b>32</b>	<b>24</b>

POST 4TH SEMESTER	6
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**SEMESTER - 5**

<b>COURSE TYPE (Core/Elective / University Compulsory)</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>O</b>	<b>NO. OF CONTACT HOURS PER WEEK</b>	<b>NO. OF CREDITS</b>
CORE	3	1	0	0	4	4
CORE	0	0	2	0	2	1
CORE	3	1	0	0	4	4
CORE	0	0	2	0	2	1
CORE	3	1	0	0	4	4
CORE	0	0	2	0	2	1

ELECTIVE	3	1	0	0	4	4
ELECTIVE	0	0	2	0	2	1
CORE	1	0	2	0	3	2
ELECTIVE	0	0	3	0	3	2
UNIVERSITY COMPULSORY	1	1	0	0	2	0
	<b>14</b>	<b>5</b>	<b>13</b>	<b>0</b>	<b>32</b>	<b>24</b>

**SEMESTER - 6**

<b>COURSE TYPE</b> <b>(Core/Elective /</b> <b>University</b> <b>Compulsory)</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>O</b>	<b>NO. OF CONTACT</b> <b>HOURS PER WEEK</b>	<b>NO. OF CREDITS</b>
CORE	3	1	0	0	4	4
CORE	0	0	2	0	2	1
CORE	3	1	0	0	4	4
CORE	0	0	2	1	2	2
ELECTIVE	3	1	0	0	4	4

ELECTIVE	0	0	2	0	2	1
ELECTIVE	3	1	0	0	4	4
ELECTIVE	0	0	2	0	2	1
CORE	1	0	2	0	3	2
ELECTIVE	0	0	3	0	3	2
UNIVERSITY COMPULSORY	1	1	0	0	2	0
	<b>14</b>	<b>5</b>	<b>13</b>	<b>0</b>	<b>32</b>	<b>25</b>

POST 6TH SEMESTER	6
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#### SEMESTER - 7

COURSE TYPE (Core/Elective / University Compulsory)	L	T	P	O	NO. OF CONTACT HOURS PER WEEK	NO. OF CREDITS
CORE	3	1	0	0	4	4
CORE	0	0	2	0	2	1
ELECTIVE	3	1	0	0	4	4
ELECTIVE	0	0	2	0	2	1
ELECTIVE	1	0	2	0	3	2
ELECTIVE	0	0	2	0	2	1

ELECTIVE	0	0	3	0	3	2
CORE	0	0	3	0	3	2
	7	2	12	0	21	16

**SEMESTER - 8**

COURSE TYPE (Core/Elective / University Compulsory)	L	T	P	O	NO. OF CONTACT HOURS PER WEEK	NO. OF CREDITS
ELECTIVE	3	1	0	0	4	4
ELECTIVE	0	0	2	0	2	1
ELECTIVE	3	1	0	0	4	4
ELECTIVE	0	0	2	0	2	1
CORE	0	0	8	0	8	8
	6	2	12	0	20	18

T-P and/or O component

development of a person's emotional, social, ethical, professional and creative potentials. The 'hands on' course conducted in laboratory, aimed at developing application/ implementation/ the course involves no teaching and has P and O component. Shall include projects, seminars,

	<b>A course shall be assigned credits as under:</b>
UNIFICATION ENGINEERING	• One credit for each lecture hour
	• One credit for each tutorial hour
TECHNOLOGY	• One credit for each Outcome hour
AGES	
	• Two credits for each workshop/ laboratory/ practical/project session of 3 hours
RING	
MERCE	• One credit for each laboratory or practical or project session of 2 hours
NGUAGES	





**MANAV RACHNA**  
**DEPARTMENT OF MECHANICAL ENGINEERING**  
**B.TECH (MEU01) FIRST YEAR**  
**SEMESTER - I**

SUBJECT CODES	SUBJECT NAME	**OFFERING DEPARTMENT	*COURSE NATURE (Hard/Soft/Workshop/NTCC)	COURSE TYPE (Core/Elective / University Compulsory)
MEH101-T	ELEMENTS OF MECHANICAL ENGINEERING	ME	HARD	CORE
MEH101-P	ELEMENTS OF MECHANICAL ENGINEERING LAB	ME	HARD	CORE
PHH101-T	THERMODYNAMICS	PH	HARD	CORE
PHH101-P	THERMODYNAMICS LAB	PH	HARD	CORE
CHH101-T	GREEN CHEMISTRY	CH	HARD	CORE
CHH101-P	GREEN CHEMISTRY LAB	CH	HARD	CORE
MAH103-T	ENGINEERING MATHEMATICS-I	MA	HARD	CORE
MAH103-P	ENGINEERING MATHEMATICS-I LAB	MA	HARD	CORE
HLS101	BUSINESS ENGLISH	HL	SOFT	CORE
MEW102	WORKSHOP	ME	HARD	CORE
FLS103	FRENCH-I	MRCFL	NTCC	UNIVERSITY COMPULSORY
FLS101	SPANISH-I			
FLS102	GERMAN-I			
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>				

SEMESTER - II				
SUBJECT CODES	SUBJECT NAME	**OFFERING DEPARTMENT	*COURSE NATURE (Hard/Soft/Workshop/NTCC)	COURSE TYPE (Core/Elective / University Compulsory)
ECH103-T	FUNDAMENTALS OF ELECTRICAL & ELECTRONICS ENGINEERING	EC	HARD	CORE
ECH103-P	FUNDAMENTALS OF ELECTRICAL & ELECTRONICS ENGINEERING LAB	EC	HARD	CORE
PHH104-T	MECHANICS	PH	HARD	CORE
PHH104-P	MECHANICS LAB	PH	HARD	CORE
CSH101-T	STRUCTURED PROGRAMMING	CS	HARD	CORE
CSH101-P	STRUCTURED PROGRAMMING LAB	CS	HARD	CORE
MAH105-T	ENGINEERING MATHEMATICS-II	MA	HARD	CORE
MAH105-P	ENGINEERING MATHEMATICS-II LAB	MA	HARD	CORE
HLS102	COMMUNICATIVE ENGLISH	HL	SOFT	CORE

MEW103	ENGINEERING DRAWING	ME	WORKSHOP	ELECTIVE
CHS102	ENVIRONMENTAL SCIENCE	CH	NTCC	UNIVERSITY COMPULSORY
FLS107	FRENCH-II	MRCFL	NTCC	UNIVERSITY COMPULSORY
FLS105	SPANISH-II			
FLS106	GERMAN-II			
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>				

SUMMER TRAINING POST 2nd SE

**SEMESTER-**

SUBJECT CODES	SUBJECT NAME	**OFFERING DEPARTMEN T	*COURSE NATURE (Hard/Soft/ Workshop/ NTCC)	COURSE TYPE (Core/Elective / University Compulsory)
MEH204-T	FLUID MECHANICS	ME	HARD	CORE
MEH204-P	FLUID MECHANICS LAB	ME	HARD	CORE
MEH205-T	ENGINEERING MATERIALS AND THEIR BEHAVIOUR	ME	HARD	CORE
MEH205-P	ENGINEERING MATERIALS AND THEIR BEHAVIOUR LAB	ME	HARD	CORE
MEH206-T	MECHANICS OF MATERIALS	ME	HARD	CORE
MEH206-P	MECHANICS OF MATERIALS LAB	ME	HARD	CORE
MEH207-T	MANUFACTURING TECHNOLOGY-I	ME	HARD	CORE
MEH207-P	MANUFACTURING TECHNOLOGY-I LAB	ME	HARD	CORE
	BASKET OFFERED BY HUMANITIES DEPTT.	HL	SOFT	ELECTIVE
MEW208	MACHINE DRAWING	ME	WORKSHOP	CORE
FLS211	FRENCH-III	MRCFL	NTCC	UNIVERSITY COMPULSORY
FLS209	SPANISH-III			
FLS210	GERMAN-III			
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>				

**SEMESTER-**

SUBJECT CODES	SUBJECT NAME	**OFFERING DEPARTMENT	*COURSE NATURE (Hard/Soft/Workshop/NTCC)	COURSE TYPE (Core/Elective / University Compulsory)
MEH209-T	THEORY OF MACHINES	ME	HARD	CORE
MEH209-P	THEORY OF MACHINES LAB	ME	HARD	CORE
MEH210-T	MANUFACTURING TECHNOLOGY-II	ME	HARD	CORE
MEH210-P	MANUFACTURING TECHNOLOGY-II LAB	ME	HARD	CORE
MEH211-T	THERMAL ENGINEERING	ME	HARD	CORE
MEH211-P	THERMAL ENGINEERING LAB	ME	HARD	CORE
MAH309-T	APPLIED NUMERICAL TECHNOLOGY & COMPUTING	MA	HARD	ELECTIVE
	POLYMER TECHNOLOGY	CH		
	ELECTIVE FROM PHYSICS DEPTT	PH		
MAH309-P	APPLIED NUMERICAL TECHNOLOGY & COMPUTING LAB	MA	HARD	ELECTIVE
	POLYMER TECHNOLOGY LAB	CH		
	ELECTIVE FROM PHYSICS DEPTT LAB	PH		
	BASKET OF COURSES ON ENVIRONMENTAL ETHICS & SUSTAINABLE DEVELOPMENT	ALL	SOFT	ELECTIVE
MEW212	PRO ENGINEER	ME	WORKSHOP	ELECTIVE
MEW213	CATIA	ME	WORKSHOP	ELECTIVE
FLS215	FRENCH-IV	MRCFL	NTCC	UNIVERSITY COMPULSORY
FLS213	SPANISH-IV			
FLS214	GERMAN-IV			
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>				

MEN214	SUMMER TRAINING POST 4TH SE
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SEMESTER-				
SUBJECT CODES	SUBJECT NAME	**OFFERING DEPARTMENT	*COURSE NATURE (Hard/Soft/Workshop/NTCC)	COURSE TYPE (Core/Elective / University Compulsory)
MEH315-T	MACHINE DESIGN	ME	HARD	CORE
MEH315-P	MACHINE DESIGN LAB	ME	HARD	CORE
MEH316-T	PRODUCTION MANAGEMENT	ME	HARD	CORE
MEH316-P	PRODUCTION MANAGEMENT LAB	ME	HARD	CORE
MEH317-T	INTERNAL COMBUSTION ENGINES	ME	HARD	CORE
MEH317-P	INTERNAL COMBUSTION ENGINES LAB	ME	HARD	CORE

MEH320-T	TURBO MACHINARY	ME	HARD	ELECTIVE
	COMPUTER AIDED MANUFACTURING & COMPUTER INTEGRATED			
MEH321-T	MANUFACTURING	ME		
MEH322-T	HYDRAULIC MACHINES	ME		
MEH323-T	FOUNDRY TECHNOLOGY	ME		
MEH324-T	COMPUTER AIDED DESIGN AND ENGINEERING	ME		
	INFOSYS FOUNDATION PROGRAM FP4.0	CS		
ECH207-T	PRINCIPLES OF DIGITAL ELECTRONICS & CIRCUIT DESIGN	EC		
MEH320-P	TURBO MACHINARY LAB	ME	HARD	ELECTIVE
	COMPUTER AIDED MANUFACTURING & COMPUTER INTEGRATED			
MEH321-P	MANUFACTURING LAB	ME		
MEH322-P	HYDRAULIC MACHINES LAB	ME		
MEH323-P	FOUNDRY TECHNOLOGY LAB	ME		
MEH324-P	COMPUTER AIDED DESIGN AND ENGINEERING LAB	ME		
	INFOSYS FOUNDATION PROGRAM FP4.0 LAB	CS		
ECH207-P	PRINCIPLES OF DIGITAL ELECTRONICS & CIRCUIT DESIGN LAB	EC		
	INFOSYS CONNECT SOFT SKILLS		SOFT	ELECTIVE
MEW318	ANSYS ICEMCFD	ME	WORKSHOP	ELECTIVE
MEW319	ANSYS FLUENT	ME	WORKSHOP	ELECTIVE
FLS219	FRENCH-V	MRCFL	NTCC	UNIVERSITY COMPULSORY
FLS217	SPANISH-V			
FLS218	GERMAN-V			
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>				

<b>SEMESTER-</b>				
<b>SUBJECT CODES</b>	<b>SUBJECT NAME</b>	<b>**OFFERING DEPARTMENT</b>	<b>*COURSE NATURE (Hard/Soft/Workshop/NTCC)</b>	<b>COURSE TYPE (Core/Elective / University Compulsory)</b>
	HEAT TRANSFER	ME	HARD	CORE
	ADVANCED MACHINE DESIGN	ME	HARD	ELECTIVE 1
	SOLAR ENERGY ENGINEERING	ME	HARD	
	ENGINEERING METROLOGY	ME	HARD	

ADVANCED MECHNICS OF MATERIALS	ME	HARD	ELECTIVE 2
POWER PLANT ENGINEERING	ME	HARD	
INDUSTRIAL ERGONOMICS	ME	HARD	
MECHANICAL VIBRATION	ME	HARD	ELECTIVE 3
GAS DYNAMICS AND JET PROPULSION	ME	HARD	
METAL FORMING ANALYSIS	ME	HARD	
MEASUREMENT, INSTRUMENTATION & CONTROL	ME	HARD	
CONTROLS SYSTEMS	EC	HARD	ELECTIVE 4
MICRO ELECTIC MECHANICAL SYSTEMS	EC	HARD	
MICROPROCESSORS & INTERFACING	EC	HARD	
ARTIFICIAL INTELLIGENCE & INTELLIGENCE SYSTEMS	CS	HARD	
3 Electives to be chosen from the 4 g			
ANSYS ICEMCFD	ME	WORKSHOP	ELECTIVE
ANSYS FLUENT	ME	WORKSHOP	ELECTIVE
QUANTITATIVE APTITUDE	MA	SOFT	ELECTIVE
FOREIGN LANGUAGE	MRCFL	NTCC	UNIVERSITY COMPULSORY
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>			

SEMESTER-				
SUBJECT CODES	SUBJECT NAME	**OFFERING DEPARTMENT	*COURSE NATURE (Hard/Soft/ Workshop/ NTCC)	COURSE TYPE (Core/Elective / University Compulsory)

REFRIGERATION AND AIR CONDITIONING	ME	HARD	CORE
FINITE ELEMENT METHOD	ME	HARD	ELECTIVE
ALTERNATE FUELS, POLLUTION AND CONTROL	ME	HARD	ELECTIVE
QUALITY ENGINEERING	ME	HARD	ELECTIVE
AUTOMOBILE ENGINEERING	ME	HARD	ELECTIVE
BASKET OF COURSES BY MANAGEMENT DEPTT	MC	SOFT	ELECTIVE
MINOR PROJECT	ME	NTCC	CORE
SEMINAR	ME	NTCC	CORE
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>			

SEMESTER-				
SUBJECT CODES	SUBJECT NAME	**OFFERING DEPARTMENT	*COURSE NATURE (Hard/Soft/Workshop/NTCC)	COURSE TYPE (Core/Elective / University Compulsory)
	HEATING VENTILATION AND AIR CONDITIONING	ME	HARD	CORE
	PRODUCT DESIGN AND DEVELOPMENT	ME	HARD	CORE
	PROJECT MANAGEMENT	ME	HARD	CORE
	COMPUTATIONAL FLUID DYNAMICS	ME	HARD	CORE
	MECHATRONICS	ME	HARD	CORE
	AUTOMATION IN MANUFACTURING	ME	HARD	ELECTIVE
	MAJOR PROJECT	ME	NTCC	CORE
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>				

<b>*COURSE NATURE</b>	<b>Hard course (H):</b> A course having L-T-P
	<b>Soft Course (S):</b> A course aimed at devel
	<b>Workshop course(W):</b> A completely ‘har
	<b>Non Teaching Credit Course(N):</b> The cc

**\*\*OFFERING DEPARTMENT NAMES**

EC	DEPARTMENT OF ELECTRONICS & COMMUNI
PH	DEPARTMENT OF PHYSICS
CS	DEPARTMENT OF COMPUTER SCIENCE & TECH
HL	DEPARTMENT OF HUMANITIES & LANGUAGES
CH	DEPARTMENT OF CHEMISTRY
MA	DEPARTMENT OF MATHEMATICS
ME	DEPARTMENT OF MECHANICAL ENGINEERING
MC	DEPARTMENT OF MANAGEMENT & COMMER
MRCFL	MANAV RACHNA CENTRE OF FOREIGN LANGU

**UNIVERSITY**  
**ICAL ENGINEERING**  
**YEAR SCHEME**

**1**

L	T	P	O	NO. OF CONTACT HOURS PER WEEK	NO. OF CREDITS
3	1	0	0	4	4
0	0	2	0	2	1
3	1	0	0	4	4
0	0	2	0	2	1
3	1	0	0	4	4
0	0	2	0	2	1
3	1	0	0	4	4
0	0	2	0	2	1
1	0	2	0	3	2
0	0	3	0	3	2
1	1	0	0	2	0
<b>14</b>	<b>5</b>	<b>13</b>	<b>0</b>	<b>32</b>	<b>24</b>

**2**

L	T	P	O	NO. OF CONTACT HOURS PER WEEK	NO. OF CREDITS
3	1	0	0	4	4
0	0	2	0	2	1
3	1	0	0	4	4
0	0	2	0	2	1
3	1	0	0	4	4
0	0	2	0	2	1
3	1	0	0	4	4
0	0	2	0	2	1
1	0	2	0	3	2



0	0	3	0	3	2
1	0	2	0	3	0
1	1	0	0	2	0
<b>15</b>	<b>5</b>	<b>15</b>	<b>0</b>	<b>35</b>	<b>24</b>

SEMESTER	3
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3					
L	T	P	O	NO. OF CONTACT HOURS PER WEEK	NO. OF CREDITS
3	1	0	0	4	4
0	0	2	0	2	1
3	1	0	0	4	4
0	0	2	0	2	1
3	1	0	0	4	4
0	0	2	0	2	1
3	1	0	0	4	4
0	0	2	0	2	1
1	0	2	0	3	2
0	0	3	0	3	2
1	1	0	0	2	0
<b>14</b>	<b>5</b>	<b>13</b>	<b>0</b>	<b>32</b>	<b>24</b>

4
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L	T	P	O	NO. OF CONTACT HOURS PER WEEK	NO. OF CREDITS
3	1	0	0	4	4
0	0	2	0	2	1
3	1	0	0	4	4
0	0	2	0	2	1
3	1	0	0	4	4
0	0	2	0	2	1
3	1	0	0	4	4
0	0	2	0	2	1
3	1	0	0	4	4
0	0	2	0	2	1
1	0	2	0	3	2
0	0	3	0	3	2
1	1	0	0	2	0
<b>14</b>	<b>5</b>	<b>13</b>	<b>0</b>	<b>22</b>	<b>24</b>

SEMESTER	6
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5					
L	T	P	O	NO. OF CONTACT HOURS PER WEEK	NO. OF CREDITS
3	1	0	0	4	4
0	0	2	0	2	1
3	1	0	0	4	4
0	0	2	0	2	1
3	1	0	0	4	4
0	0	2	0	2	1

3	1	0	0	4	4
0	0	2	0	2	1
1	0	2	0	3	2
0	0	3	0	3	2
1	1	0	0	2	0
<b>14</b>	<b>5</b>	<b>13</b>	<b>0</b>	<b>14</b>	<b>24</b>

<b>6</b>					
<b>L</b>	<b>T</b>	<b>P</b>	<b>O</b>	<b>NO. OF CONTACT HOURS PER WEEK</b>	<b>NO. OF CREDITS</b>
3	1	2	0	6	5
3	1	2	0	6	5

3	1	2	0	6	5
3	1	2	0	6	5
3	1	2	0	6	5


roups. Max 1 from a group

0	0	3	0	3	2
1	0	2	0	3	2
1	1	0	0	2	0
<b>14</b>	<b>5</b>	<b>13</b>	<b>0</b>	<b>32</b>	<b>24</b>

7

L	T	P	O	NO. OF CONTACT HOURS PER WEEK	NO. OF CREDITS
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3	1	2	0	6	5
3	1	2	0	6	5
1	0	2	0	3	2
0	0	0	3	3	3
0	0	0	1	1	1
<b>7</b>	<b>2</b>	<b>6</b>	<b>4</b>	<b>19</b>	<b>16</b>

<b>8</b>					
<b>L</b>	<b>T</b>	<b>P</b>	<b>O</b>	<b>NO. OF CONTACT HOURS PER WEEK</b>	<b>NO. OF CREDITS</b>
3	1	2	0	6	5
3	1	2	0	6	5
0	0	0	8	8	8
<b>6</b>	<b>2</b>	<b>4</b>	<b>8</b>	<b>20</b>	<b>18</b>

and/or O component  
 opment of a person's emotional, social, ethical, professional and creative  
 ids on' course conducted in laboratory, aimed at developing application/  
 course involves no teaching and has P and O component. Shall include

**A course shall be assigned credits as under:**

CATION ENGINEERING	<ul style="list-style-type: none"> <li>• One credit for each lecture hour</li> </ul>
	<ul style="list-style-type: none"> <li>• One credit for each tutorial hour</li> </ul>
HNOLOGY	<ul style="list-style-type: none"> <li>• One credit for each Outcome hour</li> </ul>
S	<ul style="list-style-type: none"> <li>• Two credits for each workshop/ laboratory/ practical/project session of 3 hours</li> </ul>
3	
RCE	<ul style="list-style-type: none"> <li>• One credit for each laboratory or practical or project session of 2 hours</li> </ul>
JAGES	



MANAV RACHNA  
vidyayajnanam-shiksha

**MANAV RACHNA UNIVER**  
**DEPARTMENT OF MATHEM/**  
**B.SC (MAU01)**  
**SEMESTER - 1**

SUBJECT CODES	SUBJECT NAME	**OFFERING DEPARTMENT	*COURSE NATURE (Hard/Soft/Workshop/NTCC)	COURSE TYPE (Core/Elective / University Compulsory)
MAH113-T	ESSENTIALS OF MATHEMATICS	MA	HARD	CORE
MAH114-T	FUNDAMENTALS OF MATHEMATICS			
MAH113-P	ESSENTIALS OF MATHEMATICS LAB	MA	HARD	CORE
MAH114-P	FUNDAMENTALS OF MATHEMATICS LAB			
PHH107-T	ESSENTIALS OF PHYSICS	PH	HARD	CORE
PHH107-P	ESSENTIALS OF PHYSICS LAB			
CHH101-T	GREEN CHEMISTRY	CH	HARD	CORE
CHH101-P	GREEN CHEMISTRY LAB			
CSH101-T	STRUCTURED PROGRAMMING	CS	HARD	CORE
CSH101-P	STRUCTURED PROGRAMMING LAB			
HLS101	BUSINESS ENGLISH	HL	SOFT	CORE
CSW151	COMPUTING WORKSHOP	CS	WORKSHOP	CORE
CHS102	ENVIRONMENTAL SCIENCE	CH	NTCC	UNIVERSITY COMPULSORY
FLS103	FRENCH-I	MRCFL	NTCC	UNIVERSITY COMPULSORY
FLS101	SPANISH-I			
FLS102	GERMAN-I			
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>				

**SEMESTER - 2**

SUBJECT CODES	SUBJECT NAME	**OFFERING DEPARTMENT	*COURSE NATURE (Hard/Soft/Workshop/NTCC)	COURSE TYPE (Core/Elective / University Compulsory)
MAH115-T	ALGEBRA	MA	HARD	CORE
MAH115-P	ALGEBRA LAB			
MAH116-T	CALCULUS-I	MA	HARD	CORE
MAH116-P	CALCULUS-I LAB			
CHH108-T	ESSENTIALS OF CHEMISTRY	CH	HARD	CORE
CHH108-P	ESSENTIALS OF CHEMISTRY LAB			
PHH108-T	MODERN PHYSICS	PH	HARD	CORE
PHH108-P	MODERN PHYSICS LAB			
HLS102	COMMUNICATIVE ENGLISH	HL	SOFT	CORE
MAW119	STATISTICS USING EXCEL	MA	WORKSHOP	CORE

FLS107	FRENCH-II	MRCFL	NTCC	UNIVERSITY COMPULSORY
FLS105	SPANISH-II			
FLS106	GERMAN-II			
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>				

MAW120 SUMMER TRAINING POST 2nd SEMESTE

**SEMESTER - 3**

SUBJECT CODES	SUBJECT NAME	**OFFERING DEPARTMENT	*COURSE NATURE (Hard/Soft/Workshop/NTCC)	COURSE TYPE (Core/Elective / University Compulsory)
MAH221-T	REAL ANALYSIS-I	MA	HARD	CORE
MAH221-P	REAL ANALYSIS-I LAB			
MAH222-T	CALCULUS-II	MA	HARD	CORE
MAH222-P	CALCULUS-II LAB			
MAH223-T	DIFFERENTIAL EQUATIONS & MM I	MA	HARD	CORE
MAH223-P	DIFFERENTIAL EQUATIONS & MM I LAB			
MAH224-T	GEOMETRY OF TWO AND THREE DIMENSIONS	MA	HARD	CORE
MAH224-P	GEOMETRY OF TWO AND THREE DIMENSIONS			
	BASKET OF COURSES ON ENVIRONMENTAL ETHICS & SUSTAINABLE DEPARTMENT	ALL	SOFT	ELECTIVE
	BASKET OF COURSES BY MANAGEMENT DEPTT.	MC	SOFT	ELECTIVE
MAW225	WORKSHOP BY THE DEPARTMENT	MA	WORKSHOP	CORE
FLS211	FRENCH-III	MRCFL	NTCC	UNIVERSITY COMPULSORY
FLS209	SPANISH-III			
FLS210	GERMAN-III			
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>				

**SEMESTER - 4**

SUBJECT CODES	SUBJECT NAME	**OFFERING DEPARTMENT	*COURSE NATURE (Hard/Soft/Workshop/NTCC)	COURSE TYPE (Core/Elective / University Compulsory)
MAH226-T	REAL ANALYSIS-II	MA	HARD	CORE
MAH226-P	REAL ANALYSIS-II LAB			
MAH227-T	GROUP THEORY	MA	HARD	CORE
MAH227-P	GROUP THEORY LAB			
MAH228-T	DIFFERENTIAL EQUATIONS & MM II	MA	HARD	CORE



MAH228-P	DIFFERENTIAL EQUATIONS & MM II LAB	MA	HARD	CORE
MAH229-T	PROBABILITY & MATHS STATISTICS	MA	HARD	CORE
MAH229-P	PROBABILITY & MATHS STATISTICS LAB			
MAS230	QUANTITATIVE APTITUDE	MA	SOFT	CORE
	BASKET OF COURSES BY HUMANITIES DEPTT.	HL	SOFT	ELECTIVE
MAW231	LATEX AND LINUX	MA	WORKSHOP	ELECTIVE
FLS215	FRENCH-IV	MRCFL	NTCC	UNIVERSITY COMPULSORY
FLS213	SPANISH-IV			
FLS214	GERMAN-IV			
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>				

MAW232	SUMMER TRAINING POST 4TH SEMESTE			
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#### SEMESTER - 5

SUBJECT CODES	SUBJECT NAME	**OFFERING DEPARTMENT	*COURSE NATURE (Hard/Soft/Workshop/NTCC)	COURSE TYPE (Core/Elective / University Compulsory)
MAH333-T	RING THEORY	MA	HARD	CORE
MAH333-P	RING THEORY LAB			
MAH334-T	NUMERICAL ANALYSIS	MA	HARD	CORE
MAH334-P	NUMERICAL ANALYSIS LAB			
MAH335-T	MECHANICS	MA	HARD	ELECTIVE (ANY TWO)
MAH336-T	NUMBER THEORY			
MAH337-T	DISCRETE MATHEMATICS			
MAH335-P	MECHANICS LAB	MA	HARD	ELECTIVE (ANY TWO)
MAH336-P	NUMBER THEORY LAB			
MAH337-P	DISCRETE MATHEMATICS LAB			
MAW338	SEMINARS/PRESENTATIONS	MA	NTCC	
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>				

#### SEMESTER - 6

SUBJECT CODES	SUBJECT NAME	**OFFERING DEPARTMENT	*COURSE NATURE (Hard/Soft/Workshop/NTCC)	COURSE TYPE (Core/Elective / University Compulsory)
MAH339-T	LINEAR ALGEBRA	MA	HARD	CORE
MAH339-P	LINEAR ALGEBRA LAB			
MAH340-T	METRIC SPACES	MA	HARD	CORE
MAH340-P	METRIC SPACES LAB			
MAH341-T	MATHEMATICAL FINANCE	MA	HARD	ELECTIVE
MAH342-T	INTEGRAL TRANSFORMS & APPLICATION			

MAH343-T	LINEAR PROGRAMMING & GAME THEORY			
MAH341-P	MATHEMATICAL FINANCE LAB	MA	HARD	ELECTIVE
MAH342-P	INTEGRAL TRANSFORMS & APPLICATION LAB			
MAH343-P	LINEAR PROGRAMMING & GAME THEORY LAB			
MAW344	PROJECT	MA	NTCC	
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>				

**RSITY**  
**ATICS**

L	T	P	O	NO. OF CONTACT HOURS PER WEEK	NO. OF CREDITS
3	1	0	0	4	4
0	0	2	0	2	1
3	1	0	0	4	4
0	0	2	0	2	1
3	1	0	0	4	4
0	0	2	0	2	1
3	1	0	0	4	4
0	0	2	0	2	1
1	0	2	0	3	2
0	0	3	0	3	2
1	0	2	0	3	0
1	1	0	0	2	0
<b>15</b>	<b>5</b>	<b>15</b>	<b>0</b>	<b>35</b>	<b>24</b>

L	T	P	O	NO. OF CONTACT HOURS PER WEEK	NO. OF CREDITS
3	1	0	0	4	4
0	0	2	0	2	1
3	1	0	0	4	4
0	0	2	0	2	1
3	1	0	0	4	4
0	0	2	0	2	1
3	1	0	0	4	4
0	0	2	0	2	1
1	0	2	0	3	2
0	0	3	0	3	2

1	1	0	0	2	0
<b>14</b>	<b>5</b>	<b>13</b>	<b>0</b>	<b>32</b>	<b>24</b>

R	3
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L	T	P	O	NO. OF CONTACT HOURS PER WEEK	NO. OF CREDITS
3	1	0	0	4	4
0	0	2	0	2	1
3	1	0	0	4	4
0	0	2	0	2	1
3	1	0	0	4	4
0	0	2	0	2	1
3	1	0	0	4	4
0	0	2	0	2	1
1	0	2	0	3	2
1	0	2	0	3	2
0	0	3	0	3	2
1	1	0	0	2	0
<b>15</b>	<b>5</b>	<b>15</b>	<b>0</b>	<b>35</b>	<b>26</b>

L	T	P	O	NO. OF CONTACT HOURS PER WEEK	NO. OF CREDITS
3	1	0	0	4	4
0	0	2	0	2	1
3	1	0	0	4	4
0	0	2	0	2	1
3	1	0	0	4	4

0	0	2	0	2	1
3	1	0	0	4	4
0	0	2	0	2	1
1	0	2	0	3	2
1	0	2	0	3	2
0	0	3	0	3	2

1	1	0	0	2	0
<b>15</b>	<b>5</b>	<b>15</b>	<b>0</b>	<b>35</b>	<b>26</b>

R	3
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L	T	P	O	NO. OF CONTACT HOURS PER WEEK	NO. OF CREDITS
3	1	8	0	4	4
0	0	2	0	2	1
3	1	0	0	4	4
0	0	2	0	2	1
6	2	0	0	8	8
0	0	4	0	4	2
0	0	0	1	0	1
<b>12</b>	<b>4</b>	<b>15</b>	<b>1</b>	<b>24</b>	<b>21</b>

L	T	P	O	NO. OF CONTACT HOURS PER WEEK	NO. OF CREDITS
3	1	0	0	4	4
0	0	2	0	2	1
3	1	0	0	4	4
0	0	2	0	2	1
3	1	0	0	4	4

0	0	2	0	2	1
0	0	0	5	0	5
<b>9</b>	<b>3</b>	<b>6</b>	<b>5</b>	<b>18</b>	<b>20</b>





**MANAV RACHNA UNIVERSITY**  
**DEPARTMENT OF CHEMISTRY**  
**B.SC (CHU01)**  
**SEMESTER - 1**

SUBJECT CODES	SUBJECT NAME	**OFFERING DEPARTMENT	*COURSE NATURE (Hard/Soft/Workshop/NTCC)	COURSE TYPE (Core/Elective / University Compulsory)	L	T	P	O	NO. OF CONTACT HOURS PER WEEK	NO. OF CREDITS
MAH113-T	ESSENTIALS OF MATHEMATICS	MA	HARD	CORE	3	1	0	0	4	4
MAH114-T	FUNDAMENTALS OF MATHEMATICS									
MAH113-P	ESSENTIALS OF MATHEMATICS LAB									
MAH114-P	FUNDAMENTALS OF MATHEMATICS LAB	MA	HARD	CORE	0	0	2	0	2	1
PHH107-T	ESSENTIALS OF PHYSICS	PH	HARD	CORE	3	1	0	0	4	4
PHH107-P	ESSENTIALS OF PHYSICS LAB				0	0	2	0	2	1
CHH101-T	GREEN CHEMISTRY	CH	HARD	CORE	3	1	0	0	4	4
CHH101-P	GREEN CHEMISTRY LAB				0	0	2	0	2	1
CSH101-T	STRUCTURED PROGRAMMING				CS	HARD	CORE	3	1	0
CSH101-P	STRUCTURED PROGRAMMING LAB	0	0	2				0	2	1
HLS101	BUSINESS ENGLISH	HL	SOFT	CORE	1	0	2	0	3	2
CSW151	COMPUTING WORKSHOP	CS	WORKSHOP	CORE	0	0	3	0	3	2
CHS102	ENVIRONMENTAL SCIENCE	CH	SOFT	UNIVERSITY COMPULSORY	1	0	2	0	3	0
FLS103	FRENCH-I	MRCFL	SOFT	UNIVERSITY COMPULSORY	1	1	0	0	2	0
FLS101	SPANISH-I									
FLS102	GERMAN-I									
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>					<b>15</b>	<b>5</b>	<b>15</b>	<b>0</b>	<b>35</b>	<b>24</b>

**SEMESTER - 2**

SUBJECT CODES	SUBJECT NAME	**OFFERING DEPARTMENT	*COURSE NATURE (Hard/Soft/Workshop/NTCC)	COURSE TYPE (Core/Elective / University Compulsory)	L	T	P	O	NO. OF CONTACT HOURS PER WEEK	NO. OF CREDITS
CHH106-T	PHYSICAL CHEMISTRY I	CH	HARD	CORE	3	1	0	0	4	4
CHH106-P	PHYSICAL CHEMISTRY I LAB				0	0	2	0	2	1
CHH107-T	INORGANIC CHEMISTRY I	CH	HARD	CORE	3	1	0	0	4	4
CHH107-P	INORGANIC CHEMISTRY I LAB				0	0	2	0	2	1
MAH117-T	ADVANCED MATHEMATICS	MA	HARD	CORE	3	1	0	0	4	4
MAH118-T	FUNDAMENTALS OF MATHEMATICS-II									
MAH117-P	ADVANCED MATHEMATICS LAB									
MAH118-P	FUNDAMENTALS OF MATHEMATICS-II LAB									
PHH108-T	MODERN PHYSICS	PH	HARD	CORE	3	1	0	0	4	4
PHH108-P	MODERN PHYSICS LAB				0	0	2	0	2	1
HLS102	COMMUNICATIVE ENGLISH	HL	SOFT	CORE	1	0	2	0	3	2
CHW109	CHEMISTRY IN EVERYDAY LIFE	CH	WORKSHOP	CORE	0	0	3	0	3	2
FLS107	FRENCH-II	MRCFL	SOFT	UNIVERSITY COMPULSORY	1	1	0	0	2	0
FLS105	SPANISH-II									
FLS106	GERMAN-II									
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>										

**SUMMER TRAINING POST 2nd SEMESTER CHW110**

3

**SEMESTER - 3**

SUBJECT CODES	SUBJECT NAME	**OFFERING DEPARTMENT	*COURSE NATURE (Hard/Soft/Workshop/NTCC)	COURSE TYPE (Core/Elective / University Compulsory)	L	T	P	O	NO. OF CONTACT HOURS PER WEEK	NO. OF CREDITS
CHH211-T	INORGANIC CHEMISTRY II	CH	HARD	CORE	3	1	0	0	4	4
CHH211-P	INORGANIC CHEMISTRY II LAB				0	0	2	0	2	1
CHH212-T	PHYSICAL CHEMISTRY II	CH	HARD	CORE	3	1	0	0	4	4
CHH212-P	PHYSICAL CHEMISTRY II LAB				0	0	2	0	2	1
CHH213-T	ORGANIC CHEMISTRY I	CH	HARD	CORE	3	1	0	0	4	4
CHH213-P	ORGANIC CHEMISTRY I LAB				0	0	2	0	2	1
CHH214-T	ANALYTICAL CHEMISTRY & SPECTROSCOPY				CH	HARD	CORE	3	1	0
CHH214-P	ANALYTICAL CHEMISTRY & SPECTROSCOPY LAB	0	0	2				0	2	1
	MANAGEMENT ELECTIVES		SOFT	ELECTIVE	1	0	2	0	3	2
	HUMANITIES ELECTIVES				1	0	2	0	3	2
CHW215	EXTRACTION & SYNTHESIS	CH	WORKSHOP	CORE	0	0	3	0	3	2
FLS211	FRENCH-III	MRCFL	SOFT	UNIVERSITY COMPULSORY	1	1	0	0	2	0
FLS209	SPANISH-III									
FLS210	GERMAN-III									
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>										



## SEMESTER - 4

SUBJECT CODES	SUBJECT NAME	**OFFERING DEPARTMENT	*COURSE NATURE (Hard/Soft/Workshop/NTCC)	COURSE TYPE (Core/Elective / University Compulsory)	L	T	P	O	NO. OF CONTACT HOURS PER WEEK	NO. OF CREDITS
CHH216-T	INORGANIC CHEMISTRY III	CH	HARD	CORE	3	1	0	0	4	4
CHH216-P	INORGANIC CHEMISTRY III LAB				0	0	2	0	2	1
CHH217-T	PHYSICAL CHEMISTRY III	CH	HARD	CORE	3	1	0	0	4	4
CHH217-P	PHYSICAL CHEMISTRY III LAB				0	0	2	0	2	1
CHH218-T	ORGANIC CHEMISTRY II	CH	HARD	CORE	3	1	0	0	4	4
CHH218-P	ORGANIC CHEMISTRY II LAB				0	0	2	0	2	1
CHH219-T	POLYMER CHEMISTRY	CH	HARD	ELECTIVE	3	1	0	0	4	4
CHH220-T	CLINICAL AND PHARMACEUTICAL CHEMISTRY				0	0	2	0	2	1
CHH219-P	POLYMER CHEMISTRY LAB	CH	HARD	ELECTIVE	0	0	2	0	2	1
CHH220-P	CLINICAL AND PHARMACEUTICAL CHEMISTRY LAB				0	0	2	0	2	1
MAS 230	QUANTITATIVE APTITUDE		SOFT	CORE	1	0	2	0	3	2
CHS203	ENVIRONMENT ETHICS AND SUSTAINABLE DEVELOPMENT: 1. E-Waste: Environmental problem and management	CH/	SOFT	ELECTIVE	1	0	2	0	3	2
		CH								
CHW221	WORKSHOP ON COROSION	CH	WORKSHOP	CORE	0	0	3	0	3	2
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>					<b>14</b>	<b>4</b>	<b>15</b>	<b>0</b>	<b>33</b>	<b>26</b>

## SUMMER TRAINING POST 4TH SEMESTER (CHW222)

3

## SEMESTER - 5

SUBJECT CODES	SUBJECT NAME	**OFFERING DEPARTMENT	*COURSE NATURE (Hard/Soft/Workshop/NTCC)	COURSE TYPE (Core/Elective / University Compulsory)	L	T	P	O	NO. OF CONTACT HOURS PER WEEK	NO. OF CREDITS
CHH323-T	INSTRUMENTAL METHOD OF CHEMICAL ANALYSIS	CH	HARD	CORE	3	1	0	0	4	4
CHH323-P	INSTRUMENTAL METHOD OF CHEMICAL ANALYSIS				0	0	2	0	2	1
CHH324-T	ORGANIC CHEMISTRY III	CH	HARD	CORE	3	1	0	0	4	4
CHH324-P	ORGANIC CHEMISTRY III LAB				0	0	2	0	2	1
CHH325-T	PHYSICAL CHEMISTRY IV	CH	HARD	CORE	3	1	0	0	4	4
CHH325-P	PHYSICAL CHEMISTRY IV LAB				0	0	2	0	2	1
CHH326-T	FOOD CHEMISTRY & TECHNOLOGY	CH	HARD	ELECTIVE	3	1	0	0	4	4
CHH327-T	GREEN TECHNOLOGY				0	0	2	0	2	1
CHH326-P	FOOD CHEMISTRY & TECHNOLOGY LAB	CH	HARD	ELECTIVE	0	0	2	0	2	1
CHH327-P	GREEN TECHNOLOGY LAB				0	0	2	0	2	1
CHN328	SEMINARS/ PRESENTATIONS	CH	NTCC	CORE	0	0	0	2	0	2
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>					<b>9</b>	<b>4</b>	<b>8</b>	<b>3</b>	<b>24</b>	<b>22</b>

## SEMESTER - 6

SUBJECT CODES	SUBJECT NAME	**OFFERING DEPARTMENT	*COURSE NATURE (Hard/Soft/Workshop/NTCC)	COURSE TYPE (Core/Elective / University Compulsory)	L	T	P	O	NO. OF CONTACT HOURS PER WEEK	NO. OF CREDITS
CHH329-T	INDUSTRIAL & APPLIED CHEMISTRY	CH	HARD	CORE	3	1	0	0	4	4
CHH329-P	INDUSTRIAL & APPLIED CHEMISTRY LAB				0	0	2	0	2	1
CHH330-T	CHEMISTRY OF BIOMOLECULES & NATURAL PRODUCTS	CH	HARD	CORE	3	1	0	0	4	4
CHH330-P	CHEMISTRY OF BIOMOLECULES & NATURAL PRODUCTS LAB				0	0	2	0	2	1
CHH331-T	MATERIALS OF INDUSTRIAL IMPORTANCE	CH	HARD	ELECTIVE	3	1	0	0	4	4
CHH332-T	INDUSTRIAL CHEMICAL & ENVIRONMENT				0	0	2	0	2	1
CHH331-P	MATERIALS OF INDUSTRIAL IMPORTANCE LAB	CH	HARD	ELECTIVE	0	0	2	0	2	1
CHH332-P	INDUSTRIAL CHEMICAL & ENVIRONMENT LAB				0	0	2	0	2	1
CHN333	PROJECT	CH	NTCC	CORE	0	0	0	5	5	5
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>					<b>9</b>	<b>3</b>	<b>6</b>	<b>5</b>	<b>23</b>	<b>20</b>



**MANAV RACHNA UNIVER**  
**DEPARTMENT OF PHYSIC**  
**B.SC (PHU01)**  
**SEMESTER - 1**

SUBJECT CODES	SUBJECT NAME	**OFFERING DEPARTMENT	*COURSE NATURE (Hard/Soft/Workshop/NTCC)	COURSE TYPE (Core/Elective / University Compulsory)
MAH113-T	ESSENTIALS OF MATHEMATICS	MA	HARD	CORE
MAH114-T	FUNDAMENTALS OF MATHEMATICS			
MAH113-P	ESSENTIALS OF MATHEMATICS LAB	MA	HARD	CORE
MAH114-P	FUNDAMENTALS OF MATHEMATICS LAB			
PHH107-T	ESSENTIALS OF PHYSICS	PH	HARD	CORE
PHH107-P	ESSENTIALS OF PHYSICS LAB			
CHH101-T	GREEN CHEMISTRY	CH	HARD	CORE
CHH101-P	GREEN CHEMISTRY LAB			
CSH101-T	STRUCTURED PROGRAMMING	CS	HARD	CORE
CSH101-P	STRUCTURED PROGRAMMING LAB			
HLS101	BUSINESS ENGLISH	HL	SOFT	CORE
CSW151	COMPUTING WORKSHOP	CS	WORKSHOP	CORE
CHS102	ENVIRONMENTAL SCIENCE	CH	NTCC	UNIVERSITY COMPULSORY
FLS103	FRENCH-I	MRCFL	NTCC	UNIVERSITY COMPULSORY
FLS101	SPANISH-I			
FLS102	GERMAN-I			
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>				

**SEMESTER - 2**

SUBJECT CODES	SUBJECT NAME	**OFFERING DEPARTMENT	*COURSE NATURE (Hard/Soft/Workshop/NTCC)	COURSE TYPE (Core/Elective / University Compulsory)
PHH109-T	MATHEMATICAL PHYSICS-I	PH	HARD	CORE
PHH109-P	MATHEMATICAL PHYSICS-I LAB			
PHH110-T	MECHANICS	PH	HARD	CORE
PHH110-P	MECHANICS LAB			
CHH108-T	ESSENTIALS OF CHEMISTRY	CH	HARD	CORE
CHH108-P	ESSENTIALS OF CHEMISTRY LAB			
PHH108-T	MODERN PHYSICS	PH	HARD	CORE
PHH108-P	MODERN PHYSICS LAB			
HLS102	COMMUNICATIVE ENGLISH	HL	SOFT	CORE
MEW102	ENGINEERING WORKSHOP	ME	WORKSHOP	CORE

FLS107	FRENCH-II	MRCFL	NTCC	UNIVERSITY COMPULSORY
FLS105	SPANISH-II			
FLS106	GERMAN-II			
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>				

SUMMER TRAINING POST 2nd SEMESTE

**SEMESTER - 3**

SUBJECT CODES	SUBJECT NAME	**OFFER ING DEPARTM ENT	*COURSE NATURE (Hard/Soft/ Workshop/ NTCC)	COURSE TYPE (Core/Elective / University Compulsory)
PHH211-T	ELECTRICITY AND MAGNETISM	PH	HARD	CORE
PHH211-P	ELECTRICITY AND MAGNETISM LAB			
PHH212-T	QUANTUM MECHANICS	PH	HARD	CORE
PHH212-P	QUANTUM MECHANICS LAB			
PHH213-T	MATHEMATICAL PHYSICS-II	PH	HARD	CORE
PHH213-P	MATHEMATICAL PHYSICS-II LAB			
MAH224-T	STATISTICAL MECHANICS	PH	HARD	CORE
MAH224-P	STATISTICAL MECHANICS LAB			
	BASKET OF COURSES BY HUMANITIES DEPTT.	HL	SOFT	ELECTIVE
	BASKET OF COURSES BY MANAGEMENT DEPTT.	MC	SOFT	ELECTIVE
	ELECTRICAL TECHNOLOGY WORKSHOP	EC	WORKSHOP	CORE
FLS211	FRENCH-III	MRCFL	NTCC	UNIVERSITY COMPULSORY
FLS209	SPANISH-III			
FLS210	GERMAN-III			
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>				

**SEMESTER - 4**

SUBJECT CODES	SUBJECT NAME	**OFFER ING DEPARTM ENT	*COURSE NATURE (Hard/Soft/ Workshop/ NTCC)	COURSE TYPE (Core/Elective / University Compulsory)
MAH411-T	NUMERICAL METHODS	MA	HARD	CORE
MAH411-P	NUMERICAL METHODS LAB			
PHH215-T	SOLID STATE PHYSICS	PH	HARD	CORE
PHH215-P	SOLID STATE PHYSICS LAB			
PHH217-T	THERMAL PHYSICS	PH	HARD	CORE
PHH217-P	THERMAL PHYSICS LAB			
PHH216-T	DIGITAL ELECTRONICS	PH	HARD	CORE
PHH216-P	DIGITAL ELECTRONICS LAB			

MAS230	QUANTITATIVE APTITUDE	MA	SOFT	CORE
	BASKET OF COURSES ON ENVIRONMENTAL ETHICS & SUSTAINABLE DEPARTMENT WORKSHOP (OPEN SOURCE SOFTWARE)	ALL	SOFT	ELECTIVE
			WORKSHOP	ELECTIVE
FLS215	FRENCH-IV	MRCFL	NTCC	UNIVERSITY COMPULSORY
FLS213	SPANISH-IV			
FLS214	GERMAN-IV			
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>				

	SUMMER TRAINING POST 4TH SEMESTER
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**SEMESTER - 5**

SUBJECT CODES	SUBJECT NAME	**OFFERING DEPARTMENT	*COURSE NATURE (Hard/Soft/Workshop/NTCC)	COURSE TYPE (Core/Elective / University Compulsory)
	ELECTIVE NON DEPARTMENT		HARD	ELECTIVE
	ELECTIVE NON DEPARTMENT LAB			
	DISCIPLINE SPECIFIC ELECTIVE-I	PH	HARD	ELECTIVE
	DISCIPLINE SPECIFIC ELECTIVE-I LAB			
	DISCIPLINE SPECIFIC ELECTIVE-II	PH	HARD	ELECTIVE
	DISCIPLINE SPECIFIC ELECTIVE-II LAB			
PHH319-T	ELECTRONIC DEVICES	PH	HARD	CORE
PHH319-P	ELECTRONIC DEVICES LAB			
	SEMINARS	PH	NTCC	
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>				

**SEMESTER - 6**

SUBJECT CODES	SUBJECT NAME	**OFFERING DEPARTMENT	*COURSE NATURE (Hard/Soft/Workshop/NTCC)	COURSE TYPE (Core/Elective / University Compulsory)
PHH320-T	ELECTROMAGNETIC THEORY	PH	HARD	CORE
PHH320-P	ELECTROMAGNETIC THEORY LAB			
	DISCIPLINE SPECIFIC ELECTIVE-III	PH	HARD	CORE
	DISCIPLINE SPECIFIC ELECTIVE-III LAB			
	DISCIPLINE SPECIFIC ELECTIVE-IV	PH	HARD	ELECTIVE
	DISCIPLINE SPECIFIC ELECTIVE-IV LAB			
	PROJECT	PH	NTCC	
<b>TOTAL (L-T-P-O/CONTACT HOURS/CREDITS)</b>				

**DISCIPLINE SPECIFIED ELECTIVES:**

ASTRONOMY AND ASTROPHYSICS, NUCLEAR PHYSICS, APPLIED DYNAMICS, PHYSICS OF DEVICES AND INSTRU  
RENEWABLE ENERGY I, RENEWABLE ENERGY II, MATERIAL SCIENCE I, MATERIAL SCIENCE II, NANOMATERIAL

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S

L	T	P	O	NO. OF CONTACT HOURS PER WEEK	NO. OF CREDITS
3	1	0	0	4	4
0	0	2	0	2	1
3	1	0	0	4	4
0	0	2	0	2	1
3	1	0	0	4	4
0	0	2	0	2	1
3	1	0	0	4	4
0	0	2	0	2	1
1	0	2	0	3	2
0	0	3	0	3	2
1	0	2	0	3	0
1	1	0	0	2	0
<b>15</b>	<b>5</b>	<b>15</b>	<b>0</b>	<b>35</b>	<b>24</b>

L	T	P	O	NO. OF CONTACT HOURS PER WEEK	NO. OF CREDITS
3	1	0	0	4	4
0	0	2	0	2	1
3	1	0	0	4	4
0	0	2	0	2	1
3	1	0	0	4	4
0	0	2	0	2	1
3	1	0	0	4	4
0	0	2	0	2	1
1	0	2	0	3	2
0	0	3	0	3	2

1	1	0	0	2	0
<b>14</b>	<b>5</b>	<b>13</b>	<b>0</b>	<b>32</b>	<b>24</b>

R	3
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L	T	P	O	NO. OF CONTACT HOURS PER WEEK	NO. OF CREDITS
3	1	0	0	4	4
0	0	2	0	2	1
3	1	0	0	4	4
0	0	2	0	2	1
3	1	0	0	4	4
0	0	2	0	2	1
3	1	0	0	4	4
0	0	2	0	2	1
1	0	2	0	3	2
1	0	2	0	3	2
0	0	3	0	3	2
1	1	0	0	2	0
<b>15</b>	<b>5</b>	<b>15</b>	<b>0</b>	<b>35</b>	<b>26</b>

L	T	P	O	NO. OF CONTACT HOURS PER WEEK	NO. OF CREDITS
3	1	0	0	4	4
0	0	2	0	2	1
3	1	0	0	4	4
0	0	2	0	2	1
3	1	0	0	4	4
0	0	2	0	2	1
3	1	0	0	4	4
0	0	2	0	2	1

1	0	2	0	3	2
1	0	2	0	3	2

0      0      3      0      3      2

1	1	0	0	2	0
<b>15</b>	<b>5</b>	<b>15</b>	<b>0</b>	<b>35</b>	<b>26</b>

R	3
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L	T	P	O	NO. OF CONTACT HOURS PER WEEK	NO. OF CREDITS
3	1	0	0	4	4
0	0	2	0	2	1
3	1	0	0	4	4
0	0	2	0	2	1
3	1	0	0	4	4
0	0	2	1	2	2
3	1	0	0	4	4
0	0	2	0	2	1
0	0	0	1	0	1
<b>12</b>	<b>4</b>	<b>8</b>	<b>1</b>	<b>24</b>	<b>22</b>

L	T	P	O	NO. OF CONTACT HOURS PER WEEK	NO. OF CREDITS
3	1	0	0	4	4
0	0	2	0	2	1
3	1	0	0	4	4
0	0	2	0	2	1
3	1	0	0	4	4
0	0	2	0	2	1
0	0	0	5	0	5
<b>9</b>	<b>3</b>	<b>6</b>	<b>5</b>	<b>18</b>	<b>20</b>



JMMENTATION, ATMOSPHERIC PHYSICS I , ATMOSPHERIC PHYSICS II,  
S AND APPLICATIONS

