



**ANNEXURE – I**

**Credit Structure for Undergraduate programs**

Sr. No.	Category Code	Category	Credits
1	HSSM	Ability Enhancement Course (AEC), Indian Knowledge System (IKS), Value Education Course (VEC), Entrepreneurship/Economics/Management courses	10
2	BSC	Basic Science courses	14
3	ESC	Engineering Science courses including workshop, drawing, basics of electrical/mechanical/computer etc.	16
4	PCC	Professional core courses	70
5	PEC	Professional Elective courses relevant to chosen specialization/branch	10
6	OE	Open subjects – Electives from other technical and /or emerging subjects	08
7	ELC	Project work, seminar and internship in industry or elsewhere, Industry Training and Skill Development, Capstone Course	20
8	VSEC	Vocations Skill Courses (VSC) , Skill Enhancement Courses(SEC)	10
9	CC	Co-curricular Courses (CC) such as Health and Wellness, Yoga education sports, and fitness, Cultural Activities, NSS/NCC and Fine/ Applied/ Visual/ Performing Arts	04
10	MDM	Compulsory Multidisciplinary Minor	14
		<b>TOTAL</b>	<b>176</b>

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**GROUP 1: SEMESTER I / GROUP 2: SEMESTER II**

Sr No	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks		
				L	T	P		Continual Assessment	End Sem Examination	Total
1	BSC	AS101T	Engineering Physics & Material Sciences	2	0	-	2	15	35	50
2	BSC	AS101P	Engineering Physics & Materials Science Lab	-	-	2	1	25	25	50
3	BSC	AS102T	Applied Mathematics – I	4	-	-	4	30	70	100
4	ESC	AS103T	Engineering Practices-I (Electrical & Electronics)	3	-	-	3	30	70	100
5	ESC	AS103P	Engineering Practices-I Lab (Electrical & Electronics)	-	-	2	1	25	25	50
6	ESC	AS104T	Logic building with C	2	-	-	2	15	35	50
7	ESC	AS104P	Logic building with C Lab	-	-	2	1	25	25	50
8	AEC	AS105P	Business Communication Skills I Lab	-	-	2	1	25	25	50
9	IKS	AS106T	Indian Knowledge Systems	2	-	-	2	15	35	50
10	SEC	AS107T	Career Development I	-	-	2	1	50	-	50
11	PCC	II101T	Program Foundation I	2	-	-	2	15	35	50
12	CC	AS108T	Co-curricular Courses - I	-	-	-	2	50	-	50
<b>Total</b>				<b>17</b>	<b>-</b>	<b>10</b>	<b>44</b>	<b>320</b>	<b>380</b>	<b>700</b>

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**GROUP 1: SEMESTER II / GROUP 2: SEMESTER I**

Sr No	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks		
				L	T	P		Continual Assessment	End Sem Examination	Total
1	BSC	AS201T	Engineering Chemistry & Environmental Science	2	-	--	2	15	35	50
2	BSC	AS201P	Engineering Chemistry & Environmental Science Lab	-	-	2	1	25	25	50
3	BSC	AS202T	Applied Mathematics-II	4	-	-	4	30	70	100
4	ESC	AS203T	Engineering Practices-II(Civil & Mechanical)	3	-	-	3	30	70	100
5	ESC	AS203P	Engineering Practices-II Lab (Civil & Mechanical)	-	-	2	1	25	25	50
6	ESC	AS204T	Problem Solving with Python	2	-	-	2	15	35	50
7	ESC	AS204P	Problem Solving with Python Lab	-	-	2	1	25	25	50
8	AEC	AS205P	Business Communication Skills II Lab	-	-	2	1	25	25	50
9	SEC	AS206T	Career Development II	-	-	2	1	50	-	50
10	PCC	II201T	Program Foundation II	2	-	-	2	15	35	50
11	ESC	AS207T	Design Thinking	2	-	-	2	30	70	100
12	CC	AS208T	Co-curricular Courses - I	-	-	-	2	50	-	50
<b>Total</b>				<b>17</b>	<b>-</b>	<b>10</b>	<b>22</b>	<b>345</b>	<b>405</b>	<b>750</b>

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**SEMESTER III**

Sr No	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks		
				L	T	P		Continual Assessment	End Sem Examination	Total
1	PCC	II301T	Analog and Digital Electronics	3	-	-	3	30	70	100
2	PCC	II301P	Analog and Digital Electronics Lab	-	-	2	1	25	25	50
3	PCC	II302T	Analog and Digital Communication	3	-	-	3	30	70	100
4	PCC	II302P	Analog and Digital Communication Lab	-	-	2	1	25	25	50
5	PCC	II303T	Object Oriented Programming and Data Structures	3	-	-	3	30	70	100
6	PCC	II303P	Object Oriented Programming and Data Structures Lab	-	-	2	1	25	25	50
7	PCC	II304T	IoT Sensors and Actuators	3	-	-	3	30	70	100
8	PCC	II305T	Electronics and Mechanical Measurements	3	-	-	3	30	70	100
9	SEC	II306P	Career Development III	-	-	2	1	50	-	50
10	VEC	II307T	Value Education Course I	2	-	-	2	15	35	50
11	ELC	II308P	Micro Project I*	-	-	2	1	50	-	50
<b>Total</b>				<b>17</b>	<b>0</b>	<b>10</b>	<b>22</b>	<b>340</b>	<b>460</b>	<b>800</b>
12	MDM		Multidisciplinary Minor - I	2	-	-	2	15	35	50
<b>Total</b>				<b>19</b>		<b>10</b>	<b>24</b>	<b>355</b>	<b>495</b>	<b>850</b>

\* Field Project or Community engagement project in the major discipline

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**SEMESTER IV**

Sr No	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks		
				L	T	P		Continual Assessment	End Sem Examination	Total
1	BSC	AS309T	Applied Mathematics - III	3	-	-	3	30	70	100
2	PCC	II401T	Microprocessors and Microcontrollers	3	-	-	3	30	70	100
3	PCC	II401P	Microprocessors and Microcontrollers Lab	-	-	2	1	25	25	50
4	PCC	II402T	Computer Networking and Data Communication	3	-	-	3	30	70	100
5	PCC	II403T	IoT Protocols and Architecture	3	-	-	3	30	70	100
6	PCC	II404P	Internet of Things Lab.	-	-	2	1	25	25	50
7	OE	II405T	Open Elective - I	2	-	-	2	15	35	50
8	VSC	II406T	Technical Skill Development - I	2	-	-	2	50	-	50
9	VEC	II407T	Value Education Course II	2	-	-	2	15	35	50
10	SEC	II408P	Career Development - IV	-	-	2	1	50	-	50
11	ELC	II409P	Micro Project II*	-	-	2	1	50	-	50
<b>Total</b>				<b>18</b>	<b>0</b>	<b>8</b>	<b>22</b>	<b>350</b>	<b>400</b>	<b>750</b>
12	MDM		Multidisciplinary Minor - II	3	-	-	3	30	70	100
<b>Total</b>				<b>21</b>		<b>8</b>	<b>25</b>	<b>380</b>	<b>470</b>	<b>850</b>

\* Field Project or Community engagement project in the major discipline

Open Elective - I	
II405T(i)	Cyber Physical Systems

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**SEMESTER V**

Sr No	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks		
				L	T	P		Continual Assessment	End Sem Examination	Total
1	PCC	II501T	Signal Processing	3	-	-	3	30	70	100
2	PCC	II501P	Signal Processing Lab.	-	-	2	1	25	25	50
3	PCC	II502T	Database Management Systems	3	-	-	3	30	70	100
4	PCC	II502P	Database Management Systems	-	-	2	1	25	25	50
5	PCC	II503T	Operating Systems	3	-	-	3	30	70	100
6	PEC	II504T	Professional Elective - I	3	-	-	3	30	70	100
7	OE	II505T	Open Elective - II	3	-	-	3	30	70	100
8	VSC	II506T	Technical Skill Development - II	2	-	-	2	50	-	50
9	SEC	II507P	Career Development - V	-	-	2	1	50	-	50
<b>Total</b>				<b>17</b>	<b>0</b>	<b>6</b>	<b>20</b>	<b>300</b>	<b>400</b>	<b>700</b>
12	MDM		Multidisciplinary Minor - III	3	-	-	3	30	70	100
<b>Total</b>				<b>20</b>		<b>6</b>	<b>23</b>	<b>330</b>	<b>470</b>	<b>800</b>

**Open Elective - II**

II505T (i)	<b>Industrial and Medical IoT</b>
II505T (ii)	<b>IoT for Social Good</b>

**Professional Elective- I**

II504T (i)	<b>Computer Architecture and Organization</b>
II504T (ii)	<b>Basic Electrical Machines</b>
II504T (iii)	<b>Manufacturing Processes</b>

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**INDUSTRIAL IoT**

**SEMESTER VI**

Sr No	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks		
				L	T	P		Continual Assessment	End Sem Examination	Total
1	PCC	II601T	Machine Learning	3	-	-	3	30	70	100
2	PCC	II601P	Machine Learning Lab	-	-	2	1	25	25	50
3	PCC	II602T	Data Analytics for IoT	3	-	-	3	30	70	100
4	PCC	II602P	Data Analytics for IoT Lab	-	-	2	1	25	25	50
5	PCC	II603T	Cloud Computing	3	-	-	3	30	70	100
6	PCC	II603P	Cloud Computing Lab	-	-	2	1	25	25	50
7	PEC	II604T	Professional Elective- II	3	-	-	3	30	70	100
8	AEC	AS601T	Economics & Management	2	-	-	2	15	35	50
9	OE	II605T	Open Elective- III	3	-	-	3	30	70	100
10	ELC	II606P	Project - I	-	-	2	1	50	50	100
11	SEC	II607P	Career Development -VI	-	-	2	1	50	-	50
<b>Total</b>				<b>17</b>		<b>10</b>	<b>22</b>	<b>340</b>	<b>510</b>	<b>850</b>
12	MDM		Multidisciplinary Minor - IV	3	-	-	3	30	70	100
<b>Total</b>				<b>20</b>		<b>10</b>	<b>25</b>	<b>370</b>	<b>580</b>	<b>950</b>

Open Elective - III	
II605T (i)	Security in Industrial IoT
II605T (ii)	Condition Monitoring in Industry

Professional Elective- II	
II604T (i)	Digital Image Processing
II604T (ii)	Privacy and Security in IoT
II604T (iii)	Blockchain Technology
II604T (iv)	Cyber Security & Privacy
II604T (v)	Cyber Physical Systems
II604T (vi)	Mechanical Structure Design
II604T (vii)	Robotics and Automation

**SEMESTER VII**

Sr No	Course	Course	Course Title	Hours per	Credits	Maximum Marks
				July 2023	1.0	Applicable for 2023-24
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	Category	Code		Week				Continual Assessment	End Sem Examination	Total
				L	T	P				
1	PCC	II701T	Industrial IoT and Industry 4.0	3	-	-	3	30	70	100
2	PCC	II702T	Artificial Intelligence	3	-	-	3	30	70	100
3	PCC	II702P	Artificial Intelligence Lab	-	-	2	1	25	25	50
4	PCC	II703T	Dashboard & Mobile Application Development	3	-	-	3	30	70	100
5	PCC	II703P	Dashboard & Mobile Application Development Lab	-	-	2	1	25	25	50
6	PEC	II704T	Professional Elective - III	3	-	-	3	30	70	100
7	PEC	II704P	Professional Elective - III Lab	-	-	2	1	25	25	50
8	ELC	II705P	Project - II	-	-	6	3	50	50	100
9	ELC	II706P	Summer / Winter Internship*	-	-	-	2	50	--	50
<b>Total</b>				<b>12</b>	<b>0</b>	<b>12</b>	<b>20</b>	<b>295</b>	<b>405</b>	<b>700</b>
12	MDM		Multidisciplinary Minor - V	3	-	-	3	30	70	100
<b>Total</b>				<b>15</b>		<b>12</b>	<b>23</b>	<b>325</b>	<b>475</b>	<b>800</b>

\* Summer / Winter Internship (Evaluation of Four weeks Internship Completion till 6th Semester)

Professional Elective- III	
II704T (i)	PLC and SCADA Systems
II704T (ii)	Computer Vision
II704T (iii)	Natural Language Processing
II704T (iv)	Embedded Systems
II704T (v)	Deep Learning

**SEMESTER VIII**

**Option A**

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**B. Tech. Scheme of Examination & Syllabus 2023-24****INDUSTRIAL IoT**

ARISE &amp; SHINE

Sr No	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks		
				L	T	P		Continual Assessment	End Sem Examination	Total
1	ELC	II801P*	Project based on one semester internship in Industry/Research Institute/ National Laboratories/ Incubation Center	-	-	-	12	300	100	400
<b>Total</b>				-	-	-	<b>12</b>	<b>300</b>	<b>100</b>	<b>400</b>

\*End semester examination will consist of evaluation of seminar &amp; project report.

**Option B**

Sr No	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks		
				L	T	P		Continual Assessment	End Sem Examination	Total
1	ELC	II801P#	Institutional Internship	-	-	12	6	100	100	200
2	ELC	II802P	Project – III	-	-	12	6	100	100	200
<b>Total</b>				-	-	<b>0</b>	<b>12</b>	<b>300</b>	<b>100</b>	<b>400</b>

**Option B is available to students only after recommendation of the concerned Head of the department. The project and internship should contribute towards career development plan of the students.**

\* Minimum 90 days internship in any industry and project is to be carried out during internship.

# Two NPTEL courses (as per choice of student) or Institutional Internship by IEDC, SVP CET.

**EXIT OPTIONS****Award of UG Certificate in Major with 40 credits and an additional 8 credits (After First Year)**

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**INDUSTRIAL IoT**

EXIT COURSES			
S.N.	Course name	Mode of conduction	Credits

Award of UG Diploma in Major with \_\_\_\_\_ credits and an additional 8 credits (After Second Year)

EXIT COURSES			
S.N.	Course name	Mode of conduction	Credits

Award of UG Degree in Major with \_\_\_\_\_ credits and an additional 8 credits (After Third Year)

EXIT COURSES			
S.N.	Course name	Mode of conduction	Credits

**Multidisciplinary Minor**

**Minor 1 :- Management**

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### INDUSTRIAL IoT

Sr No	Sem	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks		
					L	T	P		Continual Assessment	End Sem Examination	Total
1		MDM									
2		MDM									
3		MDM									
4		MDM									
				<b>Total</b>				<b>14</b>			

### Multidisciplinary Minor

#### Minor 2 :- Emerging Trends

Sr No	Sem	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks		
					L	T	P		Continual Assessment	End Sem Examination	Total
1		MDM									
2		MDM									
3		MDM									
4		MDM									
				<b>Total</b>				<b>14</b>			

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