

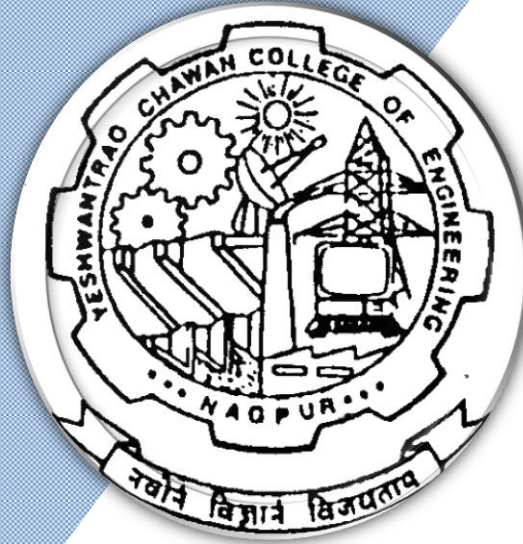
Nagar Yuwak Shikshan Sanstha's

# Yeshwantrao Chavan College of Engineering

(An Autonomous Institution affiliated to Rashtrasant Tukadoji Maharaj Nagpur University)

(Accredited 'A++' Grade by NAAC with a score of 3.6)

Hingna Road, Wanadongri, Nagpur - 441 110



## Bachelor of Technology

### SoE & Syllabus 2023

#### 1<sup>st</sup> to 4<sup>th</sup> Semester

(Department of Electronics Engineering)

### B. Tech in Electronics Engineering



Nagar Yuwak Shikshan Sanstha's  
**Yeshwantrao Chavan College of Engineering**  
(An Autonomous Institution affiliated to Rashtrasant Tukadoji Maharaj Nagpur University)

**B.TECH SCHEME OF EXAMINATION 2023**

(Scheme of Examination w.e.f. 2023-24 onward)  
(Department of Electronics Engineering)

**B. Tech in Electronics Engineering**

SoE No.  
23EE-101

S N	Sem	Type	BoS/ Deptt	Sub. Code	Subject	T/P	Contact Hours				Credits	% Weightage			ESE Duration
							L	T	P	Hrs		MSEs*	TA**	ESE	
<b>FIRST SEMESTER (GROUP-A)</b>															
1	1	BS	GE	23GE1101	Calculus and Vector	T	3	0	0	3	3	30	20	50	3
2	1	BS	GE	23GE1104	Applied Chemistry	T	3	0	0	3	3	30	20	50	3
3	1	BS	GE	23GE1105	Lab: Applied Chemistry	P	0	0	2	2	1		60	40	
4	1	HS/AEC1	GE	23GE1112	Professional Communication	T	2	0	0	2	2	30	20	50	2
5	1	HS/IKS	GE	23GE1115	Indian Knowledge System	T	2	0	0	2	2	30	20	50	2
6	1	BES	CV	23CV1101	Engineering Mechanics	T	3	0	0	3	3	30	20	50	3
7	1	BES	CV	23CV1102	Lab: Engineering Mechanics	P	0	0	2	2	1		60	40	
8	1	BES	IT	23IT1103	Programming for Problem Solving	T	2	0	0	2	2	30	20	50	2
9	1	BES	IT	23IT1104	Lab: Programming for Problem Solving	P	0	0	2	2	1		60	40	
10	1	VSEC	GE	23GE1117	Get Set Go	...	...	...	...	...	2		60	40	
11	1	CC1	GE		Liberal Learning Course (LLC1)	...	...	...	...	...	2		60	40	
<b>TOTAL FIRST SEM</b>							<b>15</b>	<b>0</b>	<b>6</b>	<b>21</b>	<b>22</b>				

<b>SECOND SEMESTER (GROUP-A)</b>															
1	2	BS	GE	23GE1202	Differential Equations, Matrices and Statistics	T	3	0	0	3	3	30	20	50	3
2	2	BS	GE	23GE1208	Engineering Physics	T	3	0	0	3	3	30	20	50	3
3	2	BS	GE	23GE1209	Lab: Engineering Physics	P	0	0	2	2	1		60	40	
4	2	BES	ME	23ME1201	Engineering Graphics	T	1	0	0	1	1	30	20	50	3
5	2	BES	ME	23ME1202	Lab : Engineering Graphics	P	0	0	4	4	2		60	40	
6	2	BES	EL	23EL1201	Basic Electrical and Electronics Engineering	T	3	0	0	3	3	30	20	50	3
7	2	BES	EL	23EL1205	Lab : Electrical and Electronics Workshop	P	0	0	2	2	1		60	40	
8	2	PC	EE	23EE1203	Digital Logic Design	T	3	0	0	3	3	30	20	50	3
9	2	PC	EE	23EE1204	Lab : Digital Logic Design	P	0	0	2	2	1		60	40	
10	2	VSEC	GE	23GE1218	Functional English	...	...	...	...	...	2		60	40	
11	2	CC2	GE		Liberal Learning Course (LLC2)	...	...	...	...	...	2		60	40	
<b>TOTAL SECOND SEM</b>							<b>13</b>	<b>0</b>	<b>10</b>	<b>23</b>	<b>22</b>				

**Liberal Learning Course**

S N	Sem	Type	BoS/ Deptt	Sub. Code	Subject
1	1	CC1	GE	23LLC1101	Music (Vocal)
2	1	CC1	GE	23LLC1102	Music (Instrumental)
3	1	CC1	GE	23LLC1103	Indian Classical Dance
4	1	CC1	GE	23LLC1104	Other forms of Dances
5	1	CC1	GE	23LLC1105	Painting
6	1	CC1	GE	23LLC1106	Theatre and acting
7	1	CC1	GE	23LLC1107	Photography
8	1	CC1	GE	23LLC1108	Yoga
9	1	CC1	GE	23LLC1109	Chess
10	1	CC1	GE	23LLC1110	Athletics
11	1	CC1	GE	23LLC1111	Basket Ball
12	1	CC1	GE	23LLC1112	Judo
13	1	CC1	GE	23LLC1113	Elements of Japanese Language
14	1	CC1	GE	23LLC1114	Elements of German Language
15	1	CC1	GE	23LLC1115	Elements of French Language
16	1	CC1	GE	23LLC1116	Elements of Spanish Language
17	1	CC1	GE	23LLC1117	Basics of Vedic Maths
18	1	CC1	GE	23LLC1118	Skilling in Microsoft Visio and Inkscape



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**B.TECH SCHEME OF EXAMINATION 2023**

(Scheme of Examination w.e.f. 2023-24 onward)  
 (Department of Electronics Engineering)  
**B. Tech in Electronics Engineering**

SoE No.  
23EE-101

S N	Sem	Type	BoS/ Deptt	Sub. Code	Subject	T/P	Contact Hours				Credits	% Weightage			ESE Duration
							L	T	P	Hrs		MSEs*	TA**	ESE	

**Liberal Learning Course**

S N	Sem	Type	BoS/ Deptt	Sub. Code	Subject
1	2	CC2	GE	23LLC1201	Music (Vocal)
2	2	CC2	GE	23LLC1202	Music (Instrumental)
3	2	CC2	GE	23LLC1203	Indian Classical Dance
4	2	CC2	GE	23LLC1204	Other forms of Dances
5	2	CC2	GE	23LLC1205	Painting
6	2	CC2	GE	23LLC1206	Theatre and acting
7	2	CC2	GE	23LLC1207	Photography
8	2	CC2	GE	23LLC1208	Yoga
9	2	CC2	GE	23LLC1209	Chess
10	2	CC2	GE	23LLC1210	Athletics
11	2	CC2	GE	23LLC1211	Basket Ball
12	2	CC2	GE	23LLC1212	Judo
13	2	CC2	GE	23LLC1213	Elements of Japanese Language
14	2	CC2	GE	23LLC1214	Elements of German Language
15	2	CC2	GE	23LLC1215	Elements of French Language
16	2	CC2	GE	23LLC1216	Elements of Spanish Language
17	2	CC2	GE	23LLC1217	Basics of Vedic Maths
18	2	CC2	GE	23LLC1218	Skilling in Microsoft Visio and Inkscape

**MANDATORY LEARNING COURSES**

S	N	HS	Sub. Code	Subject	A	L	T	P	Hrs	Credits
1	2	HS	GE2131	Universal Human Values (UHV)	A	2	0	0	2	0

**MSEs\* = Two MSEs of 15 Marks each will conducted and marks of these 2 MSEs will be considered for Continuous Assessment**

**TA\*\* = for Theory : TA1-5 marks on Proctored Online Exam, TA2-12 marks on activities decided by course teacher, TA3 - 3 marks on class attendance**

**TA\*\* = for Practical : MSPA will be 15 marks each**

		July, 2023	1.00	Applicable for AY 2023-24 Onwards
Chairperson	Dean (Acad. Matters)	Date of Release	Version	



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SoE No.  
23EE-101

SN	Sem	Type	BoS/ Deptt	Sub. Code	Subject	T/P	Contact Hours				Credits	% Weightage			ESE Duration Hours
							L	T	P	Hrs		MSEs*	TA**	ESE	
<b>THIRD SEMESTER</b>															
1	3	HSSM-1	GE	23GE1301	Fundamentals of Management & Economics	T	2	0	0	2	2	30	20	50	3
2	3	PC	EE	23EE1301	Electronic Devices and Circuits	T	3	0	0	3	3	30	20	50	3
3	3	PC	EE	23EE1302	Lab : Electronic Devices and Circuits	P	0	0	2	2	1		60	40	
4	3	PC	EE	23EE1303	Network Analysis	T	3	0	0	3	3	30	20	50	3
5	3	PC	EE	23EE1304	Lab : Network Analysis	P	0	0	2	2	1		60	40	
6	3	PC	EE	23EE1305	Signal and Systems	T	3	0	0	3	3	30	20	50	3
7	3	VEC-2	EE	23EE1306	Basics of Python Programming	T	2	0	0	2	2	30	20	50	3
8	3	CEP	EE	23EE1307	Lab : Sensor based mini project and report writing	P	0	0	2	4	2		60	40	
9	3	OE-1	OE		Open Elective-I	T	2	0	0	2	2	30	20	50	3
10	3	MDM	EE		MD Minor Course-I	T	2	0	0	2	2	30	20	50	3
<b>TOTAL</b>							<b>17</b>	<b>0</b>	<b>6</b>	<b>25</b>	<b>21</b>				

List of Mandatory Learning Course (MLC)															
1	3	HS	T&P	MLC2123	YCAPP3 : YCCE Communication Aptitude Preparation	A	3	0	0	3	0				

Open Elective - I															
SN	Sem	Type	BoS/ Deptt	Sub. Code	Subject										
1	3	OE1	GE	23OE1301	OE-I : Combinatorics										
2	3	OE1	GE	23OE1302	OE-I : Fuzzy Set Theory, Arithmetic And Logic										
3	3	OE1	GE	23OE1303	OE-I : Green Chem. & Sustainability										
4	3	OE1	GE	23OE1304	OE-I : Hydrogen Fuel										
5	3	OE1	GE	23OE1305	OE-I : Electronic Materials And Applications										
6	3	OE1	GE	23OE1306	OE-I : Laser Technology And Applications										
7	3	OE1	MGT	23OE1307	OE-I : Finance And Cost Management										
8	3	OE1	MGT	23OE1308	OE-I : Operation Research Techniques										
9	3	OE1	MGT	23OE1309	OE-I : Project Evaluation & Management										
10	3	OE1	MGT	23OE1310	OE-I : Total Quality Management										
11	3	OE1	MGT	23OE1311	OE-I : Value Engineering										
12	3	OE1	MGT	23OE1312	OE-I : Maintenance Management										
13	3	OE1	MGT	23OE1313	OE-I : Industrial Safety										
14	3	OE1	MGT	23OE1314	OE-I : Industry 4.0										
15	3	OE1	MGT	23OE1315	OE-I : Operation Management										
16	3	OE1	MGT	23OE1316	OE-I : Material Management										
17	3	OE1	MGT	23OE1317	OE-I : Hospitality Management										
18	3	OE1	MGT	23OE1318	OE-I : Human Resource Management & Organizational Behaviour										
19	3	OE1	MGT	23OE1319	OE-I : Agri-Business Management										
20	3	OE1	MGT	23OE1320	OE-I : Rural Marketing										
21	3	OE1	MGT	23OE1321	OE-I : Marketing Management										
22	3	OE1	MGT	23OE1322	OE-I : Health Care Management										

		July, 2023	1.00	
Chairperson	Dean (Acad. Matters)	Date of Release	Version	Applicable for AY 2023-24 Onwards



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**B.TECH SCHEME OF EXAMINATION 2023**  
 (Scheme of Examination w.e.f. 2023-24 onward)  
 (Department of Electronics Engineering)  
**B. Tech in Electronics Engineering**

SoE No.  
23EE-101

SN	Sem	Type	BoS/ Deptt	Sub. Code	Subject	T/P	Contact Hours				Credits	% Weightage			ESE Duration Hours
							L	T	P	Hrs		MSEs*	TA**	ESE	
<b>FOURTH SEMESTER</b>															
1	4	BS	GE	23GE1404	Probability Theory and Sampling Theory	T	3	0	0	3	3	30	20	50	3
2	4	HSSM-2	GE	23GE1401	Entrepreneurship Development	T	2	0	0	2	2	30	20	50	3
3	4	<b>AEC-2</b>	GE	23GE1405 23GE1406	Marathi Language / Hindi Language	T	2	0	0	2	2	30	20	50	3
4	4	VEC-1	CV	23CV1411	Environmental Sustainability, Pollution and Management	T	2	0	0	2	2	30	20	50	3
5	4	PC	EE	23EE1401	Electromagnetic Fields	T	3	0	0	3	3	30	20	50	3
6	4	PC	EE	23EE1402	<b>Lab</b> : Electronics Workshop	P	0	0	2		1		60	40	
7	4	PC	EE	23EE1403	Analog Circuits	T	3	0	0	3	3	30	20	50	3
8	4	PC	EE	23EE1404	<b>Lab</b> : Analog Circuits	P	0	0	2	2	1		60	40	
9	4	VSEC-2	EE	23EE1405	<b>Lab</b> : PCB design or CAD	P	0	0	2	4	2		60	40	
10	4	OE-2	OE		<b>Open Elective-II</b>	T	2	0	0	2	2	30	20	50	3
11	4	MDM	EE		<b>MD Minor Course-II</b>	T	2	0	0	2	2	30	20	50	3
<b>TOTAL</b>							<b>19</b>	<b>0</b>	<b>6</b>	<b>25</b>	<b>23</b>				

List of Mandatory Learning Course (MLC)															
1	4	HS	T&P	MLC2124	YC <b>AP4</b> : YCCE Communication Aptitude Preparation	A	3	0	0	3	0				

Open Elective - II					
SN	Sem	Type	BoS/ Deptt	Sub. Code	Subject
1	4	OE2	GE	23OE2401	OE-II : Combinatorics
2	4	OE2	GE	23OE2402	OE-II : Fuzzy Set Theory, Arithmetic And Logic
3	4	OE2	GE	23OE2403	OE-II : Green Chem. & Sustainability
4	4	OE2	GE	23OE2404	OE-II : Hydrogen Fuel
5	4	OE2	GE	23OE2405	OE-II : Electronic Materials And Applications
6	4	OE2	GE	23OE2406	OE-II : Laser Technology And Applications
7	4	OE2	MGT	23OE2407	OE-II : Finance And Cost Management
8	4	OE2	MGT	23OE2408	OE-II : Operation Research Techniques
9	4	OE2	MGT	23OE2409	OE-II : Project Evaluation & Management
10	4	OE2	MGT	23OE2410	OE-II : Total Quality Management
11	4	OE2	MGT	23OE2411	OE-II : Value Engineering
12	4	OE2	MGT	23OE2412	OE-II : Maintenance Management
13	4	OE2	MGT	23OE2413	OE-II : Industrial Safety
14	4	OE2	MGT	23OE2414	OE-II : Industry 4.0
15	4	OE2	MGT	23OE2415	OE-II : Operation Management
16	4	OE2	MGT	23OE2416	OE-II : Material Management
17	4	OE2	MGT	23OE2417	OE-II : Hospitality Management
18	4	OE2	MGT	23OE2418	OE-II : Human Resource Management & Organizational Behaviour
19	4	OE2	MGT	23OE2419	OE-II : Agri-Business Management
20	4	OE2	MGT	23OE2420	OE-II : Rural Marketing
21	4	OE2	MGT	23OE2421	OE-II : Marketing Management
22	4	OE2	MGT	23OE2422	OE-II : Health Care Management

		July, 2023	1.00	<b>Applicable for AY 2023-24 Onwards</b>
Chairperson	Dean (Acad. Matters)	Date of Release	Version	



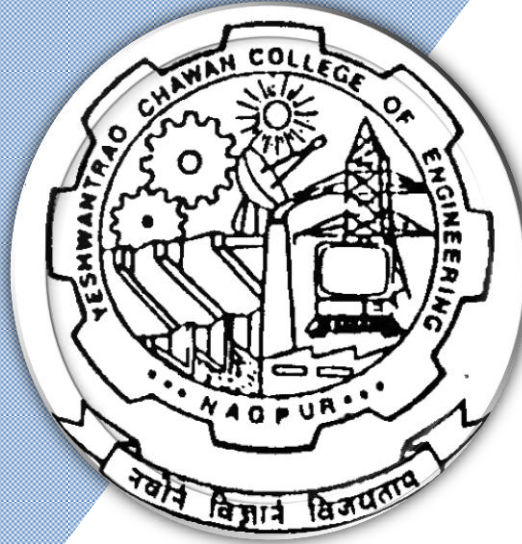
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## Bachelor of Technology

### SoE & Syllabus 2023

#### 1<sup>st</sup> Semester

(Department of Electrical Engineering)

### B. Tech in Electronics Engineering



Nagar Yuwak Shikshan Sanstha's  
**Yeshwantrao Chavan College of Engineering**  
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**B.TECH SCHEME OF EXAMINATION 2023**

(Scheme of Examination w.e.f. 2023-24 onward)

(Department of Electronics Engineering)

**B. Tech in Electronics Engineering**

SoE No.  
23EE-101

S N	Sem	Type	BoS/ Deptt	Sub. Code	Subject	T/P	Contact Hours				Credits	% Weightage			ESE Duration
							L	T	P	Hrs		MSES*	TA**	ESE	
<b>FIRST SEMESTER (GROUP-A)</b>															
1	1	BS	GE	23GE1101	Calculus and Vector	T	3	0	0	3	3	30	20	50	3
2	1	BS	GE	23GE1104	Applied Chemistry	T	3	0	0	3	3	30	20	50	3
3	1	BS	GE	23GE1105	<b>Lab:</b> Applied Chemistry	P	0	0	2	2	1		60	40	
4	1	HS/AEC1	GE	23GE1112	Professional Communication	T	2	0	0	2	2	30	20	50	2
5	1	HS/IKS	GE	23GE1115	Indian Knowledge System	T	2	0	0	2	2	30	20	50	2
6	1	BES	CV	23CV1101	Engineering Mechanics	T	3	0	0	3	3	30	20	50	3
7	1	BES	CV	23CV1102	<b>Lab:</b> Engineering Mechanics	P	0	0	2	2	1		60	40	
8	1	BES	IT	23IT1103	Programming for Problem Solving	T	2	0	0	2	2	30	20	50	2
9	1	BES	IT	23IT1104	<b>Lab:</b> Programming for Problem Solving	P	0	0	2	2	1		60	40	
10	1	VSEC	GE	23GE1117	Get Set Go	...	...	...	...	...	2		60	40	
11	1	CC1	GE		<b>Liberal Learning Course (LLC1)</b>	...	...	...	...	...	2		60	40	
<b>TOTAL FIRST SEM</b>							<b>15</b>	<b>0</b>	<b>6</b>	<b>21</b>	<b>22</b>				

<b>SECOND SEMESTER (GROUP-A)</b>															
1	2	BS	GE	23GE1202	Differential Equations, Matrices and Statistics	T	3	0	0	3	3	30	20	50	3
2	2	BS	GE	23GE1208	Engineering Physics	T	3	0	0	3	3	30	20	50	3
3	2	BS	GE	23GE1209	<b>Lab:</b> Engineering Physics	P	0	0	2	2	1		60	40	
4	2	BES	ME	23ME1201	Engineering Graphics	T	1	0	0	1	1	30	20	50	3
5	2	BES	ME	23ME1202	<b>Lab :</b> Engineering Graphics	P	0	0	4	4	2		60	40	
6	2	BES	EL	23EL1201	Basic Electrical and Electronics Engineering	T	3	0	0	3	3	30	20	50	3
7	2	BES	EL	23EL1205	<b>Lab :</b> Electrical and Electronics Workshop	P	0	0	2	2	1		60	40	
8	2	PC	EE	23EE1203	Digital Logic Design	T	3	0	0	3	3	30	20	50	3
9	2	PC	EE	23EE1204	<b>Lab :</b> Digital Logic Design	P	0	0	2	2	1		60	40	
10	2	VSEC	GE	23GE1218	Functional English	...	...	...	...	...	2		60	40	
11	2	CC2	GE		<b>Liberal Learning Course (LLC2)</b>	...	...	...	...	...	2		60	40	
<b>TOTAL SECOND SEM</b>							<b>13</b>	<b>0</b>	<b>10</b>	<b>23</b>	<b>22</b>				

**Liberal Learning Course**

S N	Sem	Type	BoS/ Deptt	Sub. Code	Subject
1	1	CC1	GE	23LLC1101	Music (Vocal)
2	1	CC1	GE	23LLC1102	Music (Instrumental)
3	1	CC1	GE	23LLC1103	Indian Classical Dance
4	1	CC1	GE	23LLC1104	Other forms of Dances
5	1	CC1	GE	23LLC1105	Painting
6	1	CC1	GE	23LLC1106	Theatre and acting
7	1	CC1	GE	23LLC1107	Photography
8	1	CC1	GE	23LLC1108	Yoga
9	1	CC1	GE	23LLC1109	Chess
10	1	CC1	GE	23LLC1110	Athletics
11	1	CC1	GE	23LLC1111	Basket Ball
12	1	CC1	GE	23LLC1112	Judo
13	1	CC1	GE	23LLC1113	Elements of Japanese Language
14	1	CC1	GE	23LLC1114	Elements of German Language
15	1	CC1	GE	23LLC1115	Elements of French Language
16	1	CC1	GE	23LLC1116	Elements of Spanish Language
17	1	CC1	GE	23LLC1117	Basics of Vedic Maths
18	1	CC1	GE	23LLC1118	Skilling in Microsoft Visio and Inkscape



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SoE No.  
23EE-101

S N	Sem	Type	BoS/ Deptt	Sub. Code	Subject	T/P	Contact Hours				Credits	% Weightage			ESE Duration
							L	T	P	Hrs		MSEs*	TA**	ESE	

**Liberal Learning Course**

S N	Sem	Type	BoS/ Deptt	Sub. Code	Subject
1	2	CC2	GE	23LLC1201	Music (Vocal)
2	2	CC2	GE	23LLC1202	Music (Instrumental)
3	2	CC2	GE	23LLC1203	Indian Classical Dance
4	2	CC2	GE	23LLC1204	Other forms of Dances
5	2	CC2	GE	23LLC1205	Painting
6	2	CC2	GE	23LLC1206	Theatre and acting
7	2	CC2	GE	23LLC1207	Photography
8	2	CC2	GE	23LLC1208	Yoga
9	2	CC2	GE	23LLC1209	Chess
10	2	CC2	GE	23LLC1210	Athletics
11	2	CC2	GE	23LLC1211	Basket Ball
12	2	CC2	GE	23LLC1212	Judo
13	2	CC2	GE	23LLC1213	Elements of Japanese Language
14	2	CC2	GE	23LLC1214	Elements of German Language
15	2	CC2	GE	23LLC1215	Elements of French Language
16	2	CC2	GE	23LLC1216	Elements of Spanish Language
17	2	CC2	GE	23LLC1217	Basics of Vedic Maths
18	2	CC2	GE	23LLC1218	Skilling in Microsoft Visio and Inkscape

**MANDATORY LEARNING COURSES**

S N	Sem	Type	BoS/ Deptt	Sub. Code	Subject	A	L	T	P	Hrs	Credits	ESE Duration
1	2	HS		GE2131	Universal Human Values (UHV)		2	0	0	2	0	

**MSEs\* = Two MSEs of 15 Marks each will conducted and marks of these 2 MSEs will be considered for Continuous Assessment**

**TA\*\* = for Theory : TA1-5 marks on Proctored Online Exam, TA2-12 marks on activities decided by course teacher, TA3 - 3 marks on class attendance**

**TA\*\* = for Practical : MSPA will be 15 marks each**

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(An Autonomous Institution affiliated to Rashtrasant Tukadoji Maharaj Nagpur University)

**B. Tech SoE and Syllabus 2023**  
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(Department of Mathematics & Humanities)

**SoE No.**  
**23FY-101**

## B.Tech First Year

### I SEMESTER

### 23GE1101: Calculus and Vector

#### Course Outcomes :

##### The students will be able to

1. Apply the knowledge of differentiation to solve the Engineering problems.
2. Determine the derivatives of functions of several variables and develop the relations among the derivatives of variables.
3. Apply the knowledge of Beta and Gamma functions to find area, volume and mass.
4. Discuss Calculus of Scalar and vector point function and use appropriate theorems to evaluate integrals of functions of single and multiple variables.

Unit I: Differential Calculus	(6 Hrs.)
Successive differentiation, $n^{\text{th}}$ derivative of rational function, Trigonometrical transformations, $n^{\text{th}}$ derivative of the product of two functions (Leibnitz's theorem), Taylor's theorem, Use of Maclaurin's theorem for one variable, standard expansions, Examples on Taylor's Theorem. <b>(Contemporary Issues related to Topic)</b>	
Unit II: Partial Differentiation	(7 Hrs.)
Functions of several variables, First and higher order derivatives, Homogeneous functions, Euler's theorem on homogeneous function, Chain rule and total differential coefficient of composite functions. Jacobians. <b>(Contemporary Issues related to Topic)</b>	
Unit III: Integral Calculus	(6 Hrs.)
Improper integrals: Gamma and Beta functions, applications of integral calculus in computing area, length, volumes, and surface of solids of revolutions. <b>(Contemporary Issues related to Topic)</b>	
Unit IV: Multiple integrals	(6 Hrs.)
Double integral, change of order of integral, change of variables, triple integrals and its applications. <b>(Contemporary Issues related to Topic)</b>	
Unit V: Vector Calculus	(7 Hrs.)
Vector fields, Vector differentiation, Gradient, Divergence and Curl, Directional derivatives with physical interpretation, Solenoidal and irrotational motions. <b>(Contemporary Issues related to Topic)</b>	
Unit VI: Vector Integration & Applications	(7 Hrs.)
Vector integration: Line, surface and volume integrals, Statement of Stoke's theorem, Gauss divergence theorem and Green's theorem (without proof), Simple applications of these theorems. <b>(Contemporary Issues related to Topic)</b>	
<b>Total Lecture</b>	<b>39 Hours</b>

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## B.Tech First Year

### Textbooks:

1. Erwin Kreyzig, Advance Engineering Mathematics, 10<sup>th</sup> Edition, John Wiley and Sons, INC.
2. H.K. Dass, Engineering Mathematics, 11<sup>th</sup> revised edition, S. Chand, Delhi.
3. H.K. Dass, Advanced Engineering Mathematics, 8<sup>th</sup> revised edition, S. Chand, Delhi.
4. Dr. B.S. Grewal, Higher Engineering Mathematics, 42<sup>th</sup> edition, Khanna Publishers.
5. P.N.Wartikar and J.N.Wartikar, Applied Mathematics, 4<sup>th</sup> Edition, Vidyarthi GrihaPrakashan.

### Reference Books:

1. G B Thomas and R L Finney, Calculus and Analytical Geometry, 9th edition, Addison-Wesley, 1999.
2. Michael Spivak and Tom Apostol, Calculus, Vol I & Vol II 2<sup>nd</sup> edition, Wiley.
3. N.P. Bali and Manish Goyal, A text book of Engineering Mathematics, 10<sup>th</sup> edition, Laxmi Prakashan.

### YCCE e- library book links [ACCESSIBLE FROM COLLEGE CAMPUS]

1. <http://103.152.199.179/YCCE/Suported%20file/Suprpted%20file/e-copies%20of%20books/Applied%20Sciences%20&%20Humanities/Mathematics%20and%20Humanities/>

### MOOCs Links and additional reading, learning, video material

1. <https://nptel.ac.in/courses/111/106/111106146/>
2. <https://nitkr.ac.in/docs/5-Multiple%20Integrals%20and%20their%20Applications.pdf>

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**B.Tech First Year**

SoE No.  
23FY-101

## I SEMESTER

### 23GE1104 : Applied Chemistry

#### Course Outcomes:

Upon successful completion of the course students will be able to

1. **Illustrate** qualitative and quantitative aspects of water for industrial and domestic applications. (L3)
2. **Apply** concepts of electrochemistry for energy storage devices and corrosion. (L3)
3. **Establish** significance of engineering materials in technological applications. (L3)
4. **Develop** insight into advanced materials. (L3)

#### Unit I: Water Chemistry

(7 Hrs.)

Introduction, Potable water quality parameters. Hardness, Types of hardness. Sterilization. Desalination of water by R.O. Softening of water by Zeolite process and Ion Exchange Process (principle, advantages, and limitations). Numerical based on Hardness and Zeolite process. Boiler trouble (Scale and sludge). Contemporary issues related to the topic

#### Unit II: Electrochemistry

(7 Hrs.)

**Electrochemistry:** Introduction, metallic and electrolytic conductance, resistance, specific resistance, conductance, specific conductance, equivalent and molar conductance. Variation of conductance with dilution. Electrode and electrode potential. Nernst Equation and applications. Faraday's laws and Numerical. Industrial applications: Electroplating, Electrolytic refining, Electroforming, Electrowinning.  
**Corrosion-** Definition, Causes, theories of corrosion- dry, wet and differential aeration. Contemporary issues related to the topic

#### Unit III: Energy storage device:

(6 Hrs.)

Introduction, Characteristics, and general applications.  
Lithium-ion battery, Glass battery, H<sub>2</sub>-O<sub>2</sub> Fuel cell. Differences between battery and a fuel cell.  
Supercapacitors: Definition, types, characteristics, and application.  
**H<sub>2</sub> as a green fuel:** Introduction, production, storage, and utilization.

#### Unit IV: Fuels

(7 Hrs.)

Introduction, Calorific value, HCV & LCV. Determination of calorific value of fuels by Bomb & Boy's calorimeter. Dulong's formula numericals.  
Significance of Proximate and Ultimate analysis.  
Knocking in Internal combustion petrol and diesel engines, Octane and Cetane number, Knocking and its relationship with structure of fuels. Catalytic cracking & advantages.

#### Unit V: Engineering Materials

(6 Hrs.)

##### Cement:

Introduction, Manufacturing of Portland cement. Role of microscopic constituents. Properties-setting and hardening, heat of hydration and soundness. Types of cement-Rapid hardening cement, Low heat cement, High alumina cement. Ready-mix concrete.

##### Lubricants:

Introduction, Classification, Mechanisms.

Properties & Significance of liquid lubricants-Viscosity and viscosity index, Flash and fire point, Cloud and pour point, Aniline point, acid value, saponification number. Numerical on V.I.

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## Unit VI: Advanced Materials

(6 Hrs.)

### Advanced Materials

**Nanomaterials:** Definition, Carbon Nanotubes and types. Applications of Nanomaterials in electronics, environment and medicine.

**Liquid Crystal Polymers:** Introduction, General properties and applications.

**Polymers in electronic industries:** Introduction, Piezo, pyroelectric, Ferroelectric polymers.

**Smart materials:** Introduction, Properties and applications of Chromoactive, Photoactive and Magneto rheological materials.

**Spectroscopic techniques:** Introduction and applications

**Total Lecture 39 Hours**

### Textbooks:

1. S S. Dara , A Text book of Engineering Chemistry , S.Chand & Co New Delhi. Eleventh Edition.
2. P.C. Jain and Monica Jain , Engineering Chemistry , Dhanpat Rai & sons New Delhi , Sixteenth Edition.
3. P. W. Atkins, Physical Chemistry ,Oxford Publications, Eighth edition .

### Reference Books:

1. Eskel Nordell , Water treatment for industrial and other use ,Rein hold Publishing Corporation, New York.
2. Lloyd A.Munro, Chemistry in Engineering, Prentice-hall, Inc Nj, 2nd Edition.
3. Robert B Leighou Mc Graw, Chemistry of Engineering Materials, Hill Book Company, Inc New York.
4. B.K.Sharma Krishna, Engineering Chemistry, Prakashan media private LTD. 1st Edition, 2014.
5. R.V.Gadag, A.Nityananda Shetty, Engineering Chemistry ,I K International Publishing House New Delhi , First Edition.
6. Fred. Billmeyer Jr., A textbook of polymer science, Wiley India ,Third Edition.

### YCCE e- library book links [ACCESSIBLE FROM COLLEGE CAMPUS]

1. <http://103.152.199.179/YCCE/Supported%20file/Supprted%20file/SERIES%20WISE%20BOOKS/CHEMISTRY/>

### MOOCs Links and additional reading, learning, video material

1. <https://www.youtube.com/watch?v=XTt3gXB0a84>
2. <https://www.youtube.com/watch?v=i1hYXx79QiE>
3. <https://www.youtube.com/watch?v=JfJ7MIP9Dco>
4. <https://www.youtube.com/watch?v=L2VSOccUrSk>
5. <https://www.youtube.com/watch?v=p5pk4Um6lsk>
6. <https://youtu.be/-R7s17hD104>
7. <https://youtu.be/Bmj85Ihf7w>

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**SoE No.**  
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## B.Tech First Year

### I SEMESTER

### 23GE1105 : Lab. Applied Chemistry

#### Course Outcomes

Upon successful completion of the course the students will be able to

1. **Illustrate** qualitative and quantitative aspects of water for industrial and domestic applications. (L3)
2. **Apply** concepts of electrochemistry for energy storage devices and corrosion. (L3)
3. **Establish** significance of engineering materials in technological applications. (L3)
4. **Develop** insight into advanced materials. (L3)

**Total 10 experiments are to be performed**

**(4 each from Phase I and Phase II and two demonstration experiments)**

SN	Experiments based on
<b>List of Experiments-Phase I</b>	
1	Determination of total hardness of water sample.
2	Determination of alkalinity present in the water sample.
3	Estimation of Fe <sup>2+</sup> ions by redox titration
4	Determination of copper by iodometric titration
5	Estimation of Nickel.
6	To determine the strength of a given potassium dichromate solution with N/20 sodium thiosulphate solution
7	Determination of COD of water sample.
8	Synthesis of urea formaldehyde and phenol formaldehyde resin..
9	Determination of rate of the reaction of hydrolysis of ethyl acetate at room temperature and analysis of experimental data using Computational Software.
<b>List of Experiments-Phase II</b>	
1	Determination of viscosity of lubricating oil by Redwood Viscometer I or II
2	Determination of Cation exchange capacity of an ion exchange resin
3	Determination of molecular weight of a polymer.
4	Oil Testing for Flash Point / Cloud Point/Pour Point/Aniline Point
5	Proximate analysis of coal
6	Determination of surface tension of liquids using stalagmometer.
7	Determination of electrochemical equivalence of copper using Faradays Law

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8	To determine the heat of solution of potassium nitrate calorimetrically.
9	Determination of strength of the given acid conductometrically.
10.	To verify Beer-Lambert law for $\text{KMnO}_4$ calorimetrically and determine the concentration of the given solution of $\text{KMnO}_4$ .
<b>List of Demonstration Experiments</b>	
1	Determination of pH of water sample by pH meter
2	Synthesis of polyaniline

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## B.Tech First Year

### I SEMESTER

### 23GE1112 : Professional Communication

#### Course Outcomes :

**Upon successful completion of the course the students will be able to:**

1. Apply different modes for effective communication
2. Produce competently the Phonology of English language
3. Apply nuances of LSRW skills
4. Practice Communication through different channels

#### Unit I: Basics of Communication

(6 Hrs.)

Process of Communication, Levels of Communication, Flow of Communication, Networks of Communication, Classification of Barriers (Intrapersonal, Interpersonal, Organizational).

#### Unit II: English Phonetics

(7 Hrs.)

Speech Mechanism, Organs of speech, Consonant and Vowels sounds symbols, word stress rules

#### Unit III: Presentation & Interview Skills

(6 Hrs.)

Presentation-Nuances of presentation- Kinesics, Proxemics, Chronemics, Vocalics, Modes of Presentation,

Interview-Purpose, expectations of employer and preparation for Interview, Types, Types of Questions & Answering Techniques, Telephonic Interviews – preparation and guidelines

#### Unit IV: Technical Reports, Memo & E-Mail Etiquettes

(7 Hrs.)

Report -Types, Characteristics, prewriting aspects of report and preparing writing of reports

Memo- Objectives, Types, Structure and Layout

Email-Etiquette, acronyms.

**Total Lecture 26 Hours**

#### Textbooks:

1. Meenakshi Raman & Sangeeta Sharma, Technical Communication, Raman & Sharma, Oxford University Press Orford University Press
2. T. Balasubramaniam, Textbook of English Phonetics for Indian Students, Macmillan India Ltd
- 3.

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## B.Tech First Year

### Reference Books:

1.	Dale Carnegie ,How to Develop Self – Confidence & Influence People by Public Speaking
2.	Asha Kaul, Communication Skills
3.	Allen Peas ,Body Language
4.	Gerson's Gerson, Technical Communication

### MOOCs Links and additional reading, learning, video material

1.	<a href="https://dl.uswr.ac.ir/bitstream/Hannan/141245/1/9781138219120.pdf">https://dl.uswr.ac.ir/bitstream/Hannan/141245/1/9781138219120.pdf</a>
2.	<a href="https://www.pdfdrive.com/word-power-made-easy-the-complete-handbook-for-building-a-superiorvocabulary-e157841139.html">https://www.pdfdrive.com/word-power-made-easy-the-complete-handbook-for-building-a-superiorvocabulary-e157841139.html</a>
3.	<a href="https://www.pdfdrive.com/improve-your-communication-skills-present-with-confidence-write-with-stylelearn-skills-of-persuasion-e156963640.html">https://www.pdfdrive.com/improve-your-communication-skills-present-with-confidence-write-with-stylelearn-skills-of-persuasion-e156963640.html</a>
4.	<a href="https://www.pdfdrive.com/21-days-of-effective-communication-everyday-habits-and-exercises-to-improveyour-communication-skills-and-social-intelligence-e158273760.html">https://www.pdfdrive.com/21-days-of-effective-communication-everyday-habits-and-exercises-to-improveyour-communication-skills-and-social-intelligence-e158273760.html</a>

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## B.Tech First Year

### I SEMESTER

### 23GE1115 : Indian Knowledge System

#### Course Outcomes:

Upon successful completion of the course the students will be able to

1. Apply primary requirements pertaining towards awareness of Indian Knowledge System.
2. Analyze various Indian society, culture and literature to enhance their traditions.
3. Evaluate structure of Indian art.
4. Understand Indian heritage and architectural skills.

Unit:1	Introduction to Indian Civilization	6 Hours
Development of Human Civilization with specific reference: Stone age: Tool Technology and Cultural Development, Indus Valley civilization, Vedic Civilization. (Contemporary Issues related to Topic)		
Unit:2	Indian Society, Culture and Literature	6 Hours
Society and its types, Culture and its Characteristics, Foundational Literature. (Contemporary Issues related to Topic)		
Unit:3	Tradition of Indian Art and Painting	7 Hours
Indian Traditional Painting, Art style folk, mural with Gandhara and Mathura school of art. (Contemporary Issues related to Topic)		
Unit:4	Indic Traditions of Architecture, Design and Planning	7 Hours
Monumental studies of architectural skill: Rock Cut Caves, Stupa and Temple Architecture, The Ancient cities of Indus Saraswati region. Town Planning and drainage system. (Contemporary Issues related to Topic)		
<b>Total Lecture Hours</b>		<b>26 Hours</b>

#### Textbooks

1	Reader's Digest: Vanished Civilizations, THE READER'S DIGEST ASSOCIATION LIMITED, LONDON,NEWYORK.
2	Qaiser Zoha Alam ; Language and Literature Divers Indian Experience
3	Bal Ram Singh (Author), Nath Girish (Author) ; Science and Technology in Ancient Indian Texts
4	NCERT Books

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## B.Tech First Year

Reference Books	
1	B S Harishankar; Art and Archaeology of India: Stone Age to the Present, 2003.
2	Gupte R S and Mahajan B D; Ajanta, Ellora and Aurangabad, 1962.
3	Dharampal, Some Aspects of Earlier Indian Society and Polity and Their Relevance Today, New Quest Publications, Pune, 1987.
4	Michel Lorblanchet, "Rock Art In The Old World" IGNC series, in India
5	Percy Brown, "Indian Architecture" D. B. Taraporevala sons & co. Pvt. Ltd. Bombay(1959).

PPT's/Research papers	
1	<a href="https://www.researchgate.net/publication/360889208_STONE_AGE_TOOL_TECHNOLOGY_and_CULTURAL_DEVELOPMENT">https://www.researchgate.net/publication/360889208_STONE_AGE_TOOL_TECHNOLOGY_and_CULTURAL_DEVELOPMENT</a>
2	<a href="https://scholar.google.com/citations?view_op=view_citation&amp;hl=en&amp;user=iT1KSV8AAAAJ&amp;sortBy=pubdate&amp;citation_for_view=iT1KSV8AAAAJ:UcHWp8X0CEIC">https://scholar.google.com/citations?view_op=view_citation&amp;hl=en&amp;user=iT1KSV8AAAAJ&amp;sortBy=pubdate&amp;citation_for_view=iT1KSV8AAAAJ:UcHWp8X0CEIC</a>

MOOCs Links and additional reading, learning, video material	
1	<a href="https://prepp.in/news/e-492-indian-architecture-art-and-culture-notes">https://prepp.in/news/e-492-indian-architecture-art-and-culture-notes</a>
2	<a href="https://www.artzolo.com/blog/most-famous-indian-painting-styles">https://www.artzolo.com/blog/most-famous-indian-painting-styles</a>
3	<a href="https://www.researchgate.net/publication/360889332_Stone_Age_Tool_Technology_Cultural_Development">https://www.researchgate.net/publication/360889332_Stone_Age_Tool_Technology_Cultural_Development</a>
4	<a href="https://testbook.com/ias-preparation/ancient-history-16-mahajanapadas">https://testbook.com/ias-preparation/ancient-history-16-mahajanapadas</a>

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SoE No.  
23CV-101

## B.Tech in Civil Engineering

### I SEMESTER

### 23CV1101 : Engineering Mechanics

#### Course Outcomes :

Upon successful completion of the course the students will be able to

1. Describe the fundamental concepts of statics and dynamics.
2. Apply the basic concepts of applied mechanics for solution of problems on planar force system.
3. Determine the properties of surface like centroid, moment of inertia, etc. for planar surfaces and mass moment of inertia for rigid body.
4. Analyze pin jointed truss frame structure and beam structure analytically and graphically.
5. Evaluate the dynamic variables of kinetics of particles and simple lifting machine

#### Unit I: Resultant of planar force System

(7 Hrs.)

Fundamental concepts, system of forces, laws of mechanics, principle of transmissibility of force, Moment of force, Principle of moment, Couple, Resultant of a planar force system, Equivalent force couple system. **(Contemporary Issues related to Topic)**

#### Unit II: Equilibrium of planar force System

(6 Hrs.)

Free body diagrams, Conditions of equilibrium, types of supports, types of beams, types of loads on beam, Equilibrium of a planar force system **(Contemporary Issues related to Topic)**

#### Unit III: Friction and Trusses

(7 Hrs.)

Friction: Coulomb's laws of dry friction, plane friction, belt friction.  
Trusses: Types of trusses, assumptions in analysis of truss, Analysis of truss by method of joint. **(Contemporary Issues related to Topic)**

#### Unit IV: Properties of Surfaces

(6 Hrs.)

Centroid: Introduction, First Moment of Area, Centroid of composite areas.  
Moment of Inertia: Introduction, Second Moment of Area, Polar moment of Inertia, Radius of Gyration, Transfer formula for moment of Inertia, Product of Inertia, Moment of Inertia, and product of inertia for composite areas, Principal Moments of Inertia. **(Contemporary Issues related to Topic)**

#### Unit V: Virtual Work Method and Kinetics of Particle

(7 Hrs.)

Virtual Work Method: Introduction, Principle of virtual work, Application to beam and frame.  
Kinetics of Particle: Introduction, Newton's law of motion for a Particle, D' Alembert's principle, Translation of particle and connected system. **(Contemporary Issues related to Topic)**

#### Unit VI: Work Energy and Impulse Momentum Method

(6 Hrs.)

Work Energy Method: Introduction, Work energy equation for translation, Work energy applied to particle motion and connected system.  
Impulse Momentum Method: Introduction, Linear Impulse momentum, Conservation of linear momentum, coefficient of restitution, elastic impact, Impulse momentum in plane motion. **(Contemporary Issues related to Topic)**

**Total Lecture | 39 Hours**

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(Department of Civil Engineering)

SoE No.  
23CV-101

## B.Tech in Civil Engineering

### Textbooks:

1. Nelson A., Engineering Mechanics (Statics and Dynamics), ed 2009, Tata Mc. Grew Hill Education Pvt. Ltd., New Delhi, 2009.
2. Dubey N.H., Engineering Mechanics (Statics and Dynamics) first edition 2013, Tata Mc. Graw Hill Education Pvt. Ltd., New Delhi, 2013.
3. Singer F.L, Engineering Mechanics (Statics and Dynamics), Harper and Rowe publication, New Delhi, 1994.

### Reference Books:

1. Timoshenko S, Young D.H and Rao J.V, Engineering Mechanics, Mc. Graw Hill Publication, New Delhi, 2007.
2. Bhattacharyya B., Engineering Mechanics, Oxford University Press, New Delhi, 2008.
3. Hibbeler R.C, Engineering Mechanics (Statics and Dynamics), Pearson Publication, Singapore, 2000.
4. Shames I.H. and Rao J.V., Engineering Mechanics (Statics and Dynamics), First Edition, Pearson Publication, New Delhi, 2003.
5. Beer F.P. and Johnston E.R; Vector Mechanics for Engineers, 9<sup>th</sup> edition Tata Mc. Graw Hill Publication, New Delhi. 2007.

### YCCE e- library book links [ACCESSIBLE FROM COLLEGE CAMPUS]

- 1 chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/http://103.152.199.179/YCCE/Supported%20file/Supported%20file/e-copies%20of%20books/Civil%20Engineering/78.%20Engineering-Mechanics-Statics-and-Dinamics-E-W-Nelson-C-L-Best-W-G-McLean-1st-Ed-1997-Schaum-Outline-McGraw-Hill%20(1).pdf
- 2 chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/http://103.152.199.179/YCCE/Supported%20file/Supported%20file/e-copies%20of%20books/Civil%20Engineering/79.%20Engineering%20Mechanics.%20Statics-%20MERIAM%20AND%20KRAIGE.pdf
- 3 chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/http://103.152.199.179/YCCE/Supported%20file/Supported%20file/e-copies%20of%20books/Civil%20Engineering/81.%20Engineering%20Mechanics%201.pdf

### MOOCs Links and additional reading, learning, video material

1. <https://www.youtube.com/watch?v=nGfVTNfNwnk>
2. <https://www.youtube.com/watch?v=6nguX-cEsvw>
3. <https://nptel.ac.in/courses/112103108>

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Nagar Yuwak Shikshan Sanstha's

# Yeshwantrao Chavan College of Engineering

(An Autonomous Institution affiliated to Rashtrasant Tukadoji Maharaj Nagpur University)

**B. Tech SoE and Syllabus 2023**  
(Scheme of Examination w.e.f. 2023-24 onward)  
(Department of Civil Engineering)

**SoE No.**  
**23CV-101**

## B.Tech in Civil Engineering

### I SEMESTER

### 23CV1102 : Lab. Engineering Mechanics

#### Course Outcomes

Upon successful completion of the course the students will be able to

1. Describe the fundamental concepts of statics and dynamics.
2. Apply the basic concepts of applied mechanics for solution of problems on planar force system.
3. Determine the properties of surface like centroid, moment of inertia, etc. for planar surfaces and mass moment of inertia for rigid body.
4. Analyze pin jointed truss frame structure and beam structure analytically and graphically.
5. Evaluate the dynamic variables of kinetics of particles and simple lifting machine

Minimum Eight Practical's to be performed from the list as below

SN	Experiments based on
1	To find determine the support reactions of a Simply Supported Beam experimentally and analytically.
2	To determine the forces in the members of a Jib Crane Apparatus experimentally and graphically.
3	To determine the coefficient of friction between two surfaces of different material on Plane Friction Apparatus.
4	To determine the coefficient of friction of Coil Friction Apparatus.
5	To determine the forces in members of a Shear Leg Apparatus experimentally and manually.
6	To determine the mass moment of inertia of a fly wheel using Fly Wheel Apparatus
7	To determine efficiency and law of machine of Differential Axel & Wheel machine.
8	To determine efficiency and Law of machine of Single Purchase Crab machine.
9	To determine efficiency and Law of machine of Double Purchase Crab machine.
10	To verify law of polygonal of forces using Law of Polygon Apparatus.
11	To find support reactions of a simply supported beam using graphical method and hand calculation.
12.	To find the forces in the member of truss using graphical method and hand calculation.
13.	To find (1) Principle moment of inertia and (2) Moment of inertia and product of inertia about any inclined axis for a composite figure using Mohr's circle and hand calculation,

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**B. Tech SoE and Syllabus 2023**  
(Scheme of Examination w.e.f. 2023-24 onward)  
(Department of Information Technology)

**SoE No.  
23IT-101**

## B.Tech in Information Technology

### I SEMESTER

### 23IT1103 : Programming for Problem Solving

#### Course Outcomes :

- 1) Understand the basics of computer system operations and algorithms, flowcharts.
- 2) Apply the basics of C programming for problem solving.
- 3) Apply and analyze the different dimensional arrays for problem solving.
- 4) Understand the basics of string, structure, and union and apply them to problem solving.

#### Unit I: Computer System Basics:

**(3 Hrs.)**

Basics of programming and problem solving. Introduction to algorithms and flowcharts, Types of programming errors, basic input/output statements and functions (scanf, printf, getch, putch, gets, puts ), Introduction to library functions,

#### Unit II: Basic of C Programming

**(6 Hrs.)**

**Basic building blocks of C:** Character set, variables, identifiers & keywords, Data types, Operators: arithmetic, logical and relational operators, , bitwise operators, precedence of operators, Expressions, sizeof() operator, constants, typedef statement, writing straight line programs. Decision control statements: if, if - else and nested if-else statements, else-if ladder statement, switch-case control statement.

#### Unit III: Loop Structures:

**(5 Hrs.)**

While, do while and for loops, break and continue statement, "goto" statement, real life programming examples based on these loop structures, real life programming examples.

#### Unit IV: Modular Programming:

**(6 Hrs.)**

Concept of functions, user defined functions, function prototypes, formal parameters, actual parameters, return types, call by value , call by reference, C programs using functions, Recursive functions, comparing recursion against iteration, C programs using recursive functions, real life programming examples

#### Unit V: Arrays:

**(6 Hrs.)**

One dimensional array, array manipulation, insertion, deletion of an element, searching techniques- Linear and binary search, sorting technique – Bubble sort. Two-dimensional arrays: matrix representation, programs for basic matrix operations such as addition, multiplication and transpose, Array as function arguments. real life programming examples

#### Unit VI: String, Structure and Union:

**(4 Hrs.)**

Strings: string representation and string handling functions, Introduction to pointer, structure and union. real life programming examples

**Total Lecture 30 Hours**

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(Department of Information Technology)

## B.Tech in Information Technology

**SoE No.  
23IT-101**

### Text books

1	The C Programming Language, J.B.W.Kernighan & D.M.Ritchie, Prentice Hall
2	Mastering C, K.R.Venugopal & S.R. Prasad, TMH, 2007.
3	Programming in ANSI C, E. Balaguruswamy, Mc Graw Hill Education

### Reference Books

1	Problem Solving And Program Design In C, Jeri. R. Hanly, Elliot B. Koffman, Pearson Education.
2	Programming with C, Byron Gottfried, Schaum;s Outline Series
3	How to solve it by computers, R. G. Dromey, Prentice Hall India

### YCCE e- library book links [ACCESSIBLE FROM COLLEGE CAMPUS]

1	<a href="http://103.152.199.179/YCCE/Suported%20file/Supprted%20file/e-copies%20of%20books">http://103.152.199.179/YCCE/Suported%20file/Supprted%20file/e-copies%20of%20books</a>
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### MOOCs Links and additional reading, learning, video material

1	<a href="https://nptel.ac.in/courses/106104128">https://nptel.ac.in/courses/106104128</a>
2	<a href="https://nptel.ac.in/courses/106104128">https://nptel.ac.in/courses/106104128</a>
3	<a href="https://www.youtube.com/watch?v=rQoqCP7LX60&amp;list=PLxgZQoSe9cg1drBnejUaDD9GEJBGQ5hMt">https://www.youtube.com/watch?v=rQoqCP7LX60&amp;list=PLxgZQoSe9cg1drBnejUaDD9GEJBGQ5hMt</a>

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Nagar Yuwak Shikshan Sanstha's

# Yeshwantrao Chavan College of Engineering

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**B. Tech SoE and Syllabus 2023**  
(Scheme of Examination w.e.f. 2023-24 onward)  
(Department of Information Technology)

**SoE No.  
23IT-101**

## B.Tech in Information Technology

### I SEMESTER

### 23IT1104 : Lab. Programming for Problem Solving

#### Course Outcomes: Students will be able to

- 1) Understand the basics of computer system operations and algorithms, flowcharts.
- 2) Apply the basics of C programming for problem solving.
- 3) Apply and analyze the different dimensional arrays for problem solving.
- 4) Understand the basics of string, structure, and union and apply them to problem solving.

<b>Unit I: Computer System Basics:</b>	<b>(3 Hrs.)</b>
Basics of programming and problem solving. Introduction to algorithms and flowcharts, Types of programming errors, basic input/output statements and functions (scanf, printf, getch, putch, gets, puts ), Introduction to library functions,	
<b>Unit II: Basic of C Programming</b>	<b>(6 Hrs.)</b>
<b>Basic building blocks of C:</b> Character set, variables, identifiers & keywords, Data types, Operators: arithmetic, logical and relational operators, , bitwise operators, precedence of operators, Expressions, sizeof() operator, constants, typedef statement, writing straight line programs. Decision control statements: if, if - else and nested if-else statements, else-if ladder statement, switch-case control statement.	
<b>Unit III: Loop Structures:</b>	<b>(5 Hrs.)</b>
While, do while and for loops, break and continue statement, “goto” statement, real life programming examples based on these loop structures, real life programming examples.	
<b>Unit IV: Modular Programming:</b>	<b>(6 Hrs.)</b>
Concept of functions, user defined functions, function prototypes, formal parameters, actual parameters, return types, call by value , call by reference, C programs using functions, Recursive functions, comparing recursion against iteration, C programs using recursive functions, real life programming examples	
<b>Unit V: Arrays:</b>	<b>(6 Hrs.)</b>
One dimensional array, array manipulation, insertion, deletion of an element, searching techniques- Linear and binary search, sorting technique – Bubble sort. Two-dimensional arrays: matrix representation, programs for basic matrix operations such as addition, multiplication and transpose, Array as function arguments. real life programming examples	
<b>Unit VI: String, Structure and Union:</b>	<b>(4 Hrs.)</b>
Strings: string representation and string handling functions, Introduction to pointer, structure and union. real life programming examples	
<b>Total Lecture</b>	<b>30 Hours</b>

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(Department of Information Technology)

## B.Tech in Information Technology

SoE No.  
23IT-101

### Text books

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2	Mastering C, K.R.Venugopal & S.R. Prasad, TMH, 2007.
3	Programming in ANSI C, E. Balaguruswamy, Mc Graw Hill Education

### Reference Books

1	Problem Solving And Program Design In C, Jeri. R. Hanly, Elliot B. Koffman, Pearson Education.
2	Programming with C, Byron Gottfried, Schaum;s Outline Series
3	How to solve it by computers, R. G. Dromey, Prentice Hall India

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### MOOCs Links and additional reading, learning, video material

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2	<a href="https://nptel.ac.in/courses/106104128">https://nptel.ac.in/courses/106104128</a>
3	<a href="https://www.youtube.com/watch?v=rQoqCP7LX60&amp;list=PLxgZQoSe9cg1drBnejUaDD9GEJBGQ5hMt">https://www.youtube.com/watch?v=rQoqCP7LX60&amp;list=PLxgZQoSe9cg1drBnejUaDD9GEJBGQ5hMt</a>

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(Department of Information Technology)

SoE No.  
23IT-101

## B.Tech in Information Technology

### List of Practical

SN	Unit	Name Of The Practical	Remark	CO'S Mapped	PO'S Mapped
1(A)		Introduction to Linux Operating system & it's different commands.	Manual	CO 1	PO1
1(B)		Introduction to Vi editor, Compilation and Execution of a program in Linux.	Manual	CO 1	PO1
2	II	Practical based on Arithmetic and Conditional operators.	Operators	CO 1	PO1
3	II	Practical based on Conditional and Unconditional Statements.	Conditional Statements	CO 1	PO1
4	III	Practical based on Entry Controlled Looping Statements.	For / While Loop	CO 2	PO 1, PO 2
5	III	Practical based on Exit Controlled Looping Statement	Do while Loop	CO 2	PO 1, PO 2
6	IV	Practical based on Functions and Recursion.	Functions / Recursion	CO 3	PO2, PO3
7	V	Practical based on 1-D Array.	1D Array	CO 3	PO2, PO3
8	V	Practical based on 2-D Array.	2D Array	CO 3	PO2, PO3
9	VI	Practical based on Strings.	Strings & Pointers	CO 3	PO2, PO3
10	VI	Practical based on Structures.	Structures	CO 4	PO1, PO2, PO3

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**B. Tech SoE and Syllabus 2023**  
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(Department of Civil Engineering)

**SoE No.**  
**23FY-101**

## B.Tech in FYC

### I SEMESTER

### 23GE1117-Get Set Go

#### Course Outcomes:

Upon successful completion of the course the students will be able to

1. Students will understand the importance of building trust in communication and learn how to use the 3Vs of communication (Visual, Vocal, Verbal) to energize their interactions.
2. The course will focus on leadership principles and styles, emphasizing how effective communication can motivate others and gain willing cooperation. Students will participate in activities like skits and team presentations to demonstrate their leadership skills.
3. The course will equip students with team management and organization skills, enabling them to lead and participate in team-building activities effectively.

Unit:1	Build a foundation for success	6 Hours
Explain the Importance of Process of improvement, stating your Name with Impact, Recall and Use Names, Name Remembering Formula o LIRA o PACE – Individual Activity o BRAMMS o Chaining Method, Introduce “My Vision” Communication Fundamentals for Building Trust- Be a good listener, use conversation links, show genuine interest Hi-Five of Success ♣ Build on Memory Skills and Enhance Relationships ♣ PEG words ♣ Explain Permanent PEG Memory System, energize our Communications – Explain 3Vs of communication – Visual-Vocal-Verbal Activity – Practice Conversations, Pause-Part-Punch, Group Activity		
Unit:2	Increase Self Confidence	6 Hours
Use our experiences to communicate more confidently • Communicate with clarity and conciseness • Discover how past experiences influence behaviour ,Motivate Others and Enhance Relationships- • Learning Objectives • Explain Gain Willing Cooperation Principles • Group Presentation • Explain Demonstration of Leadership Principles • Explain “Evidence” critical in establishing credibility Individual Activity – Sharing of defining moment, Skit to demonstrate Leadership Principles, Stranded on Island .		
Unit:3	Fundamentals of Communication	6 Hours
Fundamentals of Communication (Earn the right – Excite -Eagerness) ♣ Elevator Pitch ♣ Develop more Flexibility, ♣ Recap and Summarize Activities - – Individual Presentation, Flexibility Drills, Individual Presentations – My Vision Assignment		
Unit:4	Team Management and Organization skills	5 Hours
Team Management and Organization skills, Leadership Styles, Effective Communication Activity- Team Presentation, Team building activities.		
EVALUATION	1 Hour	EVALUATION
WRITTEN TEST		
Total Lecture Hours		24 Hours

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(Department of Civil Engineering)

**SoE No.**  
**23FY-101**

## B.Tech in FYC

### Reference Books

- 1 Soft Skills - Enhancing Employability: Connecting Campus with Corporate. - M S Rao
- 2 Soft Skills Training: A Workbook to Develop Skills for Employment - Frederick H Wentz
- 3 Soft Skills: Know Yourself and Know the World - Alex

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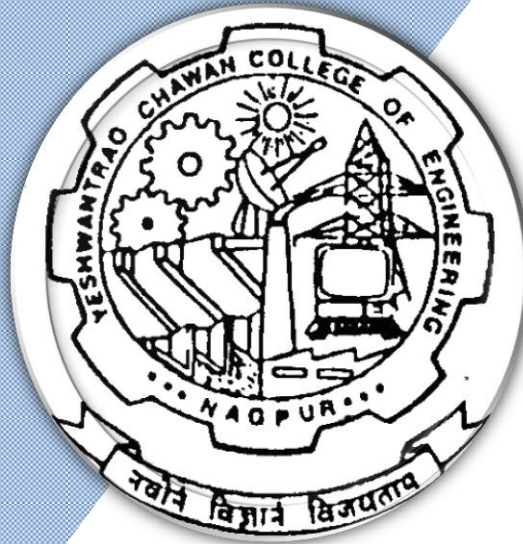
Nagar Yuwak Shikshan Sanstha's

# Yeshwantrao Chavan College of Engineering

(An Autonomous Institution affiliated to Rashtrasant Tukadoji Maharaj Nagpur University)

(Accredited 'A++' Grade by NAAC with a score of 3.6)

Hingna Road, Wanadongri, Nagpur - 441 110



## Bachelor of Technology

### SoE & Syllabus 2023

#### 2<sup>nd</sup> Semester

(Department of Electronics Engineering)

### B. Tech in Electronics Engineering



Nagar Yuwak Shikshan Sanstha's  
**Yeshwantrao Chavan College of Engineering**  
(An Autonomous Institution affiliated to Rashtrasant Tukadoji Maharaj Nagpur University)

**B.TECH SCHEME OF EXAMINATION 2023**

(Scheme of Examination w.e.f. 2023-24 onward)

(Department of Electronics Engineering)

**B. Tech in Electronics Engineering**

SoE No.  
23EE-101

S N	Sem	Type	BoS/ Deptt	Sub. Code	Subject	T/P	Contact Hours				Credits	% Weightage			ESE Duration
							L	T	P	Hrs		MSES*	TA**	ESE	
<b>FIRST SEMESTER (GROUP-A)</b>															
1	1	BS	GE	23GE1101	Calculus and Vector	T	3	0	0	3	3	30	20	50	3
2	1	BS	GE	23GE1104	Applied Chemistry	T	3	0	0	3	3	30	20	50	3
3	1	BS	GE	23GE1105	<b>Lab:</b> Applied Chemistry	P	0	0	2	2	1		60	40	
4	1	HS/AEC1	GE	23GE1112	Professional Communication	T	2	0	0	2	2	30	20	50	2
5	1	HS/IKS	GE	23GE1115	Indian Knowledge System	T	2	0	0	2	2	30	20	50	2
6	1	BES	CV	23CV1101	Engineering Mechanics	T	3	0	0	3	3	30	20	50	3
7	1	BES	CV	23CV1102	<b>Lab:</b> Engineering Mechanics	P	0	0	2	2	1		60	40	
8	1	BES	IT	23IT1103	Programming for Problem Solving	T	2	0	0	2	2	30	20	50	2
9	1	BES	IT	23IT1104	<b>Lab:</b> Programming for Problem Solving	P	0	0	2	2	1		60	40	
10	1	VSEC	GE	23GE1117	Get Set Go	...	...	...	...	...	2		60	40	
11	1	CC1	GE		<b>Liberal Learning Course (LLC1)</b>	...	...	...	...	...	2		60	40	
<b>TOTAL FIRST SEM</b>							<b>15</b>	<b>0</b>	<b>6</b>	<b>21</b>	<b>22</b>				

<b>SECOND SEMESTER (GROUP-A)</b>															
1	2	BS	GE	23GE1202	Differential Equations, Matrices and Statistics	T	3	0	0	3	3	30	20	50	3
2	2	BS	GE	23GE1208	Engineering Physics	T	3	0	0	3	3	30	20	50	3
3	2	BS	GE	23GE1209	<b>Lab:</b> Engineering Physics	P	0	0	2	2	1		60	40	
4	2	BES	ME	23ME1201	Engineering Graphics	T	1	0	0	1	1	30	20	50	3
5	2	BES	ME	23ME1202	<b>Lab :</b> Engineering Graphics	P	0	0	4	4	2		60	40	
6	2	BES	EL	23EL1201	Basic Electrical and Electronics Engineering	T	3	0	0	3	3	30	20	50	3
7	2	BES	EL	23EL1205	<b>Lab :</b> Electrical and Electronics Workshop	P	0	0	2	2	1		60	40	
8	2	PC	EE	23EE1203	Digital Logic Design	T	3	0	0	3	3	30	20	50	3
9	2	PC	EE	23EE1204	<b>Lab :</b> Digital Logic Design	P	0	0	2	2	1		60	40	
10	2	VSEC	GE	23GE1218	Functional English	...	...	...	...	...	2		60	40	
11	2	CC2	GE		<b>Liberal Learning Course (LLC2)</b>	...	...	...	...	...	2		60	40	
<b>TOTAL SECOND SEM</b>							<b>13</b>	<b>0</b>	<b>10</b>	<b>23</b>	<b>22</b>				

**Liberal Learning Course**

S N	Sem	Type	BoS/ Deptt	Sub. Code	Subject
1	1	CC1	GE	23LLC1101	Music (Vocal)
2	1	CC1	GE	23LLC1102	Music (Instrumental)
3	1	CC1	GE	23LLC1103	Indian Classical Dance
4	1	CC1	GE	23LLC1104	Other forms of Dances
5	1	CC1	GE	23LLC1105	Painting
6	1	CC1	GE	23LLC1106	Theatre and acting
7	1	CC1	GE	23LLC1107	Photography
8	1	CC1	GE	23LLC1108	Yoga
9	1	CC1	GE	23LLC1109	Chess
10	1	CC1	GE	23LLC1110	Athletics
11	1	CC1	GE	23LLC1111	Basket Ball
12	1	CC1	GE	23LLC1112	Judo
13	1	CC1	GE	23LLC1113	Elements of Japanese Language
14	1	CC1	GE	23LLC1114	Elements of German Language
15	1	CC1	GE	23LLC1115	Elements of French Language
16	1	CC1	GE	23LLC1116	Elements of Spanish Language
17	1	CC1	GE	23LLC1117	Basics of Vedic Maths
18	1	CC1	GE	23LLC1118	Skilling in Microsoft Visio and Inkscape



Nagar Yuwak Shikshan Sanstha's  
**Yeshwantrao Chavan College of Engineering**  
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**B.TECH SCHEME OF EXAMINATION 2023**

(Scheme of Examination w.e.f. 2023-24 onward)

(Department of Electronics Engineering)

**B. Tech in Electronics Engineering**

SoE No.  
23EE-101

S N	Sem	Type	BoS/ Deptt	Sub. Code	Subject	T/P	Contact Hours				Credits	% Weightage			ESE Duration
							L	T	P	Hrs		MSEs*	TA**	ESE	

**Liberal Learning Course**

S N	Sem	Type	BoS/ Deptt	Sub. Code	Subject
1	2	CC2	GE	23LLC1201	Music (Vocal)
2	2	CC2	GE	23LLC1202	Music (Instrumental)
3	2	CC2	GE	23LLC1203	Indian Classical Dance
4	2	CC2	GE	23LLC1204	Other forms of Dances
5	2	CC2	GE	23LLC1205	Painting
6	2	CC2	GE	23LLC1206	Theatre and acting
7	2	CC2	GE	23LLC1207	Photography
8	2	CC2	GE	23LLC1208	Yoga
9	2	CC2	GE	23LLC1209	Chess
10	2	CC2	GE	23LLC1210	Athletics
11	2	CC2	GE	23LLC1211	Basket Ball
12	2	CC2	GE	23LLC1212	Judo
13	2	CC2	GE	23LLC1213	Elements of Japanese Language
14	2	CC2	GE	23LLC1214	Elements of German Language
15	2	CC2	GE	23LLC1215	Elements of French Language
16	2	CC2	GE	23LLC1216	Elements of Spanish Language
17	2	CC2	GE	23LLC1217	Basics of Vedic Maths
18	2	CC2	GE	23LLC1218	Skilling in Microsoft Visio and Inkscape

**MANDATORY LEARNING COURSES**

S N	Sem	Type	BoS/ Deptt	Sub. Code	Subject	A	L	T	P	Hrs	Credits	ESE Duration
1	2	HS		GE2131	Universal Human Values (UHV)		2	0	0	2	0	

**MSEs\* = Two MSEs of 15 Marks each will conducted and marks of these 2 MSEs will be considered for Continuous Assessment**

**TA\*\* = for Theory : TA1-5 marks on Proctored Online Exam, TA2-12 marks on activities decided by course teacher, TA3 - 3 marks on class attendance**

**TA\*\* = for Practical : MSPA will be 15 marks each**

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Nagar Yuwak Shikshan Sanstha's

# Yeshwantrao Chavan College of Engineering

(An Autonomous Institution affiliated to Rashtrasant Tukadoji Maharaj Nagpur University)

**B. Tech SoE and Syllabus 2023**  
(Scheme of Examination w.e.f. 2023-24 onward)  
(Department of Mathematics & Humanities)

**SoE No.**  
**23FY-101**

## B.Tech First Year

### II SEMESTER

## 23GE1202 : Differential Equations, Matrices and Statistics

#### Course Outcomes

##### The students will be able to

1. Use appropriate Methods to solve first order and higher order differential equations and apply it to find solution of engineering problems.
2. Use Matrix method to solve linear system of equations, evaluate eigen values - eigen vectors and its applications.
3. Make use of probability distributions to solve real life problems.
4. Inspect scientific data, use proper curve fitting and find correlation, regression of variables.

#### Unit I: Differential Equations I

(7 Hrs.)

Linear differential equations of first order and first degree, Differential equation reducible to linear form, Exact differential equations (excluding the case of integrating factor) and their applications to various fields. **(Contemporary Issues related to Topic)**

#### Unit II: Differential Equations II

(7 Hrs.)

Higher order linear differential equations with constant coefficients, Complementary functions and Particular Integral for different cases, Method of variation of parameters, Examples on application to various fields. **(Contemporary Issues related to Topic)**

#### Unit III: Differential Equations III

(6 Hrs.)

Cauchy's homogeneous linear differential equations, Legendre's linear differential equation, Applications of differential equations to various fields (only up to second order). **(Contemporary Issues related to Topic)**

#### Unit IV: Partial Differential Equations

(6 Hrs.)

Partial Differential Equations of first order, first degree i.e. Lagrange's form, linear homogeneous equations of higher order with constant coefficient. Application of variable separable method to solve first and second order partial differential equations. **(Contemporary Issues related to Topic)**

#### Unit IV: Matrices

(7 Hrs.)

Rank of a matrix, Consistency of system of equations using rank, Characteristics equations, Eigen values and Eigen vectors, Cayley Hamilton Theorem (without proof) statement and verification, Sylvester's theorem-statement and its application. **(Contemporary Issues related to Topic)**

#### Unit VI: Statistics

(6 Hrs.)

Fitting of straight line,  $y = a + bx$ , a parabola  $y = a + bx + cx^2$ , exponential curves and power curves by method of least squares; Lines of regression and correlation; Rank correlation. **(Contemporary Issues related to Topic)**

**Total Lecture 39 Hours**

			July, 2023	1.00	Applicable for AY 2023-24 Onwards
Chairperson	Dean (Acad. Matters)	Dean OBE	Date of Release	Version	





Nagar Yuwak Shikshan Sanstha's

# Yeshwantrao Chavan College of Engineering

(An Autonomous Institution affiliated to Rashtrasant Tukadoji Maharaj Nagpur University)

**B. Tech SoE and Syllabus 2023**  
(Scheme of Examination w.e.f. 2023-24 onward)  
(Department of Mathematics & Humanities)

**SoE No.**  
**23FY-101**

## B.Tech First Year

Textbooks:	
1.	Erwin Kreyzig, Advance Engineering Mathematics, 6 <sup>th</sup> Edition, John Wiley and Sons, INC.
2.	H.K. Dass, Engineering Mathematics, 11 <sup>th</sup> revised edition, S. Chand, Delhi.
3.	H.K. Dass, Advanced Engineering Mathematics, 8 <sup>th</sup> revised edition, S. Chand, Delhi.
4.	Dr. B.S. Grewal, Higher Engineering Mathematics, 42 <sup>th</sup> edition, Khanna Publishers.
5.	P.N.Wartikar and J.N.Wartikar, Applied Mathematics, 4 <sup>th</sup> Edition, Vidyarthi GrihaPrakashan.

Reference Books:	
1.	G B Thomas and R L Finney, Calculus and Analytical Geometry, 9th edition, Addison-Wesley, 1999.
2.	N.P. Bali and Manish Goyal, A text book of Engineering Mathematics, 10 <sup>th</sup> edition, Laxmi Prakashan.

YCCE e- library book links [ACCESSIBLE FROM COLLEGE CAMPUS]	
1	<a href="http://103.152.199.179/YCCE/Suported%20file/Supprted%20file/e-copies%20of%20books/Applied%20Sciences%20&amp;%20Humanities/Mathematics%20and%20Humanities/">http://103.152.199.179/YCCE/Suported%20file/Supprted%20file/e-copies%20of%20books/Applied%20Sciences%20&amp;%20Humanities/Mathematics%20and%20Humanities/</a>

MOOCs Links and additional reading, learning, video material	
1.	<a href="https://nptel.ac.in/courses/111103070">https://nptel.ac.in/courses/111103070</a>
2.	<a href="https://onlinecourses.nptel.ac.in/noc19_ma28/preview">https://onlinecourses.nptel.ac.in/noc19_ma28/preview</a>
3.	<a href="https://nptel.ac.in/courses/111/106/111106100/">https://nptel.ac.in/courses/111/106/111106100/</a>

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Nagar Yuwak Shikshan Sanstha's

# Yeshwantrao Chavan College of Engineering

(An Autonomous Institution affiliated to Rashtrasant Tukadoji Maharaj Nagpur University)

**B. Tech SoE and Syllabus 2023**  
(Scheme of Examination w.e.f. 2023-24 onward)  
(Department of Physics)

SoE No.  
23FY-101

## B.Tech First Year

### II SEMESTER

### 23GE1208 : Engineering Physics

#### Course Outcomes :

Upon successful completion of the course the students will be able to

1. Correlate fundamentals of quantum mechanics to solve problems dealing with quantum particles.
2. Assess the characteristics of semiconductor materials in terms of crystal structures, charge carriers and Energy bands.
3. Examine the intensity variation of light due to interference, diffraction, laser and its applications.
4. Analyze the motion of charged particles in electric and magnetic field and its applications to electron optic devices.
5. Illustrate the nature and characterization of magnetic materials and superconductors for engineering applications.

#### Unit I: Quantum Physics

(7 Hrs.)

Wave-particle duality, de-Broglie's hypothesis, Wave packet, Heisenberg's uncertainty principle: significance and applications, Wave function and its probability interpretation, Schrodinger Equation, Particle in infinite potential well. (Contemporary Issues related to Topic)

#### Unit II: Semiconductor Physics

(7 Hrs.)

Formation of energy bands in solids; Classification of solids, Energy band diagram of Si and Ge, Intrinsic and extrinsic semiconductors, Conductivity, Law of mass action, Fermi function, Fermi level in intrinsic and extrinsic semiconductors, Dependence of Fermi level on impurity concentration and temperature, Hall effect. (Contemporary Issues related to Topic)

#### Unit III: Geometrical Optics

(7 Hrs.)

Interference: Interference in thin films, Wedge shaped film, Newton's rings, Applications of interference  
Diffraction: Fraunhofer diffraction from a single slit. (Contemporary Issues related to Topic)

#### Unit IV: Laser

(6 Hrs.)

Coherence and its types, Interaction of radiation with matter, Population Inversion, Pumping: methods and schemes, Optical resonant cavity, Ruby laser, Semiconductor diode laser, Properties and engineering applications of laser. (Contemporary Issues related to Topic)

#### Unit V: Electron Ballistics

(7 Hrs.)

Motion of a charged particle in uniform electric and magnetic field, Cross field configuration; Electron refraction, Electron lens. Cathode ray oscilloscope and its application. (Contemporary Issues related to Topic)

#### Unit VI: Magnetic Materials & Superconductors

(6 Hrs.)

Introduction to magnetic materials, Interpretation of Hysteresis curves, Superconductors: Type-I and Type-II, Meissner effect, Applications. (Contemporary Issues related to Topic)

**Total Lecture 40 Hours**

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(Department of Physics)

**SoE No.**  
**23FY-101**

## B.Tech First Year

### Textbooks

1	M. N. Avadhanulu, P.G.Kshirsagar, A Textbook of Engg. Physics, S.Chand and Company.
2	Hitendra K Malik , A K Singh , Engineering Physics, 2nd Edition, Tata McGraw Hill Education Private Limited,

### Reference Books

1	David Halliday, Robert Resnick and Jerle Walker, John-Wiley India, Fundamentals of Physics, 10 <sup>th</sup> John Wiley & Sons Inc.
2	Brijlal and Subramanyam, Text Book of Optics, Revised edition, S. Chand and Company.
3	M.N. Avadhanulu, 2 <sup>nd</sup> Edition, Laser, S.Chand and Company.
4	A.Beiser, Concept of Modern Physics, 6 <sup>th</sup> Edition, Laser, Tata McGraw-Hill.
5	Thyagarajan K. and Ghatak A.K, LASERS: Theory and Applications, 2 <sup>nd</sup> Edition, Macmillan Publication
6	S.O.Pillai, Solid State Physics, 9 <sup>th</sup> Edition, New Edge International Publishers.
7	Palanisamy, Solid State Physics, 8 <sup>th</sup> Edition, New Edge International Publishers.
8	C. Kittel, Solid State Physics, 8 <sup>th</sup> Edition, Willey Publication.
9	B. K. Pandey, S. Chaturvedi, Engineering Physics, 1 <sup>st</sup> Edition, Cengage Learning.
10	John Allision, Electronic Engineering Materials and Devices, TMH edition, 10 <sup>th</sup> reprint, Tata McGraw Hill.

### YCCE e- library book links [ACCESSIBLE FROM COLLEGE CAMPUS]

1	<a href="http://103.152.199.179/YCCE/Suported%20file/Supprted%20file/e-copies%20of%20books/Applied%20Sciences%20&amp;%20Humanities/Physics/Eisberg%20&amp;%20Resnick%20-%20Quantum%20Physics.pdf">http://103.152.199.179/YCCE/Suported%20file/Supprted%20file/e-copies%20of%20books/Applied%20Sciences%20&amp;%20Humanities/Physics/Eisberg%20&amp;%20Resnick%20-%20Quantum%20Physics.pdf</a>
2	<a href="http://103.152.199.179/YCCE/Suported%20file/Supprted%20file/e-copies%20of%20books/Applied%20Sciences%20&amp;%20Humanities/Physics/2016_Book_ThePhysicsOfSemiconductors.pdf">http://103.152.199.179/YCCE/Suported%20file/Supprted%20file/e-copies%20of%20books/Applied%20Sciences%20&amp;%20Humanities/Physics/2016_Book_ThePhysicsOfSemiconductors.pdf</a>
3	<a href="http://103.152.199.179/YCCE/Suported%20file/Supprted%20file/e-copies%20of%20books/Applied%20Sciences%20&amp;%20Humanities/Physics/Dekker%20-%20Solid%20State%20Physics.pdf">http://103.152.199.179/YCCE/Suported%20file/Supprted%20file/e-copies%20of%20books/Applied%20Sciences%20&amp;%20Humanities/Physics/Dekker%20-%20Solid%20State%20Physics.pdf</a>

### MOOCs Links and additional reading, learning, video material

1	<a href="https://nptel.ac.in/courses/115106066">https://nptel.ac.in/courses/115106066</a> - Quantum Physics
2	<a href="https://archive.nptel.ac.in/courses/115/105/115105121/">https://archive.nptel.ac.in/courses/115/105/115105121/</a> -CRO
3	<a href="http://www.digimat.in/nptel/courses/video/115102124/L36.html">www.digimat.in/nptel/courses/video/115102124/L36.html</a> - Laser

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(Department of Physics)

**SoE No.**  
**23FY-101**

## B.Tech First Year

### II SEMESTER

### 23GE1209 : Lab. Engineering Physics

#### Course Outcomes:

#### Upon successful completion of the course the students will be able to

1. Correlate fundamentals of quantum mechanics to solve problems dealing with quantum particles.
2. Assess the characteristics of semiconductor materials in terms of crystal structures, charge carriers and Energy bands.
3. Examine the intensity variation of light due to interference, diffraction, laser and its applications.
4. Analyze the motion in electric field and magnetic field and its applications to electron optic devices.
5. Illustrate the nature and characterization of magnetic materials and superconductors for engineering Applications.

#### List of Experiments :

Sr. No.	Experiments based on
1	Determination of Planck's constant.
2	Study of Tunnel Diode.
3	Determination of Hall coefficient and density of charge carriers using Hall effect.
4	Dependence of Hall coefficient on temperature.
5	Determination of Band gap in a semiconductor by four probe method.
6	Determination of Band gap in a semiconductor using reverse biased p-n junction diode.
7	Determination of radius of curvature of Plano convex lens using Newton's rings.
8	Determination of thickness of thin paper using air wedge.
9	Determination of wavelength of sodium light using diffraction grating.
10	Determination of wavelength of laser using diffraction grating.
11	Determination of divergence of laser beam.
12	Determination of amplitude and frequency of sinusoidal signal using CRO.
13	To measure the phase shift introduced by a phase shift network using Dual beam CRO.
14	Determination of the velocity of Ultrasonic waves in a non -electrolytic liquid by ultrasonic interferometer.

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# Yeshwantrao Chavan College of Engineering

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**B. Tech SoE and Syllabus 2023**

(Scheme of Examination w.e.f. 2023-24 onward)

(Department of Mechanical Engineering)

**B.Tech in Mechanical Engineering**

**SoE No.  
23ME-101**

## II SEMESTER

### 23ME1201 : Engineering Graphics

#### Course Outcomes :

Upon successful completion of the course the students will be able to

1. Construct orthographic drawing and isometric drawing of a given object
2. Evaluate Projections of various One Dimensional, Two dimensional, Three dimensional objects
3. Develop the lateral surfaces of various solids, their section and intersection.
4. Practice the use of software tools used for Two dimensional drawings.

#### Unit I: Theory of Orthographic Projections:

(3 Hrs.)

Introduction, Quadrant system, Theory of orthographic projection, Projection method and principal planes, First and Third angle projections,

#### Unit II: Theory of Isometric Projections:

(2 Hrs.)

Theory of isometric projection, Method for drawing isometric views, Different problems on isometric projections.

#### Unit III: Lines:

(2 Hrs.)

Projection of points, Projection of lines, True lengths and inclinations, apparent lengths and inclinations, various positions of lines in different quadrants, Traces of lines, projection of line on auxiliary plane.

#### Unit IV: Planes and Solids:

(4 Hrs.)

Projection planes: (Polygonal Lamina, Circular Lamina), Projection of Perpendicular planes and oblique planes. Auxiliary views (Auxiliary planes) Projection of Solids :(Inclined to One Plane Only) - Polyhedra (Regular and Irregular Polyhedra), Solids of Revolution

#### Unit V: Section of Solids and Development of Surfaces:

(2 Hrs.)

Types of Section planes, Sectional top view, True shape.  
Development of different solids using Radial line and parallel line methods.

#### Unit VI: Intersection of Surfaces of solids:

(2 Hrs.)

Intersection between similar solids, Intersection between dissimilar solids, Lines and Curves of Intersection.

**Total Lecture 15 Hours**

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**B. Tech SoE and Syllabus 2023**

(Scheme of Examination w.e.f. 2023-24 onward)

(Department of Mechanical Engineering)

## B.Tech in Mechanical Engineering

SoE No.  
23ME-101

### Textbooks:

1.	D.M. Kulkarni, A. P. Rastogi and A. K. Sarkar , Engineering Graphics with AutoCAD PHI learning Pvt. Ltd., Revised Edition(2014),
2.	N. D. Bhatt ,Engineering Drawing Charotar Publishing House Pvt. Ltd, 53 rd Edition 2017

### Reference Books:

1.	D. A. Jolhe Engineering Drawing , Tata McGraw Hill Publications , 2008,
2.	K. L. Narayana & P. Kanniah , Engineering Drawing SciTech Publication , 2010
3.	R. K. Dhawan Engineering Drawing S. Chand Publication Multicolor revised edition 2015

### YCCE e- library book links [ACCESSIBLE FROM COLLEGE CAMPUS]

1	Intranet on address 172.16.1.10. data/CCC/software / AutoCAD Software Setup.
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### MOOCs Links and additional reading, learning, video material

1.	<a href="https://youtube.com/playlist?list=PLLy_2iUCG87Bw9XPfEF3r3EW5UIAOv8iz">https://youtube.com/playlist?list=PLLy_2iUCG87Bw9XPfEF3r3EW5UIAOv8iz</a>
2.	Eng <a href="https://nptel.ac.in/courses/112105294">https://nptel.ac.in/courses/112105294</a>

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**B. Tech SoE and Syllabus 2023**  
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(Department of Mechanical Engineering)

**SoE No.  
23ME-101**

## B.Tech in Mechanical Engineering

### II SEMESTER

### 23ME1202 : Lab. Engineering Graphics

#### Course Outcomes :

Upon successful completion of the course the students will be able to

1. Construct orthographic drawing and isometric drawing of a given object
2. Evaluate Projections of various One Dimensional, Two dimensional, Three dimensional objects
3. Develop the lateral surfaces of various solids, their section and intersection.
4. Practice the use of software tools used for Two dimensional drawings.

#### Practical's to be performed from the list as below

SN	Experiments based on	No.of Practical's
1	Introduction of AutoCAD Basic Commands	02
2	Orthographic Projection	03
3	Isometric Projection	03
4	Projection of Straight Line	03
5	Projection of Planar Surface	03
6	Projection of Solid	03
7	Section and Development of Solid	04
8	Intersection of Surfaces	03
9	Drawing Sheet 1: Convention for various lines, Dimensioning and Orthographic Projection	02
10	Drawing Sheet 2: Projection of line, planar surface or solid. (Any one)	02
<b>Total Practical's</b>		<b>28 Hours</b>

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(Department of Electrical Engineering)

**B.Tech in Electrical Engineering**

SoE No.  
23EL-101

## II SEMESTER

### 23EL1201 : Basic Electrical and Electronics Engineering

#### Course Outcomes:

1. Understand the fundamental concepts of Analog Electronic and Electrical Circuits
2. Apply the concepts of Electrical and Electronic Circuits to obtain the desired parameter
3. Analyze analog Electrical Circuits for given application.
4. Analyze analog Electronic Circuits for given application

<b>Unit I: Circuit Elements and Energy Sources</b>	<b>(7 Hrs.)</b>
Circuit Elements, Series and Parallel Combination of Resistances, Inductance and Capacitances, Energy Sources, Source Transformation, Sources with Periodic Waveforms, A.C. in Inductance and Capacitance, Star-Delta Connection. <b>(Contemporary Issues related to Topic)</b>	
<b>Unit II: Analysis of Network</b>	<b>(7 Hrs.)</b>
Kirchhoff's Laws, Current Division, Voltage Division, Nodal and Mesh Analysis of Electric Circuits, Thevenin's Theorem <b>(Contemporary Issues related to Topic)</b>	
<b>Unit III: Generator and Motors</b>	<b>(7 Hrs.)</b>
Introduction to Generator, Construction, working principle, Types of Generators, Introduction to DC Motor, Working Principle of DC Motor, Types of Motors. <b>(Contemporary Issues related to Topic)</b>	
<b>Unit IV: Diode and Transistor</b>	<b>(6 Hrs.)</b>
Introduction to Semiconductor, P-N junction diodes, Biasing & Characteristics of diodes. Diode Circuits - Half wave rectifier, full wave rectifier, bridge rectifier. Introduction to BJT- NPN and PNP, Modes of operation,. <b>(Contemporary Issues related to Topic)</b>	
<b>Unit V: Operational Amplifier and Its Application</b>	<b>(7 Hrs.)</b>
Introduction to Op-Amp, Inverting and Non-Inverting Amplifier, Linear Applications of OP-AMP like adder, Subtractor, integrator, differentiator and non-linear application using Comparator. <b>(Contemporary Issues related to Topic)</b>	
<b>Unit VI: Electronics Measurement</b>	<b>(6 Hrs.)</b>
Introduction to Measurement System, Generalized block diagram of Measurement System, Static & dynamic characteristics of measurement system, Types of errors & their sources, Statistical analysis. <b>(Contemporary Issues related to Topic)</b>	
<b>Total Lecture</b>	<b>40 Hours</b>

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## B. Tech SoE and Syllabus 2023

(Scheme of Examination w.e.f. 2023-24 onward)

(Department of Electrical Engineering)

## B.Tech in Electrical Engineering

SoE No.  
23EL-101

### Textbooks:

- |    |  |
|----|--|
| 1. | Basic Electrical Engineering, T. K. Nagsarkar and M. S. Sukhija, Oxford Higher Education, First Edition 2005 |
| 2. | Electronics Devices and circuits, Millman Jacob, McGraw Hill Education, Fourth Edition (2015)                |
| 3. | Circuit Theory (Analysis and Synthesis), by A. Chakrabarti, Dhanpat Rai & Co., Reprint Edition 2014          |

### Reference Books:

- |    |   |
|----|---|
| 1. | OP-AMP and Linear Integrated Circuit, by Ramakant A. Gayakwad, Prentice Hall India Learnin Private Limited, Published in 2002 |
| 2. | Electrical & Electronic measurement & Instrument, A. K. Sawhney, Dhanpat Rai & Co., 18th edition 2008                         |

### YCCE e- library book links [ACCESSIBLE FROM COLLEGE CAMPUS]

- |   |   |
|---|---|
| 1 | <a href="http://link.springer.com/openurl?genre=book&amp;isbn=978-1-4613-6193-0">http://link.springer.com/openurl?genre=book&amp;isbn=978-1-4613-6193-0</a> |
| 2 | <a href="https://onlinelibrary.wiley.com/doi/book/10.1002/9780470168042">https://onlinelibrary.wiley.com/doi/book/10.1002/9780470168042</a>                 |

### MOOCs Links and additional reading, learning, video material

- |    |   |
|----|---|
| 1. | <a href="https://onlinecourses.nptel.ac.in/noc22_ee113/preview">https://onlinecourses.nptel.ac.in/noc22_ee113/preview</a> |
|----|---|

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(Department of Electrical Engineering)

**B.Tech in Electrical Engineering**

**SoE No.  
23EL-101**

## II SEMESTER

### 23EL1205 : Lab : Electrical and Electronics Workshop

#### Course Outcomes:

Upon successful completion of the course the students will be able

1. To choose the electrical and electronics components/equipment for various application
2. To select various sensors and measuring instruments for different applications.
3. To build the various electrical wiring for different application

Sr. No.	Experiments based on
1	Introduction of Tools, Electrical Materials and Electrical Drawing Symbols
2	Introduction to basic Electrical Components (R, L, C) with its number and color coding.
3	Introduction to Different types of Measuring Instruments and its demonstration.
4	To implement 12 V DC power supply using 7812 IC
5	Fabrication of four switch socket Electrical Distribution Board
6	To fabricate Staircase Wiring and Godown Wiring
7	Fabrication of solar powered electric fan
8	To monitor the output voltage of solar panel using voltage Sensor
9	Introduction to Different sensor devices and its demonstration.
10	To Study different protection devices and Importance of Earthing.

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(Scheme of Examination w.e.f. 2023-24 onward)  
(Department of Electronics Engineering)

**SoE No.  
23EE-101**

## B.Tech in Electronics Engineering

### II SEMESTER

### 23EE1203 : Digital Logic Design

#### Course Outcomes:

**Upon successful completion of the course the students will be able to**

1. Apply the laws of Boolean algebra to simplify logical equations and combination logic circuits.
2. Understand and demonstrate the various codes and illustrate their addition subtraction.
3. Solve logical functions using K- map to implement combinational logic circuits.
4. Design and analyze Synchronous and Asynchronous sequential Circuits.

Unit:1	Number system and codes	7 Hours
Binary, Octal, hexadecimal and decimal Number systems and their inter conversion, BCD numbers (8421-2421), Gray code, ASCII codes. Binary addition and subtraction, signed and unsigned binary numbers, 1's and 2's complement representation.		
Unit:2	Boolean Algebra	7 Hours
Basic logic circuits: Logic gates (AND, OR, NOT, NAND, NOR, Ex-OR, Ex-NOR and their truth tables), Universal Gates, Laws of Boolean algebra, De-Morgan's theorem.		
Unit:3	Minimization Techniques	7 Hours
Minterm, Maxterm, POS, SOP, K-Map, Simplification by Boolean theorems, don't care condition.		
Unit:4	Combinational Logic	7 Hours
Half adder, Full adder, Subtractor circuit. Multiplexer demultiplexer, decoder, BCD to seven segment Decoder, encoders, code converters.		
Unit:5	Sequential Circuits	7 Hours
Flipflop, set-reset latches, R-S flip-flop, D-flipflop, J-K Flip-flop, Master slave Flipflop, T flip-flop, excitation table of flip-flops. Flip-Flop to flip-flop conversion		
Unit :6	Registers & Counters	7 Hours
Serial in/Serial out shift register, Serial in/parallel out shift register, parallel in/parallel out shift register, parallel in/Serial out shift register, Bi-directional register, Synchronous/Asynchronous counter: Ring Counter, Ripple Counter Johnson's Counter operation, Up/down synchronous counter, application of counter.		
Total Lecture Hours		42 Hours

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(Department of Electronics Engineering)

## B.Tech in Electronics Engineering

SoE No.  
23EE-101

### Textbooks

1	Modern Digital Electronics , RP Jain, Tata McGraw Hill, 3rd Edition
2	M. Morris Mano, Digital Design, 3rd Edition, Prentice Hall of India Pvt. Ltd., 2003 Pearson Education (Singapore) Pvt. Ltd., New Delhi, 2003.
3	Donald P. Leach and Albert Paul Malvino, Digital Principles and Applications, 6th Edition, TMH, 2003.
4	Anandkumar- fundamental of digital circuit. 3rd edition. PHI

### Reference Books

1	Fundamentals of Logic Design, C.H. Roth, Public Work & Services, 3rd edition 2007.
2	Engg Approach to Digital Design, Fletcher, Prentice Hall of India 1993.
3	Digital Circuits & Microprocessors, Hebert Taub, Mc Graw Hill, 1988.

### YCCE e- library book links [ACCESSIBLE FROM COLLEGE CAMPUS]

1	<a href="http://103.152.199.179/YCCE/yccelibrary.html">http://103.152.199.179/YCCE/yccelibrary.html</a>
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### MOOCs Links and additional reading, learning, video material

1	<a href="https://www.digimat.in/nptel/courses/video/108105132/L01.html">https://www.digimat.in/nptel/courses/video/108105132/L01.html</a>
2	<a href="https://www.digimat.in/nptel/courses/video/108105113/L01.html">https://www.digimat.in/nptel/courses/video/108105113/L01.html</a>
3	<a href="https://www.coursera.org/learn/digital-systems">https://www.coursera.org/learn/digital-systems</a>

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Nagar Yuwak Shikshan Sanstha's

# Yeshwantrao Chavan College of Engineering

(An Autonomous Institution affiliated to Rashtrasant Tukadoji Maharaj Nagpur University)

**B. Tech SoE and Syllabus 2023**

(Scheme of Examination w.e.f. 2023-24 onward)

(Department of Electronics Engineering)

**B.Tech in Electronics Engineering**

SoE No.  
23EE-101

## II SEMESTER

### 23EE1204 : Lab. Digital Logic Design

#### Course Outcomes:

Upon successful completion of the course the students will be able to

1. Apply the laws of Boolean algebra to simplify logical equations and combination logic circuits.
2. Understand and demonstrate the various codes and illustrate their addition subtraction.
3. Design and exhibit the methods to solve logical functions using K- map to implement combinational logic circuits.
4. Design and analyze Synchronous and Asynchronous sequential Circuits.

Sr. No.	Experiments based on
1	Basic logic circuits: Logic gates verification using kit.
2	Introduction to Bread Board and Verify Truth Tables of basic Logic gates using BreadBoard.
3	Construction of half/full adder using XOR and NAND gates and verification of its operation.
4	Verify Binary to Gray and Gray to Binary conversion using NAND gates only.
5	Implementation of 4x1 multiplexer and 1x4 demultiplexer using logic gates.
6	Verify the truth table of D-flip-flops and JK- flip-flops.
7	Design and verify the 4-Bit Synchronous Counter.
8	Introduction to SPICE Digital model and commands. Verify Truth Tables of basic Logic gates & Universal Gates using <b>using SPICE</b> .
9	Design & verify Truth Table of Half adder & Full adder circuits <b>Logic simulator</b> .
10	Design & verify Truth Table of 4:1 Multiplexer & 1:4 Demultiplexer circuits <b>using SPICE</b> .

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**B. Tech SoE and Syllabus 2023**  
(Scheme of Examination w.e.f. 2023-24 onward)  
(Department of Mathematics & Humanities)

**SoE No.**  
**23FY-101**

## B.Tech First Year

### II SEMESTER

### 23GE1218 : Functional English

#### Course Outcomes:

**Upon successful completion of the course the students will be able to**

1. Understand the concept of FE (Functional English) and its application in various real-life scenarios.
2. Develop basic interactive communication skills, including greetings, asking for information, stating opinions, and providing feedback.
3. Acquire knowledge of social networking, texting, instant messaging, blogs, and discussion boards, along with the ethical considerations associated with online communication.
4. Successfully complete quizzes and assignments assessing knowledge in the covered topics of FE, social media, tenses, and effective communication.

Unit:1	Introduction to Functional English	6 Hours
<p>What is FE? And Areas of application. Basic Interactive sentences - Greetings &amp; Replies, Asking for information, Telling people what you do, Asking somebody's opinion, Giving your opinion, Saying someone is correct, Saying that someone is wrong, Apologizing, Praising someone's work, Saying goodbye. Introduction &amp; Basics of Common Expressions – Offer, Request, Gratitude, Apology. Modal Verbs - Words used often: Can- could, Will – would, Shall – should, Ought to-Must, May-might. Practice exercises, Practice Conversations, Script Activity</p>		
Unit:2	Internet & Social Media Communication	6 Hours
<p>Introduction &amp; Basics to Social Networking, Texting &amp; Instant messaging, Blogs &amp; Discussion Board- discussion with examples, Ethics of social media &amp; communication Topic: Introduction to Creative Ads Why Ads, What's in it for me? Characteristics of ads. Assignment Quiz on the above Topics, Exercises for Evaluation</p>		
Unit:3	TENSES	6 Hours
<p>Introduction &amp; Basics, Simple Tense (Past, Present, Future), Continuous Tense (Past, Present, Future) – discussion with examples. Introduction &amp; Basics, Perfect Tense (Past, Present, Future), Perfect Continuous Tense (Past, Present, Future) – discussion with examples Introduction to Movie Magic, Learn English with films, Film Vocabulary, Describing a film, Types of Films Assessment – Letter and Email Writing, Tenses – Quiz</p>		
Unit:4	Written Communication	5 Hours
<p>Introduction &amp; Basics of Writing, five methods of communication, Mind your grammar, Commonly confusing words Letters – Format, Parts of a business letter, When does communication fail?, Things to remember, Positive language not negative language, Active voice not passive voice Effective emailing -How to make an effective e-mail, Few common e-mail habits that cause problems, Parts of an e-mail, Some other important aspects.</p>		

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(Department of Mathematics & Humanities)

**SoE No.**  
**23FY-101**

## B.Tech First Year

Assignment Presentation on Mad Ads, Quiz on Tenses and social media-Internet Communication

Topic: Activity Extempore

<b>EVALUATION</b>			<b>1 Hour</b>
<b>WRITTEN TEST</b>	<b>TA=60</b>	<b>ESE=40</b>	<b>TOTAL=100</b>
<b>Total Lecture Hours</b>			<b>24 Hours</b>

### Reference Books

- 1 How to win friends & influence people – Dale Carnegie
2. Functional English for Communication - Ujjwala Kakarla
- 3 Functional English for Technical Students – Dr Prathibha Mahato & Dr Dora Thompson

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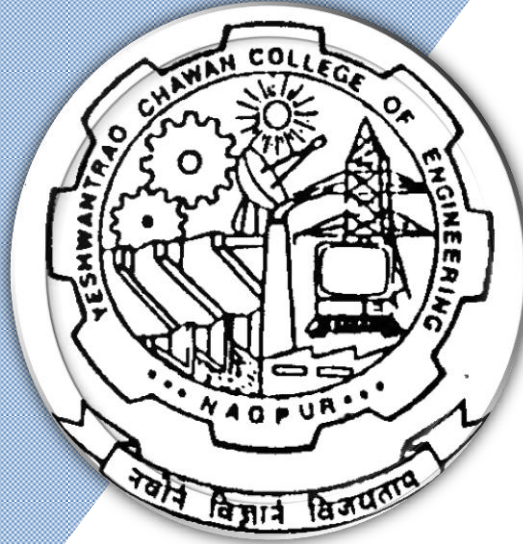
Nagar Yuwak Shikshan Sanstha's

# Yeshwantrao Chavan College of Engineering

(An Autonomous Institution affiliated to Rashtrasant Tukadoji Maharaj Nagpur University)

(Accredited 'A++' Grade by NAAC with a score of 3.6)

Hingna Road, Wanadongri, Nagpur - 441 110



## Bachelor of Technology

### SoE & Syllabus 2023

### 3<sup>rd</sup> Semester

(Department of Electrical Engineering)

## B. Tech in Electronics Engineering



Nagar Yuwak Shikshan Sanstha's  
**Yeshwantrao Chavan College of Engineering**  
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**B.TECH SCHEME OF EXAMINATION 2023**  
 (Scheme of Examination w.e.f. 2023-24 onward)  
 (Department of Electronics Engineering)  
**B. Tech in Electronics Engineering**

SoE No.  
23EE-101

SN	Sem	Type	BoS/ Deptt	Sub. Code	Subject	T/P	Contact Hours				Credits	% Weightage			ESE Duration Hours
							L	T	P	Hrs		MSEs*	TA**	ESE	
<b>THIRD SEMESTER</b>															
1	3	HSSM-1	GE	23GE1301	Fundamentals of Management & Economics	T	2	0	0	2	2	30	20	50	3
2	3	PC	EE	23EE1301	Electronic Devices and Circuits	T	3	0	0	3	3	30	20	50	3
3	3	PC	EE	23EE1302	Lab : Electronic Devices and Circuits	P	0	0	2	2	1		60	40	
4	3	PC	EE	23EE1303	Network Analysis	T	3	0	0	3	3	30	20	50	3
5	3	PC	EE	23EE1304	Lab : Network Analysis	P	0	0	2	2	1		60	40	
6	3	PC	EE	23EE1305	Signal and Systems	T	3	0	0	3	3	30	20	50	3
7	3	VEC-2	EE	23EE1306	Basics of Python Programming	T	2	0	0	2	2	30	20	50	3
8	3	CEP	EE	23EE1307	Lab : Sensor based mini project and report writing	P	0	0	2	4	2		60	40	
9	3	OE-1	OE		Open Elective-I	T	2	0	0	2	2	30	20	50	3
10	3	MDM	EE		MD Minor Course-I	T	2	0	0	2	2	30	20	50	3
<b>TOTAL</b>							<b>17</b>	<b>0</b>	<b>6</b>	<b>25</b>	<b>21</b>				

List of Mandatory Learning Course (MLC)															
1	3	HS	T&P	MLC2123	YCAPP3 : YCCE Communication Aptitude Preparation	A	3	0	0	3	0				

Open Elective - I															
SN	Sem	Type	BoS/ Deptt	Sub. Code	Subject										
1	3	OE1	GE	23OE1301	OE-I : Combinatorics										
2	3	OE1	GE	23OE1302	OE-I : Fuzzy Set Theory, Arithmetic And Logic										
3	3	OE1	GE	23OE1303	OE-I : Green Chem. & Sustainability										
4	3	OE1	GE	23OE1304	OE-I : Hydrogen Fuel										
5	3	OE1	GE	23OE1305	OE-I : Electronic Materials And Applications										
6	3	OE1	GE	23OE1306	OE-I : Laser Technology And Applications										
7	3	OE1	MGT	23OE1307	OE-I : Finance And Cost Management										
8	3	OE1	MGT	23OE1308	OE-I : Operation Research Techniques										
9	3	OE1	MGT	23OE1309	OE-I : Project Evaluation & Management										
10	3	OE1	MGT	23OE1310	OE-I : Total Quality Management										
11	3	OE1	MGT	23OE1311	OE-I : Value Engineering										
12	3	OE1	MGT	23OE1312	OE-I : Maintenance Management										
13	3	OE1	MGT	23OE1313	OE-I : Industrial Safety										
14	3	OE1	MGT	23OE1314	OE-I : Industry 4.0										
15	3	OE1	MGT	23OE1315	OE-I : Operation Management										
16	3	OE1	MGT	23OE1316	OE-I : Material Management										
17	3	OE1	MGT	23OE1317	OE-I : Hospitality Management										
18	3	OE1	MGT	23OE1318	OE-I : Human Resource Management & Organizational Behaviour										
19	3	OE1	MGT	23OE1319	OE-I : Agri-Business Management										
20	3	OE1	MGT	23OE1320	OE-I : Rural Marketing										
21	3	OE1	MGT	23OE1321	OE-I : Marketing Management										
22	3	OE1	MGT	23OE1322	OE-I : Health Care Management										

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(Department of Electronics Engineering)

**B.Tech in Electronics Engineering**

SoE No.  
23EE-101

## III SEMESTER

### 23GE1301: Fundamentals of Management & Economics

#### Course Outcomes:

Upon successful completion of the course the students will be able to

1. Develop the Managerial Perspective and perform the various functions of management for optimum utilization of Engineering Resources
2. Identify and Analyze the role of Financial Accountancy and Marketing Management in the Organization
3. Develop perspective about economy based on logical reasoning and estimate the economic outcomes.
4. Interprets comparative advantage of resources.

#### Unit I:

7 Hrs.

**Principles of Management:** Evolution of Management Thought: Scientific and Administrative Theory of Management, Definition and Concept of Management, Functions of Management: Planning, Organizing, Directing, Staffing and Controlling, Motivational Theories, Concept of Leadership.

#### Unit II:

8 Hrs.

**Marketing and Financial Management:** Marketing and Financial Management –Marketing Theories and Concept-Marketing Mix, Market Segmentation, Targeting and Positioning and Functions Financial Management and Accountancy- Accountancy Rules and Capital, Preparation of Books of Account- Journal posting of Transaction into ledger and preparation of trial Balance, Introduction of Trading Account, Profit and loss account and balance sheet.

#### Unit III:

7 Hrs.

**Introduction to Microeconomics:** Nature and Scope of Microeconomics, Demand Analysis: Meaning and determinants of demand, law of demand, Elasticity of Demand - types and degrees, Utility analysis, Law of diminishing marginal utility, supply- law of supply, Law of Variable proportions and Return to Scale, Classification of market structure.

#### Unit IV:

8 Hrs.

**Introduction to Macroeconomics:** Nature and Scope of Macroeconomics, Concept of GDP, GNP, NDP, NNP, Measurement of GDP; Economic Growth and development, Money – definition, types and function of money, Inflation – meaning, types, causes and measure to control, concept of deflation, functions of central and commercial bank, Sources of public revenue - direct and indirect taxes.

**Total Lecture**

**30 Hours**

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**SoE No.  
23EE-101**

## B.Tech in Electronics Engineering

Textbooks:	
1	Principle of Management, 9 <sup>th</sup> edition, Harold Koontz Ramchandra, Tata McGraw hills
2	Marketing Management: Planning, Implementation and Control, 3 <sup>rd</sup> Edition, Ramaswamy V.S. and Namakumari S, Macmillian
3	Fundamentals of Accounting Gupta R.L. & Radhaswamy ;
4	Modern Economics, 13 <sup>th</sup> Edition, H. L. Ahuja, S. Chand Publisher, 2009
5	Modern Economic Theory, 3 <sup>rd</sup> edition, K. K. Devett, S. Chand Publisher, 2007
6	Principle of Economics, 7 <sup>th</sup> edition, Mankiw N. Gregory, Thomson, 2013

Reference Books:	
1	Foundations of Financial Markets and Institutions, 3 <sup>rd</sup> Edition, Fabozzi, Prentice Hall
2	Fundamentals of Financial Instruments, 2 <sup>nd</sup> Edition, Parameshwaran, Wiley India
3	Marketing Management, 3 <sup>rd</sup> Edition, Rajan Saxena, Tata McGraw Hill
4	Advance Economic Theory, 17 <sup>th</sup> Edition, H. L. Ahuja, S. Chand Publisher, 2009
5	International Trade, 12 <sup>th</sup> edition, M. L. Zingan, Vindra Publication, 2007
6	Macro Economics, 11 <sup>th</sup> edition, M. L. Zingan, Vindra Publication, 2007
7	Monitory Economics:, 1 <sup>st</sup> Edition, M. L. Sheth, Himayalaya Publisher, 1995

YCCE e- library book links [ACCESSIBLE FROM COLLEGE CAMPUS]	
1	<a href="http://link.springer.com/openurl?genre=book&amp;isbn=978-1-4613-6193-0">http://link.springer.com/openurl?genre=book&amp;isbn=978-1-4613-6193-0</a>
2	<a href="https://onlinelibrary.wiley.com/doi/book/10.1002/9780470168042">https://onlinelibrary.wiley.com/doi/book/10.1002/9780470168042</a>

MOOCs Links and additional reading, learning, video material	
1	<a href="https://onlinecourses.nptel.ac.in/noc22_mg104/preview">https://onlinecourses.nptel.ac.in/noc22_mg104/preview</a>
2	<a href="https://archive.nptel.ac.in/courses/110/101/110101131/">https://archive.nptel.ac.in/courses/110/101/110101131/</a>
3	<a href="https://onlinecourses.nptel.ac.in/noc23_mg122/preview">https://onlinecourses.nptel.ac.in/noc23_mg122/preview</a>
4	<a href="https://onlinecourses.nptel.ac.in/noc21_hs52/preview">https://onlinecourses.nptel.ac.in/noc21_hs52/preview</a>
5	<a href="https://onlinecourses.nptel.ac.in/noc22_hs67/preview">https://onlinecourses.nptel.ac.in/noc22_hs67/preview</a>

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**SoE No.  
23EE-101**

## B.Tech in Electronics Engineering

### III SEMESTER

### 23EE1301: Electronic Devices and Circuits

#### Course Outcomes:

**Upon successful completion of the course the students will be able to**

1. Analyze different types of semiconductor devices, their operation and characteristics.
2. Design and analyze the DC bias circuitry of BJT and FET.
3. Analyze and model BJT for small signal and low frequency.
4. Apply concept of feedback to improve the stability of circuits.
5. Design circuits using the transistors and oscillators

Unit:1	Transistors	8 Hours
BJT - structure, operation, characteristics and Biasing BJT structure, Symbol, Basic operation. Input and Output Characteristics in CE, CB and CC configuration, BJT biasing, Stability factor.		
Unit:2	Low frequency BJT	7 Hours
Single Stage Amplifiers BJT small signal model – Analysis of CE, CB, CC amplifiers, Miller's theorem		
Unit:3	JFET & MOSFET	7 Hours
JFET:-Symbol, Structure, operation, characteristics, Drain and Transfer Characteristics, JFET Biasing. MOSFET: -Structure, Symbol, Basic operation, Drain and Transfer Characteristics, MOSFET Biasing.		
Unit:4	Low frequency FET & MOSFET	8 Hours
Small signal model– Analysis of CS, CG and CD amplifiers.		
Unit:5	Power Amplifiers	7 Hours
Classes of power amplifiers – Class A, Class B amplifiers, Analysis of Class A, Class B, Distortions in amplifiers.		
Unit :6	Feedback Amplifiers and Oscillators	8 Hours
Feedback Amplifiers: - Feedback Concept, Classification of amplifiers based on feedback topology, (Voltage, Current, Transconductance and Transresistance amplifiers), Effect of negative feedback on various performance parameters of an amplifier. Oscillators: Condition for oscillations, phase shift – Wien bridge, Hartley, Colpitts and Crystal oscillator.		
<b>Total Lecture Hours</b>		<b>45 Hours</b>

#### Textbooks

- |   |  |
|---|--|
| 1 | Millman & Halkies, "Electronic Device and Circuits", Second Edition, Tata McGraw Hill. |
| 2 | Boylestead & Nashelsky, "Electronic devices and Circuits Theory" Eighth edition, PHI   |

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**B.Tech in Electronics Engineering**

SoE No.  
23EE-101

## Reference Books

- |   |   |
|---|---|
| 1 | Millman Halkies, "Integrated Electronics", Tata McGraw Hill.          |
| 2 | David A. Bell, "Electronic Device and Circuits", Fourth Edition, PHI. |

## YCCE e- library book links [ACCESSIBLE FROM COLLEGE CAMPUS]

- |   |   |
|---|---|
| 1 | <a href="http://103.152.199.179/YCCE/yccelibrary.html">http://103.152.199.179/YCCE/yccelibrary.html</a> |
|---|---|

## MOOCs Links and additional reading, learning, video material

- |   |   |
|---|---|
| 1 | <a href="http://nptel.iitm.ac.in/video.php?subjectId=117103063">http://nptel.iitm.ac.in/video.php?subjectId=117103063</a> |
| 2 | NPTEL Video: mod07lec29: BJT  |
| 3 | NPTEL Video: mod07lec30   |

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(Department of Electronics Engineering)

**B.Tech in Electronics Engineering**

SoE No.  
23EE-101

## III SEMESTER

### 23EE1302: Lab. Electronic Devices and Circuits

#### Course Outcomes:

**Upon successful completion of the course the students will be able to**

1. Analyze different types of semiconductor devices, their operation and characteristics.
2. Design and analyze the DC bias circuitry of BJT and FET.
3. Analyze and model BJT for small signal and low frequency.
4. Apply concept of feedback to improve the stability of circuits.
5. Design circuits using the transistors and oscillators

Sr. No.	Experiments based on
1	To plot I/P & O/P Characteristics of Common Base Transistor Configuration. Find I/P& O/P Resistance and Current Gain.
2	To plot I/P & O/P Characteristics of Common Emitter Transistor Configuration. Find I/P& O/P Resistance and Current Gain.
3	To perform the Fixed Bias circuit of the transistor.
4	To perform the Self Bias circuit of transistor.
5	To perform the Drain and Transfer characteristics of Field Effect Transistor (FET).
6	To Plot the Frequency Response of a single stage RC coupled CE amplifier.
7	N-Channel MOSFET amplifier in common source configuration with and without feedback.
8	To determine the efficiency of Class A power amplifier.
9	To determine the efficiency of Class B push pull power amplifier and to study cross over distortion.
10	To determine the phase shift in RC phase shift oscillator.

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**SoE No.  
23EE-101**

## B.Tech in Electronics Engineering

### III SEMESTER

### 23EE1303 : Network Analysis

#### Course Outcomes:

Upon successful completion of the course the students will be able to

1. **Define, understand** and **explain** concepts related to electrical networks.
2. **Apply** the knowledge of network theorems to the electrical networks to acquire the desired parameter.
3. **Understand** and **analyze** electrical circuits in transform domain.
4. **Apply** the concept of two – port networks to **evaluate** different two-port parameters.
5. **Analyze** network concepts using EDA Tool.

Unit:1	Nodal Analysis of Electric Circuits	8 Hours
Basics of electric circuits, circuit elements and their voltage – current relationship, classification of circuit elements, sources - their types and characteristics, concept of equivalent sources, source transformation and duality, concept of supernode , nodal analysis of circuits containing resistors, inductors, capacitors, transformers, and both independent and dependent sources to determine current, voltage and power.		
Unit:2	Mesh Analysis of Electric Circuits	7 Hours
Mesh Analysis, Concept of super mesh, mutual inductance, coefficient of coupling, dot convention, dot marking in coupled coils, mesh analysis of circuits containing resistors, inductors, capacitors, transformers, and both independent and dependent sources to determine current, voltage and power.		
Unit:3	Network Theorem	9 Hours
Superposition Theorem, Thevenin's Theorem, Norton's Theorem, Maximum Power Transfer Theorem		
Unit:4	Initial and Final Conditions, Impedance Functions and Circuit Analysis with Laplace Transform	7 Hours
Concept of initial and final conditions, behaviour of resistor, inductor and capacitor at $t = 0^-$ and at $t = 0^+$ , procedure for evaluating initial and final conditions, analytical treatment. Review of Laplace Transform, transform impedance and admittance, s – domain impedance and admittance models for resistor, inductor and capacitor, series and parallel combinations of elements. Transformed network on loop and mesh basis, mesh and node equations for transformed networks, time response of electrical network with and without initial conditions by Laplace transform.		

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<b>Unit:5</b>	<b>Transforms of other Signal Waveforms, Network Functions, Poles and Zeros of network functions</b>	<b>7 Hours</b>
Unit step, ramp and impulse functions with and without time delay, their Laplace transform, waveform synthesis and its application to electrical networks. Terminal pairs or ports, network functions for one port and two port networks, definition and physical interpretation of poles and zeros, pole-zero plot for network functions, restrictions on pole and zero locations for driving point and transfer functions, time domain behaviour from the pole – zero plot, network synthesis using pole – zero plot.		
<b>Unit :6</b>	<b>Two Port Parameters</b>	<b>7 Hours</b>
Standard reference directions for the voltages and currents of a two – port network, defining equations for open circuit impedance, transmission, inverse transmission, hybrid and inverse hybrid parameters, relationships between parameter sets, conditions for reciprocity and electrical symmetry in terms of two – port parameters, interconnections of two - port networks.		
<b>Total Lecture Hours</b>		<b>45 Hours</b>

<b>Text books</b>	
<b>1</b>	M.E.VanValkenburg, Network Analysis, 3rd Edition, PHI Learning Private Limited.
<b>Reference Books</b>	
<b>1</b>	Sudhakar,A.,Shyammohan,S.P., Circuits and Network, Tata McGraw-Hill New Delhi
<b>2</b>	A William Hayt ,Engineering Circuit Analysis,8th Edition, McGraw-Hill Education.
<b>YCCE e- library book links [ACCESSIBLE FROM COLLEGE CAMPUS]</b>	
<b>1</b>	<a href="http://103.152.199.179/YCCE/yccelibrary.html">http://103.152.199.179/YCCE/yccelibrary.html</a>
<b>MOOCs Links and additional reading, learning, video material</b>	
<b>1</b>	<a href="https://nptel.ac.in/courses/108105159">https://nptel.ac.in/courses/108105159</a>
<b>2</b>	<a href="https://archive.nptel.ac.in/courses/108/105/108105159/">https://archive.nptel.ac.in/courses/108/105/108105159/</a>

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Nagar Yuwak Shikshan Sanstha's

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(An Autonomous Institution affiliated to Rashtrasant Tukadoji Maharaj Nagpur University)

**B. Tech SoE and Syllabus 2023**

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(Department of Electronics Engineering)

**B.Tech in Electronics Engineering**

**SoE No.  
23EE-101**

## III SEMESTER

### 23EE1304 : Lab. Network Analysis

#### Course Outcomes:

Upon successful completion of the course the students will be able to

1. **Define, understand and explain** concepts related to electrical networks.
2. **Apply** the knowledge of network theorems to the electrical networks to acquire the desired parameter.
3. **Understand and analyze** electrical circuits in transform domain.
4. **Apply** the concept of two – port networks to **evaluate** different two-port parameters.
5. **Analyze** network concepts using EDA Tool.

Sr. No.	Experiments based on
1	Introduction to PSPICE and Perform nodal analysis on simple electrical circuits.
2	Perform nodal analysis on electrical circuits with dependent energy sources.
3	Perform mesh analysis on simple electrical circuits.
4	Perform mesh analysis on electrical circuits with dependent energy sources.
5	Verification of Superposition Theorem.
6	Verification of Thevenin's Theorem.
7	Verification of Norton's Theorem.
8	Verification of Maximum Power Transfer Theorem.
9	Perform nodal analysis on RLC circuits.
10	Perform mesh analysis on RLC circuits.

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(Department of Electronics Engineering)

**SoE No.  
23EE-101**

## B.Tech in Electronics Engineering

### III SEMESTER

### 23EE1305 : Signal and Systems

#### Course Outcomes:

Upon successful completion of the course the students will be able to

1. **Understand** and apply mathematical knowledge for Continuous & Discrete time signals
2. Apply mathematical knowledge for problem analysis in Continuous & discrete time systems
3. **Apply** and **analyze** various properties of transform techniques to solve the continuous and discrete Time Systems
4. **Analyze** various methods to categorize the LTI Systems and identify solutions and apply for mathematical representation of systems

Unit:1	7 Hours	
Continuous and Discrete time signals Signal representation, Transformation of the independent variable, classification of signals, Signal Energy and Power, Periodic, Even & Odd, Real and Exponential Signals		
Unit:2	8 Hours	
Continuous and Discrete time System Continuous-Time Systems, system properties: linearity: additivity and homogeneity, shift-invariance, causality, stability, convolution		
Unit:3	7 Hours	
Fourier Series Representation of Periodic Signals Fourier Series Representation of Continuous-Time Periodic Signals, convergence of the Fourier Series.		
Unit:4	8 Hours	
Fourier Transform Convergence of Fourier Transform and its Properties, Representation of A periodic Signals, The Fourier Transform for Periodic Signals. Analysis and Characterization of LTI Systems using the Fourier Transform.		
Unit:5	7 Hours	
The Laplace Transform . The Region of Convergence for Laplace Transforms. The Inverse Laplace Transform. Properties of the Laplace Transform. Analysis and Characterization of LTI Systems Using the Laplace Transform. The Unilateral Laplace Transform		
Unit :6	8 Hours	
Z transform The Z Transform. The Region of Convergence for Z Transforms. The Inverse Z Transform. Properties of the Z Transform. Analysis and Characterization of LTI Systems Using the Z Transform		
<b>Total Lecture Hours</b>		<b>45 Hours</b>

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**SoE No.  
23EE-101**

## Text books

1 Alan V. Oppenheim, Alan S.Willsky, with S. Hamid,., Signals and Systems, Prentice Hall of India.

## Reference Books

1 B.P.Lathi, Linear Systems and Signals

2 D.Roy Choudhury, Networks and Systems, New Age International Publishers

## YCCE e- library book links [ACCESSIBLE FROM COLLEGE CAMPUS]

1 <http://103.152.199.179/YCCE/yccelibrary.html>

2

## MOOCs Links and additional reading, learning, video material

1 NPTEL Material from web (ISC Bangalore/IITS)

2 NPTEL Material from web (ISC Bangalore/IITS)

3 [https://onlinecourses.nptel.ac.in/noc22\\_ee93/preview](https://onlinecourses.nptel.ac.in/noc22_ee93/preview)

4 [https://onlinecourses.nptel.ac.in/noc22\\_ee90/preview](https://onlinecourses.nptel.ac.in/noc22_ee90/preview)

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(Department of Electronics Engineering)

**SoE No.  
23EE-101**

## B.Tech in Electronics Engineering

### III SEMESTER

### 23EE1306 : Basics of Python Programming

#### Course Outcomes:

**Upon successful completion of the course the students will be able to**

1. Interpret the fundamental Python syntax and semantics
2. Use of Python control flow statements.
3. Express proficiency in the handling of strings and functions.
4. Determine the methods to create and manipulate Python programs by utilizing the data structures like lists, dictionaries, tuples and sets.

Unit:1	5 Hours	
Introduction to Python Programming Language, Identifiers, Keywords, Statements and Expressions, Variables, Operators, Data Types, Indentation, Comments, Reading Input, Print Output, Type Conversions, The type() Function and Is Operator.		
Unit:2	5 Hours	
Control Flow Statements, The if Decision Control Flow Statement, The if...else Decision Control Flow Statement, The if...elif...else Decision Control Statement, Nested if Statement, The while Loop, The for Loop, The continue and break Statements,		
Unit:3	5 Hours	
Strings, Creating and Storing Strings, Basic String Operations, Accessing Characters in String by Index Number, String Slicing and Joining, String Methods, Formatting Strings, Lists, Creating Lists, Basic List Operations, Indexing and Slicing in Lists, Built-In Functions Used on Lists, List Methods, The del Statement.		
Unit:4	5 Hours	
Dictionaries, Creating Dictionary, Accessing and Modifying key:value Pairs in Dictionaries, Built-In Functions Used on Dictionaries, Dictionary Methods, The del Statement,		
Unit:5	5 Hours	
Tuples and Sets, Creating Tuples, Basic Tuple Operations, Indexing and Slicing in Tuples, Built-In Functions Used on Tuples, Relation between Tuples and Lists, Relation between Tuples and Dictionaries, Tuple Methods, Using zip() Function, Sets, Set Methods, Traversing of Sets, Frozenset		
Unit :6	5 Hours	
Visualizing Information: what is data visualization, use of Pyplot Matplotlib Library, Creating Line charts and scatter plot, Creating bar charts and Pie Charts, Customizing the plots, Creating Histogram with PyPlot and other library, Creating Frequency Polygons, Creating Box plot, Plotting data from Data frame.		
<b>Total Lecture Hours</b>		<b>30 Hours</b>

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23EE-101**

## Text books

1 "Introduction to Python Programming", 1st Edition, Gowrishankar S, Veena A CRC Press/Taylor & Francis.

## Reference Books

1 "Python Data Science Handbook: Essential Tools for Working with Data", 1st Edition, Jake VanderPlas, O'Reilly Media

2 "Core Python Applications Programming", 3rd Edition, Wesley J Chun, Pearson Education

## YCCE e- library book links [ACCESSIBLE FROM COLLEGE CAMPUS]

1 <http://103.152.199.179/YCCE/yccelibrary.html>

## MOOCs Links and additional reading, learning, video material

1 <https://www.python.org/>

2 <https://www.w3schools.com/python/>

3 <https://www.geeksforgeeks.org/python-programming-language/>

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(Department of Electronics Engineering)

**SoE No.**  
**23EE-101**

## B.Tech in Electronics Engineering

### III SEMESTER

### 23EE1307 : Lab : Sensor based mini project and report writing

#### Course Outcomes:

Upon successful completion of the course the students will be able to

1. Develop a deeper understanding of the importance of healthy living and its impact on overall well-being.
2. Develop a sense of community and belonging among participants through collaborative activities and shared experiences.
3. Make positive lifestyle changes and will be equipped with resources

Sr. No.	Experiments based on (Sensor based mini project and report writing)
1	Soiling testing project (MSPA-1)
2	Temperature and Humidity testing project (MSPA-2)
3	Air pollution related project (MSPA-3)
4	Solar power related project (MSPA-4)

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23EE-101

## III SEMESTER Multidisciplinary Minor Courses

### Track 1

Courses	Sem	MDMT1EE101 : Sustainable Electronics
MDM-I	3	(MDM1EE101) Sustainable Electronics Fundamentals
MDM-II	4	(MDM2EE102) Consumer Electronics
MDM-III	5	(MDM3EE103) Digital Electronics
MDM-IV	6	(MDM4EE104) Microcontroller with Arduino applications
MDM-V	7	(MDM5EE105) Sensors and Actuators
MDM-VI	8	(MDM6EE106) E-waste Management and Recycling Technologies

### Track 2

Courses	Sem	MDMT2EE201 :Applied Signal Processing
MDM-I	3	(MDM1EE201) Fundamentals of Digital Electronics
MDM-II	4	(MDM2EE202) Fundamental of Image Processing and Applications
MDM-III	5	(MDM3EE203) Computer Vision
MDM-IV	6	(MDM4EE204) Forensic Image Processing
MDM-V	7	(MDM5EE205) Biomedical Image Processing
MDM-VI	8	(MDM6EE206) Remote Sensing and satellite Image Processing

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**B.Tech in Electronics Engineering**

SoE No.  
23EE-101

## III SEMESTER

### Open Elective -I : Basket

SN	Sem	Type	BoS/ Deptt	Sub. Code	Subject
1	3	OE1	GE	23OE1301	OE-I : Combinatorics
2	3	OE1	GE	23OE1302	OE-I : Fuzzy Set Theory, Arithmetic And Logic
3	3	OE1	GE	23OE1303	OE-I : Green Chem. & Sustainability
4	3	OE1	GE	23OE1304	OE-I : Hydrogen Fuel
5	3	OE1	GE	23OE1305	OE-I : Electronic Materials And Applications
6	3	OE1	GE	23OE1306	OE-I : Laser Technology And Applications
7	3	OE1	MGT	23OE1307	OE-I : Finance And Cost Management
8	3	OE1	MGT	23OE1308	OE-I : Operation Research Techniques
9	3	OE1	MGT	23OE1309	OE-I : Project Evaluation & Management
10	3	OE1	MGT	23OE1310	OE-I : Total Quality Management
11	3	OE1	MGT	23OE1311	OE-I : Value Engineering
12	3	OE1	MGT	23OE1312	OE-I : Maintenance Management
13	3	OE1	MGT	23OE1313	OE-I : Industrial Safety
14	3	OE1	MGT	23OE1314	OE-I : Industry 4.0
15	3	OE1	MGT	23OE1315	OE-I : Operation Management
16	3	OE1	MGT	23OE1316	OE-I : Material Management
17	3	OE1	MGT	23OE1317	OE-I : Hospitality Management
18	3	OE1	MGT	23OE1318	OE-I : Human Resource Management & Organizational Behaviour
19	3	OE1	MGT	23OE1319	OE-I : Agri-Business Management
20	3	OE1	MGT	23OE1320	OE-I : Rural Marketing
21	3	OE1	MGT	23OE1321	OE-I : Marketing Management
22	3	OE1	MGT	23OE1322	OE-I : Health Care Management

Link for Open Electives syllabus: <https://ycce.edu/syllabus/>

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(Department of Electronics Engineering)

**B.Tech in Electronics Engineering**

**SoE No.  
23EE-101**

**III SEMESTER**  
**Mandatory Learning Course (Audit Course)**  
**MLC2123 : YCAP3**

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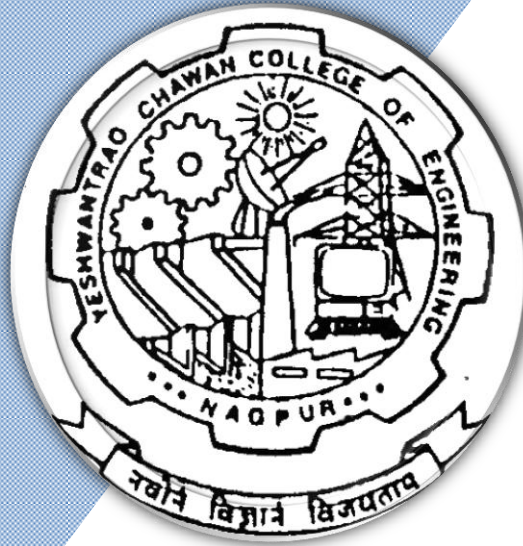
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# Yeshwantrao Chavan College of Engineering

(An Autonomous Institution affiliated to Rashtrasant Tukadoji Maharaj Nagpur University)

(Accredited 'A++' Grade by NAAC with a score of 3.6)

Hingna Road, Wanadongri, Nagpur - 441 110



## Bachelor of Technology

### SoE & Syllabus 2023

#### 4<sup>th</sup> Semester

(Department of Electrical Engineering)

### B. Tech in Electronics Engineering



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**Yeshwantrao Chavan College of Engineering**  
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**B.TECH SCHEME OF EXAMINATION 2023**  
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 (Department of Electronics Engineering)  
**B. Tech in Electronics Engineering**

SoE No.  
23EE-101

SN	Sem	Type	BoS/ Deptt	Sub. Code	Subject	T/P	Contact Hours				Credits	% Weightage			ESE Duration Hours
							L	T	P	Hrs		MSEs*	TA**	ESE	
<b>FOURTH SEMESTER</b>															
1	4	BS	GE	23GE1404	Probability Theory and Sampling Theory	T	3	0	0	3	3	30	20	50	3
2	4	HSSM-2	GE	23GE1401	Entrepreneurship Development	T	2	0	0	2	2	30	20	50	3
3	4	<b>AEC-2</b>	GE	23GE1405 23GE1406	Marathi Language / Hindi Language	T	2	0	0	2	2	30	20	50	3
4	4	VEC-1	CV	23CV1411	Environmental Sustainability, Pollution and Management	T	2	0	0	2	2	30	20	50	3
5	4	PC	EE	23EE1401	Electromagnetic Fields	T	3	0	0	3	3	30	20	50	3
6	4	PC	EE	23EE1402	<b>Lab</b> : Electronics Workshop	P	0	0	2		1		60	40	
7	4	PC	EE	23EE1403	Analog Circuits	T	3	0	0	3	3	30	20	50	3
8	4	PC	EE	23EE1404	<b>Lab</b> : Analog Circuits	P	0	0	2	2	1		60	40	
9	4	VSEC-2	EE	23EE1405	<b>Lab</b> : PCB design or CAD	P	0	0	2	4	2		60	40	
10	4	OE-2	OE		<b>Open Elective-II</b>	T	2	0	0	2	2	30	20	50	3
11	4	MDM	EE		<b>MD Minor Course-II</b>	T	2	0	0	2	2	30	20	50	3
<b>TOTAL</b>							<b>19</b>	<b>0</b>	<b>6</b>	<b>25</b>	<b>23</b>				

List of Mandatory Learning Course (MLC)															
1	4	HS	T&P	MLC2124	YC <b>AP4</b> : YCCE Communication Aptitude Preparation	A	3	0	0	3	0				

Open Elective - II					
SN	Sem	Type	BoS/ Deptt	Sub. Code	Subject
1	4	OE2	GE	23OE2401	OE-II : Combinatorics
2	4	OE2	GE	23OE2402	OE-II : Fuzzy Set Theory, Arithmetic And Logic
3	4	OE2	GE	23OE2403	OE-II : Green Chem. & Sustainability
4	4	OE2	GE	23OE2404	OE-II : Hydrogen Fuel
5	4	OE2	GE	23OE2405	OE-II : Electronic Materials And Applications
6	4	OE2	GE	23OE2406	OE-II : Laser Technology And Applications
7	4	OE2	MGT	23OE2407	OE-II : Finance And Cost Management
8	4	OE2	MGT	23OE2408	OE-II : Operation Research Techniques
9	4	OE2	MGT	23OE2409	OE-II : Project Evaluation & Management
10	4	OE2	MGT	23OE2410	OE-II : Total Quality Management
11	4	OE2	MGT	23OE2411	OE-II : Value Engineering
12	4	OE2	MGT	23OE2412	OE-II : Maintenance Management
13	4	OE2	MGT	23OE2413	OE-II : Industrial Safety
14	4	OE2	MGT	23OE2414	OE-II : Industry 4.0
15	4	OE2	MGT	23OE2415	OE-II : Operation Management
16	4	OE2	MGT	23OE2416	OE-II : Material Management
17	4	OE2	MGT	23OE2417	OE-II : Hospitality Management
18	4	OE2	MGT	23OE2418	OE-II : Human Resource Management & Organizational Behaviour
19	4	OE2	MGT	23OE2419	OE-II : Agri-Business Management
20	4	OE2	MGT	23OE2420	OE-II : Rural Marketing
21	4	OE2	MGT	23OE2421	OE-II : Marketing Management
22	4	OE2	MGT	23OE2422	OE-II : Health Care Management

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(Department of Electronics Engineering)

SoE No.  
23EE-101

## B.Tech in Electronics Engineering

### IV SEMESTER

### 23GE1404 : Probability Theory and Sampling Theory

#### Course Outcomes:

Upon successful completion of the course the students will be able to

1. Identify an appropriate probability distribution for a given discrete or continuous random variable and compute probabilities.
2. Use probability distributions to solve a given problem
3. Apply concepts of sampling theory to find probabilities and estimate parameters of various problems.
4. Test the hypothesis and estimate confidence intervals at different levels.

<b>Unit I:</b>	<b>8 Hrs.</b>
<b>Random Variables and Probability Distributions:</b> Conditional probability, Baye's theorem. Discrete and Continuous random variables, Probability function and Distribution function, Joint distributions. Independent Random variables, Conditional Distribution.	
<b>Unit II:</b>	<b>7 Hrs.</b>
<b>Mathematical Expectation:</b> Mathematical Expectation, Variance and Standard Deviation, Moments, Moment generating function, Skewness and Kurtosis.	
<b>Unit III:</b>	<b>7 Hrs.</b>
<b>Special Probability Distributions:</b> Binomial, Geometric, Poisson, Exponential, Normal, Central Limit theorem.	
<b>Unit IV:</b>	<b>8 Hrs.</b>
<b>Sampling Theory:</b> Unbiased and efficient estimates, Point estimates and interval estimates. Confidence interval for means, Confidence interval for proportions, Confidence interval for differences and sums of mean and proportions.	
<b>Unit V:</b>	<b>7 Hrs.</b>
<b>Estimation:</b> Unbiased and efficient estimates. Point estimates and interval estimates. Confidence interval for means, Confidence interval for proportions, Confidence interval for differences and sums of mean and proportions.	
<b>Unit VI:</b>	<b>8 Hrs.</b>
<b>Hypothesis Testing:</b> Definition of hypothesis, Testing of hypothesis for large samples using normal distributions. Testing of hypothesis for small distributions (student's t-test, F-test). Goodness of fit test (Chi-square distribution).	
	<b>Total Lecture 45 Hours</b>

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## Textbooks:

1	M. R. Spiegel, The theory and problems of probability and Statistics, 3 <sup>rd</sup> edition, Schaum series. (McGraw Hill)
2	Michael J. Evans and Jeffrey S. Rosenthal, Probability and Statistics, 2 <sup>nd</sup> edition, W. H. Freeman publisher, 2009

## Reference Books:

1	S. C.Gupta and V.K.Kapoor, Fundamentals of Mathematical statistics, 10th Edition, Sultan chand and son, 2001.
2	G Balaji, Probability and Statistics, 15 <sup>th</sup> edition, G Balaji publisher, 2017

## YCCE e- library book links [ACCESSIBLE FROM COLLEGE CAMPUS]

1	<a href="http://103.152.199.179/YCCE/Supported%20file/Supported%20file/e-copies%20of%20books/Applied%20Sciences%20&amp;%20Humanities/Mathematics%20and%20Humanities/">http://103.152.199.179/YCCE/Supported%20file/Supported%20file/e-copies%20of%20books/Applied%20Sciences%20&amp;%20Humanities/Mathematics%20and%20Humanities/</a>
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## MOOCs Links and additional reading, learning, video material

1	<a href="https://nptel.ac.in/courses/111106051">https://nptel.ac.in/courses/111106051</a>
2	<a href="https://archive.nptel.ac.in/courses/111/104/111104137/">https://archive.nptel.ac.in/courses/111/104/111104137/</a>
3	<a href="https://archive.nptel.ac.in/courses/111/106/111106135/">https://archive.nptel.ac.in/courses/111/106/111106135/</a>

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**SoE No.**  
**23EE-101**

## B.Tech in Electronics Engineering

### IV SEMESTER

### 23GE1401 : Entrepreneurship Development

#### Course Outcomes:

Upon successful completion of the course the students will be able to

1. Appreciate role of entrepreneurs in society and develop entrepreneurial abilities by providing information about skill sets.
2. Develop an understanding of how and what form of business organization to choose for start up.
3. Stimulate to innovate, develop prototypes or ideas by applying theory into practice.
4. Identify the Support rendered by various Government Agencies.

#### Unit I:

**7 Hrs.**

**Entrepreneur & Entrepreneurship:** Meaning of Entrepreneur, Evolution of the concept – Theories and Models, Types of Entrepreneur, Stages in entrepreneurial process- Idea Generation, Screening, Selection and Managing Resources.

#### Unit II:

**8 Hrs.**

**Legal Compliances for Incorporating Start up:** Fundamentals of choosing the Business Organization form for startup, Incorporation of Partnership, LL.P & Co – operative, Incorporation of One Person Company, Pvt. Ltd., Pub. Ltd. and not for profit company, Financing the legal Venture and Legal Compliances.

#### Unit III:

**7 Hrs.**

**Entrepreneurship and IP Strategy:** Intellectual Property : Definition and Concept of Trade Mark, Patent, Copyright, Industrial Design, IP Strategy and Entrepreneurship.

#### Unit IV:

**8 Hrs.**

**Support to Entrepreneurs:** Financing new ventures, Business Incubators – Government Policy for Small Scale Enterprises, Growth Strategies in small industry – Expansion, Diversification, Joint Venture, Merger and Subcontracting.

**Total Lecture**

**30 Hours**

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## B.Tech in Electronics Engineering

### Student activities:

1. Interview at least four entrepreneurs or businessman and identify Traits of successful entrepreneurs.
2. Analyse case studies of any two successful entrepreneurs.
3. Download product development and innovative films from internet.
4. Identify your hobbies and interests and convert them into business idea

### Textbooks

1. Khanka. S.S., "Entrepreneurial Development" S.Chand & Co. Ltd., Ram Nagar, New Delhi, 2013.
2. Donald F Kuratko, "Entrepreneurship – Theory, Process and Practice", 9th Edition, Cengage Learning 2014.
3. Corporate Law, 33rd ed. 2016, Taxman New Delhi.
4. Narayanan, V. K., Managing technology and innovation for competitive advantage, first edition, Pearson education, New Delhi, (2006)
5. Idris, K. (2003), Intellectual property: a power tool for economic growth, second edition, WIPO publication no. 888, Switzerland
6. Khanka. S.S., "Entrepreneurial Development" S.Chand & Co. Ltd., Ram Nagar, New Delhi, 2013.
7. Ramaiya's Guide to the Companies Act, 18th ed. 2014, Lexis Nexis New Delhi.

### Reference Books

1. Mehta, Monica- The Entrepreneurial Instinct : How everyone has the innate ability to start a successful small business – McGraw – Hill Education, New Delhi 2012, ISBN 978-0-07-179742-9
2. Prasanna Chandra "Protect Preparation, Appraisal, Implementation" Tata McGraw Hill. New Delhi
3. S Anil Kumar "Entrepreneurship Development" New Age International Publishers
4. Nishith Dubey "Entrepreneurship Development" PHI Learning

### YCCE e- library book links [ACCESSIBLE FROM COLLEGE CAMPUS]

- 1 <http://link.springer.com/openurl?genre=book&isbn=978-1-4613-6193-0>
- 2 <https://onlinelibrary.wiley.com/doi/book/10.1002/9780470168042>

### MOOCs Links and additional reading, learning, video material

- 1 [https://onlinecourses.swayam2.ac.in/cec23\\_mg24/course-entrepreneurship-development](https://onlinecourses.swayam2.ac.in/cec23_mg24/course-entrepreneurship-development)
- 2 [https://onlinecourses.nptel.ac.in/noc23\\_mg74/announcements?force=true-entrepreneur](https://onlinecourses.nptel.ac.in/noc23_mg74/announcements?force=true-entrepreneur)
- 3 [https://onlinecourses.nptel.ac.in/noc23\\_mg126/announcements?force=true-Business fundamentals for entrepreneurship](https://onlinecourses.nptel.ac.in/noc23_mg126/announcements?force=true-Business-fundamentals-for-entrepreneurship)

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## B.Tech in Electronics Engineering

### IV SEMESTER

### 23GE1405 : Marathi Language

#### Course Objectives

1. मराठी भाषेच्या समृद्धीची जाणीव करून देणे.
2. विद्यार्थ्यांमध्ये भाषा कौशल्याचा विकास करणे आणि त्यातून रोजगाराच्या संधीचा शोध घेणे.

#### Course Outcomes

3. भाषेचा जीवन व्यवहारात योग्य पद्धतीने वापर करण्याचा प्रयत्न करणे.
4. संत साहित्याच्या शिकवणुकीमुळे मानवता आणि मानवी व्यवहाराची सांगड घालणे, नैतिक मूल्ये रुजविणे.
5. विद्यार्थ्यांना रोजगाराभिमुख बनविणे.

Unit:1	गद्य विभाग	8 Hours
१. भारतीय लोकशाहीचे भवितव्य काय?	- डॉ. बाबासाहेब आंबेडकर	
२. काळी आई	- व्यंकटेश माडगूळकर	
३. संत तुकारामांचे अभंग	- निर्मलकुमार फडकुले	
४. माझी शाळा	- प्रकाश खरात	
५. समतेचे वारकरी संत गाडगेबाबा आणि राष्ट्रसंत तुकडोजी महाराज	- अशोक राणा	
६. लोककल्याणकारी राजा :	- शरयू तायवाडे	
Unit:2	पद्य विभाग	8 Hours
१. ज्ञानेश्वरांचे अभंग	- संत ज्ञानेश्वर	
२. वनसुधा	- वामन पंडित	
३. नवा शिपाई	- केशवसुत	
४. मेंढरं	- विठ्ठल वाघ	
५. पोरी	- अनुराधा पाटील	
६. गाव	- हेमंतकुमार कांबळे	

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Unit:3	<u>व्यावहारिक मराठी</u>	7 Hours
१. म्हणी		
२. मुलाखतलेखन	- डॉ. वैशाली धनविजय	
३. वाक्प्रचार		
४. जाहिरातलेखन	- डॉ. अजय देशपांडे	
Unit:4	<u>रोजगाराभिमुख मराठी व्यावहारिक कौशल्ये</u>	7 Hours
१. प्रत्यक्ष मुलाखत कौशल्य		
२. वाचन कौशल्य - (अ) बातमी वाचन (ब) कथा वाचन		
३. ऑनलाईन कौशल्य - (अ) ग्राहक सेवा केंद्राशी संवाद, (ब) ऑनलाईन अर्ज करणे		

### Reference Books

- पाठ्यपुस्तक : शब्दसाधना - भाग १
- रोजगाराभिमुख मराठी व्यावहारिक कौशल्ये

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### IV SEMESTER 23GE1406 : Hindi Language

#### Course Objectives

6. विद्यार्थियों में देशभक्तिपरक एवं पारिवारिक मूल्यों का विकास |
7. विद्यार्थियों पर्यावरण-संरक्षण के प्रति सजग करना |
8. एकांकी, कहानी, निबंध आदि विधाओं के मध्य का अंतर अवगत कराना |
9. हिंदी के प्रयोजनमूलक स्वरूप से परिचित कराना |
10. विद्यार्थियों को आधुनिक प्रौद्योगिकी (तकनीक) का प्रयोग करने में सक्षम बनाना |.

#### Course Outcomes

1. पौराणिक अथवा ऐतिहासिक घटनाओं को तार्किक आधार पर स्वीकार करेंगे | अपने परिवेश के उचित और अनुचित व्यवहारों के प्रति आकलन शक्ति बढ़ेगी |
2. एकांकी, कहानी, निबंध आदि विधाओं के मध्य का अंतर बताने में सक्षम होंगे |
3. कविता का रसास्वादन करने में समर्थ होंगे |
4. 'अनुवाद' के स्वरूप एवं प्रक्रिया से अवगत होंगे |
5. 'मार्गिक नक्शे' का दैनिक जीवन में उपयोग करने में सक्षम होंगे |

Unit:1	गद्य विभाग	8 Hours
१. भाईसाहब (कहानी)	- प्रेमचंद	
२. स्मृति (निबंध)	- श्रीराम शर्मा	
३. गिल्लू (रेखाचित्र)	- महादेवी वर्मा	
४. अभाव (कहानी)	- विष्णु प्रभाकर	
५. महाभारत की साँझ (एकांकी)	- भारतभूषण	

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६. उखडे खंभे (व्यंग्य)।

- हरिशंकर परसाई

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Unit:2	<u>पद्य विभाग</u>	8 Hours
१. कबीर के दोहे	- कबीरदास	
२. ले चल यहाँ भुलावा देकर	- जयशंकर प्रसाद	
३. स्नेह-निर्झर बह गया	- हैसूर्यकांत त्रिपाठी "निराला"	
४. प्रथम रश्मि	- सुमित्रानंदन पंत	
५. जीवन का झरना	- आरसीप्रसाद सिंह	
६. कविता के साथ	- दामोदर खड़से	
Unit:3	<u>अन्य पाठ्य सामग्री</u>	7 Hours
१. मुहावरे और लोकोक्तियाँ: पाठ्यपुस्तक में मुहावरे और लोकोक्तियाँ का अर्थ एवं वाक्य प्रयोग		
२. विज्ञापन कला : अर्थ, परिभाषा, प्रकार, शीर्षक का महत्त्व, विज्ञापन के प्रयोजन, सत्य, लक्ष्य, विज्ञापन की भाषा, अच्छे विज्ञापन के गुण इत्यादि।		
Unit:4	<u>कौशल्य आधारित घटक</u>	7 Hours
१. वाचन कौशल्य (समाचार-वाचन, कहानी-वाचन)		
२. सोशल मीडिया के शिष्टाचार		
३. ऑनलाइन आवेदन, ग्राहक-सेवा केंद्र से संवाद		

### Reference Books

3. पाठ्यपुस्तक : "पलाश"

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## B.Tech in Electronics Engineering

### III/IV SEMESTER

23CV1311/23CV1411

### Environmental Sustainability, Pollution and Management

#### Course Outcomes :

Upon successful completion of the course, the students will be able to

The student will be able to

1. Gain insights into the efforts to safeguard the Earth's environment and resources.
2. Develop a critical understanding of the contemporary environmental issues of concern
3. Have an overview of pollution, climate change and national and global efforts to address adaptation and mitigation to changing environment through environmental management.
4. Learn about the major international treaties and our country's stand on and responses to the major international agreements.

Unit:1	Environment and Sustainable Development	8 Hours
The man-environment interaction; Overview of natural resources: renewable, and non-renewable energy resources; Introduction to sustainable development: Sustainable Development Goals (SDGs)- targets and indicators, challenges and strategies for SDGs; Environmental issues: Global change, Climate Change and Mitigation.		
Unit:2	Environmental Pollution and Health	7 Hours
Understanding pollution: Production processes and generation of wastes, Air pollution, Water pollution, Soil pollution and solid waste, Noise pollution, Thermal and Radioactive pollution. Impact on biotic and abiotic things.		
Unit:3	Environmental Management	8 Hours
Environmental management system: ISO 14001, Concept of Circular Economy, Life cycle analysis; Cost-benefit analysis, Environmental audit and impact assessment; Waste Management and sustainability; Ecolabeling /Eco mark scheme		
Unit:4	Environmental Treaties and Legislation	7 Hours
Introduction to environmental laws and regulation, An overview of instruments of international cooperation, Major International Environmental Agreements, Major Indian Environmental Legislations, Major International organizations, and initiatives		
<b>Total Lecture</b>		<b>30 Hours</b>

#### Text books

1	Chiras, D. D and Reganold, J. P. (2010). Natural Resource Conservation: Management for a Sustainable Future.10th edition, Upper Saddle River, N. J. Benjamin/Cummins/Pearson
2	Rajagopalan, R. (2011). Environmental Studies: From Crisis to Cure. India: Oxford University Press
3	Krishnamurthy, K.V. (2003) Textbook of Biodiversity, Science Publishers, Plymouth, UK
4	Jackson, A. R., & Jackson, J. M. (2000). Environmental Science: The Natural Environment and Human Impact. Pearson Education
5	Pittock, Barrie (2009) Climate Change: The Science, Impacts and Solutions. 2nd Edition. Routledge.
6	Theodore, M. K. and Theodore, Louis (2021) Introduction to Environmental Management, 2nd Edition. CRC Press
7	Kanchi Kohli and Manju Menon (2021) Development of Environment Laws in India, Cambridge University Press

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### Reference Books

1	Headrick, Daniel R. (2020) Humans versus Nature- A Global Environmental History, Oxford University Press
2	Gilbert M. Masters and W. P. (2008). An Introduction to Environmental Engineering and Science, Ela Publisher (Pearson)
3	William P. Cunningham and Mary A. (2015). Cunningham Environmental Science: A global concern, Publisher (Mc-Graw Hill, USA)
4	Varghese, Anita, Oommen, Meera Anna, Paul, Mridula Mary, Nath, Snehlata (Editors) (2022) Conservation through Sustainable Use: Lessons from India. Routledge.
5	Central Pollution Control Board Web page for various pollution standards. <a href="https://cpcb.nic.in/standards">https://cpcb.nic.in/standards</a>
6	Barnett, J. & S. O'Neill (2010). Maladaptation. Global Environmental Change—Human and Policy Dimensions 20: 211–213
7	Richard A. Marcantonio, Marc Lame (2022). Environmental Management: Concepts and Practical Skills. Cambridge University Press
8	Ministry of Environment, Forest and Climate Change (2019) A Handbook on International Environment Conventions & Programmes. <a href="https://moef.gov.in/wp-content/uploads/2020/02/convention-V-16-CURVE-web.pdf">https://moef.gov.in/wp-content/uploads/2020/02/convention-V-16-CURVE-web.pdf</a>

### YCCE e- library book links [ACCESSIBLE FROM COLLEGE CAMPUS]

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## B.Tech in Electronics Engineering

### IV SEMESTER

### 23EE1401: Electromagnetic Fields

#### Course Outcomes:

Upon successful completion of the course the students will be able to

1. Define and recognize different co-ordinate systems, apply different techniques of vector calculus to understand concepts of electromagnetic field theory. Describe the fabrication process on MOS transistors.
2. Determine the electromagnetic force exerted on charged particles, current elements, working principle of various electric and magnetic fields.
3. Explain fundamental laws governing electromagnetic fields and evaluate the physical quantities of electromagnetic fields in different media using the fundamental laws.
4. Deduce and justify the concepts of electromagnetic waves, means of transporting energy or information, in the form of radio waves.

Unit:1	8 Hours
Orthogonal coordinate systems- Cartesian, Cylindrical, Spherical and Transformations, differential lengths, surfaces and volumes.	
Unit:2	7 Hours
Coulomb's law, Electric field Intensity for different charge distribution: Point, Line, Surface & Volume, Electric flux, Gauss's law and Application, Divergence, Maxwell's First equation (Electrostatics), The Divergence Theorem.	
Unit:3	8 Hours
Energy & Potential: Energy Expended in Moving a Point charge in an Electric Field, Definition of Potential Difference and Potential, Potential field of a point charge, Potential field of a System of charges: Conservative Property, Potential Gradient, The Dipole, Poisson's and Laplace's equation, Uniqueness Of Electrostatic solution.	
Unit:4	7 Hours
Biot-Savart's law and its applications, Ampere's Circuital law and its applications, Curl, Stoke's Theorem, Magnetic flux and magnetic flux density, Faraday's law, displacement current, Maxwell's equations for static and time varying fields with physical significance	
Unit:5	8 Hours
Uniform plane wave, wave propagation in free space & dielectric, Poynting's Theorem and Wave Power, Propagation in Good Conductors: Skin Effect.	
Unit :6	8 Hours
Reflection of uniform plane waves at Normal incidence, standing wave ratio, plane wave propagation in general directions, plane wave reflection at oblique incidence angles, Brewsters angle.	
Total Lecture Hours	45 Hours

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## Textbooks

- |   |   |
|---|---|
| 1 | Engineering Electromagnetic, William H. Hayt, 7 th Edition, Tata McGraw – Hill, 2006 reprint. |
| 2 | Electromagnetics ,J D Kraus, 3 rd edition 1984, McGraw – Hill                                 |

## Reference Books

- |   |   |
|---|---|
| 1 | Electromagnetism: Theory and application, Ashutosh Pramanik, 2 nd edition august 2009, Prentice Hall. |
| 2 | Elements of Electromagnetics, M. N. O. Sadiku, 4 th edition 2007, Oxford Press                        |
| 3 | Field and Wave Electromagnetics, David K. Cheng, Second Edition, Addison Wesley                       |

## YCCE e- library book links [ACCESSIBLE FROM COLLEGE CAMPUS]

- |   |   |
|---|---|
| 1 | <a href="http://103.152.199.179/YCCE/yccelibrary.html">http://103.152.199.179/YCCE/yccelibrary.html</a> |
|---|---|

## MOOCs Links and additional reading, learning, video material

- |   |   |
|---|---|
| 1 | <a href="https://archive.nptel.ac.in/courses/108/106/108106073/">https://archive.nptel.ac.in/courses/108/106/108106073/</a> |
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## IV SEMESTER

### 23EE1402: Lab. Electronics Workshop

#### Course Outcomes:

Upon successful completion of the course the students will be able to

1. **Understand** and identify Different Electronics Components.
2. **Apply** the basic knowledge of Electronics Components to select the mini project.
3. **Demonstrate** their practical Knowledge to do Artwork, printing, Etching & drilling of PCB for mini project.
4. **Prepare** the mini project report and three minute video.

Sr. No.	Experiments based on
1	Identification of Various electronic components used in electronics workshop.
2	Identification of various equipment used in electronics workshop.
3	Testing of various electronics components.
4	Soldering and De-Soldering Practice.
5	PCB Design using EDA Tools (Orcad Layout Plus /Allegro/ Multisim Ultiboard /EasyEDA / Express PCB )
6	Etching and fabrication
7	Mini Project (Arduino / Node MCU / Raspberry Pi)
8	Report Writing

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### IV SEMESTER

### 23EE1403: Analog Circuits

#### Course Outcomes:

Upon successful completion of the course the students will be able to

**CO-1** : Student will acquire knowledge of the fundamentals, the different Parameters and internal structure of the operational amplifier.

**CO-2** : Student will analyze and design the linear applications of the operational amplifier.

**CO-3** : Students will analyze and design active Butterworth filters using operational amplifier

**CO-4** : Student will analyze and design the non-linear applications of the operational amplifier.

**CO-5** : Student will be able to use simulation tools and hardware to conduct experiments using operational amplifier circuits

<b>Unit:1</b>	Differential Amplifier, configurations, DC & AC Analysis of DIBO and DIUBO, Differential amplifier using swamping resistor, constant current bias, current mirror, cascaded differential amplifier. DC Level Shifter.	<b>8 Hours</b>
<b>Unit:2</b>	OPERATIONAL AMPLIFIER FUNDAMENTALS: Block Diagram of Op-AMP, Ideal Op-Amp, OPAMP parameters, Basic Op-Amp Configurations: Open loop, Feedback in OPAMP circuit: Inverting, Non-inverting, voltage follower. Compensation of error parameters :Input Bias and Offset Current, Input Bias and Offset voltages, frequency compensation.	<b>7 Hours</b>
<b>Unit:3</b>	LINEAR APPLICATIONS : Summing, difference amplifier, integrator, differentiator, Current-to-Voltage Converter, Voltage-to-Current Converter, Instrumentation Amplifiers, Instrumentation Applications, Transducer Bridge amplifiers.Precision Rectifiers, Log/Antilog amplifiers	<b>8 Hours</b>
<b>Unit:4</b>	ACTIVE FILTERS: Transfer function, first order filter, Standard second order response, higher order filter, KRC Filters, Multiple feedback filters, second and higher order Butterworth filter design.	<b>7 Hours</b>
<b>Unit:5</b>	NONLINEAR CIRCUITS: Voltage Comparators, Comparator Applications, Peak Detectors, Schmitt Triggers: Inverting & Non-inverting, Sample-and-Hold Circuits, clipper, clamper, WAVEFORM GENERATORS: multivibrators, triangular wave generator, Sinusoidal Oscillators.	<b>8 Hours</b>
<b>Unit :6</b>	Monolithic timer IC555, D-A AND A-D CONVERTERS: Performance Specifications of D-A Converters (DACs) and A-D Converters (ADCs), D-A Conversion Techniques, A-D Conversion Techniques.	<b>7 Hours</b>
<b>Total Lecture Hours</b>		<b>45 Hours</b>

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**B. Tech SoE and Syllabus 2023**

(Scheme of Examination w.e.f. 2023-24 onward)

(Department of Electronics Engineering)

## B.Tech in Electronics Engineering

SoE No.  
23EE-101

### Text books

1	Op-amps and Linear Integrated Circuits, Ramakant A. Gayakwad, Prentice Hall 3rd Edition
2	Linear Integrated Circuits, S. Salivahanan, V. S. Bhaaskaran, Tata McGraw Hill Publication 3rd Edition
3	Linear Integrated Circuits, D. Roy Chaudhuri, Shail Jain, New Age International 3rd Edition

### Reference Books

1	Design with Operational Amplifiers and Analog Integrated Circuits, Sergio Franco, McGraw-Hill 3rd Edition
2	

### YCCE e- library book links [ACCESSIBLE FROM COLLEGE CAMPUS]

1 <http://103.152.199.179/YCCE/yccelibrary.html>

2

### MOOCs Links and additional reading, learning, video material

1 [https://onlinecourses.nptel.ac.in/noc24\\_ee73/preview](https://onlinecourses.nptel.ac.in/noc24_ee73/preview)

2 <https://archive.nptel.ac.in/courses/108/108/108108111/>

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**B.Tech in Electronics Engineering**

**SoE No.  
23EE-101**

## IV SEMESTER

### 23EE1404 : Lab. Analog Circuits

#### Course Outcomes:

Upon successful completion of the course the students will be able to

**CO-1** : Student will acquire knowledge of the fundamentals, the different Parameters and internal structure of the operational amplifier.

**CO-2** : Student will analyze and design the linear applications of the operational amplifier.

**CO-3** : Students will analyze and design active Butterworth filters using operational amplifier

**CO-4** : Student will analyze and design the non-linear applications of the operational amplifier.

**CO-5** : Student will be able to use simulation tools and hardware to conduct experiments using operational amplifier circuits

Sr. No.	Experiments based on
1	To determine DC operating point and verify Gain relationship of Dual input Balanced Output Differential amplifier. To plot input output waveforms.
2	To determine DC operating point and verify Gain relationship of Dual input Un-balanced Output Differential amplifier. To plot input output waveforms.
3	To verify Gain relationship of Inverting and Non-inverting amplifier. To plot frequency response of Non-Inverting amplifier and verify gain bandwidth relation.
4	To determine CMRR and Slew rate of OP-AMP and compare with theoretical values.
5	To verify gain relationship of Summer, Scalar and Subtractor circuits.
6	To determine cut-off frequencies $f_a$ and $f_b$ of Integrator using frequency response and verify input output waveforms.
7	To determine cut-off frequencies $f_a$ and $f_b$ of Differentiator using frequency response and verify input output waveforms.
8	To determine cut-off frequency of second order Butterworth Low pass filter using frequency response and verify order of filter from stop band of frequency response.
9	To determine cut-off frequency of second order Butterworth High pass filter using frequency response and verify order of filter from stop band of frequency response.
10	To verify VUT and VLT of Schmitt trigger using OP-AMP IC 741 and plot the hysteresis curve.

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SoE No.  
23EE-101

## IV SEMESTER

### 23EE1405 : Lab. PCB design or CAD

#### Course Outcomes:

Upon successful completion of the course the students will be able to

1. Understand of fundamental concepts related to PCB design
2. Gain proficiency in using industry-standard EDA tools for PCB design
3. apply design rules and best practices in PCB layout, component placement
4. Analyse and optimize signal integrity in PCB designs, soldering practices
5. Prototype development, and practical testing to ensure that the designed circuits

Sr. No.	Experiments based on
1	Introduction to PCB Design Process
2	Introduction to EDA tools
3	PCB materials
4	PCB layout methods
5	Etching Process
6	Soldering Process
7	Fabrication and Testing
8	Mini Project

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## IV SEMESTER

### Multidisciplinary Minor Courses

#### Track 1

Courses	Sem	MDMT1EE101 : Sustainable Electronics
MDM-I	3	(MDM1EE101) Sustainable Electronics Fundamentals
MDM-II	4	(MDM2EE102) Consumer Electronics
MDM-III	5	(MDM3EE103) Digital Electronics
MDM-IV	6	(MDM4EE104) Microcontroller with Arduino applications
MDM-V	7	(MDM5EE105) Sensors and Actuators
MDM-VI	8	(MDM6EE106) E-waste Management and Recycling Technologies

#### Track 2

Courses	Sem	MDMT2EE201 :Applied Signal Processing
MDM-I	3	(MDM1EE201) Fundamentals of Digital Electronics
MDM-II	4	(MDM2EE202) Fundamental of Image Processing and Applications
MDM-III	5	(MDM3EE203) Computer Vision
MDM-IV	6	(MDM4EE204) Forensic Image Processing
MDM-V	7	(MDM5EE205) Biomedical Image Processing
MDM-VI	8	(MDM6EE206) Remote Sensing and satellite Image Processing

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23EE-101

## IV SEMESTER Open Elective -II : Basket

SN	Sem	Type	BoS/ Deptt	Sub. Code	Subject
1	4	OE2	GE	23OE2401	OE-II : Combinatorics
2	4	OE2	GE	23OE2402	OE-II : Fuzzy Set Theory, Arithmetic And Logic
3	4	OE2	GE	23OE2403	OE-II : Green Chem. & Sustainability
4	4	OE2	GE	23OE2404	OE-II : Hydrogen Fuel
5	4	OE2	GE	23OE2405	OE-II : Electronic Materials And Applications
6	4	OE2	GE	23OE2406	OE-II : Laser Technology And Applications
7	4	OE2	MGT	23OE2407	OE-II : Finance And Cost Management
8	4	OE2	MGT	23OE2408	OE-II : Operation Research Techniques
9	4	OE2	MGT	23OE2409	OE-II : Project Evaluation & Management
10	4	OE2	MGT	23OE2410	OE-II : Total Quality Management
11	4	OE2	MGT	23OE2411	OE-II : Value Engineering
12	4	OE2	MGT	23OE2412	OE-II : Maintenance Management
13	4	OE2	MGT	23OE2413	OE-II : Industrial Safety
14	4	OE2	MGT	23OE2414	OE-II : Industry 4.0
15	4	OE2	MGT	23OE2415	OE-II : Operation Management
16	4	OE2	MGT	23OE2416	OE-II : Material Management
17	4	OE2	MGT	23OE2417	OE-II : Hospitality Management
18	4	OE2	MGT	23OE2418	OE-II : Human Resource Management & Organizational Behaviour
19	4	OE2	MGT	23OE2419	OE-II : Agri-Business Management
20	4	OE2	MGT	23OE2420	OE-II : Rural Marketing
21	4	OE2	MGT	23OE2421	OE-II : Marketing Management
22	4	OE2	MGT	23OE2422	OE-II : Health Care Management

Link for Open Electives syllabus: <https://ycce.edu/syllabus/>

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**SoE No.  
23EE-101**

**IV SEMESTER**

**Mandatory Learning Course (Audit Course)**

**MLC2124 : YCAP4**

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