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 1st to 4th Semester

(Department of Information Technology)

**B.** Tech in Information Technology



(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 Information Technology) B. Tech. in Information Technology

SoE No. 23IT-101

S	Sem	Sem Type BoS/ Sub. Code Subject				T/P							/eightage		ESE
N			Deptt				L	Т	Р	Hrs		MSEs*	TA**	ESE	Duration Hours
		<u> </u>			FIRST SEMESTER (	GROUP-	A)	<u> </u>							HAUITS
1	1	BS	GE	23GE1101	Calculus and Vector	Т	3	0	0	3	3	30	20	50	3
2	1	BS	GE	23GE1106	Engineering Chemistry	Т	3	0	0	3	3	30	20	50	3
3	1	BS	GE	23GE1107	Lab: Engineering Chemistry	Р	0	0	2	2	1		60	40	
4	1	HS/AEC1	GE	23GE1112	Professional Communication	Т	2	0	0	2	2	30	20	50	2
5	1	HS/IKS	GE	23GE1115	Indian Knowledge System	Т	2	0	0	2	2	30	20	50	2
6	1	BES	CV	23CV1101	Engineering Mechanics	Т	3	0	0	3	3	30	20	50	3
7	1	BES	CV	23CV1102	Lab: Engineering Mechanics	Р	0	0	2	2	1		60	40	
8	1	BES	IT	23IT1103	Programming for Problem Solving	Т	2	0	0	2	2	30	20	50	2
9	1	BES	IT	23IT1104	Lab: Programming for Problem Solving	Р	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						
					TOTAL FI	RST SEM	15	0	6	21	22				
					SECOND SEMESTER	(CROUD	<b>A</b> \								
4	0	DC.	GE	23GE1203	Differential Equations and Complex	T		_	_	0	0	20	00	50	2
1	2	BS			Analysis		3	0	0	3	3	30	20	50	3
2	2	BS	GE	23GE1210	Applied Physics	Т	3	0	0	3	3	30	20	50	3
3	2	BS	GE	23GE1211	Lab: Applied Physics	Р	0	0	2	2	1		60	40	
4	2	BES	ME	23ME1201	Engineering Graphics	Т	1	0	0	1	1	30	20	50	3
5	2	BES	ME	23ME1202	Lab : Engineering Graphics	Р	0	0	4	4	2		60	40	
6	2	BES	EL	23EL1201	Basic Electrical and Electronics Engineering	Т	3	0	0	3	3	30	20	50	3
7	2	BES	СТ	23CT1205	Lab : Computer WorkShop	Р	0	0	2	2	1		60	40	
8	2	PC	IT	23IT1201	Basics of Python Programming	Т	3	0	0	3	3	30	20	50	3
9	2	PC	IT	23IT1202	Lab: Basics of Python Programming	Р	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	
			•	-	TOTAL SECO	OND SEM	13	0	10	23	22				

Liberal Learning Course

S	Sem	Туре	BoS/ Deptt	Sub. Code	Subject
1	1	CC1	GE		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



MANDATORY LEARNING COURSES

#### 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 Information Technology) B. Tech. in Information Technology

2 0 0

SoE No. 23IT-101

S N	Sem	Type	BoS/ Deptt	Sub. Code	Subject	T/P	Contact Hours L T P Hrs	Credits	% We	eightage TA** ESE	
Lil	peral L	earning.	Course	9	<u> </u>	l			l l		Hours
S	Sem	Type	BoS/	Sub. Code	Subject						
N			Deptt		-						
1	2	CC2	GE	23LLC1201	Music (Vocal)						
2	2	CC2	GE		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						

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

Universal Human Values (UHV)

TA \*\* = for Theory: TA1-5 marks on Proctored Online Exam, TA2-12 marks on activitied decided by course teacher, TA3 - 3 marks on class attendance TA\*\* = for Practical : MSPA will be 15 marks each

×	yeld -	MR Mi Bharri AR	Most .	July, 2023	1.00	Applicable for AY 2023-24 Onwards
-	513	Chairperson	Dean (Acad. Matters)	Date of Release	Version	711 2020 21 011114140



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MLC2123

#### 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 Information Technology) B. Tech. in Information Technology

SoE No. 23IT-101

SN Sem Type BoS/ Sub. Code Subject T/P Contact Hours					<b>;</b>	% Weightage			ESE						
			Deptt				L	Т	Р	Hrs		MSEs*	TA**	ESE	Duration
					THIRD SEMES	STE	R								-7.1.12
1	3	BS	GE	23GE1303	Linear Algebra	Т	3	0	0	3	3	30	20	50	3
2	3	HSSM-1	GE	23GE1301	Fundamentals of Management & Economics	Т	2	0	0	2	2	30	20	50	3
3	3	VEC-1	CV	23CV1311	Environmental Sustainability, Pollution and Management	Т	2	0	0	2	2	30	20	50	3
4	3	PC	IT	23IT1301	Data Structure and Program Design	Т	3	0	0	3	3	30	20	50	3
5	3	PC	IT	23IT1302	<b>Lab</b> : Data Structure and Program Design	Р	0	0	2	2	1		60	40	
6	3	PC	IT	23IT1303	Computer Archtecture & Organization	Т	3	0	0	3	3	30	20	50	3
7	3	PC	IT	23IT1304	Object Oriented Programming	Т	3	0	0	3	3	30	20	50	3
8	3	PC	IT	23IT1305	Lab : Object Oriented Programming	Р	0	0	2	2	1		60	40	
9	3	PC	IT	23IT1306	Lab : Software Lab -1	Р	0	0	2	2	1		60	40	
10	3	CEP	IT	23IT1307	Lab: IT Project	Р	0	0	2	4	2		60	40	
11	3	OE-1	OE		Open Elective-I	Т	2	0	0	2	2	30	20	50	3
12	3	MDM	IT		MD Minor Course-I	Т	2	0	0	2	2	30	20	50	3
					ТО	TAL	20	0	8	30	25				
List of M	andato	ory Learnir	na Coui	rse (MLC)											
	1			1	T										

Α

pen El	ective -	I			
SN	Sem	Туре	BoS/ Deptt	Sub. Code	Subject
1	3	OE1	GE	230E1301	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	230E1304	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	230E1307	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	230E1310	OE-I : Total Quality Management
11	3	OE1	MGT	230E1311	OE-I : Value Engineering
12	3	OE1	MGT	230E1312	OE-I : Maintenance Management
13	3	OE1	MGT	230E1313	OE-I : Industrial Safety
14	3	OE1	MGT	230E1314	OE-I: Industry 4.0
15	3	OE1	MGT	230E1315	OE-I : Operation Management
16	3	OE1	MGT	230E1316	OE-I : Material Management
17	3	OE1	MGT	230E1317	OE-I : Hospitality Management
18	3	OE1	MGT	230E1318	OE-I : Human Resource Management & Organizational Behaviour
19	3	OE1	MGT	230E1319	OE-I : Agri-Business Management
20	3	OE1	MGT	230E1320	OE-I : Rural Marketing
21	3	OE1	MGT	230E1321	OE-I : Marketing Management
22	3	OE1	MGT	230E1322	OE-I : Health Care Management

YCAP3: YCCE Communication

Aptitude Preparation

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



#### 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 Information Technology) B. Tech. in Information Technology

SoE No. 23IT-101

SN	Sem	Type	BoS/	Sub. Code	Subject T/			Contac	t Hours	3	Credits	% Weightage			ESE
			Deptt				L	Т	Р	Hrs		MSEs*	TA**	ESE	Duration
					FOURTH SEME	EQT	ED				<u> </u>				Houre
	1		ı		FOURTH SEMI	-011		ı			ı				
1	4	HSSM-2	GE	23GE1401	Entrepreneurship Development	Т	2	0	0	2	2	30	20	50	3
2	4	AEC-2	GE	23GE1405 23GE1406	Marathi Language / Hindi Language	Т	2	0	0	2	2	30	20	50	3
3	4	PC	IT	23IT1401	Discrete Mathamatics and Graph Theory	Т	3	0	0	3	3	30	20	50	3
4	4	PC	IT	23IT1402	Digital Circuits and Microprocessor	Т	3	0	0	3	3	30	20	50	3
5	4	PC	ΙΤ	23IT1403	Lab : Digital Circuits and Microprocessor	Р	0	0	2	2	1		60	40	
6	4	PC	IT	23IT1404	Computer Netwrok	Т	3	0	0	3	3	30	20	50	3
7	4	PC	IT	23IT1405	Lab : Computer Netwrok	Р	0	0	2	2	1		60	40	
8	4	PC	IT	23IT1406	Lab : Software Lab -2	Р	0	0	2	2	1		60	40	
9	4	VSEC-3	IT	23IT1407	Lab : Adv. Python Programming	Р	0	0	4	4	2		60	40	
10	4	VEC-2	IT	23IT1408	Cyber Laws	Т	2	0	0	2	2	30	20	50	3
11	4	MDM	IT		MD Minor Course-II	Т	2	0	0	2	2	30	20	50	3
12	4	OE-2	OE		Open Elective-II	Т	2	0	0	2	2	30	20	50	3
					ТО	TAL	19	0	10	29	24				
List of Ma	andato	ry Learnin	ig Coui	se (MLC)											
1	4	HS	T&P	MLC2124	YCAP4 : YCCE Communication Aptitude Preparation	Α	3	0	0	3	0				

Open Ele	ective -	II			]
SN	Sem	Type	BoS/ Deptt	Sub. Code	Subject
1	4	OE2	GE	230E2401	OE-II : Combinatorics
2	4	OE2	GE	230E2402	OE-II : Fuzzy Set Theory, Arithmetic And Logic
3	4	OE2	GE	230E2403	OE-II : Green Chem. & Sustainability
4	4	OE2	GE	230E2404	OE-II : Hydrogen Fuel
5	4	OE2	GE	230E2405	OE-II : Electronic Materials And Applications
6	4	OE2	GE	230E2406	OE-II : Laser Technology And Applications
7	4	OE2	MGT	230E2407	OE-II : Finance And Cost Management
8	4	OE2	MGT	230E2408	OE-II : Operation Research Techniques
9	4	OE2	MGT	230E2409	OE-II : Project Evaluation & Management
10	4	OE2	MGT	230E2410	OE-II : Total Quality Management
11	4	OE2	MGT	230E2411	OE-II : Value Engineering
12	4	OE2	MGT	230E2412	OE-II : Maintenance Management
13	4	OE2	MGT	230E2413	OE-II : Industrial Safety
14	4	OE2	MGT	230E2414	OE-II : Industry 4.0
15	4	OE2	MGT	230E2415	OE-II : Operation Management
16	4	OE2	MGT	230E2416	OE-II : Material Management
17	4	OE2	MGT	230E2417	OE-II : Hospitality Management
18	4	OE2	MGT	230E2418	OE-II : Human Resource Management & Organizational Behaviour
19	4	OE2	MGT	230E2419	OE-II : Agri-Business Management
20	4	OE2	MGT	230E2420	OE-II : Rural Marketing
21	4	OE2	MGT	230E2421	OE-II : Marketing Management
22	4	OE2	MGT	230E2422	OE-II : Health Care Management

2	Del	July, 2023	1.00	Applicable for AY 2023-24 Onwards
Cnairperson	Dean (Acad. Matters)	Date of Release	Version	AT 2023-24 Oliwarus

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 Semester

(Department of Information Technology)

**B.** Tech in Information Technology



(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 Information Technology) B. Tech. in Information Technology

SoE No. 23IT-101

S	Sem	Sem Type BoS/ Sub. Code Subject				T/P							/eightage		ESE
N			Deptt				L	Т	Р	Hrs		MSEs*	TA**	ESE	Duration Hours
		<u> </u>			FIRST SEMESTER (	GROUP-	A)	<u> </u>							HAUITS
1	1	BS	GE	23GE1101	Calculus and Vector	Т	3	0	0	3	3	30	20	50	3
2	1	BS	GE	23GE1106	Engineering Chemistry	Т	3	0	0	3	3	30	20	50	3
3	1	BS	GE	23GE1107	Lab: Engineering Chemistry	Р	0	0	2	2	1		60	40	
4	1	HS/AEC1	GE	23GE1112	Professional Communication	Т	2	0	0	2	2	30	20	50	2
5	1	HS/IKS	GE	23GE1115	Indian Knowledge System	Т	2	0	0	2	2	30	20	50	2
6	1	BES	CV	23CV1101	Engineering Mechanics	Т	3	0	0	3	3	30	20	50	3
7	1	BES	CV	23CV1102	Lab: Engineering Mechanics	Р	0	0	2	2	1		60	40	
8	1	BES	IT	23IT1103	Programming for Problem Solving	Т	2	0	0	2	2	30	20	50	2
9	1	BES	IT	23IT1104	Lab: Programming for Problem Solving	Р	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						
					TOTAL FI	RST SEM	15	0	6	21	22				
					SECOND SEMESTER	(CROUD	<b>A</b> \								
4	0	DC.	GE	23GE1203	Differential Equations and Complex	T		_	_	0	0	20	00	50	2
1	2	BS			Analysis		3	0	0	3	3	30	20	50	3
2	2	BS	GE	23GE1210	Applied Physics	Т	3	0	0	3	3	30	20	50	3
3	2	BS	GE	23GE1211	Lab: Applied Physics	Р	0	0	2	2	1		60	40	
4	2	BES	ME	23ME1201	Engineering Graphics	Т	1	0	0	1	1	30	20	50	3
5	2	BES	ME	23ME1202	Lab : Engineering Graphics	Р	0	0	4	4	2		60	40	
6	2	BES	EL	23EL1201	Basic Electrical and Electronics Engineering	Т	3	0	0	3	3	30	20	50	3
7	2	BES	СТ	23CT1205	Lab : Computer WorkShop	Р	0	0	2	2	1		60	40	
8	2	PC	IT	23IT1201	Basics of Python Programming	Т	3	0	0	3	3	30	20	50	3
9	2	PC	IT	23IT1202	Lab: Basics of Python Programming	Р	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	
			•	-	TOTAL SECO	OND SEM	13	0	10	23	22				

Liberal Learning Course

S	Sem	Туре	BoS/ Deptt	Sub. Code	Subject
1	1	CC1	GE		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



MANDATORY LEARNING COURSES

#### 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 Information Technology) B. Tech. in Information Technology

2 0 0

SoE No. 23IT-101

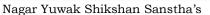
S N	Sem	Type	BoS/ Deptt	Sub. Code	Subject	T/P	Contact Hours L T P Hrs	Credits	% We	eightage TA** ESE	
Lil	peral L	earning.	Course	9	<u> </u>	l			l l		Hours
S	Sem	Type	BoS/	Sub. Code	Subject						
N			Deptt		-						
1	2	CC2	GE	23LLC1201	Music (Vocal)						
2	2	CC2	GE		Music (Instrumental)						
3	2	CC2	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						

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

Universal Human Values (UHV)

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-	513	Chairperson	Dean (Acad. Matters)	Date of Release	Version	711 2020 21 011114140





(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)

**B.Tech First Year** 

SoE No. 23FY-101

#### **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<sup>th</sup> derivative of rational function, Trigonometrical transformations, n<sup>th</sup> 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. (**Contemporary Issues related to Topic**)

#### 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. (Contemporary Issues related to Topic)

#### **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. (Contemporary Issues related to Topic)

#### **Unit IV: Multiple integrals**

(6 Hrs.)

Double integral, change of order of integral, change of variables, triple integrals and its applications.

(Contemporary Issues related to Topic)

#### **Unit V: Vector Calculus**

(7 Hrs.)

Vector fields, Vector differentiation, Gradient, Divergence and Curl, Directional derivatives with physical interpretation, Solenoidal and irrotational motions. (Contemporary Issues related to Topic)

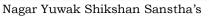
#### **Unit VI: Vector Integration & Applications**

(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. (Contemporary Issues related to Topic)

Total Lecture | 39 Hours

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# 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-10

23FY-101

SoE No.

**B.Tech First Year** 

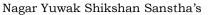
Tex	Textbooks:					
1.	Erwin Kreyzig, Advance Engineering Mathematics, 10th Edition, John Wiley and Sons, INC.					
2.	H.K. Dass, Engineering Mathematics, 11 <sup>th</sup> revised edition, S. Chand, Delhi.					
3.	H.K. Dass, Advanced Engineering Mathematics, 8 <sup>th</sup> revised edition, S. Chand, 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, Vidvarthi GrihaPrakashan,					

Ref	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, VolI & 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/Supprted%20file/e-			
	copies%20of%20books/Applied%20Sciences%20&%20Humanities/Mathematics%20and%20Humanities/			

M	MOOCs Links and additional reading, learning, video material				
1.	https://nptel.ac.in/courses/111/106/111106146/				
2.	https://nitkkr.ac.in/docs/5-Multiple%20Integrals%20and%20their%20Applications.pdf				

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(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 Chemistry)

SoE No. 23FY-101

#### **B.Tech First Year**

#### **I SEMESTER**

23GE1106: Engineering Chemistry

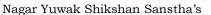
#### **Course Outcomes:**

#### 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. Explain basic principles of spectroscopy and its applications. (L3)
- 4. **Establish** insight into advanced engineering materials. (L3)

Unit:1	Water Chemistry 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	7 Hours
Unit:2	Electrochemistry Introduction, metallic and electrolytic conductance. Electrode and electrode potential. Nernst Equation, numericals and applications. Faraday's laws and numericals. Industrial applications: Electroplating, Electrolytic refining, Corrosion- Definition, Causes, theories of corrosion- dry, wet and differential aeration. Contemporary issues related to the topic	7 Hours
Unit:3	Energy storage device 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.  Contemporary issues related to the topic	6 Hours
Unit:4	Drugs & Polymer chemistry Drugs: Introduction, types of drugs, synthesis of commonly used drug molecules such as aspirin and paracetamol. Polymer: Introduction, Classification of polymers, Use and disposal of polymers. Properties of polymers - Solubility, Molecular Weight, Crystallinity, Glass transition temperature. Contemporary issues related to the topic	6 Hours

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(Department of Chemistry)

SoE No. 23FY-101

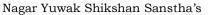
## **B.Tech First Year**

Unit:5	Spectroscopic Techniques and Applications	6 Hours				
	Introduction, fundamentals, types, principles, and selection rules of spectroscopy.					
	Basic principle and applications of UV- Visible, IR, NMR Spectroscopy and numericals.					
	Contemporary issues related to the topic					
<del></del>						
Unit:6		7 Hours				
	Nanomaterials: Definition, Carbon Nanotubes and types. Applications of Nanomaterials					
	in electronics, environment and medicine.					
	Chemical sensors: Types and application.					
	Liquid Crystal Polymers: Introduction, General properties and applications.					
	Polymers in electronic industries: Introduction, Piezo, Pyroelectric, Ferroelectric					
	polymers.					
	<b>Smart materials:</b> Introduction, Properties and applications of Chromoactive,					
	Photoactive and Magneto rheological materials.					
	Contemporary issues related to the topic					
	Contemporary issues related to the topic					
	Total Lecture Hours	39 Hours				

Te	ext books
1	S S. Dara, A Textbook 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.
4	Y.R. Sharma, Elementary organic spectroscopy, S. Chand and company private limited.
Re	eference Books
1	B.K.Sharma Krishna, Engineering Chemistry, Prakashan media private LTD. 1st Edition, 2014.
2	CNR Rao, Chemistry of Advanced Materials, Willey Publications, 1993.
3	Fred. Billmeyer Jr., A textbook of polymer science, Wiley India, 2nd Edition.
4	Robert B Leighou, Chemistry of Engineering Materials, Hill Book Company, Inc New York
5	C.N. Banwell ,Fundamentals of Molecular Spectroscopy ,Mc Graw hill education , 4th Edition
6	William C. O'Mara, Robert B. Herring, Handbook of Semiconductor Silicon Technology ,Noyes Publications
	Park Ridge, NJ, USA.1st Edition.
Y	CCE e- library book links [ACCESSIBLE FROM COLLEGE CAMPUS]
1	http://103.152.199.179/YCCE/Suported%20file/Supprted%20file/SERIES%20WISE%20BOOKS/CHEMIST
	RY/
M	OOCs Links and additional reading, learning, video material
1	https://www.youtube.com/watch?v=XTt3gXB0a84
2	https://www.youtube.com/watch?v=iihYXx79QiE
3	https://www.youtube.com/watch?v=JfJ7MlP9Dco
4	https://www.youtube.com/watch?v=L2VSOccUrSk
5	https://www.youtube.com/watch?v=p5pk4Um6lsk
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6 https://www.youtube.com/watch?v=zVDMgoffmC0





(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 Chemistry)

B.Tech First Year

SoE No. 23FY-101

#### **I SEMESTER**

23GE1107: Lab. Engineering Chemistry

#### **Course Outcomes:**

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

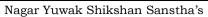
- 1. Illustrate qualitative and quantitative aspects of water for industrial and domestic applications. (L3)
- 2. Apply concepts of electrochemistry for energy storage devices and corrosion. (L3)
- **3.** Explain basic principles of spectroscopy and its applications. (L3)
- **4. Establish** insight into advanced engineering 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
	List of Experiments-Phase I
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 & 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.
	List of Experiments-Phase II
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
8	To determine the heat of solution of potassium nitrate calorimetrically.

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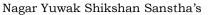
# Yeshwantrao Chavan College of Engineering (An Autonomous Institution affiliated to Rashtrasant Tukadoji Maharaj Nagpur University) B. Tech SoE and Syllabus 2023 (Scheme of Examination w.e.f. 2023-24 onward) (Department of Chemistry) SoE No 23FY-10

SoE No. 23FY-101

## **B.Tech First Year**

9	Determination of strength of the given acid conductometrically.
10.	To verify Beer-Lambert law for KMnO <sub>4</sub> colorimetrically and determine the concentration of the given solution of KMnO <sub>4</sub> .
	List of Demonstration Experiments
1	Determination of pH of water sample by pH meter
2	Synthesis of polyaniline.

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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**

#### **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-Etiquettes, acronyms.

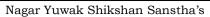
**Total Lecture | 26 Hours** 

#### **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

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# 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-10

SoE No. 23FY-101

## **B.Tech First Year**

Re	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				

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

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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**

#### **I SEMESTER**

23GE1115: Indian Knowledge System

#### Course Outcomes:

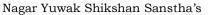
#### Upon successful completion of the course the students will be able to

- 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
Develop	oment of Human Civilization with specific reference:	1
Stone ag	ge: Tool Technology and Cultural Development, Indus Valley civilization, Vedic Civiliza	ition.
(Conten	aporary Issues related to Topic)	
Unit:2	Indian Society, Culture and Literature	6 Hours
Society a	and its types, Culture and its Characteristics, Foundational Literature.	1
(Conten	aporary Issues related to Topic)	
Unit:3	Tradition of Indian Art and Painting	7 Hours
Indian 7	raditional Painting, Art style folk, mural with Gandhara and Mathura school of art.	1
(Conten	aporary Issues related to Topic)	
Unit:4	Indic Traditions of Architecture, Design and Planning	7 Hours
Monum	ental studies of architectural skill: Rock Cut Caves, Stupa and Temple Architecture,	The Ancient
cities of	Indus Saraswati region. Town Planning and drainage system.	
(Conten	aporary Issues related to Topic)	
	Total Lecture Hours	26 Hours

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

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

(Department of Mathematics & Humanities)

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#### **B.Tech First Year**

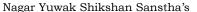
Re	eference Books
1	B S Harishankar; Art and Archaeology of India: Stone Age to the Present, 2003.
2	Gupte R S and Mahajan B D; Ajanta, Ellora and Aurangabad, 1962.
3	Dharampal, Some Aspects of Earlier Indian Society and Polity and Their Relevance Today,
	New Quest Publications, Pune, 1987.
4	Michel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

#### PPT's/Research papers

- 1 https://www.researchgate.net/publication/360889208\_STONE\_AGE\_TOOL\_TECHNOLOGY\_and\_CULTUR\_AL\_DEVELOPMENT
- 2 https://scholar.google.com/citations?view\_op=view\_citation&hl=en&user=iT1KSV8AAAAJ&sortby=pubdate &citation for view=iT1KSV8AAAAJ:UeHWp8X0CEIC

# MOOCs Links and additional reading, learning, video material 1 https://prepp.in/news/e-492-indian-architecture-art-and-culture-notes 2 https://www.artzolo.com/blog/most-famous-indian-painting-styles 3 https://www.researchgate.net/publication/360889332\_Stone\_Age\_Tool\_Technology\_Cultural\_Development 4 https://testbook.com/ias-preparation/ancient-history-16-mahajanapadas

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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**

### **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

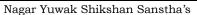
(6 Hrs.)

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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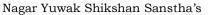
(Department of Civil Engineering)

SoE No. 23CV-101

# **B.Tech in Civil Engineering**

Te	xtbooks:
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.
Re	ference 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.
YC	CCE e- library book links [ACCESSIBLE FROM COLLEGE CAMPUS]
1	chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/http://103.152.199.179/YCCE/Suported%20file/Supprted%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/Suported%20file/Supprted%20file/e-copies%20of%20books/Civil%20Engineering/79.%20Engineering%20Mechanics.%20Statics-%20MERIAM%20%20AND%20KRAIGE.pdf
3	chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/http://103.152.199.179/YCCE/Suported%20file/Supprted%20file/e-copies%20of%20books/Civil%20Engineering/81.%20Engineering%20Mechanics%201.pdf
	OOCs 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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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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(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 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:**

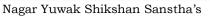
(4 Hrs.)

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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# 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 Information Technology)

SoE No. 23IT-101

## **B.Tech in Information Technology**

Text	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					

Refer	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]

http://103.152.199.179/YCCE/Suported%20file/Supprted%20file/e-copies%20of%20books

	M	OOCs Links and additional reading, learning, video material							
Ī	1	https://nptel.ac.in/courses/106104128							
Ī	2	https://nptel.ac.in/courses/106104128							
Ī	3	https://www.youtube.com/watch?v=rQoqCP7LX60&list=PLxgZQoSe9cg1drBnejUaDD9GEJBGQ5							
		<u>hMt</u>							

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Chairperson	Dean (Acad. Matters)	Dean OBE	Date of Release	Version	AY 2023-24 Onwards





(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 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.

#### **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:

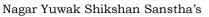
(4 Hrs.)

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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# 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 Information Technology)

SoE No. 23IT-101

# **B.Tech in Information Technology**

Text	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							

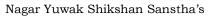
Re	Reference Books								
1	Problem Solving And Program Design In C, Jeri. R. Hanly, Elliot B. Koffman, Pearson Education.								
2	Programming with C, Byron Gottfried, Schaum;s Outline Series								
3	How to solve it by computers, R. G. Dromey, Prentice Hall India								

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

1 http://103.152.199.179/YCCE/Suported%20file/Supprted%20file/e-copies%20of%20books

$\mathbf{M}$	MOOCs Links and additional reading, learning, video material								
1	https://nptel.ac.in/courses/106104128								
2	https://nptel.ac.in/courses/106104128								
3	https://www.youtube.com/watch?v=rQoqCP7LX60&list=PLxgZQoSe9cg1drBnejUaDD9GEJBGQ5								
	hMt								

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Chairperson	Dean (Acad. Matters)	Dean OBE	Date of Release	Version	AY 2023-24 Onwards





# 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 Information Technology)

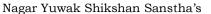
SoE No. 23IT-101

# **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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(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)

#### **B.Tech in FYC**

SoE No. 23FY-101

# 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.

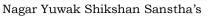
#### **EVALUATION** | 1 Hour

**EVALUATION** 

#### WRITTEN TEST

Total Lecture Hours 24 Hours

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# 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. 23FY-101

#### **B.Tech in FYC**

#### **Reference Books**

- 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 Information Technology)

**B.** Tech in Information Technology



(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 Information Technology) B. Tech. in Information Technology

SoE No. 23IT-101

S	Sem	Туре	BoS/	Sub. Code	Subject	T/P	Со			ours	Credits		eightag		ESE
N			Deptt				L	Т	Р	Hrs		MSEs*	TA**	ESE	Duration Hours
					FIRST SEMESTER (	GROUP-	<b>A</b> )								
1	1	BS	GE	23GE1101	Calculus and Vector	Т	3	0	0	3	3	30	20	50	3
2	1	BS	GE	23GE1106	Engineering Chemistry	Т	3	0	0	3	3	30	20	50	3
3	1	BS	GE	23GE1107	Lab: Engineering Chemistry	Р	0	0	2	2	1		60	40	
4	1	HS/AEC1	GE	23GE1112	Professional Communication	Т	2	0	0	2	2	30	20	50	2
5	1	HS/IKS	GE	23GE1115	Indian Knowledge System	Т	2	0	0	2	2	30	20	50	2
6	1	BES	CV	23CV1101	Engineering Mechanics	Т	3	0	0	3	3	30	20	50	3
7	1	BES	CV	23CV1102	Lab: Engineering Mechanics	Р	0	0	2	2	1		60	40	
8	1	BES	IT	23IT1103	Programming for Problem Solving	Т	2	0	0	2	2	30	20	50	2
9	1	BES	IT	23IT1104	Lab: Programming for Problem Solving	Р	0	0	2	2	1		60 40		
10	1	VSEC	GE	23GE1117	Get Set Go						2		60	60 40	
11	1	CC1	GE		Liberal Learning Course (LLC1)						2		60	40	
					TOTAL FI	RST SEM	15	0	6	21	22				
					SECOND SEMESTED	CROUD	A \								
			<u> </u>		SECOND SEMESTER  Differential Equations and Complex			Γ	Π						
1	2	BS	GE	23GE1203	Analysis	Т	3	0	0	3	3	30	20	50	3
2	2	BS	GE	23GE1210	Applied Physics	Т	3	0	0	3	3	30	20	50	3
3	2	BS	GE	23GE1211	Lab: Applied Physics	Р	0	0	2	2	1		60	40	
4	2	BES	ME	23ME1201	Engineering Graphics	Т	1	0	0	1	1	30	20	50	3
5	2	BES	ME	23ME1202	Lab: Engineering Graphics	Р	0	0	4	4	2		60	40	
6	2	BES	EL	23EL1201	Basic Electrical and Electronics Engineering	Т	3	0	0	3	3	30	20	50	3
7	2	BES	CT	23CT1205	Lab : Computer WorkShop	Р	0	0	2	2	1		60	40	
8	2	PC	IT	23IT1201	Basics of Python Programming	Т	3	0	0	3	3	30	20	50	3
9	2	PC	IT	23IT1202	Lab: Basics of Python Programming	Р	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	
		•		•	TOTAL SECO	OND SEM	13	0	10	23	22			-	

**Liberal Learning Course** 

S	Sem	Туре	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



MANDATORY LEARNING COURSES

#### 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 Information Technology)
B. Tech. in Information Technology

SoE No. 23IT-101

S	Sem	Type	BoS/	Sub. Code	Subject	T/P			lours	Credits		eightag		ESE
N			Deptt				L	T P	Hrs		MSEs*	TA**	ESE	Duration
Lik	eral L	earning	Course	9		I.		!						Hours
S	Sem	Туре	BoS/	Sub. Code	Subject									
N		••	Deptt		-									
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										
13	2	CC2	GE		Elements of Japanese Language									
14	2	CC2	GE		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									

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

Universal Human Values (UHV)

TA \*\* = for Theory: TA1-5 marks on Proctored Online Exam, TA2-12 marks on activitied decided by course teacher, TA3 - 3 marks on class attendance TA\*\* = for Practical: MSPA will be 15 marks each

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Chairperson /:	Dean (Acad. Matters)	Date of Release	Version	AY 2023-24 Onwards

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(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**

## 23GE1203: Differential Equations and Complex Analysis

#### **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 solutions of engineering problems.
- 2. Use appropriate methods to solve partial differential equations.
- 3. Determine the various functions of complex numbers.
- 4. Evaluate the integration of function of complex 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 equations, 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 V: Complex Number**

(7 Hrs.)

Basic concepts of complex numbers and its various forms. Separation of real and imaginary parts, De Moivre's theorem, Application of De Moivre's theorem, Exponential function of complex numbers, Circular function of complex numbers, Hyperbolic function and their inverse, Logarithm of a complex number.

#### (Contemporary Issues related to Topic)

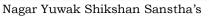
#### **Unit VI: Complex Variables**

(6 Hrs.)

Analytic function, Cauchy-Riemann conditions, Harmonic functions, Finding Harmonic conjugates, Taylor's and Laurent's Theorem (statement only), Examples on Taylor's and Laurent's Theorem, Evaluation integral by using Residue theorem. (Contemporary Issues related to Topic)

**Total Lecture** | 39 Hours

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Chairperson	Dean (Acad. Matters)	Dean OBE	Date of Release	Version	AY 2023-24 Onwards





# 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**

Tex	Textbooks:				
1.	Erwin Kreyzig, Advance Engineering Mathematics, 6th 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:**

- 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]

- http://103.152.199.179/YCCE/Suported%20file/Supprted%20file/e
  - copies%20of%20books/Applied%20Sciences%20&%20Humanities/Mathematics%20and%20Humanities/

MC	MOOCs Links and additional reading, learning, video material			
1.	https://nptel.ac.in/courses/111103070			
2.	https://onlinecourses.nptel.ac.in/noc19_ma28/preview			
3.	https://nptel.ac.in/courses/111/106/111106100/			

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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 23GE1210 : Applied 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. Justify the characteristics of semiconductor materials in terms of crystal structures, charge carriers and energy bands.
- 3. Analyze the motion of charged particles in electric and magnetic field and its applications to electron optic devices.
- 4. Examine the intensity variation of light due to Laser and its application.
- 5. Illustrate working principles of optical fibers for their use in the field of industry.

#### **Unit I: Quantum Physics**

(6 Hrs.)

Wave particle duality, Davisson and Germer experiment, Wave packet, Heisenberg's uncertainty principle, thought experiment, Significance, Applications. (Contemporary Issues related to Topic)

#### **Unit II: Introduction to Quantum Computing**

(7 Hrs.)

Introduction of complex numbers, operators, Eigen values, Eigen functions. Wave function and its probability interpretation, Schrodinger Equation, Particle in infinite and finite potential well, quantum tunneling, Introduction to Bits and Qubits. (Contemporary Issues related to Topic)

#### **Unit III: Band Theory of Solids**

(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, Hall effect, Direct and Indirect band gap semiconductors. (Contemporary Issues related to Topic)

#### **Unit IV: Electron Ballistics and Devices**

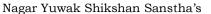
(7 Hrs.)

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 V: Lasers (7 Hrs.)

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

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#### 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**

#### **Unit VI: Optical Fibres**

(6 Hrs.)

Principle, structure and classification, Acceptance angle, Numerical aperture, Losses in optical fibers, Applications as sensors. (Contemporary Issues related to Topic)

Total Lecture | 40 Hours

#### **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**

- 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.

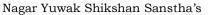
#### YCCE e- library book links [ACCESSIBLE FROM COLLEGE CAMPUS]

- chrome-http://103.152.199.179/YCCE/Suported%20file/Supprted%20file/ecopies%20of%20books/Applied%20Sciences%20&%20Humanities/Physics/Eisberg%20&%2 0Resnick%20-%20Quantum%20Physics.pdf
- http://103.152.199.179/YCCE/Suported%20file/Supprted%20file/ecopies%20of%20books/Applied%20Sciences%20&%20Humanities/Physics/2016 Book ThePhysicsOfSemiconductors.pdf

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

- https://nptel.ac.in/courses/115106066 Quantum Physics
- https://archive.nptel.ac.in/courses/115/105/115105121/ -CRO
- www.digimat.in/nptel/courses/video/115102124/L36.html-Laser

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

(Department of Physics) **B.Tech First Year** 

SoE No. 23FY-101

# II SEMESTER 23GE1211: Lab. Applied Physics

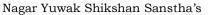
#### **Course Outcomes:**

### 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. Justify the characteristics of semiconductor materials in terms of crystal structures, charge carriers and energy bands.
- 3. Analyze the motion of charged particles in electric and magnetic field and its applications to electron optic devices.
- 4. Examine the intensity variation of light due to Laser and its application.
- 5. Illustrate working principle of optical fibers for their use in the field of industry.

List of E	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	The study of V-I characteristics of a semiconductor diode (Germanium and silicon) in forward and reverse bias mode.					
6	Determination of Band gap in a semiconductor by four probe method.					
7	Determination of Band gap in a semiconductor using reverse biased p-n junction diode.					
8	Determination of wavelength of laser using diffraction grating.					
9	Determination of divergence of laser beam.					
10	Determination of Acceptance angle and numerical aperture of a given optical fiber.					
11	To measure the phase shift introduced by a phase shift network using Dual beam CRO.					
12	Determination of amplitude and frequency of sinusoidal signal using CRO.					

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

SoE No. 23ME-101

### **B.Tech in Mechanical Engineering**

#### **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:

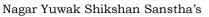
(2 Hrs.)

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

**Total Lecture** 15

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)

SoE No. 23ME-101

# **B.Tech in Mechanical Engineering**

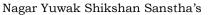
Te	Textbooks:			
1.	D.M. Kulkarni, A. P. Rastogi and A. K. Sarkar, Engineering Graphics with AutoCAD PHI learning Pvt. Ltd.,			
	Revised Edition(2014),			
2.	N. D. Bhatt ,Engineering Drawing Charotar Publishing House Pvt. Ltd, 53 rd Edition 2017			

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

Y	CCE e- library book links [ACCESSIBLE FROM COLLEGE CAMPUS]
1	Intranet on address 172.16.1.10. data/CCC/software / AutoCAD Software Setup.

MC	MOOCs Links and additional reading, learning, video material		
1.	1. https://youtube.com/playlist?list=PLLy_2iUCG87Bw9XPfEF3r3EW5UlAOv8iz		
2.	Eng https://nptel.ac.in/courses/112105294		

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

SoE No. 23ME-101

## **B.Tech in Mechanical Engineering**

#### **II SEMESTER**

23ME1202: Lab. Engineering Graphics

#### **Course Outcomes:**

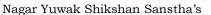
#### Upon successful completion of the course the students will be able to

- 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
	Total Practical's	28 Hours

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### B. Tech SoE and Syllabus 2023

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

SoE No. 23EL-101

## **B.Tech in Electrical Engineering**

#### **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

#### **Unit I: Circuit Elements and Energy Sources**

(7 Hrs.)

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. (Contemporary Issues related to Topic)

#### **Unit II: Analysis of Network**

(7 Hrs.)

Kirchhof's Laws, Current Division, Voltage Division, Nodal and Mesh Analysis of Electric Circuits, Theorem (Contemporary Issues related to Topic)

#### **Unit III: Generator and Motors**

(7 Hrs.)

Introduction to Generator, Construction, working principle, Types of Generators, Introduction to DC Motor, Working Principle of DC Motor, Types of Motors. (Contemporary Issues related to Topic)

#### **Unit IV: Diode and Transistor**

(6 Hrs.)

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,. (Contemporary Issues related to Topic)

#### **Unit V: Operational Amplifier and Its Application**

(7 Hrs.)

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.

(Contemporary Issues related to Topic)

#### **Unit VI: Electronics Measurement**

(6 Hrs.)

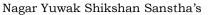
Introduction to Measurement System, Generalized block diagram of Measurement System, Static & dynamic

characteristics of measurement system, Types of errors & their sources, Statistical analysis.

(Contemporary Issues related to Topic)

**Total Lecture** | 40 Hours

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

SoE No. 23EL-101

## **B.Tech in Electrical Engineering**

l	Te	extbooks:		
ĺ	1.	Basic Electrical Engineering, T. K. Nagsarkar and M. S. Sukhija, Oxford Higher Education,		
		First Edition2005		
	2.	Electronics Devices and circuits, Millman Jacob, McGraw Hill Education, Fourth Edition (2015)		
ĺ	3.	Circuit Theory (Analysis and Synthesis), by A. Chakrabarti, Dhanpat Rai & Co., Reprint Edition		

#### **Reference Books:**

2014

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

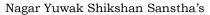
#### YCCE e- library book links [ACCESSIBLE FROM COLLEGE CAMPUS]

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

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

https://onlinecourses.nptel.ac.in/noc22\_ee113/preview

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

SoE No. 23CT-101

# **B.Tech in Computer Technology**

#### **II SEMESTER**

23CT1205: Lab. Object Oriented Programming

#### **Course Outcomes**

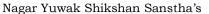
#### Upon successful completion of the course the students will be able to

- 1. Understand the concept of object-oriented programming and modelling
- 2. Apply the knowledge of object-oriented programming to solve the given problem
- 1. Analyze the problem to provide the object oriented solution using advanced programming concepts

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

SN	Program based on
1	Implement the concept of Class and its data members and member functions
2	Implement the concept of function overloading
3	Implement the concept of passing object as a function argument
4	Implement the concept of friend function
5	Implement the concept of constructor and its type.
6	Implement the concept of operator overloading
7	Implement the concept of single inheritance.
8	Implement the concept of multilevel Inheritance
9	Implement the concept of each access specifiers (Private, Public and Protected).
10	Implement the concept of run time polymorphism
11	Implement the concept of Files
12	Implement the concept of command line arguments
13	Implement the concept of function templates
14	Implement the concept of Class templates.
15	Implement the concept of exception.

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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**

#### **II SEMESTER**

23IT1201: Basics of Python Programming

#### **Course Outcomes:**

After completion of the course:

- 1. Understand fundamentals, syntax, and semantics of Python programming
- 2. Apply concepts of different data structure, control flow statements, Arrays, lists, dictionaries, tuples and sets.
- 3. Analyze and present the data by utilizing various data visualization tools
- 4. Design & Develop programs to offer solutions using basics of Python.

Unit I: Introduction (9 Hrs.)

Generationsofcomputer, computerlanguages. Introduction to Python Programming Language, Identifiers, K eywords, Statements and Expressions, Variables, Operators, Precedence and Associativity, Data Types, Inden tation, Comments, Reading Input, Print Output, Type Conversions, The type () Function and Is Operator, Dyna micand Strongly Typed Language, Control Flow Statements, Theif Decision Control Flow Statement, Theif... else Decision Control Statement, Nested if Statement, (Contemporary Issues related to Topic)

#### **Unit II: Control Structure and Functions**

(8 Hrs.)

The while Loop, The for Loop, The continue and break Statements, Catching Exceptions Using try and except Statement, Functions, Built-In Functions, Commonly Used Modules, Function Definition and Calling the Function, Thereturn Statement and void Function, Scopeand Life time of Variables, Default Parameters, Keyword Arguments,\*argsand \*\*kwargs, Command Line Argument (Contemporary Issues related to Topic)

#### **Unit III: Strings and Lists**

(8 Hrs.)

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 Use don Lists, List Methods, The del Statement. (Contemporary Issues related to Topic)

Unit IV: Dictionaries (8 Hrs.)

**Dictionaries,** Creating Dictionary, Accessing and Modifying key: value Pairs in Dictionaries, Built-In Functions Used on Dictionaries, Dictionary Methods, The del Statement, **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, Frozen set. (**Contemporary Issues related to Topic**)

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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**

Unit V: Files	(8 Hr	rs.)
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**Files**, Types of Files, Creating and Reading Text Data, File Methods to Read and Write Data, Reading and Writing Binary Files, The Pickle Module, Reading and Writing CSV Files, Python os and os. path Modules, **Regular Expression Operations**, Using Special Characters, Regular Expression Methods, Named Groups in Python Regular Expressions, Regular Expression with glob Module (**Contemporary Issues related to Topic**)

#### **Unit VI: Visualizing Information**

(8 Hrs.)

**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 Dataframe. (**Contemporary Issues related to Topic**)

**Total Lecture** 

49 Hours

#### **Text Books:**

1 "Introduction to Python Programming", 1st Edition, Gowrishankar S, Veena ACRCPress/Taylor&Francis

#### ReferenceBooks:

- 1 "PythonDataScienceHandbook:EssentialToolsforWorkingwithData",1stEdition,JakeVanderPlas,O'R eilly Media
- <sup>2</sup> "Hands-On Machine Learning with Scikit- Learnand Tensor Flow :Concepts, Tools, and Techniques to Build Intelligent Systems", 2ndEdition, Aurelien Geron O'Reilly Media.
- 3 "CorePythonApplicationsProgramming",3rdEdition,WesleyJChun,PearsonEducation

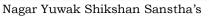
#### YCCE e-library book links[ACCESSIBLEFROM COLLEGECAMPUS]

- http://103.152.199.179/YCCE/e-copies%20of%20books/7.Information%20Technology/5.\_DataStructuresAndAlgorithmsWith%20Python.pdf
- 2 http://103.152.199.179/YCCE/DTEL%20Material/7.Information%20Technology/DTEL%20PPTs/

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

- 1. https://archive.nptel.ac.in/courses/106/106/106106182/
- 2. https://archive.nptel.ac.in/courses/106/106/106106145/

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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**

#### **II SEMESTER**

23IT1202: Lab. Basics of Python Programming

#### **Course Outcomes**

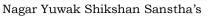
#### Upon successful completion of the course the students will be able to

- 1. Comprehend programming constructs operators, command line Arguments, Strings etc.
- Design application by using Python for real world problems.

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

SN	Experiments based on
1	A. Write a python program to demonstrate different number data types in Python.
	B. Write a python program to perform different arithmetic operators on numbers.
2	A. Write a python program to find largest of three numbers.
	B. Write a python program to convert temperature to and from Celsius to Fahrenheit
3	A. Write a python program to print for a score between 0.0 to 1.0. If the score is out of range print an error message, if the score is between 0.0 to 1.0 print a grade using a following grade using following table
	Score Grade
	>= 0.9 A
	>= 0.8 B
	>= 0.7 C
	>=0.6 D
	<0.6 E
	B. Write a python program to check if given year is leap year or not.
4	A. Write a python program to print Fibonacci series.
	B. Write a python program to find the GCD of two positive numbers.
5	A. Write a python program to demonstrate command line argument in python.
	B. Write a python program to check whether a particular character is present or not in the string using command line argument
6	A. Write a python program to create, concatenate, and print a string and access sub string
	B. Write a python program to create append, and remove from list.

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# 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 Information Technology) SoE No. 23IT-10

SoE No. 23IT-101

# **B.Tech in Information Technology**

7	A. Write a python program to count vowels, consonant and blank from a string.
8	Write a python program to input information of n students as given below:
	a. name
	b. registration number
	c. total marks
	The user has to specify a value for n numbers of student. The program should output the registration
	number and marks of specified student given his name.
9	Write a python program for reading a CSV files using CSV reader() to read a CSV file in python
10	A. Draw a line chart by using Pyplot matplotlib library of data visualization
	B. Draw a bar graph of the given data for the production of apples and oranges of a field of toranto using pyplot matplotlib library.
	range(2000,2006)
	apples=[0.35,0.6,0.9,0.8,0.65,0.8]
	oranges=[0.4,0.8,0.9,0.7,0.6,0.8]

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(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**

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

What is FE? And Areas of application. Basic Interactive sentences - Greetings & 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 & 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

#### **Unit:2** Internet & Social Media Communication

6 Hours

Introduction & Basics to Social Networking, Texting & Instant messaging, Blogs & Discussion Board- discussion with examples, Ethics of social media & 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

Unit:3 | TENSES | 6 Hours

Introduction & Basics, Simple Tense (Past, Present, Future), Continuous Tense (Past, Present, Future) – discussion with examples.

Introduction & 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

#### **Unit:4** Written Communication

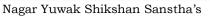
**5 Hours** 

Introduction & 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.

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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**

Assignment Presentation on Mad Ads, Quiz on Tenses and social media-Internet Communication Topic: Activity Extempore

EVALUATION							
WRITTEN TEST	TA=60	ESE=40	TOTAL=100				
	<u>'</u>	<u>,                                      </u>					
Total Lecture Hours							

#### Reference Books

- 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 Semester

(Department of Information Technology)

**B.** Tech in Information Technology



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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 SCHEME OF EXAMINATION 2023**

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

(Department of Information Technology) B. Tech. in Information Technology

SoE No. 23IT-101

SN	Sem	Type	BoS/	Sub. Code	Subject	T/P Contact Hours		Credits				ESE			
			Deptt				L	Т	Р	Hrs		MSEs*	TA**	ESE	Duration
					THIRD SEMES	STE	R								-7.1.12
1	3	BS	GE	23GE1303	Linear Algebra	Т	3	0	0	3	3	30	20	50	3
2	3	HSSM-1	GE	23GE1301	Fundamentals of Management & Economics	Т	2	0	0	2	2	30	20	50	3
3	3	VEC-1	CV	23CV1311	Environmental Sustainability, Pollution and Management	Т	2	0	0	2	2	30	20	50	3
4	3	PC	IT	23IT1301	Data Structure and Program Design	Т	3	0	0	3	3	30	20	50	3
5	3	PC	IT	23IT1302	<b>Lab</b> : Data Structure and Program Design	Р	0	0	2	2	1		60	40	
6	3	PC	IT	23IT1303	Computer Archtecture & Organization	Т	3	0	0	3	3	30	20	50	3
7	3	PC	IT	23IT1304	Object Oriented Programming	Т	3	0	0	3	3	30	20	50	3
8	3	PC	IT	23IT1305	Lab : Object Oriented Programming	Р	0	0	2	2	1		60	40	
9	3	PC	IT	23IT1306	Lab : Software Lab -1	Р	0	0	2	2	1		60	40	
10	3	CEP	IT	23IT1307	Lab: IT Project	Р	0	0	2	4	2		60	40	
11	3	OE-1	OE		Open Elective-I	Т	2	0	0	2	2	30	20	50	3
12	3	MDM	IT		MD Minor Course-I	Т	2	0	0	2	2	30	20	50	3
					ТО	TAL	20	0	8	30	25				
List of M	andato	ory Learnir	na Coui	rse (MLC)											
				1	<u> </u>										

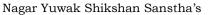
Α

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	230E1304	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	230E1307	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	230E1310	OE-I : Total Quality Management		
11	3	OE1	MGT	230E1311	OE-I : Value Engineering		
12	3	OE1	MGT	230E1312	OE-I : Maintenance Management		
13	3	OE1	MGT	230E1313	OE-I : Industrial Safety		
14	3	OE1	MGT	230E1314	OE-I : Industry 4.0		
15	3	OE1	MGT	230E1315	OE-I : Operation Management		
16	3	OE1	MGT	230E1316	OE-I : Material Management		
17	3	OE1	MGT	230E1317	OE-I : Hospitality Management		
18	3	OE1	MGT	230E1318	OE-I : Human Resource Management & Organizational Behaviour		
19	3	OE1	MGT	230E1319	OE-I : Agri-Business Management		
20	3	OE1	MGT	230E1320	OE-I : Rural Marketing		
21	3	OE1	MGT	230E1321	OE-I : Marketing Management		
22	3	OE1	MGT	230E1322	OE-I : Health Care Management		

YCAP3: YCCE Communication

Aptitude Preparation

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(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 Information Technology)

SoE No. 23IT-101

## **B.Tech in Information Technology**

#### III /IV SEMESTER

23GE1303/ 23GE1403 : Linear Algebra

#### **Course Outcomes:**

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

- 1 Solve systems of linear equations using rank of matrix.
- 2. Determine eigen values and eigen vectors and solve eigen value problems.
- 3. Explain the concepts of vector space and subspace, span and basis.
- 4. Apply principles of matrix algebra to linear transformations and inner product.

Unit I: 8 Hrs.

**Elementary matrix operations**: Introduction to Matrices and Determinants, Solution of Linear Equations, Cramer's rule, Inverse of a Matrix.

Unit II: 7 Hrs.

**Matrix Algebra:** Rank of a matrix, Gaussian elimination, LU Decomposition (Crout's method), Solving Systems of Linear Equations using the tools of Matrices.

Unit III: 7 Hrs.

**Diagonalization of Matrix:** Eigen Values and Eigen vectors, Linear dependence and independence of Eigen Vectors, Orthogonal Eigen vector, Diagonalization of matrix, Cayley-Hamilton Theorem and Sylvester's Theorem.

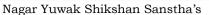
Unit IV:

**Vector Space:** Vector Space, Subspace, Sum of Sub space, linear combination, Linear dependence and independence, Span and basis, Spanning sets, Generators.

Unit V: 7 Hrs.

**Linear Transformation:** Linear transformation, Ranges and Kernel (null space) of linear transformation, Inverse of linear transformation, Algebra of linear transformation, Singular and nonsingular linear transformation.

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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**

Ur	Unit VI: 8 Hrs.						
Inner product Spaces: Inner product space and Norms, orthogonal vector, the Gram Schamidt							
orthogonalization Process, orthogonal compliment, Adjoint of Linear operator, Normal and self-adjoint							
operator, Unitary and orthogonal operator, Bilinear and Quadratic form.							
op	erator, Officary and Orthogonal operator, Brillear and Quadratic form.						
	Total Lecture	45 Hours					
	<u>'</u>						
Te	xtbooks:						
1	Erwin Kreyzig, Advance Engineering Mathematics, 9th Edition, John Wiley and Sons, INC.						
2	Dr. B. S. Grewal, Higher Engineering Mathematics, 40 <sup>th</sup> edition, Khanna Publisher.						
3	H.K. Dass, Advanced Engineering Mathematics, 8th revised edition, S. Chand, Delhi.						
4	Hoffman and Kunze, Linear Algebra, prentice Hall of India, New Delhi						
5	Glbert Strang, Linear Algebra and its Applications, Nelson Engineering (2007)						
	,						
Re	ference Books:						
1	Chandrika Prasad, Mathematics for Engineers (19th edition), , John Wiley & Sons.						
2	L.A. Pipes and Harville, Applied Mathematics for Engineers (3rd edition), McGraw Hill.						
3	K.B.Datta, Matrix and Linear Algebra, , Prentice Hall of India.						
4	Linear Algebra, Schaum's Solved Problem Series, Seymour Lipschutz, McGraw-	-Hill Book					
	Company.						
Y	CCE e- library book links [ACCESSIBLE FROM COLLEGE CAMPUS]						
1	http://103.152.199.179/YCCE/Suported%20file/Supprted%20file/e-						
	copies%20of%20books/Applied%20Sciences%20&%20Humanities/Mathematics%20and%20And%20Humanities/Mathematics%20and%20And%20Humanities/Mathematics%20and%20And%2	nanities/					
3.5							
	OOCs Links and additional reading, learning, video material						
1	https://nptel.ac.in/courses/111106051						
2	https://archive.nptel.ac.in/courses/11/104/111104137/						

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https://archive.nptel.ac.in/courses/111/106/111106135/





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

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(Department of Information Technology)

SoE No. 23IT-101

# **B.Tech in Information Technology**

#### 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.

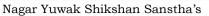
**Introduction to Microeconomics:** Nature and Scope of Microeconomics, Demand Analysis: Meaning and determinants of demand, law of demand, Elasticity of Demand - types and degrees, Utility analysis, Law of diminishing marginal utility, supply- law of supply, Law of Variable proportions and Return to 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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# 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 Information Technology) SoE No. 23IT-10

SoE No. 23IT-101

# **B.Tech in Information Technology**

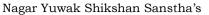
Te	Textbooks:							
1	Principle of Management, 9th edition, Harold Koontz Ramchandra, Tata McGrow hills							
2	Marketing Management: Planning, Implementation and Control, 3rd Edition, Ramaswamy V.S. and							
	Namakumari S, Macmillian							
3	Fundamentals of Accounting Gupta R.L. & Radhaswamy;	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

Ref	Reference Books:				
1	Foundations of Financial Markets and Institutions, 3 <sup>rd</sup> Edition, Fabozzi, Pretice Hall				
2	Fundamentals of Financial Instruments, 2 <sup>nd</sup> Edition, Parameshwaran, Wiley India				
3	Marketing Management, 3 <sup>rd</sup> Edition, RajanSaxena, Tata McGraw Hill				
4	Advance Economic Theory, 17th 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:,1st Edition, M. L. Sheth, Himayalaya Publisher, 1995				

Y	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				

MC	MOOCs Links and additional reading, learning, video material					
1	https://onlinecourses.nptel.ac.in/noc22_mg104/preview					
2	https://archive.nptel.ac.in/courses/110/101/110101131/					
3	https://onlinecourses.nptel.ac.in/noc23_mg122/preview					
4	https://onlinecourses.nptel.ac.in/noc21 hs52/preview					
5	https://onlinecourses.nptel.ac.in/noc22 hs67/preview					

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(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 Information Technology)

SoE No. 23IT-101

# **B.Tech in Information Technology**

# **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

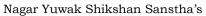
Introduction to environmental laws and regulation, An overview of instruments of international cooperation, Major International Environmental Agreements, Major Indian Environmental Legislations, Major International organizations, and initiatives

Total Lecture

30 Hours

Tex	t 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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Chairperson	Dean (Acad. Matters)	Dean OBE	Date of Release	Version	AY 2023-24 Onwards





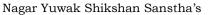
# Yeshwantrao Chavan College of Engineering (An Autonomous Institution affiliated to Rashtrasant Tukadoji Maharaj Nagpur University) B. Tech SoE and Syllabus 2023 (Scheme of Examination w.e.f. 2023-24 onward) (Department of Information Technology)

SoE No. 23IT-101

# **B.Tech in Information Technology**

Ref	erence 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. https://cpcb.nic.in/ standards
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. https://moef.gov.in/wp- content/uploads/2020/02/ convention-V-16-CURVE-web.pdf
YC	CE e- library book links [ACCESSIBLE FROM COLLEGE CAMPUS]
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MO	OCs Links and additional reading, learning, video material
1	

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(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 Information Technology)

SoE No. 23IT-101

## **B.Tech in Information Technology**

#### III SEMESTER

23IT1301: Data Structure and Program Design

#### **Course Outcomes:**

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

- 1. Comprehend programming constructs like function, array, string, pointer, structure, file and also understand basic data structures like list, stack, queue.
- 2. Apply appropriate data structures in problem solving.
- 3. Analyze the performance of operations performed on data structures.
- 4. Design application by using data structures for real world problems.

Unit I (7 Hrs.)

Arrays and strings, representation of 1D ,2D arrays in memory, sparse matrices,Scope rules,Storage Classes, pointers, dynamic allocation,Polynomial representation and operations, Structure, union, file handling.

Unit II (7 Hrs.)

Introduction to Data Structure., Time and space complexity algorithm.BIG oh, Theta notations and Omega notations, Average ,best ,and worst case analysis., abstract Data Type (ADT), ordered list, implementation using array and its operations.

Unit III (7 Hrs.)

Stack, Queues and its operations, Applications of stacks and queues, Priority Queues, Circular Queue, Dequeue

Unit IV (8 Hrs.)

Linked list: implementation of linked list using arrays and pointers, operations on singly, doubly and circular linked list, linked stack and queue, Generalized list, Skip list, applications of linked list

Unit V (8 Hrs.)

Trees, binary trees: representation in memory and traversals, Traversal algorithm using stacks, Header nodes:Threads. Threaded Binary trees Binary search Trees (BSTs), B-Trees,B+ Trees,AVL Trees.

Unit VI (8 Hrs.)

Graphs and diagraphs: Representations, Breadth and Depth First Searches, connected component, spanning trees, topological sort, Hash Function.

**Total Lecture** 45 Hours

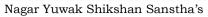
#### **Textbooks:**

- 1. Data Structures & Program Design in C,Robert Kruse, G. L. Tondo and,B. Leung,PHI-EEE
- 2. Data Structures and Algorithms Jeffrey D. Ullman, Alfred V. Aho

#### **Reference Books:**

- 1. Robert Kruse, G. L. Tondo and B. Leung PHI-EEE Data Structures & Program Design in C
- 2. Seymour Lipschutz Data Structures Tata McGraw-Hill
- 3. Ellis Horowitz, Satraj Sahni and Susan Anderson-Freed Fundamentals of Data Structures in C W. H. Freeman and Company.

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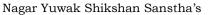
SoE No. 23IT-101

# **B.Tech in Information Technology**

Y	CCE e- library book links [ACCESSIBLE FROM COLLEGE CAMPUS]
1	http://103.152.199.179/YCCE/e-copies%20of%20books/7.Information%20Technology

MO	OOCs Links and additional reading, learning, video material
1.	https://youtu.be/6VF2Q0pgUFI?feature=shared
2.	https://youtu.be/zWg7U0OEAoE
3.	https://youtu.be/g1USSZVWDsY
4.	https://youtu.be/tORLeHHtazM

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## **B.Tech in Information Technology**

#### III SEMESTER

## 23IT1302: Lab. Data Structure and Program Design

#### **Course Outcomes**

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

- 1. Comprehend programming constructs like function, array, string, pointer, structure, file and also understand basic data structures like list, stack, queue.
- 2. Apply appropriate data structures in problem solving.
- 3. Analyze the performance of operations performed on data structures.
- 4. Design application by using data structures for real world problems.

SN	Experiments based on
1	Based on Array
2	Structure
3	Stack
4	Queue
5	Singly Link List
6	Doubbly and Circular Link List
7	Tree Traversing
8	Satck and Queue in Tree
9	Graph
10	Mini project

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**B.Tech in Information Technology** 

#### III SEMESTER

## 23IT1303: Computer Architecture and Organization

#### **Course Outcomes:**

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

- 1. Describe fundamentals of computer architecture and organization and able to design control sequence for instructions.
- 2. Apply mathematical techniques and perform computer arithmetic operations along with the understanding of processor design.
- 3. Design memory organization and understand the concept of cache mapping techniques, Input/output subsystem interfaces and buses.

Unit I (7 Hrs.)

Basic Structure of Computer Hardware and Software: Functional Units, Basic Operational Concepts, addressing methods and machine program sequencing: Memory Locations, addressing and encoding of information, Main memory operation. Instruction Format, limitations of Short word-length machines, High level language considerations.

Unit II (8 Hrs.)

Processing Unit: Some fundamental concepts, Single, two, three bus organization, Instruction set architecture of a CPU – registers, instruction execution cycle, RTL interpretation of instruction, Instruction sequencing, addressing modes. Case study – instruction sets of some common CPUs.

Unit III (7 Hrs.)

Hardwired Control: Design Micro-programmed Control: Microinstructions, Grouping of control signals, Micro program sequencing, Micro Instructions with next Address field, Perfecting microinstruction, Emulation, Bit Slices.Case study – design of a simple hypothetical CPU.

Unit IV (8 Hrs.)

Arithmetic: Number Representation, Addition of Positive numbers, Logic Design for fast adders, Addition and Subtraction, Arithmetic and Branching conditions, Multiplications of positive numbers, Signed-Operand multiplication, fast Multiplication, Booth's Algorithm, Integer Division, Floating point numbers and operations.

Unit V (8 Hrs.)

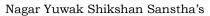
The main Memory: some basic concepts, semiconductor RAM memories, Memory system consideration, semiconductor ROM memories, Multiple module memories and interleaving, Cache Memory, Mapping techniques, Replacement algorithms, write policies Virtual memories, memory management requirements.

Unit VI (7 Hrs.)

Computer Peripherals: I/O Devices, I/O device interface, DMA, Interrupt handling Role of interrupts in process state transitions, I/O device interfaces – SCII, USB. Introduction to Pipelining, Throughput and speedup, pipeline hazards Introduction to parallel processors.

**Total Lecture | 45 Hours** 

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SoE No. 23IT-101

# **B.Tech in Information Technology**

Te	Textbooks:				
1.	David A. Patterson and John L. Hennessy Computer Organization and Design: The Hardware/Software				
	Interface 5th Edition Elsevier				
2.	Carl Hamacher Computer Organization and Embedded Systems McGraw Hill Higher Education 6th Edition				

Ref	ference Books:					
1.	John P. Hayes, Computer Architecture and Organization WCB/McGraw-Hill 3rd Edition					
2.	by William Stallings, Computer Organization and Architecture: Designing for Performance 10th Edition					
	Pearson Education					
3.	Vincent P. Heuring and Harry F. Jordan Computer System Design and Architecture 2nd Edition Pearson					
	Education					

Y	YCCE e- library book links [ACCESSIBLE FROM COLLEGE CAMPUS]		
1	http://103.152.199.179/YCCE/e-copies%20of%20books/7.Information%20Technology		

MO	MOOCs Links and additional reading, learning, video material				
1.	https://www.youtube.com/watch?v=O18D69VKX2k				
2.	https://www.youtube.com/watch?v=4nEr2Z2tItg				
3.	https://www.youtube.com/watch?v=-Bwiv5EGucs				

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SoE No. 23IT-101

# **B.Tech in Information Technology**

#### III SEMESTER

23IT1304: Object Oriented Programming

#### **Course Outcomes:**

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

- 1. Demonstrate the understanding of Object oriented concepts.
- 2. Apply the programming language JAVA efficiently in object oriented software development
- 3. Able to analyze problem statement and identify appropriate objects and methods
- 4. Design and implement a small programs using classes

#### Unit I OOP concepts: (7 Hrs.)

OOP concepts: Classes and objects, data abstraction, encapsulation, inheritance, benefits of inheritance, polymorphism, procedural and object oriented programming paradigm. Java programming: History of java, comments data types, variables, constants, scope and life time of variables, operators, operator hierarchy, expressions, type conversion and casting, enumerated types, control flow statements, jump statements, simple java stand alone programs, console input and output, formatting output, constructors ,methods, parameter passing, static fields and methods, access control, this reference, overloading methods and constructors, recursion, garbage collection

Unit II Inheritance (7 Hrs.)

Inheritance: Inheritance hierarchies, super and subclasses, member access rules, super keyword, preventing inheritance: final classes and methods, the object class and its methods; Polymorphism: dynamic binding, method overriding, abstract classes and methods; Interface: Interfaces VS Abstract classes, defining an interface, implement interfaces, accessing implementations through interface references, extending interface; Packages: Defining, creating and accessing a package, understanding CLASSPATH, importing packages

Unit III Arrays (8 Hrs.)

Arrays, Strings Arrays, One Dimensional Arrays, Two Dimensional Arrays, variable size arrays, Strings and String Buffer classes, Wrapper Classes, Collection Vector and Framework: Introduction to collection framework, Vectors, Array List, Linked list, Hashset, Treeset, Hashmap

#### **Unit IV Exception Handling**

(8 Hrs.)

Exception Handling: Benefits of exception handling, the classification of exceptions, exception hierarchy, checked exceptions and unchecked exceptions, usage of try, catch, throw, throws and finally, rethrowing exceptions, exception specification, built in exceptions, creating own exception sub classes. Multithreading: Differences between multiple processes and multiple threads, thread states, creating threads, interrupting threads, thread priorities, synchronizing threads, inter thread communication.

Unit V Files: (7 Hrs.)

Files: streams, byte streams, character stream, text input/output, binary input/output, random access file operations, file management using file class: Connecting to Database, querying a database and processing the results, updating data with JDBC.

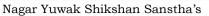
#### Unit VI: Virtual memory

(8 Hrs.)

GUI Programming with Java: The AWT class hierarchy, introduction to swing, swings Vs AWT, hierarchy for swing components. Containers: JFrame, JApplet, JDialog, Jpanel, overview of some swing components: JButton, JLabel, JTextField, JTextArea, simple applications. Layout management: Layout manager types, border, grid and flow. Applets: Inheritance hierarchy for applets, differences between applets and applications, life cycle of an applet, passing parameters to applets

Total Lecture | 45 Hours

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# **B.Tech in Information Technology**

Textbooks:		
Bruce Eckel Thinking in Java Prentice Hall		
2. Herbert Schildt Java2 Complete Reference McGraw-Hill		

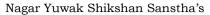
	Ref	deference books:			
	1.	E. Balagurusamy Programming with Java TATA McGraw-Hill			
Ī	2.	Core and Advanced Java, Black Book Recommended by CDAC, Revised and Upgraded			

1	http://103.152.199.179/YCCE/e-copies%20of%20books/7.Information%20Technology
- N	

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

MC	MOOCs Links and additional reading, learning, video material				
1.	https://www.youtube.com/watch?v=O5hShUO6wxs				
2.	https://www.youtube.com/watch?v=7q3zXRuctQ8&list=PLd3UqWTnYXOnT6p6dll1oiKsDu96QGANk				
3.	https://www.youtube.com/watch?v=P5tFJ9umhvk				

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Chairperson	Dean (Acad. Matters)	Dean OBE	Date of Release	Version	AY 2023-24 Onwards





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# **B.Tech in Information Technology**

#### III SEMESTER

23IT1305: Lab. Object Oriented Programming

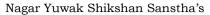
#### **Course Outcomes**

#### **Upon successful completion of the course the students will be**

- 1. Demonstrate the understanding of Object oriented concepts.
- 2. Apply the programming language JAVA efficiently in object oriented software development
- 3. Able to analyze problem statement and identify appropriate objects and methods
- Design and implement a small programs using classes

Sr. No	Experiments Base On
1.	Introduction of JAVA Programming Environment
2.	Data Types and Control Structures
3.	Class and constructor
4.	Overloading
5.	Overriding
6.	Interface
7.	Arrays and String
8.	Exception
9.	Collection
10.	Applet

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## **B.Tech in Information Technology**

## III SEMESTER 23IT1306: Lab. Software Lab1

#### **Course Outcomes**

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

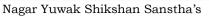
1. To equip students with foundational skills in web development, enabling them to create well-structured, visually appealing, and interactive web pages using HTML and CSS.

#### Practical based on following topics

Minimum 10 problem statements on each topic

Sr. No	Experiments Base On
1.	HTML tag
2.	Types of list
3.	Images
4.	Tables
5.	forms
6.	Frames
7.	CSS document on Internal style sheet
8.	CSS document on placing Images at different position
9.	CSS document on placing Images at different position
10.	CSS selectors

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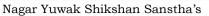
(Department of Information Technology)

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# **B.Tech in Information Technology**

**III SEMESTER** 23IT1307: Lab. IT Project

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# **B.Tech in Information Technology**

# III SEMESTER **Multidisciplinary Minor Courses**

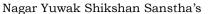
#### Track 1

Courses	Sem	MDMT1IT101: Cloud Computing
MDM-I	3	(MDM1IT101) Introduction to Cloud Computing
MDM-II	4	(MDM2IT102) Cloud Security
MDM-III	5	(MDM3IT103) Introduction to Salesforce
MDM-IV	6	(MDM4IT104) Application Development using Salesforce
MDM-V	7	(MDM5IT105) Cloud Web Services
MDM-VI	8	(MDM3IT106) Quantum Computing

### Track 2

Courses	Sem	MDMT2IT201 : Cyber Security			
MDM-I	3	(MDM1IT201) Mathematics for Cyber Security			
MDM-II	4	(MDM2IT202) Cyber Security Fundamentals			
MDM-III	5	(MDM3IT203) Cyber Security Techniques and Tools			
MDM-IV	6	MDM4IT204) Introduction to Blockchain			
MDM-V	7	MDM5IT205) Blockchain Security			
MDM-VI	8	(MDM3IT206) AI in Cyber Security			

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## **B.Tech in Information Technology**

# III SEMESTER MDM1IT101: Introduction to Cloud Computing

#### **Course Outcomes:**

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

- 1. To understand the necessary theoretical background for computing and storage clouds environments.
- 2. To know the methodologies and technologies for the development of applications that will be deployed and offered through cloud computing environments.
- 3. To be able to realize cloud infrastructures by using IaaS software, while also developing cloud applications by utilizing PaaS software.

Unit I (8 Hrs.)

Introduction to Cloud Computing, definition and characteristics of cloud computing, Different Computing Paradigms: Client-Server Computing, Cluster computing, Grid Computing, Distributed Computing, Utility Computing, Fog and Sky Computing, Cloud computing Service Models and deployment models. Advantages and disadvantages of cloud Computing.

Unit II (7 Hrs.)

Functioning of Cloud Computing, Cloud Architecture, Cloud Storage, Cloud Computing Concepts:

Virtualization, Types of Virtualization, Creation of Virtual Machines, Hypervisors, Types of hypervisor, Load Balancing, Deployment, scalability and Elasticity, Replication, types of replication, cloud Monitoring, Identity and Access Management, Service Level Agreement and Billing System.

Unit III (8 Hrs.)

Cloud computing architecture, cloud computing stack, comparison with traditional computing architecture (client-server), cloud storage, server storage, storage as a service, data storage in cloud computing, resource virtualization, Cloud Computing Technology, Introduction, Network- Basic Public Internet, The Accelerated Internet-Optimized Internet Overlay- Site-to-Site VPN, Software defined Network, Network function virtualization.

Unit IV (7 Hrs.)

Introduction to cloud application design, cloud design consideration for cloud applications, Design considerations: Scalability, Reliability, Availability, security, maintenance, up gradation and performance, Reference architecture for cloud application, cloud application design methodology, Service Oriented Architecture (SOA), Cloud Component Model (CCM), Data Storage approaches: Relational and Non-relational approaches, case study and example.

Total Lecture 30 Hours

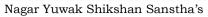
#### **Textbooks:**

- 1. Gautam Shroff Enterprise Cloud Computing Cambridge Press
- 2. Arshdeep Bahga, Vijay Madisetti Cloud Computing- A Hands On Approach University Press(INDIA) Private Ltd.

#### **Reference Books:**

- 1. University Press(INDIA) Private Ltd. Google Apps Pearson Publication
- 2. Judith Hurwitz, R. Bloor, M. Kanfman, F. Haper Cloud Computing for Dummies Wiley India Edition

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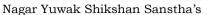
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Y	YCCE e- library book links [ACCESSIBLE FROM COLLEGE CAMPUS]					
1	http://103.152.199.179/YCCE/e-copies%20of%20books/7.Information%20Technology					

MO	MOOCs Links and additional reading, learning, video material						
1.	https://www.youtube.com/watch?v=CKllqKLOgSI&list=PL-gW8Fj5TGrpoW08kOfbG6yfXbExyL0EB						
2.	https://www.youtube.com/watch?v=v6kD9J39dys&list=PL-						
	gW8Fj5TGrpoW08kOfbG6yfXbExyL0EB&index=3						
3.	https://www.youtube.com/watch?v=yv1IMYYTnrs&list=PL-						
	gW8Fj5TGrpoW08kOfbG6yfXbExyL0EB&index=3						

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## **B.Tech in Information Technology**

#### III SEMESTER

### Code ((MDM1IT201) Name: Mathematics for Cyber Security

#### **Course Outcomes**

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

- 1. Define the concepts related to the basics of set theory and binary operations.
- 2. Demonstrate knowledge and understanding of groups, subgroups, and order of an element in finite groups.
- 3. Choose appropriate algebraic structure for cryptographic operation.
- 4. Develop understanding of use of algebraic structure in number theory algorithms.

#### **UNIT I: Elementary Number Theory**

(08 Hrs.)

The division algorithm, Divisibility and the Euclidean algorithm, The fundamental theorem of arithmetic, Modular arithmetic and basic properties of congruences; Principles of mathematical induction and well ordering principle. Primality Testing algorithms, Chinese Remainder Theorem, Quadratic Congruence

#### **UNIT II: Advanced Number Theory**

(07Hrs.)

Advanced Number Theory – Primality Testing algorithms, Chinese Remainder Theorem, Quadratic Congruence, Discrete Logarithm, Factorization Methods, Side Channel Attacks, Shannon Theory, Perfect Secrecy, Semantic Security.

#### **UNIT III: Probability theory**

(07 Hrs.)

Probability theory: Calculating probabilities, conditional probability, and Bayes' theorem, Entropy and

#### UNIT IV: Statistical analysis of security data

(08 Hrs.)

Statistical analysis of security data: Identifying patterns and assessing risks, Random number generation and its importance in cryptography

**Total Lecture** 

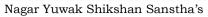
30 Hours

Tex	Textbooks:						
1.	D.S. Dummit and R.M. Foote, "Abstract Algebra", John Wiley						
2	Michael Artin, "Algebra", Pearson Education.						
3	J.A. Gallian, "Contemporary Abstract Algebra", Narosa Publishing House.						
4	I. N. Herstein, "Topics in Algebra", Wiley.						
5	N. Jacobson, "Basic Algebra I", Hindustan Publishing Company.						
6	William Stallings, "Cryptography and Network Security Principles and Practice", Pearson Education.						

#### **Reference Books:**

- 1. J. Nocedal and S. J. Wright, Numerical Optimization. New York: Springer Science+Business Media, 2006.
- 4. J. S. Rosenthal, A First Look at Rigorous Probability Theory (Second Edition). Singapore: World Scientific Publishing, 2006.

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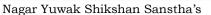
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Y	YCCE e- library book links [ACCESSIBLE FROM COLLEGE CAMPUS]						
1	http://103.152.199.179/YCCE/e-copies%20of%20books/7.Information%20Technology/						

MOOCs Links and additional reading, learning, video material							
1.	http://digimat.in/nptel/courses/video/106105031/L01.html						
2.	http://acl.digimat.in/nptel/courses/video/106106248/L26.html						

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Chairperson		Dean OBE	Date of Release		





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

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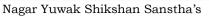
# **B.Tech in Information Technology**

# 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: <a href="https://ycce.edu/syllabus/">https://ycce.edu/syllabus/</a>

79/	Mest	Bharmi	July,2023	1.00	Applicable for  AY 2023-24 Onwards
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# 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 Information Technology)

SoE No. 23IT-101

# **B.Tech in Information Technology**

III SEMESTER **Mandatory Learning Course (MLC)** 

**MLC2123: YCAP3** 

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

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 Semester

(Department of Information Technology)

**B.** Tech in Information Technology



#### 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**

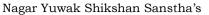
(Scheme of Examination w.e.f. 2023-24 onward)
(Department of Information Technology) B. Tech. in Information Technology

SoE No. 23IT-101

SN	Sem	Type	BoS/	Sub. Code	Subject	T/P		Contac	t Hours	3	Credits	% W	eighta		ESE
		<i>,</i>	Deptt		,		L	T	Р	Hrs		MSEs*	TA**	ESE	Duration
					FOURTH SEMI	EST	ER								
1	4	HSSM-2	GE	23GE1401	Entrepreneurship Development	Т	2	0	0	2	2	30	20	50	3
2	4	AEC-2	GE	23GE1405 23GE1406	Marathi Language / Hindi Language	Т	2	0	0	2	2	30	20	50	3
3	4	PC	IT	23IT1401	Discrete Mathamatics and Graph Theory	Т	3	0	0	3	3	30	20	50	3
4	4	PC	IT	23IT1402	Digital Circuits and Microprocessor	Т	3	0	0	3	3	30	20	50	3
5	4	PC	IT	23IT1403	Lab : Digital Circuits and Microprocessor	Р	0	0	2	2	1		60	40	
6	4	PC	IT	23IT1404	Computer Netwrok	Т	3	0	0	3	3	30	20	50	3
7	4	PC	IT	23IT1405	Lab : Computer Netwrok	Р	0	0	2	2	1		60	40	
8	4	PC	IT	23IT1406	Lab : Software Lab -2	Р	0	0	2	2	1		60	40	
9	4	VSEC-3	IT	23IT1407	Lab: Adv. Python Programming	Р	0	0	4	4	2		60	40	
10	4	VEC-2	IT	23IT1408	Cyber Laws	Т	2	0	0	2	2	30	20	50	3
11	4	MDM	IT		MD Minor Course-II	Т	2	0	0	2	2	30	20	50	3
12	4	OE-2	OE		Open Elective-II	Т	2	0	0	2	2	30	20	50	3
					TC	TAL	19	0	10	29	24				
List of M	landato	ory Learnir	ng Coui	rse (MLC)											
		1	Ī	, ,	YCAP4 : YCCE Communication	Ι.							1	1	
1	4	HS	T&P	MLC2124	Aptitude Preparation	Α	3	0	0	3	0				

Open Ele	ective -	II			
SN	Sem	Туре	BoS/ Deptt	Sub. Code	Subject
1	4	OE2	GE	230E2401	OE-II : Combinatorics
2	4	OE2	GE	230E2402	OE-II : Fuzzy Set Theory, Arithmetic And Logic
3	4	OE2	GE	230E2403	OE-II : Green Chem. & Sustainability
4	4	OE2	GE	230E2404	OE-II : Hydrogen Fuel
5	4	OE2	GE	230E2405	OE-II : Electronic Materials And Applications
6	4	OE2	GE	230E2406	OE-II : Laser Technology And Applications
7	4	OE2	MGT	230E2407	OE-II : Finance And Cost Management
8	4	OE2	MGT	230E2408	OE-II : Operation Research Techniques
9	4	OE2	MGT	230E2409	OE-II : Project Evaluation & Management
10	4	OE2	MGT	230E2410	OE-II : Total Quality Management
11	4	OE2	MGT	230E2411	OE-II : Value Engineering
12	4	OE2	MGT	230E2412	OE-II : Maintenance Management
13	4	OE2	MGT	230E2413	OE-II : Industrial Safety
14	4	OE2	MGT	230E2414	OE-II : Industry 4.0
15	4	OE2	MGT	230E2415	OE-II : Operation Management
16	4	OE2	MGT	230E2416	OE-II : Material Management
17	4	OE2	MGT	230E2417	OE-II : Hospitality Management
18	4	OE2	MGT	230E2418	OE-II : Human Resource Management & Organizational Behaviour
19	4	OE2	MGT	230E2419	OE-II : Agri-Business Management
20	4	OE2	MGT	230E2420	OE-II : Rural Marketing
21	4	OE2	MGT	230E2421	OE-II : Marketing Management
22	4	OE2	MGT	230E2422	OE-II : Health Care Management

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

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SoE No. 23IT-101

# **B.Tech in Information Technology**

# IV SEMESTER

**23GE1401**: Entrepreneurship Development

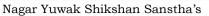
#### **Course Outcomes:**

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 – T	heories and
Models, Types of Entrepreneur, Stages in entrepreneurial process- Idea Generation,	Screening,
Selection and Managing Resources.	
	T
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	e and Legal
Compliances.	
Unit III:	7 Hrs.
Entrepreneurship and IP Strategy: Intellectual Property : Definition and Concept of Trade N	Mark, Patent,
Copyright, Industrial Design, IP Strategy and Entrepreneurship.	
Unit IV:	8 Hrs.
Support to Entrepreneurs: Financing new ventures, Business Incubators — Government Poli	cy for Small
Scale Enterprises, Growth Strategies in small industry - Expansion, Diversification, Jo	int Venture,
Merger and Subcontracting.	
Total Lecture	30 Hours

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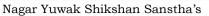
# Yeshwantrao Chavan College of Engineering (An Autonomous Institution affiliated to Rashtrasant Tukadoji Maharaj Nagpur University) B. Tech SoE and Syllabus 2023 (Scheme of Examination w.e.f. 2023-24 onward) (Department of Information Technology) SoE No. 23IT-10

SoE No. 23IT-101

# **B.Tech in Information Technology**

Stud	ent 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
Text	books
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.
Refe	rence 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
YCC	CE 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
	OCs Links and additional reading, learning, video material
1	https://onlinecourses.swayam2.ac.in/cec23_mg24/course- entrepreneurship development
2	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
	<u>entrepreneurship</u>

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(Department of Information Technology)

SoE No. 23IT-101

# **B.Tech in Information Technology**

# IV SEMESTER 23GE1405: Marathi Language

## Course **Objectives**

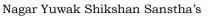
- 1. मराठी भाषेच्या समृद्धीची जाणीव करून देणे.
- 2. विद्यार्थ्यांमध्ये भाषा कौशल्याचा विकास करणे आणि त्यातून रोजगाराच्या संधींचा शोध घेणे.

## 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		<u>गद्य विभाग</u>	8 Hours
۶.	भारतीय लोकशाहीचे भवितव्य काय?	- डॉ. बाबासाहेब आंबेडकर	•
٦.	काळी आई	- व्यंकटेश माडगूळकर	
₹.	संत तुकारामांचे अभंग	- निर्मलकुमार फडकुले	
٧.	माझी शाळा	- प्रकाश खरात	
ч.	समतेचे वारकरी संत गाडगेबाबा	- अशोक राणा	
	आणि राष्ट्रसंत तुकडोजी महाराज		
ξ.	लोककल्याणकारी राजा :	- शरयू तायवाडे	
	T		
Unit:2		<u>पद्य विभाग</u>	8 Hours
۶.	ज्ञानेश्वरांचे अभंग	- संत ज्ञानेश्वर	-
۶.	वनसुधा	- वामन पंडित	
₹.	नवा शिपाई	- केशवसुत	
٧.	मेंढरं	- विट्ठल वाघ	
ч.	पोरी	- अनुराधा पाटील	
ξ.	गाव	- हेमंतकुमार कांबळे	

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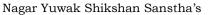
# **B.Tech in Information Technology**

Unit:3	व्यावहारिक मराठी	7 Hours
१.	म्हणी	
۶.	मुलाखतलेखन - डॉ. वैशाली धनविजय	
₹.	वाक्प्रचार	
٧.	जाहिरातलेखन - डॉ. अजय देशपांडे	
Unit:4	रोजगाराभिमुख मराठी व्यावहारिक कौशल्ये	7 Hours
१.	प्रत्यक्ष मुलाखत कौशल्य	
۶.	वाचन कौशल्य - (अ) बातमी वाचन (ब) कथा वाचन	
३. अं	ॉनलाईन कौशल्य -  (अ)  ग्राहक सेवा केंद्राशी संवाद,  (ब)  ऑनलाईन अर्ज करणे	

### **Reference Books**

- 1. पाठ्यपुस्तक: शब्दसाधना भाग १
- 2. रोजगाराभिमुख मराठी व्यावहारिक कौशल्ये

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(Department of Information Technology)

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# **B.Tech in Information Technology**

# IV SEMESTER 23GE1406 : Hindi Language

### **Course Objectives**

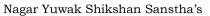
- 6. विद्यार्थियों में देशभक्तिपरक एवं पारिवारिक मूल्यों का विकास |
- 7. विद्यार्थियों पर्यावरण-संरक्षण के प्रति सजग करना |
- 8. एकांकी, कहानी, निबंध आदि विधाओं के मध्य का अंतर अवगत कराना
- 9. हिंदी के प्रयोजनमूलक स्वरूप से परिचित कराना |
- 10. विद्यार्थियों को आधुनिक प्रौद्योगिकी (तकनीक) का प्रयोग करने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

Unit:1		8 Hours	
۶.	भाईसाहब (कहानी)	- प्रेमचंद	<u> </u>
۶.	स्मृति (निबंध)	- श्रीराम शर्मा	
₹.	गिल्लू (रेखाचित्र)	- महादेवी वर्मा	
٧.	अभाव (कहानी)	- विष्णु प्रभाकर	
५.	महाभारत की साँझ (एकांकी)	- भारतभूषण	
ξ.	उखड़े खंबे (व्यंग्य)।	- हरिशंकर परसाई	

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# 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 Information Technology) SoE No. 23IT-10

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# **B.Tech in Information Technology**

Unit:2		पद्य विभाग	8 Hours			
۶.	कबीर के दोहे	- कबीरदास				
٦.	ले चल यहाँ भुलावा देकर	- जयशंकर प्रसाद				
₹.	स्नेह-निर्झर बह गया	- हैसूर्यकांत त्रिपाठी "निराला"				
٧.	प्रथम रश्मि	- सुमित्रानंदन पंत				
ч.	जीवन का झरना	- आरसीप्रसाद सिंह				
ξ.	कविता के साथ	- दामोदर खड़से				
Unit:3	अन्य पाठ्य सामग्री 7 Hours					
१.	१. मुहावरे और लोकोक्तियाँ: पाठ्यपुस्तक में मुहावरे और लोकोक्तियाँ का अर्थ एवं वाक्य प्रयोग					
۶.	विज्ञापन कला : अर्थ, परिभाषा,	प्रकार, शीर्षक का महत्त्व, विज्ञापन के प्रयोजन, सत्य, लक्ष्य	ा, विज्ञापन की			
	भाषा, अच्छे विज्ञापन के गुण इत्यादि ।					
Unit:4	1	कौशल्य आधारित घटक	7 Hours			
१. वाचन कौशल्य (समाचार-वाचन, कहानी-वाचन)						
₹. ₹	२. सोशल मीडिया के शिष्टाचार					
<b>3</b> . 3	भॉनलाइन आवेदन, ग्राहक-सेवा केंद्र	से संवाद				

Reference Books	
3. पाठ्यपुस्तक : <b>''पलाश''</b>	

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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**

## IV SEMESTER

23IT1401: Discrete Mathematics & Graph Theory

#### **Course Outcomes:**

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

- 1. Identify the importance of statements in deriving valid inferences.
- 2. Use relations and ordering methods to identify the relationship among the inferences.
- 3. Select suitable algebraic systems to find solution for real time problems.
- 4. Find the suitable computing methods and applying graph theory concepts to solve complex problems.

#### **Unit I: Mathematical Logic and Set Theory**

(7 Hrs.)

Statement and Notation: Negation, Conjunction, Disjunction, Tautologies, Truth Tables, Basic Concepts of Set Theory, Inclusion & equality of set, Power Set, Ordered Pairs and n-tuples, Operations on Sets, mathematical induction. Propositions, Predicate logic.

### **Contemporary Issues related to Topic**

#### **Unit II: Relations and Functions**

(8 Hrs.)

Relations and Ordering, Relation Matrix and Graphs, Partition and Covering of a set, Equivalence relation, Partial order relation, Partially Ordered sets, Functions, Composition of functions, Inverse Functions, Characteristics function of a set.

#### **Contemporary Issues related to Topic**

#### **Unit III: Group Theory**

(7 Hrs.)

Groups, Subgroups and Homomorphism, Cosets and Lagrange's theorem, Normal subgroups. Semi groups and Monoids Homomorphism of semigroups and monoids, Sub semi groups and monoids.

#### **Contemporary Issues related to Topic**

Unit IV: Rings (8 Hrs.)

Definitions and Examples, sub ring, Integral domain, ring homomorphism, ideal of ring polynomial

#### **Unit V: Field and Lattices**

(7 Hrs.)

Definitions and Examples, Finite Field, Ordered sets, Hasse Diagrams of partially Ordered sets. Lattices, Bounded Latices, Complements Latices, Definitions and Examples of Finite Field, Ordered sets, Hasse Diagrams of partially Ordered sets. Lattices, Bounded Latices, Complements Latices.

### **Contemporary Issues related to Topic**

#### **Unit VI: Graph Theory**

(8 Hrs.)

Basic concepts of graph theory, Basic definitions, Paths and circuits, Reach ability and connectedness, Matrix Representation of graphs, Tree and their representation and operations, Rooted trees, Path lengths in rooted trees, Multi graphs and weighted graphs, and graph isomorphism, shortest paths in weighted graphs, Hypergraphs, transitive closure, Spanning trees, Kruskal's algorithm, Prim's algorithm.

#### **Contemporary Issues related to Topic**

**Total Lecture** | 45 Hours

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SoE No. 23IT-101

## **B.Tech in Information Technology**

#### **Textbooks:**

- 1. J. P. Tremblay & R. Manohar, Discrete Mathematics Structure with application to Computer Science, 23rd re-print,2005,Tata McGraw-Hills Publication Company Limited, New Delhi.
- 2. Lipschutz Schaums's , Outline series ,Discrete Mathematics, 2nd edition, Tata McGraw-Hills Publication Company Limited, New Delhi.

#### **Reference books:**

 Bernard Kolman ,Robert C.Busby, Sharon Ross, Discrete Mathematical structures, 3rd edition, 2001, Prentice Hall of India, New Delhi.

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

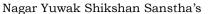
1 http://103.152.199.179/YCCE/Suported%20file/Supprted%20file/e-

copies%20of%20books/Applied%20Sciences%20&%20Humanities/Mathematics%20and%20Humanities/

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

- 1. <a href="https://onlinecourses.nptel.ac.in/noc22\_ma10/preview">https://onlinecourses.nptel.ac.in/noc22\_ma10/preview</a>
- 2. <a href="https://onlinecourses.nptel.ac.in/noc20">https://onlinecourses.nptel.ac.in/noc20</a> cs82/preview
- 3. https://nptel.ac.in/courses/111106102

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# **B.Tech in Information Technology**

# IV SEMESTER 23IT1402 : Digital Circuits and Microprocessors

#### **Course Outcomes:**

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

- 1. Demonstrate the understanding of Digital Circuits and Microprocessor.
- 2. Apply the concepts of digital circuits and microprocessor in switching theory and ARM processor.
- 3. Able to analyze problem statement and interface the various programmable ICs.
- 4. Design and implement programs to simulate the functioning of 8086 processor.

Unit I (8 Hrs.)

Basic logic circuits, Boolean laws, Simplification of function using algebraic methods, basic combinational logic circuits: Encoder, Decoder, Multiplexer, De-multiplexer, Totem pole and tristate output.

Unit II (8 Hrs.)

Simplification of sum of product and product of sum, K-maps (Up to 4 Variable), simplification of completely/incompletely specified functions using K-maps & Quine McCluskey's method, Introduction to Flip Flops (RS, D, T, JK), Memory organization using Flip-Flops. Racing Condition, J-K Master Slave Flip flop. Excitation tables, Conversion of one type to another type flips flop.

Unit III (7 Hrs.)

Excitation tables, Introduction to sequential Circuits, Counters, Registers, Synchronous/Asynchronous Designs, modulo N counter with Reset or Clear facility, Design of Mod N counters Using K-map, Lock Free Counters.

Unit IV (8 Hrs.)

Introduction: Internal architecture & pin diagram of 8086/8088 microprocessor, Minimum & Maximum mode, even & odd memory banks, Accessing memory & I/O ports, Memory mapping in minimum mode.

Unit V (8 Hrs.)

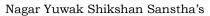
Programming with 8086/8088: Addressing Modes, Instruction set, Instruction encoding format, Timing diagram Assembler directives, 8086 programming examples, String operations, File I/O processing, Far & Near procedures, Macros, Timing & delay loops.

Unit VI (6 Hrs.)

Interfacing with 8086/8088: Memory interfacing, Programmable parallel ports, Intel 8255 PPI, Block diagram & interfacing, Modes & initialization.

**Total Lecture** | 45 Hours

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# **B.Tech in Information Technology**

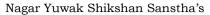
Tex	xtbooks:				
1.	Charles Roth Fundamentals of Logic Design CENGAGE Learning 5th Edition				
2.	Anand Kumar Fundamentals of Digital Circuits PHI 2nd Edition				
3.	Malvino Digital Electronics Principles Career Education 6th edition, 1998				
4.	Douglas Hall Microprocessor & Interfacing, Programming & Hardware. Tata McGraw Hil 2 <sup>nd</sup> Edition,				
	20061				
5.	A. Ray, K.M. Bhurchandi Advanced Microprocessors & Peripherals: Architecture, Programming &				
	Interfacing Tata McGraw Hill,2006				

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

1 http://103.152.199.179/YCCE/e-copies%20of%20books/7.Information%20Technology

MC	MOOCs Links and additional reading, learning, video material		
1.	https://www.youtube.com/watch?v=te5Xe3TgPC4		
2.	https://www.youtube.com/watch?v=Uuxa90Xl4Rs		
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# **B.Tech in Information Technology**

### IV SEMESTER

## 23IT1403: Lab. Digital Circuits and Microprocessors

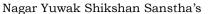
#### **Course Outcomes**

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

- 1. Student will able to be to understand designing of basic circuits using logic gates and Boolean algebra, and designing of combinational logic circuits.
- 2. Student will able to understand designing of counters and registers.
- 3. Students will be able to understand the architecture and organization of microprocessor along with instruction coding formats, addressing modes, Instructions sets of 8086.
- 4. Students will be able to understand the interfacing of memory And I/O with 8086 and interfacing and working principle of 8255 PPI.

SN	Experiments based on
1	Study of Logic Gates – Discrete version & IC version: AND, OR, NOT, NAND, NOR Gates – To Construct and verify the Truth Tables.
2	Study and configure of flip-flop, registers and counters using digital ICs. Design digital system using these circuits.
3	Study of Half Adder and Full Adder circuits – To Construct and verify the Truth Table.
4	To study Multiplexer and Demultiplexer circuits.
5	To study assembler, linker, MASM,TASM, 8086 Simulator and assembly language programming instructions of 8086 microprocessors.
6	To write & execute Assembly Language program to multiply two 16 bit numbers and Divide two numbers (16/8, 16/16, 8/8)
7	Write 8086 Assembly language program (ALP) to add array of N hexadecimal numbers stored in the memory. Accept input from the user.
8	To write & execute Assembly Language program to search a number in a string of N numbers.
9	To write & execute Assembly Language program to sort out even and odd numbers from the given data string
10	To write & execute Assembly Language program to transfer block of data from one memory block to another.
11	Study of Logic Gates – Discrete version & IC version: AND, OR, NOT, NAND, NOR Gates – To construct and verify the Truth Tables.
12.	Study and configure of flip-flop, registers and counters using digital ICs. Design digital system using these circuits.
13.	3. Study of Half Adder and Full Adder circuits – To Construct and verify the Truth Table.

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# **B.Tech in Information Technology**

# IV SEMESTER 23IT1404 : Computer Network

#### **Course Outcomes:**

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

- 1. Students will able to explain and visualize the different aspects of networks, protocols and network design models.
- 2. Students will able to illustrate the different of hardware, software and types of transmission media used in computer networks.
- 3. Students will able to analyze various Data Link layer design issues and select appropriate routing algorithms for a network.
- 4. Students will able to analyze the important aspects and functions of transport layer, application layer and Cryptography in computer networking.

Unit I (7 Hrs.)

The use of computer networks, LAN"s, MAN"s, WAN"s. topologies and their characteristics, wireless networks, protocol hierarchies, design issues for layers, interfaces and services, connection oriented and connectionless services, service primitives relationship of services to protocols. The Network Core , Packet Switching, Circuit Switching, A Network of Networks Delay, Loss, and Throughput in Packet-Switched Networks , Overview of Delay in Packet-Switched Networks, Queuing Delay and Packet Loss, End-to-End Delay, Throughput in Computer Networks, Protocol Layers and Their Service Models, Layered Architecture Encapsulation The OSI reference model. TCP/IP reference model.

Unit II (7Hrs.)

Physical layer: theoretical basis for data communication, Guided transmission media, wireless transmission: electromagnetic spectrum, radio transmission, infrared transmission.

Techniques for Bandwidth utilization: Multiplexing - Frequency division, Time division and Wave division, Concepts on spread spectrum.

Unit III (7 Hrs.)

Data Link Layer and Medium Access Sub Layer: Error Detection and Error Correction - Fundamentals, Block coding, Hamming Distance, CRC; Flow Control and Error control protocols - Stop and Wait, Go back – N ARQ, Selective Repeat ARQ, Sliding Window, Switched Local Area Networks, Link-Layer Addressing and ARP, Ethernet, Link-Layer Switches, Virtual Local Area Networks (VLANs)

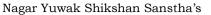
Unit IV (8 Hrs.)

Network layer: design issues, Classful and classless Internet Addresses, subnet addressing, implementation of subnet with mask, supernetting, Address block and CIDR notation, examples. Routing algorithms, congestion control algorithms, quality of service, internetworking, network layer in Internet: IP protocol, Input Processing, Switching, Output Processing, Where Does Queuing Occur, The Routing Control Plane, The Internet Protocol (IP): Forwarding and Addressing in the Internet, Datagram Format, IPv4 Addressing, Internet Control Message Protocol (ICMP), IPv6, A Brief Foray into IP Security

Unit V (8 Hrs.)

**Transport Layer:** Connection-Oriented Transport: TCP, The TCP Connection Segment Structure, Round-Trip Time Estimation and Timeout, Reliable Data Transfer, Flow Control Connection Management, Principles of Congestion Control, The Causes and the Costs of Congestion, Approaches to Congestion Control, Network-Assisted Congestion, Process to Process Communication, User Datagram Protocol (UDP), Transmission Control Protocol (TCP), SCTP Congestion Control; Quality of Service, QoS improving techniques: Leaky Bucket and Token Bucket algorithm. Performance issues: performance problems in networks, network performance measurement.

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## **B.Tech in Information Technology**

Unit VI (8 Hrs.)

Application Layer: Principles of Network Applications, Network Application Architectures
Processes Communicating 88, Transport Services Available to Applications, Transport Services Provided by the
Internet, Application-Layer Protocols, The Web and HTTP, Overview of HTTP, Non-Persistent and Persistent
Connections, HTTP Message Format, User-Server Interaction: Cookies, Web Caching, The Conditional GET,
Firewalls, Network security: cryptography, introduction to symmetric and public key algorithms, digital
signatures, authentication protocols, e-mail and web security

**Total Lecture** | 45 Hours

#### **Textbooks:**

- 1. Kurose & Ross computer networking a top-down approach Pearson Prentice Hall 6<sup>th</sup> Edition
- 2. Andrew Tanenbaum Computer Networks Pearson Prentice Hall 5<sup>th</sup> Edition.
- 3. Behrouz Forouzan Data Comminication & Networking TMH 4<sup>th</sup> Edition (2007).

#### **Reference Books:**

- 1. William Stallings Data & Computer Communication PHI 8<sup>th</sup> Edition.
- 2. Douglas Comer Internetworking with TCP/IP Prentice Hall of India 5<sup>th</sup> Edition.
- 3. Behrouz Forouzan TCP/IP protocol Suite TMH 4<sup>th</sup> Edition.

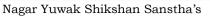
### YCCE e- library book links [ACCESSIBLE FROM COLLEGE CAMPUS]

1 http://103.152.199.179/YCCE/e-copies%20of%20books/7.Information%20Technology

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

- 1. https://www.youtube.com/watch?v=uSKdjjw5zow
- 2. https://www.youtube.com/watch?v=wvPe4Zb0tUA
- 3. https://www.youtube.com/watch?v=LdSAaSHfK3M

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# **B.Tech in Information Technology**

# IV SEMESTER 23IT1405: Lab. Computer Network

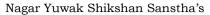
#### **Course Outcomes**

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

- 1. Understand and describe the services and features of the Computer networks.
- 2. Detect Errors in data transfer and configure the DNS and DHCP Servers

SN	Experiments based on
1	To Study different types of network & networking commands in Linux.
2	To Configure DNS Server using CISCO Packet Tracer
3	To implement client-server application using java network programming.
4	Write a program to perform Bit stuffing.
5	Write a program to implement CRC.
6	Write a program to implement Hamming Code.
7	To Configure DHCP using CISCO Packet Tracer
8	To Configure RIP server using CISCO Packet Tracer.
9	To Configure Simple VLAN server using CISCO Packet Tracer.
10	To Study campus networking of YCCE.
11	To Study different types of network & networking commands in Linux.
12.	To Configure DNS Server using CISCO Packet Tracer
13.	To implement client-server application using java network programming.

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## **B.Tech in Information Technology**

# IV SEMESTER 23IT1406 : Lab. Software Lab2

#### **Course Outcomes**

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

- 1. Understand JavaScript code, demonstrating a solid grasp of variables, data types, functions, control structures, and error handling.
- 2. Will be capable of using JavaScript to create interactive and dynamic web pages, manipulating the DOM (Document Object Model), handling events
- 3. Apply Asynchronous Programming, including promises, async/await, and callback functions
- 4. Implementing Modern JavaScript Practices and Frameworks

#### (Minimum 10 problem statements on each topic)

SN	Experiments based on
1	Basic Input/output Operations
2	DOM Manipulation
3	Events Handling
4	Conditional Statements and Loops
5	Arrays and Objects:
6	Functions
7	Asynchronous JavaScript
8	Local Storage
9	Form Validation
10	Regular Expressions:

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# **B.Tech in Information Technology**

# IV SEMESTER 23IT1407: Lab. Adv. Python Programming

#### **Course Outcomes**

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

- 1. Utilize advanced Python constructs such as decorators, context managers, and metaclasses to write more efficient and reusable code.
- 2. Students will gain expertise in handling, analyzing, and visualizing large datasets using Python libraries such as NumPy, pandas and Matplotlib
- 3. applying Python for machine learning and artificial intelligence projects using libraries such as scikit-learn
- 4. Practical understanding of advanced Python programming techniques and their applications in various domains.

#### (Minimum 10 problem statements on each topic)

SN	Experiments based on
1	Assertion
2	Decorators
3	Generators, meta classes
4	Threading in Python
5	Introduction to GUI building libraries
6	Widgets
7	Basic image processing using Python
8	Basic numerical processing using Python
9	Basing data analysis using Python
10	Basic data visualization using Python

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# **B.Tech in Information Technology**

# IV SEMESTER 23IT1408: Cyber Laws

#### **Course Outcomes:**

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

- 1. Classify Intellectual property like copyright, patents and trademark and understand cyber privacy
- 2. Understand and Identify cyber laws and regulatory.
- 3. learn conversant with the social and intellectual property issues emerging from cyberspace
- 4. Acquire deep knowledge of Information Technology act and legal framework of Right to privacy

Unit I (7 Hrs.)

Introduction, Protection of Intellectual Property Copyright, Related Rights, Patents, industrial Designs, Trademark, Unfair Competition.

Information Technology Act2000: ,Information Technology Act-2000-1 (Sec 1 to 13),Information Technology, Act-2000-2 (Sec 14 to 42),Certifying,Technology Rules), Information Technology Act -2003-3 (Sec 43 to 45 and Sec 65 to 78), Information Technology Act-2000-4(Sec 46 to Sec 64 to 78), Information Technology Act-2000-4(Sec 46 to Sec 64 and CRAT Rules), Information Technology Act-2000-5 (Sec 79 to 90), Information Technology Act-2005-6 (Sec 91-94) Amendments in 2008.

Unit II (7 Hrs.)

Information Technology Related Intellectual Property Rights Computer Software and Intellectual Property-Objective, Copyright Protection, Reproducing, Defenses, Patent, Protection, Database and Data Protection – Objective, Need for Protection, UK Data Protection Act, 1998, Us Safe Harbor Principle, Enforcement. Protection of Semi-conductor Chips-Objectives Justification of protection, Criteria, Subject, matter of Protection, WIPO Treaty, TRIPs, SCPA. Domain Name Protection – Objectives, domain name and Intellection property, registration of domain name, disputes under Intellectual Property Rights, Jurisdictional Issues, and International Perspective.

Unit III (8 Hrs.)

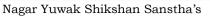
Patents (Ownership and Enforcement of Intellectual Property) Patents – Objective, Rights, Assignments, Defenses in case of Infringement Copyright – Objective, Right, Transfer of Copyright, work of employment Infringement, Defenses for infringement Trademarks-Objectives, Rights, Protection of good will, Infringement, Passing off, Defenses. Of Design Infringement, Enforcement of Intellectual Property Rights-Civil Remedies, Criminal Remedies, Border Security measure. Practical Aspects of Licensing – Benefits, Determinative factors, Important clauses, licensing clauses.

Unit IV (8 Hrs.)

Basic Concepts of Technology and Law: Understanding the Technology of Internet, Scope of Cyber Laws, Cyber Jurisprudence. Law of Digital Contracts: The Essence of Digital Contracts, The System of Digital Signatures. The Role and Function of Certifying Authorities, The Science of Cryptography. Intellectual Property Issues, Copyright in the Digital Media, Patents in the Cyber World, Rights of Netizens and E-Governance: Privacy and Freedom Issues the Cyber World, E-Governance, Cyber Crimes and Laws.

**Total Lecture** | 30 Hours

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# 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 Information Technology) SoE No. 23IT-10

SoE No. 23IT-101

# **B.Tech in Information Technology**

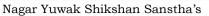
Tex	xtbooks:
1.	K.Kumar Cyber Laws: Intellectual property and E-Commerce Security, Dominant Publisher,2011
2.	Rondey D. Ryder Guide to Cyber Laws Second Edition Wadhwa and Company, New Delhi, 2007

Ref	Reference Books:					
1.	Vakul Sharma Handbook of Cyber Laws Macmillan India Ltd, 2 <sup>nd</sup> Edition, PHI,2003.					
2.	Justice Yatindra Singh Cyber Laws Universal Law Publishing, 1st Edition, New Delhi, 2003.					
3.	Augastine Paul T. Cyber Crimes and Legal Issues Crecent Publishing Corporation, 2007					

Y	YCCE e- library book links [ACCESSIBLE FROM COLLEGE CAMPUS]			
1	http://103.152.199.179/YCCE/e-copies%20of%20books/7.Information%20Technology			

M	MOOCs Links and additional reading, learning, video material				
1.	https://www.youtube.com/watch?v=cQYACLLAPOw				
2.	2. https://www.youtube.com/watch?v=d2kSE3Vdkx0				

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# **B.Tech in Information Technology**

# IV SEMESTER **Multidisciplinary Minor Courses**

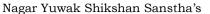
### Track 1

Courses	Sem	MDMT1IT101 : Cloud Computing		
MDM-I	3	(MDM1IT101) Introduction to Cloud Computing		
MDM-II	4	(MDM2IT102) Cloud Security		
MDM-III	5	(MDM3IT103) Introduction to Salesforce		
MDM-IV	6	6 (MDM4IT104) Application Development using Salesforce		
MDM-V	7	(MDM5IT105) Cloud Web Services		
MDM-VI	8	(MDM3IT106) Quantum Computing		

## Track 2

Courses	Sem	MDMT2IT201: Cyber Security	
MDM-I	3	(MDM1IT201) Mathematics for Cyber Security	
MDM-II	4	(MDM2IT202) Cyber Security Fundamentals	
MDM-III	5	(MDM3IT203) Cyber Security Techniques and Tools	
MDM-IV	6	6 (MDM4IT204) Introduction to Blockchain	
MDM-V	MDM-V 7 (MDM5IT205) Blockchain Security		
MDM-VI	8	(MDM3IT206) AI in Cyber Security	

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# **B.Tech in Information Technology**

# IV SEMESTER MDM2IT102: Cloud Security

#### **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: (7 Hrs.)

Isolation-Compute, Network and Storage, Common attack vectors and threats, Secure Isolation Strategies, Multitenancy, Virtualization strategies,

Inter-tenant network segmentation strategies, Storage isolation strategies, Understand the Cloud based Information Life Cycle, Data protection for Confidentiality and Integrity, Common attack vectors and threats, Encryption, Data Redaction, Tokenization, Obfuscation, PKI and Key Management, Assuring data deletion, Data retention, deletion and archiving procedures for tenant data, Data Protection Strategies

Unit II: (8 Hrs.)

Understand the access control requirements for Cloud infrastructure, Common attack vectors and threats, Enforcing Access, Control Strategies-Compute, Network and Storage

Authentication and Authorization, Roles-based Access Control, Multi-factor authentication ,Host, storage and network access control options ,OS Hardening and minimization, securing remote access, Verified and measured boot ,Firewalls, IDS, IPS and honeypots

Unit III: (8 Hrs.)

Proactive activity monitoring, Incident Response, Monitoring for unauthorized access, malicious traffic, abuse of system privileges, intrusion detection, events and alerts, Auditing – Record generation, Reporting and Management, Tamper-proofing audit logs, Quality of Services, Secure Management-User management, Identity management, Security Information and Event Management

Unit IV: (7 Hrs.)

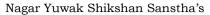
User Identification, Authentication, and Authorization in Cloud Infrastructure, concepts of Identity & Access Management -Single Sign on, Identity Federation, Identity providers and service consumers, The role of Identity provisioning, Security Patterns for Cloud Computing-Trusted Platform, Geo-tagging, Cloud VM Platform Encryption, Trusted Cloud Resource Pools, Secure Cloud Interfaces, Network Security

Total Lecture | 30 Hours

#### **Textbooks:**

- 1. Zeal Vora, Enterprise Cloud Security and Governance, ed 2009, Tata Mc. Grew Hill Education Pvt. Ltd., New Delhi, 2009.
- 2. Cloud Security and Privacy: An Enterprise Perspective on Risks and Compliance by Tim Mather, Subra Kumaraswamy, and Shahed Latif.
- 3. The Cloud Security Ecosystem: Technical, Legal, Business, and Management Issues by Ryan Ko and Kim-Kwang Raymond Choo

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SoE No. 23IT-101

# **B.Tech in Information Technology**

Re	Reference Books:					
1.	Chris Dotson, Practical Cloud Security: A Guide for Secure Design and Deployment,2019					
2.	Vic J.R. Winkler, Securing the Cloud: Cloud Computer Security Techniques and Tactics, 2011					

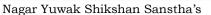
#### YCCE e- library book links [ACCESSIBLE FROM COLLEGE CAMPUS]

1 http://103.152.199.179/YCCE/e-copies%20of%20books/7.Information%20Technology

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

- 1 https://www.google.com/search?q=youtube+video+on+cloud+security&sca\_esv=587603400&rlz=1C1CHBD\_enIN1074IN1074&sxsrf=AM9HkKmDcOIQb-
- 4VOkP8j1iztWSZIvZ3Yg%3A1701676163551&ei=g4RtZc2kIZOu4-EP48-
  - 1IA&ved=0ahUKEwiN8oDapfWCAxUT1zgGHeNnDQQQ4dUDCBA&uact=5&oq=youtube+video+on+cloudd+security&gs\_lp=Egxnd3Mtd2l6LXNlcnAiH3lvdXR1YmUgdmlkZW8gb24gY2xvdWQgc2VjdXJpdHkyCBAhGKABGMMESP4yUABYxSFwAHgBkAEAmAHeAaABvw6qAQYwLjEyLjG4AQPIAQD4AQHCAggQABgIGAcYHsICCxAAGIAEGIoFGIYDwgIKECEYoAEYwwQYCuIDBBgAIEGIBgE&sclient=gws-wiz-serp#fpstate=ive&ip=1&vld=cid:ff0ae11f,vid:jI8IKpjiCSM,st:0
- 2 https://www.google.com/search?q=youtube+video+on+cloud+security&sca\_esv=587603400&rlz=1C1CHBD\_enIN1074IN1074&sxsrf=AM9HkKmDcOIQb-
  - 4VQkP8j1iztWSZIvZ3Yg%3A1701676163551&ei=g4RtZc2kIZOu4-EP48-
  - $1IA\&ved=0\\ahUKEwiN8oDapfWCAxUT1zgGHeNnDQQQ4dUDCBA\&uact=5\&oq=youtube+video+on+cloud+security\&gs\_lp=Egxnd3Mtd2l6LXNlcnAiH3lvdXR1YmUgdmlkZW8gb24gY2xvdWQgc2VjdXJpdHkyCBAhGKAB$
  - GMMESP4yUABYxSFwAHgBkAEAmAHeAaABvw6qAQYwLjEyLjG4AQPIAQD4AQHCAggQABgIGAcYHsICCxAAGIAEGIoFGIYDwgIKECEYoAEYwwQYCuIDBBgAIEGIBgE&sclient=gws-wiz-serp#fpstate=ive&vld=cid:1e7db26c,vid:BBqEetIIVlw,st:0

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## **B.Tech in Information Technology**

# IV SEMESTER MDM1IT202 : Cyber Security Fundamentals

#### **Course Outcomes**

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

1. Provide a solid foundation for individuals pursuing careers in cyber security or seeking to enhance their understanding of cyber security principles and practices.

Unit I Cyber Space (7 Hrs.)

Fundamental definitions -Interface of Technology and Law – Jurisprudence and-Jurisdiction in Cyber Space - Indian Context of Jurisdiction - Enforcement agencies – Need for IT act - UNCITRAL – E-Commerce basics .

#### **Unit III Introduction to Cyber Crime Investigation**

(7 Hrs.)

Firewalls and Packet Filters, password Cracking, Keyloggers and Spyware, Virus and Warms, Trojan and backdoors, Steganography, DOS and DDOS attack, SQL injection, Buffer Overflow, Attack on wireless Networks.

#### Unit IV: Cr.P.C and Indian Evidence Law

(8 Hrs.)

Cybercrimes under the Information Technology Act,2000 - Cybercrimes under International Law - Hacking Child Pornography, Cyber Stalking, Denial of service Attack, Virus Dissemination, Software Piracy, Internet Relay Chat (IRC) Crime, Credit Card Fraud, Net Extortion, Phishing etc - Cyber TerrorismViolation of Privacy on Internet - Data Protection and Privacy - Indian Court cases.

#### Unit V: Electronic Governance

(8Hrs.)

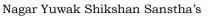
Legal Recognition of Electronic Records and Electronic Evidence -Digital Signature Certificates - Securing Electronic records and secure digital signatures - Duties of Subscribers - Role of Certifying Authorities - Regulators under the Act -The Cyber Regulations Appellate Tribunal - Internet Service Providers and their Liability—Powers of Police under the Act – Impact of the Act on other Laws . Cyber Crimes -Meaning of Cyber Crimes –Different Kinds of Cyber crimes – Cyber crimes under IPC

Total Lecture 30Hours

Tex	atbooks:				
1.	Anti-Hacker Tool Kit (Indian Edition) by Mike Shema, Publication Mc Graw Hill. 2				
2.	Cyber Security Understanding Cyber Crimes, Computer Forensics and Legal Perspectives by Nina Godbole and Sunit Belpure, Publication Wiley.				
3	Farouq Ahmed, Cyber Law in India, New Era publications, New Delhi				
4	Pawan Duggal: Cyber Law- the Indian perspective Universal Law Publishing Co.New Delhi				

Ref	Reference books:				
1.	1. Justice Yatindra Singh: Cyber Laws, Universal Law Publishing Co., New Delhi				
2.	S.R.Myneni: Information Technology Law(Cyber Laws), Asia Law House, Hyderabad				
3	Chris Reed, Internet Law-Text and Materials, Cambridge University Press.				

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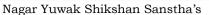
SoE No. 23IT-101

# **B.Tech in Information Technology**

Y	YCCE e- library book links [ACCESSIBLE FROM COLLEGE CAMPUS]						
1	http://103.152.199.179/YCCE/e-copies%20of%20books/7.Information%20Technology/						

MO	MOOCs Links and additional reading, learning, video material					
1.	https://www.youtube.com/watch?v=OYsY5B9pqYU					
2.	http://acl.digimat.in/nptel/courses/video/106106248/L26.html					

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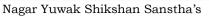
# **B.Tech in Information Technology**

# 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: <a href="https://ycce.edu/syllabus/">https://ycce.edu/syllabus/</a>

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# **B.Tech in Information Technology**

IV SEMESTER **Mandatory Learning Course (MLC)** 

**MLC2124: YCAP4** 

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