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 Computer Science and Design (CSD)

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 Computer Science and Design

SoE No. 23CSD-101

SN	Sem	Type	BoS/ Deptt	Sub. Code	Subject	T/P	Contact Hours				Credits	% Weightage			ESE Duration Hours
							L	T	P	Hrs		MSEs*	TA**	ESE	
FIRST SEMESTER (GROUP-B)															
1	1	BS	GE	23GE1103	Differential Equations and Complex Analysis	T	3	0	0	3	3	30	20	50	3
2	1	BS	GE	23GE1110	Applied Physics	T	3	0	0	3	3	30	20	50	3
3	1	BS	GE	23GE1111	**Lab:** Applied Physics	P	0	0	2	2	1		60	40	
4	1	BES	ME	23ME1103	Engineering Design	T	1	0	0	1	1	30	20	50	3
5	1	BES	ME	23ME1104	**Lab :** Engineering Design	P	0	0	4	4	2		60	40	
6	1	BES	EL	23EL1101	Basic Electrical and Electronics Engineering	T	3	0	0	3	3	30	20	50	3
7	1	PC	IT	23IT1101	Basics of Python Programming	T	3	0	0	3	3	30	20	50	3
8	1	PC	IT	23IT1102	**Lab :** Basics of Python Programming	P	0	0	2	2	1		60	40	
9	1	VSEC	GE	23GE1117	Get Set Go	…	…	…	…	…	2		60	40	
11	1	CC2	GE		**Liberal Learning Course (LLC2)**	…	…	…	…	…	2		60	40	
					TOTAL FIRST SEM		**13**	**0**	**8**	**21**	**21**				

MANDATORY LEARNING COURSES															
1	1	HS		GE2131	Universal Human Values (UHV)	**A**	2	0	0	2	0				
SECOND SEMESTER (GROUP-B)															
1	2	BS	GE	23GE1201	Calculus and Vector	T	3	0	0	3	3	30	20	50	3
2	2	BS	GE	23GE1206	Engineering Chemistry	T	3	0	0	3	3	30	20	50	3
3	2	BS	GE	23GE1207	**Lab:** Engineering Chemistry	P	0	0	2	2	1		60	40	
4	2	HS	GE	23GE1213	Technical Communication	T	2	0	0	2	2	30	20	50	2
5	2	HS	GE	23GE1214	**Lab**:Technical Communication	P	0	0	2	2	1		60	40	
6	2	HS/IKS	GE	23GE1215	Indian Knowledge System	T	2	0	0	2	2	30	20	50	2
7	2	BES	CV	23CV1201	Engineering Mechanics	T	3	0	0	3	3	30	20	50	3
8	2	BES	CV	23CV1202	**Lab:** Engineering Mechanics	P	0	0	2	2	1		60	40	
9	2	BES	IT	23IT1203	Programming for Problem Solving	T	2	0	0	2	2	30	20	50	2
10	2	BES	IT	23IT1204	**Lab:** Programming for Problem Solving	P	0	0	2	2	1		60	40	
11	2	VSEC	GE	23GE1218	Functional English	…	…	…	…	…	2		60	40	
12	2	CC1	GE		**Liberal Learning Course (LLC1)**	…	…	…	…	…	2		60	40	
					TOTAL SECOND SEM		**15**	**0**	**8**	**23**	**23**				

Liberal Learning Course

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

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SoE No. 23CSD-101

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

Liberal Learning Course

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

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

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

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

Chairperson	Dean (Acad. Matters)	July, 2023	1.00
		Date of Release	Version

Applicable for AY 2023-24 Onwards

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(Department of Information Technology)

B.Tech. in Computer Science and Design

SoE No. 23CSD-101

SN	Sem	Type	BoS/ Deptt	Sub. Code	Subject	T/P	Contact Hours				Credits	% Weightage			ESE Duration Hours
							L	T	P	Hrs		MSEs*	TA**	ESE	
THIRD SEMESTER															
1	3	HSSM1	GE	23GE1301	Fundamentals of Management & Economics	T	2	0	0	2	2	30	20	50	3
2	3	PC	CSD	23CSD1301	Discrete Mathematics and Graph Theory	T	3	0	0	3	3	30	20	50	3
3	3	PC	CSD	23CSD1302	Data Structures	T	3	0	0	3	3	30	20	50	3
4	3	PC	CSD	23CSD1303	**Lab :** Data Structures	P	0	0	2	2	1		60	40	
5	3	PC	CSD	23CSD1304	Microprocessors and Microcontrollers	T	3	0	0	3	3	30	20	50	3
6	3	PC	CSD	23CSD1305	**Lab:** Microprocessors and Microcontrollers	P	0	0	2	2	1		60	40	
7	3	PC	CSD	23CSD1306	Computer Systems Organization	T	3	0	0	3	3	30	20	50	3
8	3	VEC-2	CSD	23CSD1307	Open Source Design Tool	T	3	0	0	3	2	30	20	50	3
9	3	CEP	CSD	23CSD1308	**Lab**: Design Project	P	0	0	4	4	2		60	40	
10	3	OE 1	OE-1		**Open Elective - I**	T	2	0	0	2	2	30	20	50	3
11	3	MDM	MDM		**MD Minor Course - I**	T	2	0	0	2	2	30	20	50	3
					TOTAL		**21**	**0**	**8**	**29**	**24**				

List of Mandatory Learning Course (MLC)															
1	3	HS	T&P	MLC2123	**YCAP3 :** YCCE Communication Aptitude Preparation	**A**	3	0	0	3	**0**				

Open Elective - I

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

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

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

(Department of Information Technology)

B.Tech. in Computer Science and Design

SoE No. 23CSD-101

SN	Sem	Type	BoS/ Deptt	Sub. Code	Subject	T/P	Contact Hours				Credits	% Weightage			ESE Duration Hours
							L	T	P	Hrs		MSEs*	TA**	ESE	
FOURTH SEMESTER															
1	4	BS	GE	23GE1403	Linear Algebra	T	3	0	0	3	3	30	20	50	3
2	4	HSSM-2	GE	23GE1401	Entrepreneurship Development	T	2	0	0	2	2	30	20	50	3
3	4	**AEC-2**	GE	23GE1405 23GE1406	Marathi Language / Hindi Language	T	2	0	0	2	2	30	20	50	3
4	4	VEC-1	CV	23CV1411	Environmental Sustainability, Pollution and Management	T	2	0	0	2	2	30	20	50	3
5	4	PC	CSD	23CSD1401	Object Oriented Programming	T	3	0	0	3	3	30	20	50	3
6	4	PC	CSD	23CSD1402	**Lab :** Object Oriented Programming Lab	P	0	0	2	2	1		60	40	
7	4	PC	CSD	23CSD1403	Computer Networks	T	3	0	0	3	3	30	20	50	3
8	4	PC	CSD	23CSD1404	**Lab:** Computer Networks	P	0	0	2	2	1		60	40	
9	4	PC	CSD	23CSD1405	Software Lab	P	0	0	2	2	1		60	40	
10	4	VSEC-3	CSD	23CSD1406	**Lab :** Adv. Python Programming	P	0	0	4	4	2		60	40	
11	4	OE-2	OE		**Open Elective -II**	T	2	0	0	2	2	30	20	50	3
12	4	MDM	MDM		**MD Minor Course-II**	T	2	0	0	2	2	30	20	50	3
					TOTAL		**19**	**0**	**10**	**29**	**24**				
List of Mandatory Learning Course (MLC)															
1	4	HS	T&P	MLC2124	**YCAP4 :** YCCE Communication Aptitude Preparation	**A**	3	0	0	3	**0**				

Open Elective - II

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

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

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Hingna Road, Wanadongri, Nagpur - 441 110

Bachelor of Technology

SoE & Syllabus 2023

1st Semester

(Department of Information Technology)

B. Tech in Computer Science and Design (CSD)

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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 Computer Science and Design

SoE No. 23CSD-101

SN	Sem	Type	BoS/ Deptt	Sub. Code	Subject	T/P	Contact Hours				Credits	% Weightage			ESE Duration Hours
							L	T	P	Hrs		MSEs*	TA**	ESE	
FIRST SEMESTER (GROUP-B)															
1	1	BS	GE	23GE1103	Differential Equations and Complex Analysis	T	3	0	0	3	3	30	20	50	3
2	1	BS	GE	23GE1110	Applied Physics	T	3	0	0	3	3	30	20	50	3
3	1	BS	GE	23GE1111	**Lab:** Applied Physics	P	0	0	2	2	1		60	40	
4	1	BES	ME	23ME1103	Engineering Design	T	1	0	0	1	1	30	20	50	3
5	1	BES	ME	23ME1104	**Lab :** Engineering Design	P	0	0	4	4	2		60	40	
6	1	BES	EL	23EL1101	Basic Electrical and Electronics Engineering	T	3	0	0	3	3	30	20	50	3
7	1	PC	IT	23IT1101	Basics of Python Programming	T	3	0	0	3	3	30	20	50	3
8	1	PC	IT	23IT1102	**Lab :** Basics of Python Programming	P	0	0	2	2	1		60	40	
9	1	VSEC	GE	23GE1117	Get Set Go	…	…	…	…	…	2		60	40	
11	1	CC2	GE		**Liberal Learning Course (LLC2)**	…	…	…	…	…	2		60	40	
					TOTAL FIRST SEM		**13**	**0**	**8**	**21**	**21**				

MANDATORY LEARNING COURSES															
1	1	HS		GE2131	Universal Human Values (UHV)	**A**	2	0	0	2	0				
SECOND SEMESTER (GROUP-B)															
1	2	BS	GE	23GE1201	Calculus and Vector	T	3	0	0	3	3	30	20	50	3
2	2	BS	GE	23GE1206	Engineering Chemistry	T	3	0	0	3	3	30	20	50	3
3	2	BS	GE	23GE1207	**Lab:** Engineering Chemistry	P	0	0	2	2	1		60	40	
4	2	HS	GE	23GE1213	Technical Communication	T	2	0	0	2	2	30	20	50	2
5	2	HS	GE	23GE1214	**Lab**:Technical Communication	P	0	0	2	2	1		60	40	
6	2	HS/IKS	GE	23GE1215	Indian Knowledge System	T	2	0	0	2	2	30	20	50	2
7	2	BES	CV	23CV1201	Engineering Mechanics	T	3	0	0	3	3	30	20	50	3
8	2	BES	CV	23CV1202	**Lab:** Engineering Mechanics	P	0	0	2	2	1		60	40	
9	2	BES	IT	23IT1203	Programming for Problem Solving	T	2	0	0	2	2	30	20	50	2
10	2	BES	IT	23IT1204	**Lab:** Programming for Problem Solving	P	0	0	2	2	1		60	40	
11	2	VSEC	GE	23GE1218	Functional English	…	…	…	…	…	2		60	40	
12	2	CC1	GE		**Liberal Learning Course (LLC1)**	…	…	…	…	…	2		60	40	
					TOTAL SECOND SEM		**15**	**0**	**8**	**23**	**23**				

Liberal Learning Course

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

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SoE No. 23CSD-101

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							L	T	P	Hrs		MSEs*	TA**	ESE	

Liberal Learning Course

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

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

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

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

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

I SEMESTER

23GE1103: 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	**(8 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	**(7 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	**(8 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	**(8 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	**(7 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	**45 Hours**

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

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

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/

I SEMESTER

23GE1110 : 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	**(8 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	**(8 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	**(9 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)**	

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	**45 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	
1	David Halliday, Robert Resnick and Jerle Walker, John-Wiley India, Fundamentals of Physics, 10th John Wiley & Sons Inc.
2	Brijlal and Subramanyam, Text Book of Optics, Revised edition, S. Chand and Company.
3	M.N. Avadhanulu, 2nd Edition, Laser, S.Chand and Company.
4	A. Beiser, Concept of Modern Physics, 6th Edition, Laser, Tata McGraw-Hill.
5	Thyagarajan K. and Ghatak A.K, LASERS: Theory and Applications, 2nd Edition, Macmillan Publication
6	S. O. Pillai, Solid State Physics, 9th Edition, New Edge International Publishers.
7	Palanisamy, Solid State Physics, 8th Edition, New Edge International Publishers.
8	C. Kittel, Solid State Physics, 8th Edition, Willey Publication.

YCCE e- library book links [ACCESSIBLE FROM COLLEGE CAMPUS]	
1	chrome-http://103.152.199.179/YCCE/Suported%20file/Supprted%20file/e-copies%20of%20books/Applied%20Sciences%20&%20Humanities/Physics/Eisberg%20&%20Resnick%20-%20Quantum%20Physics.pdf
2	http://103.152.199.179/YCCE/Suported%20file/Supprted%20file/e-copies%20of%20books/Applied%20Sciences%20&%20Humanities/Physics/2016_Book_ThePhysicsOfSemiconductors.pdf

MOOCs Links and additional reading, learning, video material	
1	https://nptel.ac.in/courses/115106066 - Quantum Physics
2	https://archive.nptel.ac.in/courses/115/105/115105121/ -CRO
3	www.digimat.in/nptel/courses/video/115102124/L36.html- Laser

I SEMESTER
23GE1111 : 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 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.

I SEMESTER

23ME1103 : Engineering Design

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. Understand different CAD tools to perform 2D drawing and 3D modelling.
3. Construct 3D and Wireframe Models and Distinguish between them.
4. Design and Assemble different CAD parts.

Unit I: Theory of Orthographic Projections (CO 1)	**(3 Hrs.)**
Introduction, Quadrant system, Theory of orthographic projection, Projection method and principal planes,First and Third angle projections. Orthographic Drawing on CAD software.	
Unit II: Theory of Isometric Projections (CO 1)	**(2 Hrs.)**
Theory of isometric projection, Method for drawing isometric views, Different problems on isometric projections. Isometric Drawing on CAD software.	
Unit III: CAD Tools and Sketcher (CO 2)	**(2 Hrs.)**
Introduction to Menu Bars, Modules, Sketcher: Circle, Spline, Conic, Line, Axis, Point. Corner, Chamfer, Transformation, 3-D geometry. Constraint- Geometrical constraint.	
Unit IV: Part Design (Solid Modeling) (CO 2)	**(3 Hrs.)**
3D Reference Elements (Point, Line, Plane), Pad, Pocket, Shaft, Groove, Hole, Rib, Slot, Loft, Fillet, Chamfer, Draft, Shell, Thickness, Thread/ Tap, filleted pocket, Patterning, Scaling, Mirror	
Unit V: Surface Modeling (CO 3)	**(2 Hrs.)**
Extrude, Revolve, Sphere, Offset, Trim, Split, Boundary, Extract, Join, Translate, Rotate, Extrapolating Sweep, Loft, Blend, Intersection, 3D Circle, Corner, Helix, Fill, Connect Curve, Spline etc.	
Unit VI: Assembly Modeling (CO 4)	**(3 Hrs.)**
Solid Modelling: Insert Component, Product, Part, Existing component, Replace component, Manipulation, Snap, Smart move, Coincidence, Contact creation, Offset, Angle, Fix, Fix together, Quick constraint, Change constraint, Reuse pattern etc.	
Total Lecture	**15 Hours**

R

eference Books:

1. Engineering graphics with AUTOCAD by A. K. Sarkar, A. P. Rastogi, and D. M. Kulkarni.
2. Engineering Drawing by N. D. Bhatt.

I SEMESTER

23ME1104 : Lab. Engineering Design

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. Understand different CAD tools to perform 2D drawing and 3D modelling.
3. Construct 3D and Wireframe Models and Distinguish between them.
4. Design and Assemble different CAD parts.

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

Expt. No	Name of Experiment
1	Basic introduction to geometrical entities and CAD tools.
2	Creation of isometric views to orthographic views using any CAD software.
3	Creation of orthographic views to isometric views using any CAD software.
4	Creation of solid modelling objects using any CAD software.
5	Modification of solid modelling objects using special geometrical features.
6	Creation surface modelling objects using any CAD software.
7	Modification of surface modelling objects using special geometrical features.
8	Assembly of solid modelling objects using any CAD software.
9	Constraint modifications in assembly modelling.
10	Drafting of solid model on different layouts.

I SEMESTER

23EL1101 : 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, Thevenin's 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. **(ContemporaryIssues related to Topic)**	
Total Lecture	**40 Hours**

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

Textbooks:	
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)
3.	Circuit Theory (Analysis and Synthesis) , by A. Chakrabarti, Dhanpat Rai & Co., Reprint Edition 2014

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

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

MOOCs Links and additional reading, learning, video material	
1.	https://onlinecourses.nptel.ac.in/noc22_ee113/preview

I SEMESTER

23IT1101 : 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.IntroductiontoPythonProgrammingLanguage,Identifiers,Keywords,StatementsandExpressions,Variables,Operators,PrecedenceandAssociativity,DataTypes,Indentation,Comments,ReadingInput,PrintOutput,TypeConversions,Thetype()FunctionandIsOperator,DynamicandStronglyTypedLanguage,ControlFlowStatements,TheifDecisionControlFlowStatement,Theif…else Decision Control Flow Statement, The if…elif…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)**

Unit V: Files	(8 Hrs.)
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'Reilly Media
2	"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]	
1	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/

I SEMESTER

23IT1102 : 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. 2. Design application by using Python for real world problems.

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

<table>
<tr><th>SN</th><th>Experiments based on</th></tr>
<tr><td>1</td><td>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.</td></tr>
<tr><td>2</td><td>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</td></tr>
<tr><td>3</td><td>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
<table>
<tr><th>Score</th><th>Grade</th></tr>
<tr><td>>= 0.9</td><td>A</td></tr>
<tr><td>>= 0.8</td><td>B</td></tr>
<tr><td>>= 0.7</td><td>C</td></tr>
<tr><td>>=0.6</td><td>D</td></tr>
<tr><td><0.6</td><td>E</td></tr>
</table>
B. Write a python program to check if given year is leap year or not.</td></tr>
<tr><td>4</td><td>A. Write a python program to print Fibonacci series.
B. Write a python program to find the GCD of two positive numbers.</td></tr>
<tr><td>5</td><td>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</td></tr>
<tr><td>6</td><td>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.</td></tr>
</table>

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]

Nagar Yuwak Shikshan Sanstha's

Yeshwantrao Chavan College of Engineering

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

B. Tech SoE and Syllabus 2023

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

(Department of Civil Engineering)

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**

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

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

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

Hingna Road, Wanadongri, Nagpur - 441 110

Bachelor of Technology

SoE & Syllabus 2023

2nd Semester

(Department of Information Technology)

B. Tech in Computer Science and Design (CSD)

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 Computer Science and Design

SoE No. 23CSD-101

SN	Sem	Type	BoS/ Deptt	Sub. Code	Subject	T/P	Contact Hours				Credits	% Weightage			ESE Duration Hours
							L	T	P	Hrs		MSEs*	TA**	ESE	
FIRST SEMESTER (GROUP-B)															
1	1	BS	GE	23GE1103	Differential Equations and Complex Analysis	T	3	0	0	3	3	30	20	50	3
2	1	BS	GE	23GE1110	Applied Physics	T	3	0	0	3	3	30	20	50	3
3	1	BS	GE	23GE1111	**Lab:** Applied Physics	P	0	0	2	2	1		60	40	
4	1	BES	ME	23ME1103	Engineering Design	T	1	0	0	1	1	30	20	50	3
5	1	BES	ME	23ME1104	**Lab :** Engineering Design	P	0	0	4	4	2		60	40	
6	1	BES	EL	23EL1101	Basic Electrical and Electronics Engineering	T	3	0	0	3	3	30	20	50	3
7	1	PC	IT	23IT1101	Basics of Python Programming	T	3	0	0	3	3	30	20	50	3
8	1	PC	IT	23IT1102	**Lab :** Basics of Python Programming	P	0	0	2	2	1		60	40	
9	1	VSEC	GE	23GE1117	Get Set Go	…	…	…	…	…	2		60	40	
11	1	CC2	GE		**Liberal Learning Course (LLC2)**	…	…	…	…	…	2		60	40	
					TOTAL FIRST SEM		**13**	**0**	**8**	**21**	**21**				

MANDATORY LEARNING COURSES															
1	1	HS		GE2131	Universal Human Values (UHV)	**A**	2	0	0	2	0				
SECOND SEMESTER (GROUP-B)															
1	2	BS	GE	23GE1201	Calculus and Vector	T	3	0	0	3	3	30	20	50	3
2	2	BS	GE	23GE1206	Engineering Chemistry	T	3	0	0	3	3	30	20	50	3
3	2	BS	GE	23GE1207	**Lab:** Engineering Chemistry	P	0	0	2	2	1		60	40	
4	2	HS	GE	23GE1213	Technical Communication	T	2	0	0	2	2	30	20	50	2
5	2	HS	GE	23GE1214	**Lab**:Technical Communication	P	0	0	2	2	1		60	40	
6	2	HS/IKS	GE	23GE1215	Indian Knowledge System	T	2	0	0	2	2	30	20	50	2
7	2	BES	CV	23CV1201	Engineering Mechanics	T	3	0	0	3	3	30	20	50	3
8	2	BES	CV	23CV1202	**Lab:** Engineering Mechanics	P	0	0	2	2	1		60	40	
9	2	BES	IT	23IT1203	Programming for Problem Solving	T	2	0	0	2	2	30	20	50	2
10	2	BES	IT	23IT1204	**Lab:** Programming for Problem Solving	P	0	0	2	2	1		60	40	
11	2	VSEC	GE	23GE1218	Functional English	…	…	…	…	…	2		60	40	
12	2	CC1	GE		**Liberal Learning Course (LLC1)**	…	…	…	…	…	2		60	40	
					TOTAL SECOND SEM		**15**	**0**	**8**	**23**	**23**				

Liberal Learning Course

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

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 Computer Science and Design

SoE No. 23CSD-101

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

Liberal Learning Course

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

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

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

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

Chairperson	Dean (Acad. Matters)	July, 2023	1.00
		Date of Release	Version

Applicable for AY 2023-24 Onwards

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(Department of Mathematics & Humanities)

B.Tech First Year

SoE No. 23FY-101

II SEMESTER

23GE1201: 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	**(7 Hrs.)**
Successive differentiation, n^{th} derivative of rational function, Trigonometrical transformations, n^{th} derivative of the product of two functions (Leibnitz's theorem), Taylor's theorem, Use of Maclaurin's theorem for one variable, standard expansions, Examples on Taylor's Theorem. **(Contemporary Issues related to Topic)**	
Unit II: Partial Differentiation	**(8 Hrs.)**
Derivative of 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, Properties of Jacobians, Relation between functions **(Contemporary Issues related to Topic)**	
Unit III: Integral Calculus	**(7 Hrs.)**
Gamma function, Transformation of Gamma functions, Beta function, Transformation of Betta functions, Properties of Beta function (without proof), Relation between Beta and Gamma functions, Differentiation under Integral sign (Leibniz rule). **(Contemporary Issues related to Topic)**	
Unit IV: Multiple integrals	**(8 Hrs.)**
Double integral, change of order of integral, change of variables, triple integrals and its applications on Area, Mass, Centre of Gravity, Volume. **(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	**(8 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	**45 Hours**

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

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

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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(Department of Chemistry)

B.Tech First Year

SoE No. 23FY-101

II SEMESTER

23GE1206 : 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	**8 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	**8 Hours**
Unit:3	**Energy storage device** Introduction, Characteristics, and general applications. Lithium-ion battery, Glass battery, H_2-O_2 Fuel cell. Differences between battery and a fuel cell. Supercapacitors: Definition, types, characteristics, and application. **H_2 as a green fuel:** Introduction, production, storage, and utilization. Contemporary issues related to the topic	**7 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	**7 Hours**

Unit:5	**Spectroscopic Techniques and Applications** 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	**7 Hours**
Unit :6	**Advanced Materials** **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. **Smart materials:** Introduction**,** Properties and applications of Chromoactive, Photoactive and Magneto rheological materials. Contemporary issues related to the topic	**8 Hours**
	Total Lecture Hours	**45 Hours**

Text 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.
Reference 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.
YCCE e- library book links [ACCESSIBLE FROM COLLEGE CAMPUS]	
1	http://103.152.199.179/YCCE/Suported%20file/Supprted%20file/SERIES%20WISE%20BOOKS/CHEMISTRY/
MOOCs Links and additional reading, learning, video material	
1	https://www.youtube.com/watch?v=XTt3gXB0a84
2	https://www.youtube.com/watch?v=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
6	https://www.youtube.com/watch?v=zVDMgoffmC0

II SEMESTER
23GE1207 : 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^{2+} 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.

9	Determination of strength of the given acid conductometrically.
10.	To verify Beer-Lambert law for $KMnO_4$ colorimetrically and determine the concentration of the given solution of $KMnO_4$.
	List of Demonstration Experiments
1	Determination of pH of water sample by pH meter
2	Synthesis of polyaniline.

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II SEMESTER

23GE1213 : Technical 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	**(7 Hrs.)**
Process of Communication, Levels of Communication, Flow of Communication, Networks of Communication, Barriers to communication- Intrapersonal, Interpersonal, Organizational	
Unit II: English Phonetics	**(8 Hrs.)**
Speech Mechanism, Organs of speech, Consonant and Vowels sounds symbols, word stress rules	
Unit III: Presentation & Visual Communication , Reading & Listening Skills	**(7 Hrs.)**
Presentation-Purpose, Analysing Audience & Locale, Organizing Contents, Nuances of presentation- Kinesics, Proxemics, Chronemics, Vocalics, Modes of Presentation, Visual Communication –Introduction & importance, Role & Psychology of color in visual communication, **Listening Skills** -definition types and traits	
Unit IV: Research Paper & Technical Communication	**(8 Hrs.)**
Research Paper - Characteristics, components, Title, Abstract, Introductory Paragraph, Body of Presentation Conclusion, Acknowledgements , List of Symbols, References Memo- Objectives, Types, Structure and Layout **Email**-Etiquettes, acronyms	
Total Lecture	**30 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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Reference Books:	
1.	Dale Carnegie ,How to Develop Self – Confidence & Influence People by Public Speaking
2.	AshaKaul, Communication Skills
3.	Allen Peas ,Body Language
4.	Gerson's Gerson, Technical Communication

MOOCs 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

II SEMESTER

23GE1214 : Lab. Technical Communication

Course Outcomes :
Upon successful completion of the course the students will be able to: 1. Apply different modes for effective communication 2. competently use the phonology of English language 3. Apply nuances of LSRW skills 4. Communicate through different channels

Lab I	**(2 Hrs.)**
Handson for Consonants and vowel sounds **(Contemporary issues related to topic)**	
Lab II	**(2 Hrs.)**
Identifying the pragmatic meaning of the text **(Contemporary issues related to topic)**	
Lab III	**(2 Hrs.)**
Sessions for Interview **(Contemporary issues related to topic)**	
Lab IV	**(2 Hrs.)**
Grooming session for effective use of body language **(Contemporary issues related to topic)**	
Lab V	**(2 Hrs.)**
Visual Media – preparing poster boards, advertising product **(Contemporary issues related to topic)**	
Lab VI	**(2 Hrs.)**
Group Discussion **(Contemporary issues related to topic)**	
Total Lecture	**12 Hours**

Textbooks:	
1.	Technical Communication, 3rd Edition, Raman & Sharma, Oxford University Press
2.	Textbook of English Phonetics for Indian Students,3rd Edition, T. Balasubramaniam, Macmillan India Ltd

Reference Books:	
1.	How to Develop Self – Confidence & Influence People by Public Speaking,1st Edition, Dale Carnegie
2.	Communication Skills, 2nd Edition, Asha Kaul
3.	Body Language,1st Edition, Allen Peas
4.	Technical Communication, January 2003, Gerson's Gerson

MOOCs Links and additional reading, learning, video material	
1.	https://youtu.be/XoVLa6Dqd5I
2.	https://youtu.be/45uNWLmAZR8

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B.Tech First Year

II SEMESTER

23GE1215 : Indian Knowledge System

Course Outcomes:
Upon successful completion of the course the students will be able to
1. Apply primary requirements pertaining towards awareness of Indian Knowledge System.
2. Analyze various Indian society, culture and literature to enhance their traditions.
3. Evaluate structure of Indian art.
4. Understand Indian heritage and architectural skills.

Unit:1	**Introduction to Indian Civilization**	**7 Hours**
Development of Human Civilization with specific reference: Stone age: Tool Technology and Cultural Development, Indus Valley civilization, Vedic Civilization. **(Contemporary Issues related to Topic)**		
Unit:2	**Indian Society, Culture and Literature**	**7 Hours**
Society and its types, Culture and its Characteristics, Foundational Literature. **(Contemporary Issues related to Topic)**		
Unit:3	**Tradition of Indian Art and Painting**	**8 Hours**
Indian Traditional Painting, Art style folk, mural with Gandhara and Mathura school of art. **(Contemporary Issues related to Topic)**		
Unit:4	**Indic Traditions of Architecture, Design and Planning**	**8 Hours**
Monumental studies of architectural skill: Rock Cut Caves, Stupa and Temple Architecture, The Ancient cities of Indus Saraswati region. Town Planning and drainage system. **(Contemporary Issues related to Topic)**		
	Total Lecture Hours	**30 Hours**

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

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	Reference Books
1	B S Harishankar; Art and Archaeology of India: Stone Age to the Present, 2003.
2	Gupte R S and Mahajan B D; Ajanta, Ellora and Aurangabad, 1962.
3	Dharampal, Some Aspects of Earlier Indian Society and Polity and Their Relevance Today, New Quest Publications, Pune, 1987.
4	Michel Lorblanchet, "Rock Art In The Old World" 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_CULTURAL_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

II SEMESTER

23CV1201 : 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**

Textbooks:	
1.	Nelson A., Engineering Mechanics (Statics and Dynamics), ed 2009, Tata Mc. Grew Hill Education Pvt. Ltd., New Delhi, 2009.
2.	Dubey N.H., Engineering Mechanics (Statics and Dynamics) first edition 2013, Tata Mc. Graw Hill Education Pvt. Ltd., New Delhi, 2013.
3.	Singer F.L, Engineering Mechanics (Statics and Dynamics), Harper and Rowe publication, New Delhi, 1994.
Reference Books:	
1.	Timoshenko S, Young D.H and Rao J.V, Engineering Mechanics, Mc. Graw Hill Publication, New Delhi, 2007.
2.	Bhattacharyya B., Engineering Mechanics, Oxford University Press, New Delhi, 2008.
3.	Hibbeler R.C, Engineering Mechanics (Statics and Dynamics), Pearson Publication, Singapore, 2000.
4.	Shames I.H. and Rao J.V., Engineering Mechanics (Statics and Dynamics), First Edition, Pearson Publication, New Delhi, 2003.
5.	Beer F.P. and Johnston E.R; Vector Mechanics for Engineers, 9th edition Tata Mc. Graw Hill Publication, New Delhi. 2007.
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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
MOOCs Links and additional reading, learning, video material	
1.	https://www.youtube.com/watch?v=nGfVTNfNwnk
2.	https://www.youtube.com/watch?v=6nguX-cEsvw
3.	https://nptel.ac.in/courses/112103108

II SEMESTER
23CV1202 : 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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(Department of Information Technology)

B.Tech in Information Technology

SoE No. 23IT-101

II SEMESTER

23IT1203 : 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**

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

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

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

YCCE e- library book links [ACCESSIBLE FROM COLLEGE CAMPUS]	
1	http://103.152.199.179/YCCE/Suported%20file/Supprted%20file/e-copies%20of%20books

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=PLxgZQoSe9cg1drBnejUaDD9GEJBGQ5hMt

Nagar Yuwak Shikshan Sanstha's

Yeshwantrao Chavan College of Engineering

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

B. Tech SoE and Syllabus 2023

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

(Department of Information Technology)

B.Tech in Information Technology

SoE No. 23IT-101

II SEMESTER

23IT1204 : 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

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

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

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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=PLxgZQoSe9cg1drBnejUaDD9GEJBGQ5hMt

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**

Nagar Yuwak Shikshan Sanstha's

Yeshwantrao Chavan College of Engineering

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

B. Tech SoE and Syllabus 2023

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

(Department of Mathematics & Humanities)

SoE No. 23FY-101

B.Tech First Year

II SEMESTER

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

EVALUATION			**1 Hour**
WRITTEN TEST	**TA=60**	**ESE=40**	**TOTAL=100**
Total Lecture Hours			**24 Hours**

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

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

3rd Semester

(Department of Information Technology)

B. Tech in Computer Science and Design (CSD)

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 Computer Science and Design

SoE No. 23CSD-101

SN	Sem	Type	BoS/ Deptt	Sub. Code	Subject	T/P	Contact Hours				Credits	% Weightage			ESE Duration Hours
							L	T	P	Hrs		MSEs*	TA**	ESE	
THIRD SEMESTER															
1	3	HSSM1	GE	23GE1301	Fundamentals of Management & Economics	T	2	0	0	2	2	30	20	50	3
2	3	PC	CSD	23CSD1301	Discrete Mathematics and Graph Theory	T	3	0	0	3	3	30	20	50	3
3	3	PC	CSD	23CSD1302	Data Structures	T	3	0	0	3	3	30	20	50	3
4	3	PC	CSD	23CSD1303	**Lab :** Data Structures	P	0	0	2	2	1		60	40	
5	3	PC	CSD	23CSD1304	Microprocessors and Microcontrollers	T	3	0	0	3	3	30	20	50	3
6	3	PC	CSD	23CSD1305	**Lab:** Microprocessors and Microcontrollers	P	0	0	2	2	1		60	40	
7	3	PC	CSD	23CSD1306	Computer Systems Organization	T	3	0	0	3	3	30	20	50	3
8	3	VEC-2	CSD	23CSD1307	Open Source Design Tool	T	3	0	0	3	2	30	20	50	3
9	3	CEP	CSD	23CSD1308	**Lab**: Design Project	P	0	0	4	4	2		60	40	
10	3	OE 1	OE-1		**Open Elective - I**	T	2	0	0	2	2	30	20	50	3
11	3	MDM	MDM		**MD Minor Course - I**	T	2	0	0	2	2	30	20	50	3
					TOTAL		**21**	**0**	**8**	**29**	**24**				

List of Mandatory Learning Course (MLC)															
1	3	HS	T&P	MLC2123	**YCAP3 :** YCCE Communication Aptitude Preparation	**A**	3	0	0	3	**0**				

Open Elective - I

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

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Chairperson	**Dean (Acad. Matters)**	**Date of Release**	**Version**	

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**

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, 7th edition, Mankiw N. Gregory, Thomson, 2013

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

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

MOOCs Links and additional reading, learning, video material	
1	https://onlinecourses.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

III SEMESTER
23CSD1301: Discrete Mathematics and 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 & 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.	
Unit II: Relations and Functions:	**(7 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.	
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, Homomorphism of Sub semi groups and monoids. semigroups and monoids, Sub semi groups and monoids.	
Unit IV:Rings	**(8 Hrs.)**
Definitions and Examples, sub ring, Integral domain, ring homomorphism, ideal of ring polynomial	
Unit V: Field and Lattices	**(8 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.	
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.	
Total Lecture	**45 Hours**

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.
3	J K Shrma "Discrete Mathematics" 4th edition

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

MOOCs Links and additional reading, learning, video material	
1.	https://onlinecourses.nptel.ac.in/noc22_ma10/preview
2.	https://onlinecourses.nptel.ac.in/noc20_cs82/preview
3.	https://nptel.ac.in/courses/111106102

III SEMESTER
23CSD1302: Data Structures

Course Outcomes :
Upon successful completion of the course the students will be able to 1. Understand basic data structures like array, list, stack, queue, tree, and graph. 2. Develop knowledge of basic data structures such as arrays, linked lists 3. Apply appropriate data structures in problem solving 4. Design application by using data structures and algorithms for real world problems.

Unit I : Basic of Data Strictures	**(7 Hrs.)**
Data structures basics, Mathematical /algorithmic notations & functions, Complexity of algorithms, Sub algorithms. Big oh and theta notations and omega notations, Average, best and worst case analysis String processing: storing strings, character data type, string operations, word processing, and pattern matching algorithms.	
Unit II : Linear arrays	**(7 Hrs.)**
Linear arrays and their representation in memory, traversing linear arrays, inserting & deleting operations, sorting Techniques, Linear search and Binary search algorithms. Multidimensional arrays, Pointer arrays. Record structures and their memory representation. Matrices and sparse matrices.	
Unit III : Linked lists	**(7 Hrs.)**
Linked lists and their representation in memory, traversing a linked list, searching a linked list. Memory allocation & garbage collection. Insertion deletion operations on linked lists. Header linked lists, Two-way linked lists. polynomial representations and manipulations are using linked list, circular linked list, doubly linked list, Generalized list.	
Unit IV : Stacks	**(8 Hrs.)**
Stacks and their array representation. Arithmetic expressions: Polish notation. Quick sort, an application of stacks, Recursion. Tower of Hanoi problem. Implementation of recursive procedures by stacks, Queues. , Circular queues, Priority Queues, Dequeue	
Unit V : Trees	**(8 Hrs.)**
Trees, Binary trees & and their representation in memory, Traversing binary trees. Traversal algorithms using stacks, Header nodes: threads. Threaded Binary Trees, Binary search trees, searching, inserting and deleting in binary trees. Applications, The concept of balancing and its advantages, B-Trees, B+ Trees, AVL Trees. Heap and heapsort. General trees.	
Unit VI : Graphs and digraphs	**(8 Hrs.)**
Representations, Breadth and depth first searches, connected component, spanning trees, shortest path– single source & all pairs , activity networks, topological sort, Hamiltonian path. Graph theory, sequential representations of graphs, Warshalls' algorithm, Linked representation, operations & traversing the graphs. Posets & Topological sorting. hash functions	
Total Lecture	**45 Hours**

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Textbooks:	
1.	"Data structure in C" by Tanenbaum, PHI publication / Pearson publication
2.	Seymour Lipschutz "Theory & Problem of Data Sturctures"
3.	Y. Langsam" Data Stricture using C and C++"
4.	Gilberg and Forouzan: "Data Structure- A Pseudo code approach with C" by Thomson publication
5.	Pai: "Data Structures & Algorithms; Concepts, Techniques & Algorithms "Tata McGraw Hi

Reference Books:	
1.	Ellis Horowitz, Sartaj Sachin, Dinesh Mehta "Fondmentals of Data Structure"2nd edition CBS publication
2.	Jean-Paul Tremblay & Paul G. Sorenson Publisher-Tata McGraw Hill. "An Introduction to Data Structures with Application"
3.	Data Structures using C & C++ -By Ten Baum Publisher – Prenctice-Hall International.
4.	Data Structures: A Pseudo-code approach with C -By Gilberg & Forouzan PublisherThomson Learning.

YCCE e- library book links [ACCESSIBLE FROM COLLEGE CAMPUS]	
1	http://103.152.199.179/YCCE/e-copies%20of%20books/7.Information%20Technology/5._DataStructuresAndAlgorithmsWith%20Python.pdf
2	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=YqrFeU90Coo
2.	https://www.youtube.com/watch?v=Si9MzFqBs8E
3.	https://www.youtube.com/watch?v=6VF2Q0pgUFI

III SEMESTER
23CSD1303: Lab. Data Structures

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.

S. N.	Experiments based on
1	Write a program to perform following operations on Array. a) Traverse b) Insertion c) Deletion
2	Write a program to implement Sorting and Searching Techniques.
3	Program for allocating memory dynamically for single dimensional array and sort it using quick sort and merge sort.
4	Write a program to implement following Operations in Linked List a) Traverse b) Insertion c) Deletion
5	Write an application to implement Tower of Hanoi Problem Algorithm
6	Write an application to implement Abstract data type stack.
7	Write a program to evaluate Post fix expression using stack.
8	Write a program to implement Preorder Traversal of a binary tree.
9	Program to create file for storing details of all the items needed for playing any game of your choice also perform display, insertion of new record at any location, deletion of any record.
10	Write a Program to Perform insertion or search in a specified level of a stack implemented tree-structured symbol table.

III SEMESTER
23CSD1304: Microprocessors and Microcontrollers

Course Outcomes :
Upon successful completion of the course the students will be able to 1. Identify a detailed software & hardware structure of the Microprocessor and microcontroller 2. Determine the addressing modes and instruction sets related to programming of 8086 and 8051 3. Analyze assembly language programs; select appropriate assemble into machine a cross assembler utility of a microprocessor and microcontroller. 4. Design electrical circuitry to the Microprocessor I/O ports in order to interface the processor to external devices.

Unit I: 8086 architecture	**(7 Hrs.)**
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 II : Programming with 8086/8088	**(7 Hrs.)**
Addressing Modes, Instruction set, Instruction encoding format, Timing diagram Assembler directives, 8086 programming examples, String operations, File I/O processing, Far & Near procedures, Macros	
Unit III: Interfacing with 8086/8088	**(7 Hrs.)**
Memory interfacing, Intel 8255 PPI, Block diagram & interfacing with ADC DAC, Modes & initialization.	
Unit IV : 8051 Microcontroller	**(8 Hrs.)**
Overview of 8051 Microcontroller family, Introduction to MCS 51 family, Architecture, Memory organization, Internal RAM, Flag Register, Register Banks, SFRs , Functional pin description and various resources of MCS 51. Hardware Overview	
Unit V: Addressing modes, Instruction set	**(8Hrs.)**
Addressing modes, Instruction set and Assembly language programming Programs using look up table, Bit manipulation, 8051 I/O programming, Delay Programs	
Unit VI: I/O Interfacing	**(8Hrs.)**
I/O Interfacing such as LED, switches, 7segment display, keyboard matrix programming, 8051 programming in C: Data types and time delay, I/O programming, Logic operations, Data conversion programs, Lookup table access.	
Total Lecture	**45 Hours**

Textbooks:	
1.	A.K ray and K.M.Bhurchandani Advanced microprocessors and peripherals 2nd edition 2006 TMH
2.	Muhammad Ali Mazidi The 8051 Microcontroller and Embedded systems using assembly & C 2nd edition Pearson Education Asia LPE

Reference Books:	
1.	K.Uma Rao, Andhe Pallavi The 8051 Microcontrollers, Architecture and programming and Applications Pearson, 2009.
2.	Douglas V.Hall Microprocessors and Interfacing: Programming and Hardware Third edition TMH
3.	Kenneth.J.Ayala The 8051 microcontroller 3rd edition Cengage learning,2010

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=YqrFeU90Coo
2.	https://www.youtube.com/watch?v=Si9MzFqBs8E
3.	https://www.youtube.com/watch?v=6VF2Q0pgUFI

III SEMESTER
23CSD1305 : Lab. Microprocessors and Microcontrollers

Course Outcomes :

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

1. Identify a detailed software & hardware structure of the Microprocessor and microcontroller
2. Determine the addressing modes and instruction sets related to programming of 8086 and 8051
3. Analyze assembly language programs; select appropriate assemble into machine a cross assembler utility of a microprocessor and microcontroller.
4. Design electrical circuitry to the Microprocessor I/O ports in order to interface the processor to external devices.

S.N.	Name Of The Practical
1	To Study the architecture of 8086 Microprocessor.
2	To study Pin Diagram of 8086 Microprocessor.
3	Write an assembly language Program to perform arithmetic operation on 8bit & 16 bit.
4	Write an assembly language program to find largest number from an unordered list/array of 8 bit numbers The program starts at location 1000H:500H.The result will be obtained at 1000H:600H..
5	Write An Assembly Language Program performs one byte BCD addition.
6	Write an assembly language program To find Out the number of even and odd numbers from a given series of 16 bit hexadecimal numbers.
7	Write an ALP to determine Average of n-bytes stored in internal RAM locations using 8051 Microprocessor.
8	Write an ALP to generate Square Waveform with 50% duty ratio using 8051 Microprocessor.
9	Write an 8051 C program to read the P1.0 and P1.1 bits and issue an ASCII character to P0 according to the following table.
10	Write an 8051 C program to toggle all the bits of P0 and P2 continuously with delay.

III SEMESTER

23CSD1306 : Computer Systems 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: Structure of Computer	**(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 :Processing Unit	**(8 Hrs.)**
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: Hardwired Control Design	**(7 Hrs.)**
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 :Arithmetic	**(8 Hrs.)**
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 :The main Memory:	**(8 Hrs.)**
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 :Computer Peripherals	**(7 Hrs.)**
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**

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

Reference 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

YCCE e- library book links [ACCESSIBLE FROM COLLEGE CAMPUS]	
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MOOCs Links and additional reading, learning, video material	
1.	https://archive.nptel.ac.in/courses/106/105/106105163/
2.	https://archive.nptel.ac.in/courses/106/106/106106092
3.	https://www.youtube.com/watch?v=Ol8D69VKX2k
4.	https://www.youtube.com/watch?v=4nEr2Z2tItg
5.	https://www.youtube.com/watch?v=-Bwiv5EGucs

III SEMESTER
23CSD1307 : Open Source Design Tool

Course Outcomes :
Upon successful completion of the course the students will be able to 1. Know different Open Source Tools for Graphics Design 2. Understand features and usage of different Open Source Tools for Graphics Design 3. Use the tools for different graphics designing problems in real time situations.

Unit I: Introduction to Graphic Design	**(8Hrs.)**
Overview of graphic design principles and elements, Introduction to open-source graphics software (GIMP, Inkscape, etc.),Setting up the software environment	
Unit II : Digital Imaging	**(8Hrs.)**
Basic image editing techniques using GIMP, Working with layers, filters, and effects, Image manipulation and retouching	
Unit III: Inkscape	**(8Hrs.)**
As drawing and painting tool, Professional vector graphics editor, Scalable Vector Graphics (SVG), Objects creation and manipulation, Fill and stroke, Rendering,	
Unit IV : Blender	**(6Hrs.)**
Open Source 3D creation suite, 3D pipeline- modelling, Sculpting, Rigging, 3D and 2D animation,	
Total Lecture	**30 Hours**

Textbooks	
1.	Kenneth J. Hiebert "Graphics Design Sources"
2.	Sandeep Koranne " Handbook of Open Source Tools"

Reference Books :	
1.	Grid systems in graphic design' by Josef Müller-Brockmann
2.	Thinking with Type by Ellen Lupton,2nd Edition
3.	100 Ideas That Changed Design by Peter Fiell & Charlotte Fiell

YCCE e- library book links [ACCESSIBLE FROM COLLEGE CAMPUS]	
1	https://www.youtube.com/watch?v=JozESuPcVpg&embeds_referring_euri=https%3A%2F%

MOOCs Links and additional reading, learning, video material	
1.	https://www.youtube.com/watch?v=C8bq90idey0
2.	https://www.youtube.com/watch?v=vkSOIkNWCww

III SEMESTER

23CSD1308 : Lab: Design Project

III SEMESTER

Multidisciplinary Minor Courses

Track 1

MDMT1CSD101 : Game Technology

Courses	Sem	MDMT1CSD101 : Game Technology
MDM-I	3	(MDM1CSD101) Graphics Design
MDM-II	4	(MDM2CSD102) Motion Graphics
MDM-III	5	(MDM3CSD103) Augmented and Virtual Reality
MDM-IV	6	(MDM4CSD104) Game Theory
MDM-V	7	(MDM5CSD105) Computer Game Design and Programming
MDM-VI	8	(MDM6CSD106) Artificial Intelligence for Games

Nagar Yuwak Shikshan Sanstha's

Yeshwantrao Chavan College of Engineering

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

B. Tech SoE and Syllabus 2023

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

(Department of Information Technology)

B.Tech in Computer Science and Design

SoE No. 23IT-101

III Semester

Code (MDMI1CSD101) MDM-I Subject Name: Graphics Design

COURSE OUTLINE :
Upon successful completion of the course the students will be able to: 1. Understand the fundamental principles of graphic design (e.g., hierarchy, balance, contrast, color theory) 2. Utilize design software for creating basic graphic elements 3. Develop skills in visual communication through projects 4. Analyze and critique graphic design solutions

Unit-I: **Introduction to Graphic Design**	**(8Hrs)**
Definition and history of graphic design, The design process (research, ideation, sketching, prototyping, refinement), The elements and principles of design, Typography basics (anatomy of type, choosing fonts), Introduction to design software (e.g., Adobe Photoshop, Illustrator).	
UNIT-II: Visual Communication	**(8Hrs)**
Color Theory (color psychology, color harmonies), Image manipulation and editing (using design software) , Visual hierarchy and composition, Designing for different media (print, web, social media), Introduction to branding and identity.	
UNIT- III : **Design Applications**	**(8Hrs)**
Poster design, Logo and brand identity design, Brochure and flyer design, Basic layout design principles, Introduction to user interface (UI) design.	
UNIT-V: Design Critique and Portfolio Development	**6(Hrs)**
Design critique principles (giving and receiving feedback), Analyzing and critiquing existing, graphic design works, Portfolio building (selecting and presenting best work), The role of graphic design in society, Career exploration in graphic design.	
Total Lecture	**30 Hours**

Textbooks	
1	Design School: The Principles and Practice of Graphic Design 6th Edition by David Dabner, Sandra Stewart, Abbie Vickress, Willy publication

Reference Books:	
1	Thinking with Type by Ellen Lupton, Princeton Architectural Press
2	Non-Designer's Design Book, The 4th Edition by Robin Williams, Peachpit Press
3	Graphic Design School: The Principles and Practice of Graphic Design 4th Edition by David Dabner, Sheena Calvert, Anoki Casey, Willy publication

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

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MOOCs Links and additional reading, learning, video material	
1.	https://archive.nptel.ac.in/courses/124/107/124107002/
2.	https://www.youtube.com/channel/UC-b3c7kxa5vU-bnmaROgvog
3.	https://www.youtube.com/playlist?list=PL2FaTykxt17-syO9FGzgpS9VfUKVGgoKd
4.	https://www.youtube.com/@phlearn
5.	https://www.reddit.com/r/youtube/comments/pvv2s6/why_is_all_text_on_youtube_now_in_italics/

III SEMESTER
Open Elective -I : Basket

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

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

III SEMESTER

Mandatory Learning Course (MLC)

MLC2123 : YCAP3

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

4th Semester

(Department of Information Technology)

B. Tech in Computer Science and Design (CSD)

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 Computer Science and Design

SoE No. 23CSD-101

SN	Sem	Type	BoS/ Deptt	Sub. Code	Subject	T/P	Contact Hours				Credits	% Weightage			ESE Duration Hours
							L	T	P	Hrs		MSEs*	TA**	ESE	
FOURTH SEMESTER															
1	4	BS	GE	23GE1403	Linear Algebra	T	3	0	0	3	3	30	20	50	3
2	4	HSSM-2	GE	23GE1401	Entrepreneurship Development	T	2	0	0	2	2	30	20	50	3
3	4	**AEC-2**	GE	23GE1405 23GE1406	Marathi Language / Hindi Language	T	2	0	0	2	2	30	20	50	3
4	4	VEC-1	CV	23CV1411	Environmental Sustainability, Pollution and Management	T	2	0	0	2	2	30	20	50	3
5	4	PC	CSD	23CSD1401	Object Oriented Programming	T	3	0	0	3	3	30	20	50	3
6	4	PC	CSD	23CSD1402	**Lab :** Object Oriented Programming Lab	P	0	0	2	2	1		60	40	
7	4	PC	CSD	23CSD1403	Computer Networks	T	3	0	0	3	3	30	20	50	3
8	4	PC	CSD	23CSD1404	**Lab:** Computer Networks	P	0	0	2	2	1		60	40	
9	4	PC	CSD	23CSD1405	Software Lab	P	0	0	2	2	1		60	40	
10	4	VSEC-3	CSD	23CSD1406	**Lab :** Adv. Python Programming	P	0	0	4	4	2		60	40	
11	4	OE-2	OE		**Open Elective -II**	T	2	0	0	2	2	30	20	50	3
12	4	MDM	MDM		**MD Minor Course-II**	T	2	0	0	2	2	30	20	50	3
					TOTAL		**19**	**0**	**10**	**29**	**24**				
List of Mandatory Learning Course (MLC)															
1	4	HS	T&P	MLC2124	**YCAP4 :** YCCE Communication Aptitude Preparation	**A**	3	0	0	3	**0**				

Open Elective - II

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

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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:	**8 Hrs.**
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.	

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.	
Total Lecture	**45 Hours**

Textbooks:	
1	Erwin Kreyzig, Advance Engineering Mathematics, 9th Edition, John Wiley and Sons, INC.
2	Dr. B. S. Grewal, Higher Engineering Mathematics, 40th 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)

Reference 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.

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	https://nptel.ac.in/courses/111106051
2	https://archive.nptel.ac.in/courses/111/104/111104137/
3	https://archive.nptel.ac.in/courses/111/106/111106135/

IV SEMESTER
23GE1401 : Entrepreneurship Development

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

Unit I:	**7 Hrs.**
Entrepreneur & Entrepreneurship: Meaning of Entrepreneur, Evolution of the concept – Theories and Models, Types of Entrepreneur, Stages in entrepreneurial process- Idea Generation, Screening, Selection and Managing Resources.	
Unit II:	**8 Hrs.**
Legal Compliances for Incorporating Start up: Fundamentals of choosing the Business Organization form for startup, Incorporation of Partnership, LL.P & Co – operative, Incorporation of One Person Company, Pvt. Ltd., Pub. Ltd. and not for profit company, Financing the legal Venture and Legal Compliances.	
Unit III:	**7 Hrs.**
Entrepreneurship and IP Strategy: Intellectual Property : Definition and Concept of Trade Mark, Patent, Copyright, Industrial Design, IP Strategy and Entrepreneurship.	
Unit IV:	**8 Hrs.**
Support to Entrepreneurs: Financing new ventures, Business Incubators – Government Policy for Small Scale Enterprises, Growth Strategies in small industry – Expansion, Diversification, Joint Venture, Merger and Subcontracting.	
Total Lecture	**30 Hours**

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

Textbooks	
1.	Khanka. S.S., "Entrepreneurial Development" S.Chand & Co. Ltd.,Ram Nagar, New Delhi, 2013.
2.	Donald F Kuratko, "Entrepreneurship – Theory, Process and Practice", 9th Edition, Cengage Learning 2014.
3.	Corporate Law, 33rd ed. 2016, Taxman New Delhi.
4.	Narayanan, V. K., Managing technology and innovation for competitive advantage, first edition, Pearson education, New Delhi, (2006)
5.	Idris, K. (2003), Intellectual property: a power tool for economic growth, second edition, WIPO publication no. 888, Switzerland
6.	Khanka. S.S., "Entrepreneurial Development" S.Chand & Co. Ltd.,Ram Nagar, New Delhi, 2013.
7.	Ramaiya's Guide to the Companies Act, 18th ed. 2014, Lexis Nexis New Delhi.
Reference Books	
1.	Mehta, Monica- The Entrepreneurial Instinct : How everyone has the innate ability to start a successful small business – McGraw – Hill Education, New Delhi 2012, ISBN 978-0-07-179742-9
2	Prasanna Chandra "Protect Preparation, Appraisal, Implementation" Tata McGraw Hill. New Delhi
3	S Anil Kumar "Entrepreneurship Development" New Age International Publishers
4	Nishith Dubey "Entrepreneurship Development" PHI Learning
YCCE e- library book links [ACCESSIBLE FROM COLLEGE CAMPUS]	
1	http://link.springer.com/openurl?genre=book&isbn=978-1-4613-6193-0
2	https://onlinelibrary.wiley.com/doi/book/10.1002/9780470168042
MOOCs Links and additional reading, learning, video material	
1	https://onlinecourses.swayam2.ac.in/cec23_mg24/course- entrepreneurship development
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 entrepreneurship

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	गद्य विभाग	8 Hours

१.	भारतीय लोकशाहीचे भवितव्य काय?	- डॉ. बाबासाहेब आंबेडकर
२.	काळी आई	- व्यंकटेश माडगूळकर
३.	संत तुकारामांचे अभंग	- निर्मलकुमार फडकुले
४.	माझी शाळा	- प्रकाश खरात
५.	समतेचे वारकरी संत गाडगेबाबा आणि राष्ट्रसंत तुकडोजी महाराज	- अशोक राणा
६.	लोककल्याणकारी राजा :	- शरयू तायवाडे

Unit:2	पद्य विभाग	8 Hours

१.	ज्ञानेश्वरांचे अभंग	- संत ज्ञानेश्वर
२.	वनसुधा	- वामन पंडित
३.	नवा शिपाई	- केशवसुत
४.	मेंढरं	- विठ्ठल वाघ
५.	पोरी	- अनुराधा पाटील
६.	गाव	- हेमंतकुमार कांबळे

Unit:3	व्यावहारिक मराठी	7 Hours

१. म्हणी
२. मुलाखतलेखन - डॉ. वैशाली धनविजय
३. वाक्प्रचार
४. जाहिरातलेखन - डॉ. अजय देशपांडे

Unit:4	रोजगाराभिमुख मराठी व्यावहारिक कौशल्ये	7 Hours

१. प्रत्यक्ष मुलाखत कौशल्य
२. वाचन कौशल्य - (अ) बातमी वाचन (ब) कथा वाचन
३. ऑनलाईन कौशल्य - (अ) ग्राहक सेवा केंद्राशी संवाद, (ब) ऑनलाईन अर्ज करणे

Reference Books

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

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 नक़्शे' का दैनिक जीवन में उपयोग करने में सक्षम होंगे |

Unit:1	गद्य विभाग	8 Hours

१. भाईसाहब (कहानी) - प्रेमचंद
२. स्मृति (निबंध) - श्रीराम शर्मा
३. गिल्लू (रेखाचित्र) - महादेवी वर्मा
४. अभाव (कहानी) - विष्णु प्रभाकर
५. महाभारत की साँझ (एकांकी) - भारतभूषण
६. उखड़े खंबे (व्यंग्य)। - हरिशंकर परसाई

Unit:2	पद्य विभाग	8 Hours

१. कबीर के दोहे - कबीरदास
२. ले चल यहाँ भुलावा देकर - जयशंकर प्रसाद
३. स्नेह-निर्झर बह गया - हैसूर्यकांत त्रिपाठी "निराला"
४. प्रथम रश्मि - सुमित्रानंदन पंत
५. जीवन का झरना - आरसीप्रसाद सिंह
६. कविता के साथ - दामोदर खड़से

Unit:3	अन्य पाठ्य सामग्री	7 Hours

१. मुहावरे और लोकोक्तियाँ: पाठ्यपुस्तक में मुहावरे और लोकोक्तियाँ का अर्थ एवं वाक्य प्रयोग

२. विज्ञापन कला : अर्थ, परिभाषा, प्रकार, शीर्षक का महत्त्व, विज्ञापन के प्रयोजन, सत्य, लक्ष्य, विज्ञापन की भाषा, अच्छे विज्ञापन के गुण इत्यादि ।

Unit:4	कौशल्य आधारित घटक	7 Hours

१. वाचन कौशल्य (समाचार-वाचन, कहानी-वाचन)
२. सोशल मीडिया के शिष्टाचार
३. ऑनलाइन आवेदन, ग्राहक-सेवा केंद्र से संवाद

Reference Books

3. पाठ्यपुस्तक : **"पलाश"**

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**

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

Reference Books	
1	Headrick, Daniel R. (2020) Humans versus Nature- A Global Environmental History, Oxford University Press
2	Gilbert M. Masters and W. P. (2008). An Introduction to Environmental Engineering and Science, Ela Publisher (Pearson)
3	William P. Cunningham and Mary A. (2015). Cunningham Environmental Science: A global concern, Publisher (Mc-Graw Hill, USA)
4	Varghese, Anita, Oommen, Meera Anna, Paul, Mridula Mary, Nath, Snehlata (Editors) (2022) Conservation through Sustainable Use: Lessons from India. Routledge.
5	Central Pollution Control Board Web page for various pollution standards. 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
YCCE e- library book links [ACCESSIBLE FROM COLLEGE CAMPUS]	
1	
MOOCs Links and additional reading, learning, video material	
1	

IV SEMESTER
23CSD1401: 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 java 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 standalone 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**

Textbooks:	
1	David J. Eck " introduction to Programming Using Java
2	R. Nageswara Rao " Core Java"2nd edition

Reference books:	
1.	Herbert Schildt Java2 Complete Reference McGraw-Hill
2.	E. Balagurusamy Programming with Java TATA McGraw-Hill
3.	Amritendu De, "Spring 4 and Hibernate 4: Agile Java Design and Development", McGraw-Hill Education
4.	Ninth Edition, Tata McGraw Hill, 2014 3. Joyce Farrell, "Java Programming", Cengage Learning, Seventh Edition, 2014

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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=O5hShUO6wxs
2.	https://www.youtube.com/watch?v=7q3zXRuctQ8&list=PLd3UqWTnYXOnT6p6dll1oiKsDu96QGANk
3.	https://www.youtube.com/watch?v=P5tFJ9umhvk

IV SEMESTER

23CSD1402: 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 analyse problem statement and identify appropriate objects and methods 4. 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

IV SEMESTER
23CSD1403: Computer Networks

Course Outcomes :
Upon successful completion of the course the students will be 1. Understand the fundamental of Computer Network, data link layer issues, protocols, devices, and application level layer concepts. 2. Analyze different error detection mechanism in network layer. 3. Apply different routing algorithm for solving computer network Problem. 4. Analyze the performance of computer Networks and elements of protocol.

Unit I : Computer networks	**(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, Comparison of OSI & TCP/IP reference model	
Unit II: Physical layer	**(7 Hrs.)**
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 : Data Link Layer	**(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: Network Layer	**(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 : Transport Layer	**(8 Hrs.)**
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.	

Unit VI : Application Layer	(8 Hrs.)
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 6th Edition
2.	Andrew Tanenbaum Computer Networks Pearson Prentice Hall 5th Edition.
3.	Behrouz Forouzan Data Comminication & Networking TMH 4th Edition (2007).

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

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1.	http://103.152.199.179/YCCE/e-copies%20of%20books/7.Information%20Technology/39.Guide%20to%20computer

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

IV SEMESTER

23CSD1404: Lab. Computer Networks

Course Outcomes :
Upon successful completion of the course the students will be 1. Understand the fundamental of Computer Network, data link layer issues, protocols, devices, and application level layer concepts. 2. Analyze different error detection mechanism in network layer. 3. Apply different routing algorithm for solving computer network Problem. 4. Analyze the performance of computer Networks and elements of protocol.

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.

IV SEMESTER

23CSD1405: Software Lab

Course Outcomes
Upon successful completion of the course the students will be able to 1. To gain knowledge on designing static and dynamic web pages. 2. Able to validate web pages at client-side. 3. Design and validate XML documents. 4. Gain knowledge on server side scripting.

Minimum 10 problems to be performed on each topic

S. N	Experiments Base On
1.	To design 1) HOME PAGE 2)LOGING PAGE
2	To design 1) CATOLOGUE PAGE 2) CART PAGE
	To design 5) REGISTRATION PAGE
3.	JavaScript
4.	Design a web page using CSS (Cascading Style Sheets) which includes the different font, styles:
5.	XML file
6.	Document Type Definition (DTD) to validate the above XML file
7.	Use XML schemas XSL and CSS for the above purpose.
8.	User Authentication.
9.	Servlet that displays a message.
10.	Servlet for creating a cookie and retrieving it

Reference Books:	
1.	HTML Black Book – Steve Holzner,
2.	The complete Reference Java 2 Fifth Edition by Patrick Naughton and Herbert Schildt. TMH
3.	Java Server Pages –Hans Bergsten, SPD O'Reilly

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

MOOCs Links and additional reading, learning, video material	
1.	https://youtu.be/krfUjg0S2uI
2.	https://youtu.be/k103bbhTdXY
3.	https://nptel.ac.in/courses/106105084

IV SEMESTER
23CSD1406: Lab. Adv. Python Programming

Course Outcomes :
At the end of the Course the student shall be able to • Apply exception handling and user defined exception(s) • .Develop Module(s) and Package(s) in python • Make use of Pandas and Numpy Libraries • Implement Object Oriented concepts in programming • Apply Collection modules for the data types

(Minimum 10 problem statements on each topic)

S. N	Experiments Base On
1.	Assertion
2	Decorators
3.	Generators
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.	Basic data visualization using Python
10.	Python Collections

Textbooks:	
1.	Martin C. Brown (Author), "*Python: The Complete Reference*" McGraw Hill Education,Fourth edition , 2018

Reference Books:	
1.	R. Nageswara Rao, "Core Python Programming"Dreamtech Press India Pvt Ltd 2018.

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

MOOCs Links and additional reading, learning, video material	
1.	http://www.digimat.in/nptel/courses/video/106106182/L01.html
2.	https://youtu.be/HK8kMpjEkB4

IV SEMESTER
Multidisciplinary Minor Courses
Track 1
MDMT1CSD101 : Game Technology

Courses	Sem	MDMT1CSD101 : Game Technology
MDM-I	3	(MDM1CSD101) Graphics Design
MDM-II	4	(MDM2CSD102) Motion Graphics
MDM-III	5	(MDM3CSD103) Augmented and Virtual Reality
MDM-IV	6	(MDM4CSD104) Game Theory
MDM-V	7	(MDM5CSD105) Computer Game Design and Programming
MDM-VI	8	(MDM6CSD106) Artificial Intelligence for Games

IV Semester
Code (MDM2CSD102) MDM-II Subject Name: Motion Graphics

Course Outcome
On completion of this course, the student will be able to: 1. Understand the principles of animation (timing, spacing, anticipation, follow-through, exaggeration, etc.) 2. Apply design principles (hierarchy, balance, contrast, color theory) to motion graphics projects 3. Utilize industry-standard software (e.g., Adobe After Effects) for animation and compositing 4. Develop storyboarding and concept development skills 5. Create engaging and effective motion graphics projects

UNIT-I : Introduction to Motion Graphics	**(8Hrs)**
Definition and history of motion graphics, Applications of motion graphics (branding, explainers, titles, advertising, etc.), The animation workflow (pre-production, production, post-production), Design principles for motion graphics, Introduction to industry-standard software interface and tools.	
UNIT-II : Animation Fundamentals	**(8Hrs)**
Timing and spacing in animation, Key frame animation and interpolation methods (linear, bezier, etc.), Motion paths and animation presets, Text animation techniques, Introduction to character animation.	
UNIT-III : Motion Graphics Techniques	**(7Hrs)**
Compositing techniques (layers, blending modes, masks), Using vector graphics and illustrations in motion graphics, Working with footage (importing, editing, color correction), Sound design and music integration, Introduction to basic 2D animation principles.	
UNIT-IV: Project Development and Portfolio Building	**(7Hrs)**
Storyboarding and concept development for motion graphics, Project planning and timeline management, Advanced animation techniques (expressions, scripting), Refining and polishing final projects, Building a motion graphics portfolio.	
Total Hrs.	**(30Hrs.)**

Textbooks:	
1.	The Animator's Survival Kit" by Richard Williams
2.	"Motion Graphics: Principles and Practices from the Ground Up" by Ian Crook and Peter Beare
3.	After Effects Apprentice: Real-World Skills for the Aspiring Motion Graphics Artist" by Trish and Chris Meyer

Reference Books:	
1.	"The Art of Motion: Motion Graphics Design Projects and Techniques" by Austin Shaw
2.	"Creating Motion Graphics with After Effects" by Chris and Trish Meyer
3.	"Motion Graphic Design: Applied History and Aesthetics" by Jon Krasner

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MOOCs Links and additional reading, learning, video material	
1.	https://www.youtube.com/playlist?list=PL6-tgzjzoo5brvdut_jz4zvtBxrtZzLG9
2.	http://www.youtube.com/playlist?list=PLBX8qMBSjy2oTdZbPTnL8sQgJX97Sd2CQ
3.	http://www.youtube.com/playlist?list=PL5E9ny14GDRiEMFw69KvC3LxoGuJ-6RMy
4.	https://www.svgator.com/blog/motion-graphic-design-tips-and-tricks/

IV SEMESTER
Open Elective -II : Basket

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

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

IV SEMESTER

Mandatory Learning Course (MLC)

MLC2124 : YCAP4