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 Semester

(Department of Information Technology)

B. Tech in Information Technology

Nagar Yuwak Shikshan Sanstha's

Yeshwantrao Chavan College of Engineering

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

B.TECH SCHEME OF EXAMINATION 2023

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

(Department of Information Technology)

B. Tech. in Information Technology

SoE No. 23IT-101

SN	Sem	Type	BoS/ Deptt	Sub. Code	Subject	T/P	Contact Hours				Credits	% Weightage			ESE Duration Hours
							L	T	P	Hrs		MSEs*	TA**	ESE	
FIRST SEMESTER (GROUP-A)															
1	1	BS	GE	23GE1101	Calculus and Vector	T	3	0	0	3	3	30	20	50	3
2	1	BS	GE	23GE1106	Engineering Chemistry	T	3	0	0	3	3	30	20	50	3
3	1	BS	GE	23GE1107	**Lab:** Engineering Chemistry	P	0	0	2	2	1		60	40	
4	1	HS/AEC1	GE	23GE1112	Professional Communication	T	2	0	0	2	2	30	20	50	2
5	1	HS/IKS	GE	23GE1115	Indian Knowledge System	T	2	0	0	2	2	30	20	50	2
6	1	BES	CV	23CV1101	Engineering Mechanics	T	3	0	0	3	3	30	20	50	3
7	1	BES	CV	23CV1102	**Lab:** Engineering Mechanics	P	0	0	2	2	1		60	40	
8	1	BES	IT	23IT1103	Programming for Problem Solving	T	2	0	0	2	2	30	20	50	2
9	1	BES	IT	23IT1104	**Lab:** Programming for Problem Solving	P	0	0	2	2	1		60	40	
10	1	VSEC	GE	23GE1117	Get Set Go	…	…	…	…	…	2		60	40	
11	1	CC1	GE		**Liberal Learning Course (LLC1)**	…	…	…	…	…	2		60	40	
					TOTAL FIRST SEM		**15**	**0**	**6**	**21**	**22**				
SECOND SEMESTER (GROUP-A)															
1	2	BS	GE	23GE1203	Differential Equations and Complex Analysis	T	3	0	0	3	3	30	20	50	3
2	2	BS	GE	23GE1210	Applied Physics	T	3	0	0	3	3	30	20	50	3
3	2	BS	GE	23GE1211	**Lab:** Applied Physics	P	0	0	2	2	1		60	40	
4	2	BES	ME	23ME1201	Engineering Graphics	T	1	0	0	1	1	30	20	50	3
5	2	BES	ME	23ME1202	**Lab :** Engineering Graphics	P	0	0	4	4	2		60	40	
6	2	BES	EL	23EL1201	Basic Electrical and Electronics Engineering	T	3	0	0	3	3	30	20	50	3
7	2	BES	CT	23CT1205	**Lab :** Computer WorkShop	P	0	0	2	2	1		60	40	
8	2	PC	IT	23IT1201	Basics of Python Programming	T	3	0	0	3	3	30	20	50	3
9	2	PC	IT	23IT1202	**Lab :** Basics of Python Programming	P	0	0	2	2	1		60	40	
10	2	VSEC	GE	23GE1218	Functional English	…	…	…	…	…	2		60	40	
11	2	CC2	GE		**Liberal Learning Course (LLC2)**	…	…	…	…	…	2		60	40	
					TOTAL SECOND SEM		**13**	**0**	**10**	**23**	**22**				

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

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(Department of Information Technology)

B. Tech. in Information Technology

SoE No. 23IT-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	2	CC2	GE	23LLC1201	Music (Vocal)
2	2	CC2	GE	23LLC1202	Music (Instrumental)
3	2	CC2	GE	23LLC1203	Indian Classical Dance
4	2	CC2	GE	23LLC1204	Other forms of Dances
5	2	CC2	GE	23LLC1205	Painting
6	2	CC2	GE	23LLC1206	Theatre and acting
7	2	CC2	GE	23LLC1207	Photography
8	2	CC2	GE	23LLC1208	Yoga
9	2	CC2	GE	23LLC1209	Chess
10	2	CC2	GE	23LLC1210	Athletics
11	2	CC2	GE	23LLC1211	Basket Ball
12	2	CC2	GE	23LLC1212	Judo
13	2	CC2	GE	23LLC1213	Elements of Japanese Language
14	2	CC2	GE	23LLC1214	Elements of German Language
15	2	CC2	GE	23LLC1215	Elements of French Language
16	2	CC2	GE	23LLC1216	Elements of Spanish Language
17	2	CC2	GE	23LLC1217	Basics of Vedic Maths
18	2	CC2	GE	23LLC1218	Skilling in Microsoft Visio and Inkscape

MANDATORY LEARNING COURSES														
1	2	HS		GE2131	Universal Human Values (UHV)	A	2	0	0	2	0			

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

TA ** = for Theory : TA1-5 marks on Proctored Online Exam, TA2-12 marks on 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	Applicable for AY 2023-24 Onwards
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B. Tech SoE and Syllabus 2023

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

(Department of Mathematics & Humanities)

B.Tech First Year

SoE No. 23FY-101

I SEMESTER

23GE1101: Calculus and Vector

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

Unit I: Differential Calculus	**(6 Hrs.)**
Successive differentiation, n^{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	**(7 Hrs.)**
Functions of several variables, First and higher order derivatives, Homogeneous functions, Euler's theorem on homogeneous function, Chain rule and total differential coefficient of composite functions. Jacobians. **(Contemporary Issues related to Topic)**	
Unit III: Integral Calculus	**(6 Hrs.)**
Improper integrals: Gamma and Beta functions, applications of integral calculus in computing area, length, volumes, and surface of solids of revolutions. **(Contemporary Issues related to Topic)**	
Unit IV: Multiple integrals	**(6 Hrs.)**
Double integral, change of order of integral, change of variables, triple integrals and its applications. **(Contemporary Issues related to Topic)**	
Unit V: Vector Calculus	**(7 Hrs.)**
Vector fields, Vector differentiation, Gradient, Divergence and Curl, Directional derivatives with physical interpretation, Solenoidal and irrotational motions. **(Contemporary Issues related to Topic)**	
Unit VI: Vector Integration & Applications	**(7 Hrs.)**
Vector integration: Line, surface and volume integrals, Statement of Stoke's theorem, Gauss divergence theorem and Green's theorem (without proof), Simple applications of these theorems. **(Contemporary Issues related to Topic)**	
Total Lecture	**39 Hours**

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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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B. Tech SoE and Syllabus 2023

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

(Department of Chemistry)

B.Tech First Year

SoE No. 23FY-101

I SEMESTER

23GE1106 : Engineering Chemistry

Course Outcomes:
Upon successful completion of the course students will be able to 1. **Illustrate** qualitative and quantitative aspects of water for industrial and domestic applications. (L3) 2. **Apply** concepts of electrochemistry for energy storage devices and corrosion. (L3) 3. **Explain** basic principles of spectroscopy and its applications. (L3) 4. **Establish** insight into advanced engineering materials. (L3)

Unit:1	**Water Chemistry** Introduction, Potable water quality parameters. Hardness, Types of hardness. Sterilization. Desalination of water by R.O. Softening of water by Zeolite process and Ion Exchange Process (principle, advantages, and limitations). Numerical based on Hardness and Zeolite process. Boiler trouble (Scale and sludge). Contemporary issues related to the topic	**7 Hours**
Unit:2	**Electrochemistry** Introduction, metallic and electrolytic conductance. Electrode and electrode potential. Nernst Equation, numericals and applications. Faraday's laws and numericals. Industrial applications: Electroplating, Electrolytic refining, Corrosion- Definition, Causes, theories of corrosion- dry, wet and differential aeration. Contemporary issues related to the topic	**7 Hours**
Unit:3	**Energy storage device** Introduction, Characteristics, and general applications. Lithium-ion battery, Glass battery, H_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	**6 Hours**
Unit:4	**Drugs & Polymer chemistry** **Drugs:** Introduction, types of drugs, synthesis of commonly used drug molecules such as aspirin and paracetamol. **Polymer:** Introduction, Classification of polymers, Use and disposal of polymers. Properties of polymers - Solubility, Molecular Weight, Crystallinity, Glass transition temperature. Contemporary issues related to the topic	**6 Hours**

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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	**6 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	**7 Hours**
	Total Lecture Hours	**39 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

I SEMESTER
23GE1107 : Lab. Engineering Chemistry

Course Outcomes:

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

1. **Illustrate** qualitative and quantitative aspects of water for industrial and domestic applications. (L3)
2. **Apply** concepts of electrochemistry for energy storage devices and corrosion. (L3)
3. **Explain** basic principles of spectroscopy and its applications. (L3)
4. **Establish** insight into advanced engineering materials. (L3)

Total 10 experiments are to be performed.

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

SN	Experiments based on
	List of Experiments-Phase I
1	Determination of total hardness of water sample.
2	Determination of alkalinity present in the water sample.
3	Estimation of Fe^{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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(Department of Mathematics & Humanities)

B.Tech First Year

SoE No. 23FY-101

I SEMESTER

23GE1112 : Professional Communication

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

Unit I: Basics of Communication	**(6 Hrs.)**
Process of Communication, Levels of Communication, Flow of Communication, Networks of Communication, Classification of Barriers (Intrapersonal, Interpersonal, Organizational).	
Unit II: English Phonetics	**(7 Hrs.)**
Speech Mechanism, Organs of speech, Consonant and Vowels sounds symbols, word stress rules	
Unit III: Presentation & Interview Skills	**(6 Hrs.)**
Presentation-Nuances of presentation- Kinesics, Proxemics, Chronemics, Vocalics, Modes of Presentation, Interview-Purpose , expectations of employer and preparation for Interview, Types, Types of Questions &Answering Techniques, Telephonic Interviews – preparation and guidelines	
Unit IV: Technical Reports, Memo & E-Mail Etiquettes	**(7 Hrs.)**
Report -Types, Characteristics, prewriting aspects of report and preparing writing of reports Memo- Objectives, Types, Structure and Layout Email-Etiquettes, acronyms.	
Total Lecture	**26 Hours**

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

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

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

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I SEMESTER

23GE1115 : Indian Knowledge System

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

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

I SEMESTER
23CV1101 : Engineering Mechanics

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

Unit I: Resultant of planar force System	**(7 Hrs.)**
Fundamental concepts, system of forces, laws of mechanics, principle of transmissibility of force, Moment of force, Principle of moment, Couple, Resultant of a planar force system, Equivalent force couple system. **(Contemporary Issues related to Topic)**	
Unit II: Equilibrium of planar force System	**(6 Hrs.)**
Free body diagrams, Conditions of equilibrium, types of supports, types of beams, types of loads on beam, Equilibrium of a planar force system **(Contemporary Issues related to Topic)**	
Unit III: Friction and Trusses	**(7 Hrs.)**
Friction: Coulomb's laws of dry friction, plane friction, belt friction. Trusses: Types of trusses, assumptions in analysis of truss, Analysis of truss by method of joint. **(Contemporary Issues related to Topic)**	
Unit IV: Properties of Surfaces	**(6 Hrs.)**
Centroid: Introduction, First Moment of Area, Centroid of composite areas. Moment of Inertia: Introduction, Second Moment of Area, Polar moment of Inertia, Radius of Gyration, Transfer formula for moment of Inertia, Product of Inertia, Moment of Inertia, and product of inertia for composite areas, Principal Moments of Inertia. **(Contemporary Issues related to Topic)**	
Unit V: Virtual Work Method and Kinetics of Particle	**(7 Hrs.)**
Virtual Work Method: Introduction, Principle of virtual work, Application to beam and frame. Kinetics of Particle: Introduction, Newton's law of motion for a Particle, D' Alembert's principle, Translation of particle and connected system. **(Contemporary Issues related to Topic)**	
Unit VI: Work Energy and Impulse Momentum Method	**(6 Hrs.)**
Work Energy Method: Introduction, Work energy equation for translation, Work energy applied to particle motion and connected system. Impulse Momentum Method: Introduction, Linear Impulse momentum, Conservation of linear momentum, coefficient of restitution, elastic impact, Impulse momentum in plane motion. **(Contemporary Issues related to Topic)**	
Total Lecture	**39 Hours**

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

I SEMESTER

23CV1102 : Lab. Engineering Mechanics

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

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

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

I SEMESTER

23IT1103 : Programming for Problem Solving

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

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

			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

I SEMESTER

23IT1104 : Lab. Programming for Problem Solving

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

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

			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.
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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
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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

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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
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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 Information Technology

Nagar Yuwak Shikshan Sanstha's

Yeshwantrao Chavan College of Engineering

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

B.TECH SCHEME OF EXAMINATION 2023

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

(Department of Information Technology)

B. Tech. in Information Technology

SoE No. 23IT-101

SN	Sem	Type	BoS/ Deptt	Sub. Code	Subject	T/P	Contact Hours				Credits	% Weightage			ESE Duration Hours
							L	T	P	Hrs		MSEs*	TA**	ESE	
FIRST SEMESTER (GROUP-A)															
1	1	BS	GE	23GE1101	Calculus and Vector	T	3	0	0	3	3	30	20	50	3
2	1	BS	GE	23GE1106	Engineering Chemistry	T	3	0	0	3	3	30	20	50	3
3	1	BS	GE	23GE1107	**Lab:** Engineering Chemistry	P	0	0	2	2	1		60	40	
4	1	HS/AEC1	GE	23GE1112	Professional Communication	T	2	0	0	2	2	30	20	50	2
5	1	HS/IKS	GE	23GE1115	Indian Knowledge System	T	2	0	0	2	2	30	20	50	2
6	1	BES	CV	23CV1101	Engineering Mechanics	T	3	0	0	3	3	30	20	50	3
7	1	BES	CV	23CV1102	**Lab:** Engineering Mechanics	P	0	0	2	2	1		60	40	
8	1	BES	IT	23IT1103	Programming for Problem Solving	T	2	0	0	2	2	30	20	50	2
9	1	BES	IT	23IT1104	**Lab:** Programming for Problem Solving	P	0	0	2	2	1		60	40	
10	1	VSEC	GE	23GE1117	Get Set Go	…	…	…	…	…	2		60	40	
11	1	CC1	GE		**Liberal Learning Course (LLC1)**	…	…	…	…	…	2		60	40	
					TOTAL FIRST SEM		**15**	**0**	**6**	**21**	**22**				
SECOND SEMESTER (GROUP-A)															
1	2	BS	GE	23GE1203	Differential Equations and Complex Analysis	T	3	0	0	3	3	30	20	50	3
2	2	BS	GE	23GE1210	Applied Physics	T	3	0	0	3	3	30	20	50	3
3	2	BS	GE	23GE1211	**Lab:** Applied Physics	P	0	0	2	2	1		60	40	
4	2	BES	ME	23ME1201	Engineering Graphics	T	1	0	0	1	1	30	20	50	3
5	2	BES	ME	23ME1202	**Lab :** Engineering Graphics	P	0	0	4	4	2		60	40	
6	2	BES	EL	23EL1201	Basic Electrical and Electronics Engineering	T	3	0	0	3	3	30	20	50	3
7	2	BES	CT	23CT1205	**Lab :** Computer WorkShop	P	0	0	2	2	1		60	40	
8	2	PC	IT	23IT1201	Basics of Python Programming	T	3	0	0	3	3	30	20	50	3
9	2	PC	IT	23IT1202	**Lab :** Basics of Python Programming	P	0	0	2	2	1		60	40	
10	2	VSEC	GE	23GE1218	Functional English	…	…	…	…	…	2		60	40	
11	2	CC2	GE		**Liberal Learning Course (LLC2)**	…	…	…	…	…	2		60	40	
					TOTAL SECOND SEM		**13**	**0**	**10**	**23**	**22**				

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

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B.TECH SCHEME OF EXAMINATION 2023

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

(Department of Information Technology)

B. Tech. in Information Technology

SoE No. 23IT-101

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

MANDATORY LEARNING COURSES														
1	2	HS		GE2131	Universal Human Values (UHV)	A	2	0	0	2	0			

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

TA ** = for Theory : TA1-5 marks on Proctored Online Exam, TA2-12 marks on 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	Applicable for AY 2023-24 Onwards
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II SEMESTER
23GE1203: Differential Equations and Complex Analysis

Course Outcomes
The students will be able to
1. Use appropriate Methods to solve first order and higher order differential equations and apply it to find solutions of engineering problems.
2. Use appropriate methods to solve partial differential equations.
3. Determine the various functions of complex numbers.
4. Evaluate the integration of function of complex variables.

Unit I: Differential Equations I	**(7 Hrs.)**
Linear differential equations of first order and first degree, Differential equation reducible to linear form, Exact differential equations (excluding the case of integrating factor) and their applications to various fields. **(Contemporary Issues related to Topic)**	
Unit II: Differential Equations II	**(7 Hrs.)**
Higher order linear differential equations with constant coefficients, Complementary functions and Particular Integral for different cases, Method of variation of parameters, Examples on application to various fields. **(Contemporary Issues related to Topic)**	
Unit III: Differential Equations III	**(6 Hrs.)**
Cauchy's homogeneous linear differential equations, Legendre's linear differential equations, Applications of differential equations to various fields (only up to second order). **(Contemporary Issues related to Topic)**	
Unit IV: Partial Differential Equations	**(6 Hrs.)**
Partial Differential Equations of first order, first degree i.e. Lagrange's form, linear homogeneous equations of higher order with constant coefficient. Application of variable separable method to solve first and second order partial differential equations. **(Contemporary Issues related to Topic)**	
Unit V: Complex Number	**(7 Hrs.)**
Basic concepts of complex numbers and its various forms. Separation of real and imaginary parts, De Moivre's theorem, Application of De Moivre's theorem, Exponential function of complex numbers, Circular function of complex numbers, Hyperbolic function and their inverse, Logarithm of a complex number. **(Contemporary Issues related to Topic)**	
Unit VI: Complex Variables	**(6 Hrs.)**
Analytic function, Cauchy-Riemann conditions, Harmonic functions, Finding Harmonic conjugates, Taylor's and Laurent's Theorem (statement only), Examples on Taylor's and Laurent's Theorem, Evaluation integral by using Residue theorem. **(Contemporary Issues related to Topic)**	
Total Lecture	**39 Hours**

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/

II SEMESTER
23GE1210 : Applied Physics

Course Outcomes :

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

1. Correlate fundamentals of quantum mechanics to solve problems dealing with quantum particles.
2. Justify the characteristics of semiconductor materials in terms of crystal structures, charge carriers and energy bands.
3. Analyze the motion of charged particles in electric and magnetic field and its applications to electron optic devices.
4. Examine the intensity variation of light due to Laser and its application.
5. Illustrate working principles of optical fibers for their use in the field of industry.

Unit I: Quantum Physics	**(6 Hrs.)**
Wave particle duality, Davisson and Germer experiment, Wave packet, Heisenberg's uncertainty principle, thought experiment, Significance, Applications. **(Contemporary Issues related to Topic)**	
Unit II: Introduction to Quantum Computing	**(7 Hrs.)**
Introduction of complex numbers, operators, Eigen values, Eigen functions. Wave function and its probability interpretation, Schrodinger Equation, Particle in infinite and finite potential well, quantum tunneling, Introduction to Bits and Qubits. **(Contemporary Issues related to Topic)**	
Unit III: Band Theory of Solids	**(7 Hrs.)**
Formation of energy bands in solids; Classification of solids, Energy band diagram of Si and Ge, Intrinsic and extrinsic semiconductors, Conductivity, Law of mass action, Hall effect, Direct and Indirect band gap semiconductors. **(Contemporary Issues related to Topic)**	
Unit IV: Electron Ballistics and Devices	**(7 Hrs.)**
Motion of a charged particle in uniform electric and magnetic field, Cross field configuration; Electron refraction, Electron lens. Cathode ray oscilloscope and its application. **(Contemporary Issues related to Topic)**	
Unit V: Lasers	**(7 Hrs.)**
Coherence and its types, Interaction of radiation with matter, Population Inversion, Pumping: methods and schemes, Optical resonant cavity, Ruby laser, He-Ne laser, diode laser, Properties and engineering applications of laser. **(Contemporary Issues related to Topic)**	

Unit VI: Optical Fibres	(6 Hrs.)
Principle, structure and classification, Acceptance angle, Numerical aperture, Losses in optical fibers, Applications as sensors. **(Contemporary Issues related to Topic)**	
Total Lecture	**40 Hours**

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

Reference Books	
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

II SEMESTER

23GE1211 : Lab. Applied Physics

Course Outcomes:
Upon successful completion of the course the students will be able to 1. Correlate fundamentals of quantum mechanics to solve problems dealing with quantum particles. 2. Justify the characteristics of semiconductor materials in terms of crystal structures, charge carriers and energy bands. 3. Analyze the motion of charged particles in electric and magnetic field and its applications to electron optic devices. 4. Examine the intensity variation of light due to Laser and its application. 5. Illustrate working principle of optical fibers for their use in the field of industry.

List of 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.

II SEMESTER

23ME1201 : Engineering Graphics

Course Outcomes :
Upon successful completion of the course the students will be able to
1. Construct orthographic drawing and isometric drawing of a given object
2. Evaluate Projections of various One Dimensional, Two dimensional, Three dimensional objects
3. Develop the lateral surfaces of various solids, their section and intersection**.**
4. Practice the use of software tools used for Two dimensional drawings.

Unit I: Theory of Orthographic Projections:	**(3 Hrs.)**
Introduction, Quadrant system, Theory of orthographic projection, Projection method and principal planes, First and Third angle projections,	
Unit II: Theory of Isometric Projections:	**(2 Hrs.)**
Theory of isometric projection, Method for drawing isometric views, Different problems on isometric projections.	
Unit III: Lines:	**(2 Hrs.)**
Projection of points, Projection of lines, True lengths and inclinations, apparent lengths and inclinations, various positions of lines in different quadrants, Traces of lines, projection of line on auxiliary plane.	
Unit IV: Planes and Solids:	**(4 Hrs.)**
Projection planes: (Polygonal Lamina, Circular Lamina), Projection of Perpendicular planes and oblique planes. Auxiliary views (Auxiliary planes) Projection of Solids :(Inclined to One Plane Only) - Polyhedra (Regular and Irregular Polyhedra), Solids of Revolution	
Unit V: Section of Solids and Development of Surfaces:	**(2 Hrs.)**
Types of Section planes, Sectional top view, True shape. Development of different solids using Radial line and parallel line methods.	
Unit VI: Intersection of Surfaces of solids:	**(2 Hrs.)**
Intersection between similar solids, Intersection between dissimilar solids, Lines and Curves of Intersection.	
Total Lecture	**15 Hours**

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

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

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

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

II SEMESTER

23ME1202 : Lab. Engineering Graphics

Course Outcomes :
Upon successful completion of the course the students will be able to
1. Construct orthographic drawing and isometric drawing of a given object
2. Evaluate Projections of various One Dimensional, Two dimensional, Three dimensional objects
3. Develop the lateral surfaces of various solids, their section and intersection**.**
4. Practice the use of software tools used for Two dimensional drawings.

Practical's to be performed from the list as below

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

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B. Tech SoE and Syllabus 2023

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

(Department of Electrical Engineering)

B.Tech in Electrical Engineering

SoE No. 23EL-101

II SEMESTER

23EL1201 : Basic Electrical and Electronics Engineering

Course Outcomes:

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

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

II SEMESTER
23CT1205: Lab. Object Oriented Programming

Course Outcomes
Upon successful completion of the course the students will be able to
1. Understand the concept of object-oriented programming and modelling
2. Apply the knowledge of object-oriented programming to solve the given problem
1. Analyze the problem to provide the object oriented solution using advanced programming concepts

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

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

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

(Department of Information Technology)

B.Tech in Information Technology

SoE No. 23IT-101

II SEMESTER

23IT1201 : Basics of Python Programming

Course Outcomes :

After completion of the course:

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

Unit I: Introduction	**(9 Hrs.)**

Generationsofcomputer,computerlanguages.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/

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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

23IT1202 : Lab. Basics of Python Programming

Course Outcomes
Upon successful completion of the course the students will be able to 1. Comprehend programming constructs operators, command line Arguments, Strings etc. 2. Design application by using Python for real world problems.

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

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

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

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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.		

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

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