

Title of the Course	Structura	al Materials					_	щи				
Course Code	CEL023	3[T]					_	_ 🛱				
	Part A											
Year	1st	Semester	2nd	Credits	L 2	T 1	P 2	5				
Course Type	Embedo	Embedded theory and lab										
Course Category	Disciplin	Discipline Core										
Pre-Requisite/s	Basics o	Basics of Civil Engineering Co-Requisite/s										
Course Outcomes & Bloom's Level	CO2- To CO3- St CO4- To CO5- To Evaluat	CO1- Students will get knowledge of Basic Structural Materials(BL1-Remember) CO2- To understand the materials use in Civil Engineering industry(BL2-Understand) CO3- Students are able to apply the details of Innovative Textures(BL3-Apply) CO4- To analyse different Admixtures & other adhesives(BL4-Analyze) CO5- To evaluate the behavior of different Structural materials in different purposes(BL5-Evaluate) CO6- To Create adequate type of Construction material (BL6-Create)										
Coures Elements	Entrepre Employa Professi Gender	ional Ethics X X Values X	SDG (Goals)									
			Part B									
Modules		Contents		Pedagogy		Н	ours					

Modules	Title	Indicative-ABCA/PBL/ Experiments/Field work/ Internships	Bloom's Level	Но	urs
1	Compressive Strength of Bricks	Experiments	BL2-Understand	2	
2	Water absorption of Bricks	Experiments	BL2-Understand	2	
3	Initial and Final Setting time of Cement	Experiments	BL3-Apply	2	
4	Efflorescence of Bricks	Experiments	BL2-Understand	2	п
5	Specific Gravity of Aggregate	Experiments	BL3-Apply	2	-
6	Fineness of Cement	Experiments	BL2-Understand	2	
7	Tensile test of TOR Steel	Experiments	BL3-Apply	2	4
8	Soundness of Cement	Experiments	BL3-Apply	2	

Part D(Marks Distribution)

	Theory										
Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation						
100	40	40	20	60							
			Practical								
Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation						
0	0	0	0	0	0						

Part E

Books	Rangwala, Engineering Materials, Charotar Publication
Articles	
References Books	S. K, Duggal, Building Materials, New Age Publication
MOOC Courses	
Videos	

COs	PO1	PO2	PO3	PO4	PO5	P06	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	2	2	1	1	-	2	-	2	2	3	2	2
CO2	3	3	2	2	2	-	1	•	-	-	2	2	3	3	3
СОЗ	2	2	2	3	1	1	-	-	2	-	-	2	2	2	1
CO4	3	2	3	2	2	-	1	-	-	-	2	1	1	2	2
CO5	2	2	2	3	1	1	-	-	2	1	2	3	1	3	3 "_"
CO6	3	2	3	2	2	1	1	-	2	1	3	2	1	1	2
															_ 🗟 🛚





Title of the Course	Essential	sentials of IT											
Course Code	CSL0201	[T]						Щп					
		F	art A										
Year	1st	Semester	2nd	Credits	L	Т	Р	4					
		Compositor	2.119	Crounts	2	0	2	4					
Course Type	Embedde	nbedded theory and lab											
Course Category	Foundati	on core											
Pre-Requisite/s	complete basic und system, S	o understand the contents and successfully omplete this course, a participant must have a asic understanding of Basics of Computer astem, Storage Systems, Operating systems, etworking and Database. Co-Requisite/s											
Course Outcomes & Bloom's Level	compute CO2- Ap (BL2-Un CO3- Ex programs CO4- De system (I CO5- Ev	CO1- Understand the basics of Computer systems like types, I/O devices, storage of computer systems (Knowledge, Understand)(BL1-Remember) CO2- Apply the various networking concepts, topologies and remove deadlocks. (Apply). (BL2-Understand) CO3- Explain various memory management techniques and Analyze the concept of Subprograms and blocks (Analysis)(BL3-Apply) CO4- Design the concept of software, operating system for better utilization of external system (Design)(BL4-Analyze) CO5- Evaluating the various algorithm, its solution and other communication techniques.											
Coures Elements	Entrepre Employa Profession Gender X Human V	Investigation).(BL5-Evaluate) Skill Development × Entrepreneurship × Employability × Professional Ethics × Gender × Human Values × Environment ×											

Modules	Contents	Pedagogy	Hours
1	Computer Basics: Basics of Computer Systems(T1,T2), Evolution of Computers, Computer Generations, Classification of Computers(T1,T3), Computer Applications, Interaction between User and Computer(T7). Hardware Components, Basic Computer Organization, Input and Output Devices(T1,T3), Central Processing Unit(T1), System Bus Architecture, Memory or Storage Unit	White Board, PPT	6 " <u>"</u> "
2	Operating System: Introduction to Operating System, Function of Operating Systems(T1), Working Knowledge of GUI-Based Operating System (T3,T4), Working with latest version of Windows(T3,T4). Various Operating Systems, Evaluation of Operating System(T3,T4,T,7), Virtual Machine, Operating Systems for Mobile, Installation of Operating System(T1,T3,T4), Boot Process.	White Board, PPT	6
3	Computer Networks and World Wide Web: Introduction to Computer Networks (LAN, MAN, WAN, PAN)(T3,T4), Network Topologies, Ethical Issues related to Network Security(T2,T3). Internet and World Wide Web(T7,T8), Internet Evolution(T1), FTP, Electronic Mail, Search Engines(T1), Introduction to HTML, Static and Dynamic Web Pages	White Board, PPT	6
4	Computer Software: Introduction, System Software(T1,T3), Application Software, Firmware(T3), Software Installing and Uninstalling(T3,T4), Software Development Steps, Characteristics of good software(T1,T7), Usability of software, Introduction to Free and Open Source Software(T3,T4), Introduction to Database Management System	White Board, PPT	6
5	Subprograms and Blocks: Problem Solving: Flow Charts(T3,T4), Tracing Flow Chart, Algorithms. Fundamentals of subprograms(T1,T3,T4), Scope of life time of variables, static and dynamic scope(T7), design issues of subprograms and operations, parameter passing methods(T3,T4), overloaded sub-programs, generic sub-programs(T1,T3), design issues for functions user defined overloaded operators	White Board, PPT	6

Modules	Title	Indicative-ABCA/PBL/ Experiments/Field work/ Internships	Bloom's Level	Но	urs
1	Explain the Installation process of Operating system and its Memory Management.	Experiments	BL2-Understand	10	
2-3	Design of a Web Page which describe your Biodata.	PBL	BL3-Apply	10	
4-5	Describe Software development life cycle (SDLC) with all components.	PBL	BL5-Evaluate	10	нДи
		-		-	

Part D(Marks Distribution)

			Theory		
Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation
100	40	60	18	40	0
			Practical		
Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation
100	0	40	20	60	0

Part E

Books	P. K. Sinha, Priti Sinha; Computer Fundamentals; BPB Publication. V. Rajaraman; Fundamentals of Computers; Prentice Hall of India Publication. G. G. Wilkinson; Fundamentals of Information Technology; Wiley-Blackwell Publishing. Yashwant P. Kanetkar; Let Us C; BPB Publication.
Articles	
References Books	E. Balagurusamy; Programming in ANSI C; Tata McGraw-Hill Publishing. Ron Mansfield; Working in MS-Office; Tata McGraw Hill Publishing.
MOOC Courses	
Videos	

COs	PO1	PO2	PO3	PO4	PO5	P06	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	-	-	-	-	-	-	-	-	-	-	-	1	1	2
CO2	1	2	-	-	-	-	i	•	-	-	-	-	3	3	2
CO3	-	-	1	-	-	-	-	-	-	-	-	-	3	2	2
CO4	-	-	-	2	-	-	-	-	-	-	-	-	2	2	2
CO5	•	-	-	-	-	-	-	•	-	-	-	ı	2	2	2 ""
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-		-
															<u> </u>





Title of the Course	Principle	s of Electrical Engine	ering									
Course Code	EEL020	1[T]						щи				
			Part A				_	=				
Year	1st	Semester	2nd	Credits	L	Т	Р	4				
. Tou.	Comester		2114	Crounts	3	1	2	б				
Course Type	Embedo	led theory and lab										
Course Category	Foundat	oundation core										
Pre-Requisite/s		Co-Requisite/s										
Course Outcomes & Bloom's Level	circuits. CO2- Pr phase A CO3- Pr phase A CO4- Id requiren applicati	CO1- Predict the behavior of any electrical circuits, Formulate and solve complex DC circuits. (BL1-Remember) CO2- Predict the behavior of any electrical circuits, Formulate and solve complex single chase AC circuits.(BL2-Understand) CO3- Predict the behavior of any electrical circuits, Formulate and solve complex Three chase AC circuits.(BL3-Apply) CO4- Identify the type of electrical machine used for that particular application. Realize the equirement of transformers in transmission and distribution of electric power and other applications.(BL4-Analyze) CO5- Predict the behavior of various measuring instruments in electrical engineering(BL5-Evaluate)										
Coures Elements	Entrepre Employa Professi Gender	onal Ethics X X Values X	SDG (Goals)									

Modules	Contents	Pedagogy	Hours
1	D.C. Circuit: - Combination of resistance in series & parallel, their solution ,Star –Delta combination, KCL and KVL. Voltage and current sources, dependent and independent sources, source conversion, DC circuit's analysis using mesh & nodal method, Superposition theorem.	white board, ppt	10
2	Single Phase Circuit:- Generation of Alternating Voltage & Currents, Their Equation, Definition, R.M.S and Average values, Vector representation of alternating quantities, Phasor relations between voltage & current in each of resistance, inductance and capacitance, A.C series circuit power & power factor, Resonance in series circuit.	white board, ppt	12
3	Electrical Measuring Instruments:- Introduction and classification of Electrical Instruments, Essentials of indicating instruments, Moving iron instruments, Types ofmoving iron instruments, Advantages and Disadvantages of moving iron instruments, Applications of moving iron equipment, Permanente Magnet type moving coil instruments, extension of range of ammeters and voltmeter, Dynamometer type instruments, Dynamometer type wattmeters	white board, ppt	7
4	Poly-phase Circuits:-Generation of Poly- phase Voltages, 3phase system, Phase sequence, Inter connection of 3 phases, Voltage, Currents & Power relationships in balanced 3 phase circuits, Power Measurement in single phase & 3 phase circuits	white board, ppt	8
5	Transformer:- Construction & working principle of transformer, Emf equation, No load & Full load phasor diagram, Equivalent circuit, Losses & Efficiency, Voltage Regulation, Open circuit & Short Circuit Test on the Transformer	white board, ppt	10

Part D(Marks Distribution)

Total M Marks	linimum Passing Marks	External	Min. External	Internal	
	a.r.c	Evaluation	Internal Evaluation	Min. Internal Evaluation	
100 40)	40	12	60	28
			Practical	•	
Total M Marks	linimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation
0 0		0	0	0	0

Part E

Books	Vincent Del Toro, Electrical Engineering Fundamentals, PHI Learning, II Edition
Articles	
References Books	1. Basic Electrical Engg, Sunil S Gaikwad, Dream Tech/ Willey Publication.
MOOC Courses	
Videos	

COs	PO1	PO2	PO3	PO4	PO5	P06	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	1	2	1	1	-	-	-	-	-	-	-	1	1	2
CO2	1	1	2	1	1	3	-	1	-	-	1	ı	2	3	1
СОЗ	2	1	2	1	2	-	2	-	2	2	-	-	1	2	2
CO4	1	3	1	2	3	-	-	-	-	-	-	-	3	1	3
CO5	1	1	1	2	1	-	1	-	-	-	ı	ı	2	2	1
CO6	1	1	1	1	1	-	-	-	-	-	-	3	1	3	2



Title of the Course	Statisti	cs for Engineers										
Course Code	MAL02	:03[T]							n n n			
			Part A									
Year	1st	Semester	2nd	Credits	L	Т	Р	С	4			
					2	1	2	5				
Course Type	Embed	Embedded theory and lab										
Course Category	Discipl	ine Core		I	T							
Pre-Requisite/s	include calculu probat concep Addition tools li	cs for engineers to basic mathemati is), understanding oility theory, and fa ots in engineering onally, knowledge ke MATLAB or Py is is beneficial.	includin englicomp experior Additional englicory different for unstatis:	tics for eductions for eductions for eductions for eductions for eductions in the educations in the education in the educati	g mecha grammi method concurre course ar algeb juations ble backgr ding ad acepts a	cours anics ing, a ds. ent s ora an round vand	ses s, and nd ld					
Course Outcomes & Bloom's Level	of desc CO2- Interpr continu CO3- test, go CO4- differe CO5-	CO1- To remember basic concept of about the design data collection plans and basic tools of descriptive statistics.(BL1-Remember) CO2- To understand the identify relationship between two variables using scatter plot and Interpret a simple correlation. To understand the Knowledge about the different types of continuous distribution with their properties and applications.(BL2-Understand) CO3- To apply the test and make hypothesis by Student's t-test, F-test, chi-square test, Z test, goodness of fit.(BL3-Apply) CO4- To analyze the concept of sampling distribution of a statistic and its properties, difference between parameter and statistic.(BL4-Analyze) CO5- To evaluate and describe the properties of unbiasedness. Also identifying and provide										
Coures Elements	Entrep Emplo Profes Gende Humar	Skill Development ✓ Entrepreneurship × Employability × Professional Ethics × Gender × Human Values × Environment ×										

Modules	Contents	Pedagogy	Hours
1	tInroduction to statistics and data analysis Measures of central tendency, Measures of variability, [Moments, Skewness, Kurtosis (Concepts only)]. Correlation and Regression, Partial and Multiple correlations, Multiple regressions.	Audio/Video clips, group discussion, lecture with ppt, quiz	10
2	Introduction, random variables, Probability mass Function, distribution and density functions, joint Probability distribution and joint density functions, Marginal, conditional distribution and density functions, Mathematical expectation, and its properties Covariance, moment generating function, characteristic function.	Audio/Video clips, group discussion, lecture with ppt, Review Analysis	10
3	Binomial and Poisson distributions, Normal distribution, Gamma distribution, Exponential distribution.	Audio/Video clips, group discussion, lecture with ppt, classroom presentations, Analysis	6
4	Testing of hypothesis, Introduction, Types of errors, critical region, procedure of testing hypothesis, Large sample tests, Z test for Single Proportion, Difference of Proportion, mean and difference of means.	Audio/Video clips, group discussion, lecture with ppt, quiz	8
5	Small sample tests, Student's t-test, F-test, chi-square test, goodness of fit, independence of attributes, Design of Experiments, Analysis of variance, one and two way classifications, CRD, RBD, LSD.	Audio/Video clips, group discussion, lecture with ppt, quiz	10

Modules	Title	Indicative-ABCA/PBL/ Experiments/Field work/ Internships	Bloom's Level	Hours
1	Introduction: Understanding Data types; importing/exporting data.	Experiments	BL2-Understand	2
2	Computing Summary Statistics/plotting and visualizing data using Tabulation and Graphical Representations.	Experiments	BL3-Apply	2
3	Applying correlation and simple linear regression model to real dataset; Computing and interpreting the coefficient of determination	Experiments	BL3-Apply	2
4	Applying multiple linear regression model to real data set; computing and interpreting the multiple coefficient of determination	Experiments	BL3-Apply	2
5	Fitting the following probability distributions: Binomial distribution,	Experiments	BL3-Apply	2
6	Normal distribution Poisson distribution	Experiments	BL3-Apply	2
7	Testing of hypothesis for One sample mean and proportion from real, time problems	Experiments	BL3-Apply	2
8	Testing of hypothesis for Two sample mean and proportion from real, time problems	Experiments	BL3-Apply	2

Part D(Marks Distribution)

	Theory										
Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation						
100	50	40	12	60	28						
			Practical								
Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation						
100	0	40	20	60	30						

Part E

Books	M. Ray, H.S. Sharma, Sanjay Chaudhary Mathematical Statistics Ram Prasad & Sons J.N. Sharma, J.K. Goyal Mathematical Statistics Krishna Prakash and Media (P) Ltd	
Articles		
References Books	E.Kreyszig Advanced Engineering Mathematics 8 th Ed., John Wiley and Sons, 1999 B.V. Ramana Higher Engineering Mathematics Tata McGraw Hill B. S. Grewal Higher Engineering Mathematics Khanna Publishers	
MOOC Courses	https://onlinecourses.nptel.ac.in/noc24_ec03/preview	
Videos	https://onlinecourses.nptel.ac.in/noc24_ec03/preview	H_H

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	P06	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	F 🎜
CO1	2	-	-	-	2	2	-	1	-	-	-	-	1	ı	1
CO2	3	3	1	3	3	2	-	1	-	1	-	-	2	ı	2
CO3	3	2	-	1	3	-	-	-	-	-	-	-	1	3	2
CO4	3	2	-	2	-	-	-	-	-	-	-	-	-	3	1
CO5	2	2	-	1	-	-	-	-	-	-	-	-	-	2	1
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Title of the Course	Enviror	mental Pollution a	and global issue	es							
Course Code	MCL02	01[T]							H_H		
	-		Part A						Ē		
Year	1st	Semester	2nd	Credits	L	Т	Р	С	4		
rear	130	Cemester	ZIIG	ordates	2	1	0	3			
Course Type	Theory	heory only									
Course Category	Founda	oundation core									
Pre-Requisite/s	biodive energy	Basic knowledge of natural resources, biodiversity, ecological succession, energy flow, environmental issues and problems. Co-Requisite/s Co-Requisite/s A detaile of the co-environmental challenge these prochallenges						f s utior			
Course Outcomes & Bloom's Level	enviror CO2- (multidis CO3- (analysi CO4- (System enviror implem CO5- (CO1- CO1. Develop environmental scientists and engineers and sensitize them towards environmental issues. (BL2-Understand) CO2- CO2. To acquire analytical skills in assessing environmental impacts through a multidisciplinary approach (BL3-Apply) CO3- CO3. Ability to distinguish between various methods of various pollution analysis (BL4-Analyze) CO4- CO4. Acquire expertise and skills needed for the Environmental Management systems and techniques of monitoring, Environment audit, Environmental Impact Analysis, environment instrumentation and control systems and for the projects development, implementation, and maintenance. (BL5-Evaluate) CO5- CO5. Students acquire skills for to communicate, prepare, plan and implement the									
Coures Elements	Entrep Employ Profess Gende Humar	skill Development × Intrepreneurship × Imployability × Intrepreneurshic × Intrepreneurship × Intrepreneursh									

Modules	Contents	Pedagogy	Н	ours
Unit – 1 (Environment, Ecosystem and Environmental Education)	Environment – Definition and its segments, (Lithosphere, Hydrosphere, Atmosphere and Biosphere), Multidisciplinary nature of Environmental Science, Ecology and Ecosystem: Basic concepts, functions of ecosystem, Energy Flow, Food chain, food web, Ecological Pyramids, Ecological Successions. Environmental Education-Definition, scope, importance, Need for Public Awareness, Environmental Ethics. Environmental Impact Assessment: Screening, Scoping, Base line Analysis, Impact Mitigation, Documentation, Review, Public hearing, Post Project Monitoring.	Lecture with ppt., Diagrams, Flowchart depiction on whiteboard during online/offline lectures, Audio/Video clips, discussion (questions & answers section)	8	" <u>"</u> "
Unit – 2 (Natural Resources Management)	Natural Resources – Classification, Water Resources (availability, quality, water budget), Mineral Resources (distribution, availability and future perspectives), and Forest Resources. Energy Resources-Classification and alternatives of conventional energy resources- Solar, working of solar photovoltaic cells, Geothermal, Wind energy, Nuclear Energy, Biomass and Bio-gas	Lecture with ppt., Diagrams, Flowchart depiction on whiteboard during online/offline lectures, Audio/Video clips, Group discussion.	8	
Unit – 3 (Water, Soil & Noise Pollution)	Water pollution – sources & effects, characteristics and treatment of waste water, engineered systems for water purification: Aeration, solid separation, settling operations, filtration and disinfection. Soil formation of soil, elementary and mineral composition, types of soil in India, soil pollution, effects and abatements. Noise Hazards: Continuous and impulse noise, Effect of noise on man, Measurement and evaluation of Noise, noise isolation and absorption techniques, silencers, practical aspects of noise.	Lecture with ppt., Diagrams, Flowchart depiction on whiteboard during online/offline lectures, Audio/Video clips, Group discussion.	8	
Unit –4 (Atmospheric chemistry and Air Pollution)	Classification, sources and toxic effects of air pollutants, dispersal of air pollutants, engineered systems for air purification: Atmospheric cleansing process, approaches to contamination control. Air pollutants with emphasis on reactive intermediates in atmosphere like hydroxyl radical, ozone and nitrate radical, types of hydrocarbon in the troposphere, reaction of organic compounds in the atmosphere.(Green house gas effect, Global warming, Climate change).	Lecture with ppt., Diagrams, Flowchart depiction on whiteboard during online/offline lectures,Audio/Video clips, Group discussion.	8	

Unit – 5 (Waste Management)	Solid waste: Generation and waste characterization. Collection, storage and transport. Waste disposal, waste processing techniques, reduction, reuse and recycling, resource recovery and utilization. Physical and chemical treatment methods and composting. Hazardous waste management and treatment.	Lecture with ppt., Diagrams, Flowchart depiction on whiteboard during online/offline lectures, Audio/Video clips, Group discussion. Field visits. Industrial Visit (MSW/BMW/STP/ETP)	8
--------------------------------	--	--	---

Part D(Marks Distribution)

	Theory											
Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Interna Evaluation							
100		60	30	40	20	4						
			Practical									
Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Interna Evaluation	I						
	0											

Part E

Books	Environmental Science by B. S. Chauhan; Firewall Media, 2008 • Environmental Science by Cuningham and Cuningham; McGraw-Hill Education; 13th edition (16 February 2014) • Environmental Engineering by S. K. Dhameja; S. K. Kataria & Sons, 2009 • Environmental Science by Richard T Wright; Benjamin-Cummings Pub Co.
Articles	
References Books	Environmental Engineering by Howards S Peavy, Donald R Rowe, T. George • Environmental Science & Engineering by Gilbert M. Master • Environmental Chemistry by Stanley
MOOC Courses	
Videos	

COs	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	-	-	-	2	2	1	-	-	2	-	-	1	-	1
CO2	1	2	1	2	2	2	-	-	-	2	-	-	1	-	3
CO3	2	1	1	-	1	-	-	-	-	-	-	-	3	2	3
CO4	2	2	-	2	1	-	-	-	-	-	-	-	2	3	3
CO5	2	2	-	2	1	-	-	-	-	-	-	-	2	2	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Title of the Course	Enginee	Engineering Graphics									
Course Code	MEL020	1EL0202[T]									
Part A											
Year 1st Semester 2nd Credits											
I Gai	130	Jemester	Ziiu	Oreuits	2	1	1	4			
Course Type	Embedo	Embedded theory and lab									
Course Category	Disciplin	ne Core									
Pre-Requisite/s		Basic knowledge of geometrical construction, sketching, imagination etc. Co-Requisite/s									
Course Outcomes & Bloom's Level	applicat CO2- To (BL2-U) CO3- To dataset. CO4- To Analyzo CO5- To	ions.(BL1-Remember understand the base inderstand) or implement the differ (BL3-Apply) or analyze the drawinge)	er) ic concept of enginer rent engineering gr g performance of e	raphics, geometrical coneering graphics through raphics concepts over a ngineering graphics teatengineering graphics teatengineering graphics teatengineering	h real approp chniqu	-life e oriate ues. (B	xampl drawii 8L4-	es.			
Coures Elements	Skill Development ✓ Entrepreneurship ✓ Employability ✓ Professional Ethics × Gender × Human Values × Environment × SDG (Goals) SDG9(Industry Innovation and Infrastructure)										

Part B

Modules	Contents	Pedagogy	Hours
Unit-1	1. Drafting tools, 2. Principles of Graphics, 3. Geometrical constructions 4. Scales: Plain, diagonal, 5. Curves used in engineering practice: such as ellipse, parabola, hyperbola by different methods. Cycloidal curves, Involutes and Spirals.	Whiteboard, PPT	8
Unit-2	1. Types of projection, Orthographic projections, First angle and third angle projection. 2. Projections of points in different quadrants. Projections of lines, True inclination and true length of straight line, Traces.	Whiteboard, PPT	8
Unit-3	Projections of planes: Perpendicular plane, oblique plane and Auxiliary plane, projection of planes with inclined to one or both the reference planes and traces of planes.	Whiteboard, PPT	8
Unit-4	Projection of solids: Polyhedron and solids of revolution, projection of solids with inclined to one or both the reference planes. Introduction to Section of solids and Development of surfaces.	Whiteboard, PPT	8
Unit-5	1. Isometric projection: Isometric scale, isometric projections from orthographic drawing. 2. Computer Aided Drafting (CAD): Introduction, benefit, software's, basic commands of drafting entities like line, circle, polygon, polyhedron, cylinders; transformations and editing commands like move, rotate, mirror, array; solution of projection problems on CAD.	Whiteboard, PPT	8

Modules	Title	Indicative-ABCA/PBL/ Experiments/Field work/ Internships	Bloom's Level	Hours	
Experiment -1	Drawing sheet of plane scale.	Experiments	BL3-Apply	2	
Experiment -2	Drawing sheet of diagonal scale.	PBL	BL3-Apply	2	
Experiment -3	Drawing sheet of ellipse.	PBL	BL3-Apply	2	
Experiment -4	Drawing sheet parabola and hyperbola		BL3-Apply	2	- ₽
Experiment -5	Drawing sheet of cycloidal curves.		BL3-Apply	2	
Experiment -6	Drawing sheet of orthographic projection		BL3-Apply	2	
Experiment -7	Drawing sheet of projection of line		BL3-Apply	2	
Experiment -8	Drawing sheet of projection of plane.		BL2- Understand	2	

Part D(Marks Distribution)

	Theory												
Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation								
100	40	40	12	60									
	Practical												
Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation								
100	50	40	20	60									

Part E

Books	N.D.Bhatt Elementary of Enginnering Drawing Charotar Publication P.S. Gill Engineering Drawing Kataria Publication Agrawal and Agrawal Engineering Drawing TMH
Articles	
References Books	Venu Gopal K Engineering Drawing New age K.L. Narayana& P. Kannaiah Engineering Drawing SCITECH Pub.
MOOC Courses	https://nptel.ac.in/courses/112103019
Videos	"L"

Course Articulation Matrix

							11307	liodia	tion iv	idtiix					
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	F 🔻
CO1	2	-	-	-	2	2	-	-	3	3	-	-	3	-	2
CO2	2	-	2	2	1	2	-	-	3	3	-	-	3	2	2
СОЗ	-	-	2	1	1	-	-	-	2	1	-	-	3	2	2
CO4	-	1	2	3	1	-	-	-	-	-	-	-	3	-	2
CO5	-	1	1	2	1	-	-	-	_	-	-	-	3	-	2
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





