D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY

Kasaba Bawada, Kolhapur

(Approved by AICTE, New Delhi, Govt. of Maharashtra and Affiliated to Shivaji University Kolhapur)

(An Autonomous Institute)

Accredited by NAAC with 'A' Grade

Accredited by NBA

Structure and Curriculum

(As Per National Education Policy 2020)

For

First Year B.Tech.

in

Department of Civil Engineering

w. e. f. A.Y.: 2024-25

HEAD
Dept. of First Year Engg.
D. Y. Patil College of Engg. & Tech.
Kasaba Bawada, Kolhapur

PRINCIPAL
D. Y. PATIL College of Engineering
And Technology
Kasaba Bawada, Kolhapur.
(An Autonomous Institute)

D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY

(An Autonomous Institute)

Department of Civil Engineering

F. Y. B. Tech. Structure

Scheme of Teaching and Evaluation w. e. f. A. Y. 2024-2025

(As Per National Education Policy 2020)

Semester-I (Chemistry Cycle)

Sr. No	Course Code	Course Type	Name of the Course	Teaching Scheme Per Week			Credits	Total Marks	Evaluation Scheme			
				L	T	P			Type	Max. Marks	Minimum Marks For Passing	
1	241CEBSCL101	BSC	Applied Mathematics-I	03	--	--	03	100	ISE	20	20	40
									MSE	30		
									ESE	50	20	
2	241CEBSCL102	BSC	Applied Chemistry for Civil Engineering	03	--	--	03	100	ISE	20	20	40
									MSE	30		
									ESE	50	20	
3	241CEESCL101	ESC	Generative AI	03	--	--	03	100	ISE	20	20	40
									MSE	30		
									ESE	50	20	
4	241CEAECL 101	AEC	Professional Communication	01	--	--	01	25	ISE	25	10	10
5	241CEVSECL101	VSEC	Computer Workshop	01	--	--	01	25	ISE	25	10	10
6	241CEPCCL101	PCC	Basic Civil Engineering	02	--	--	02	50	ISE	20	20	20
									MSE	30		
7	241CEBSCT101	BSC	Applied Mathematics-I Tutorial	--	01	--	01	25	ISE	25	10	10
8	241CEBSCP102	BSC	Applied Chemistry for Civil Engineering	--	--	02	01	25	ISE	25	10	10
9	241CEESCP101	ESC	Generative AI Laboratory	--	--	02	01	25	ISE	25	10	10
10	241CEAECP 101	AEC	Professional Communication Laboratory	--	--	02	01	25	ISE	25	10	10
11	241CEVSECP101	VSEC	Computer Workshop Laboratory	--	--	02	01	25	ISE	25	10	10
12	241CECCAP102	CCA	Liberal Learning	--	--	04	02	50	ISE	50	20	20
Total				**13**	**01**	**12**	**20**	**575**	--	--	--	--
Non Credits Mandatory Courses												
1	241CEMCL101	MC	Finishing School Training I	03	--	--	--	50	ISE	50	20	Grade
2	241CEMCP102	MC	Social/ Rural Internship	--	--	--	--	50	ISE	50	20	Grade

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F. Y. B. Tech. Structure

Scheme of Teaching and Evaluation w. e. f. A. Y. 2024-2025

(As Per National Education Policy 2020)

Semester-II (Chemistry Cycle)

Sr. No	Course Code	Course Type	Name of the Course	Teaching Scheme Per Week			Credits	Total Marks	Evaluation Scheme			
				L	T	P			Type	Max. Marks	Minimum Marks For Passing	
Students Induction Program As Per AICTE Guidelines												
1	241CEBSCL103	BSC	Applied Mathematics-II	03	--	--	03	100	ISE MSE ESE	20 30 50	20 20	40
2	241CEBSCL104	BSC	Physics for Civil Engineering	03	--	--	03	100	ISE MSE ESE	20 30 50	20 20	40
3	241CEESCL102	ESC	Computer Programming and Problem Solving	03	--	--	03	100	ISE MSE ESE	20 30 50	20 20	40
4	241CEESCL103	ESC	Civil Engineering Drawing	03	--	--	03	100	ISE MSE ESE	20 30 50	20 20	40
5	241CEVSECL101	VSEC	Design Thinking Through Innovation	01	--	--	01	25	ISE	25	10	10
6	241CEIKSL 101	IKS	Historical Places in and Around Kolhapur District	02	--	--	02	50	ISE MSE	20 30	20 	20
7	241CEBSCT103	BSC	Applied Mathematics-II Tutorial	--	01	--	01	25	ISE	25	10	10
8	241CEBSCP104	BSC	Physics for Civil Engineering Laboratory	--	--	02	01	25	ISE	25	10	10
9	241CEESCP102	ESC	Computer Programming and Problem Solving Laboratory	--	--	02	01	25	ISE	25	10	10
10	241CEESCL103	ESC	Civil Engineering Drawing Laboratory	--	--	02	01	25	ISE	25	10	10
11	241CEVSECP102	VSEC	Design Thinking Through Innovation Laboratory	--	--	02	01	25	ISE	25	10	10
12	241CECCAP101	CCA	Liberal Learning	--	--	04	02	50	ISE	50	20	20
			Total	**15**	**01**	**12**	**22**	**650**	--	--	--	--
Non-Credits Mandatory Courses												
1	241CEMCL103	MC	Finishing School Training II	03	--	--	--	50	ISE	50	20	Grade
2	241CEMCP104	MC	Capstone Project	--	--	--	--	50	ISE	50	20	Grade

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Course Title: Applied Mathematics-I	
Course Code: 241CEBSCL101	**Semester:** I
Teaching Scheme: L-T-P : 03-00-00	**Credits:** 03
Evaluation Scheme ISE-I/MSE/ISE-II: 10/30/10	**ESE Marks:** 50

Prior Knowledge of:	Matrices, Derivatives, Integrations.

Course Objectives:

1.	To teach mathematical methodology.
2.	To develop mathematical skills and enhance logical thinking power of students.
3.	To provide students with skills in civil engineering mathematics.
4.	To imbibe graduates with mathematical knowledge, computational skills and the ability to deploy these skills effectively in solution of engineering problems.

Curriculum Details:

Course Contents	Duration
Unit 1: Linear Algebra –I • Introduction to matrices, types of matrices • Rank of matrix by normal form and echelon form • Solution of simultaneous linear Non-homogenous equations • Solution of simultaneous linear homogenous equations	**07Hrs**
Unit 2: Linear Algebra –II • Definition of linear combination of vectors • Dependence and independence of vectors • Eigen values and its properties • Eigen vectors and its properties • Cayley-Hamilton theorem	**07 Hrs**

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Course Contents	Duration
Unit 3: Numerical Solutions of Linear Equations • Introduction • Gauss–Elimination method • Gauss –Jordan method • Gauss –Seidel method • Jacobi's iterative method	**07 Hrs**
Unit 4: Differential Calculus • Introduction • Partial derivatives • Total derivatives • Euler's theorem on homogeneous functions • Jacobian and its properties	**07 Hrs**
Unit 5: Frequency distribution and measure of central Tendency • Frequency distribution, continuous frequency distribution • Graphical representation of a frequency distribution- histogram, frequency polygon • Measure of central tendency- arithmetic mean, median and mode • Range, quartile deviation • Mean deviation, standard deviation	**07 Hrs**
Unit 6: Statistics • Correlation and linear regression analysis– Illustrations • Curve fitting by method of least squares:	**07 Hrs**

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Course Contents	Duration
• Fitting of straight line • Fitting of second degree parabolic curves	

Course Outcomes (CO): After successful completion of the course, students will be able to

CO	Statements
101.1	**Reduce** matrices to echelon form and **Apply** the concept of rank of matrices to solve system of linear equations
101.2	**Identify** Eigen values & **make use of** it for finding Eigen vectors
101.3	**Solve** linear equations by numerical methods
101.4	**Apply** the knowledge of partial differentiation
101.5	**Apply** the knowledge to study the data given with respect to dispersion and measure of central tendency
101.6	**Apply** the acquired knowledge of statistics to solve problems in engineering applications

Course Articulation Matrix: Mapping of Course Outcomes (CO) with Program Outcomes (PO)

PO / CO	BTL	1	2	3	4	5	6	7	8	9	10	11	12
101.1	2, 3	3	2	--	--	1	---	--	--	--	--	--	1
101.2	2, 3	3	2	--	--	1	--	--	--	--	--	--	1
101.3	3	3	2	--	--	1	--	--	--	--	--	--	1
101.4	3	2	2	--	--	--	--	--	--	--	--	--	1
101.5	3	2	2	--	--	--	--	--	--	--	--	--	1
101.6	3	2	2	--	--	1	--	--	--	--	--	--	1

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Text Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Higher engineering Mathematics	36th	B. S. Grewal	Khanna publishers	2001
2	A Text Book of Applied Mathematics	7th	P. N. Wartikar, J. N. Wartikar	Vidyarthi Griha Prakashan, Pune	2006
3	Advanced Engineering Mathematics	1st	H. K. Dass	S. Chand Publications, New Delhi	2011
4	Advanced Engineering Mathematics	7th	Peter V.O'Neil	Cengage learning	2012

Reference Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Advanced Engineering Mathematics	5th	Erwin Kreyszig	India Pvt, Ltd.	2014
2	Higher Engineering Mathematics	6th	B. V. Ramana	Tata Mc Graw Hill Publication	2010
3	Numerical Methods for Scientific and Engineering Computation	5th	M. K. Jain	New Age International Pvt. Ltd New Delhi	2007
4	Calculus	8th	James Stewart	Cengage Learning	2016

Useful Link /Web Resources:

1. DELNET- http://www.delnet.in
2. NDL-http://ndl.iitkgp.ac.in
3. N-LIST- http://www.nlist.inflib.ac.in
4. https://www.youtube.com/results?search_query=Dr+Navneet+Sangle

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Course Title: Applied Mathematics-I Tutorial	
Course Code: 241CEBSCT101	**Semester:** I
Teaching Scheme: L-T-P: 00-01-00	**Credits:** 01
Evaluation Scheme ISE: 25	**ESE Marks:** 00

Prior Knowledge of:	Matrices, Derivatives, Integrations.

Course Objectives:

1.	To teach mathematical methodology.
2.	To develop mathematical skills and enhance logical thinking power of students.
3.	To provide students with skills in applying mathematical techniques to solve civil engineering problems.
4.	To imbibe graduates with mathematical knowledge, computational skills and the ability to deploy these skills effectively in solution of engineering problems.

Tut. No	Title of Tutorial	Duration
01	**Linear Algebra –I:** Rank of Matrix, Solutions of Non-homogeneous simultaneous linear equations	01 Hr
02	**Linear Algebra –I:** Solutions of simultaneous linear homogeneous equations, Application	01 Hr
03	**Linear Algebra –II:** Dependence and Independence of vectors	01 Hr
04	**Linear Algebra –II:** Eigen values and Eigen vectors of Matrix, Cayley-Hamilton Theorem	01 Hr
05	Linear Algebra using SCILAB/MATLAB	01 Hr
06	**Numerical Solutions of Linear Equations:** Gauss-Elimination method, Gauss-Jordan method	01 Hr
07	**Numerical Solutions of Linear Equations:** Gauss-Seidel method, Jacobi's iterative method	01 Hr
08	**Differential Calculus:** Euler's theorem on homogeneous functions	01 Hr

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Tut. No	Title of Tutorial	Duration
09	**Differential Calculus:** Partial derivatives, Jacobian and its properties	01 Hr
10	**Frequency distribution and measure of central Tendency:** Mean deviation, Standard deviation	01 Hr
11	**Statistics:** Correlation, linear regression analysis and curve fitting	01 Hr
12	Curve Fitting using SCILAB/MATLAB	01 Hr

List of Tutorials:

Course Outcomes (COs): After successful completion of the course, students will be able to:

CO	Statements
101.1	**Reduce** matrices to echelon form and apply the concept of rank of matrices to solve system of linear equations
101.2	**Identify** Eigen values & make use of it for finding Eigen vectors
101.3	**Solve** linear equations by numerical methods
101.4	**Apply** the knowledge of partial differentiation
101.5	**Apply** the knowledge to study the data given with respect to dispersion and measure of central tendency
101.6	**Apply** the acquired knowledge of statistics to solve problems in engineering applications

Course Articulation Matrix: Mapping of Course Outcomes (CO) with Program Outcomes (PO)

PO / CO	BTL	1	2	3	4	5	6	7	8	9	10	11	12
101.1	2, 3	3	2	--	--	1	---	--	--	--	--	--	1
101.2	2, 3	3	2	--	--	1	--	--	--	--	--	--	1
101.3	3	3	2	--	--	1	--	--	--	--	--	--	1
101.4	3	2	2	--	--	--	--	--	--	--	--	--	1

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101.5	3	2	2	--	--	--	--	--	--	--	--	--	1
101.6	3	2	2	--	--	1	--	--	--	--	--	--	1

Text Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Higher engineering Mathematics	36th	B. S. Grewal	Khanna publishers	2001
2	A Text Book of Applied Mathematics	7th	P. N. Wartikar, J. N. Wartikar	Vidyarthi Griha Prakashan, Pune	2006
3	Advanced Engineering Mathematics	1st	H. K. Dass	S. Chand Publications, New Delhi	2011
4	Advanced Engineering Mathematics	7th	Peter V.O'Neil	Cengage learning	2012

Reference Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
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2	Higher Engineering Mathematics	6th	B. V. Ramana	Tata M/c Graw Hill Publication	2010
3	Numerical Methods for Scientific and Engineering Computation	5th	M. K. Jain	New Age International Pvt. Ltd New Delhi	2007

Useful Link /Web Resources:

1. DELNET- http://www.delnet.in
2. NDL-http://ndl.iitkgp.ac.in
3. N-LIST- http://www.nlist.inflib.ac.in
4. https://www.youtube.com/results?search_query=Dr+Navneet+Sangle

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Course Title: Applied Chemistry for Civil Engineering	
Course Code: 241CEBSCL102	**Semester:** I
Teaching Scheme: L-T-P : 03-00-00	**Credits:** 03
Evaluation Scheme ISE-I/MSE/ISE-II: 10/30/10	**ESE Marks:** 50

Prior Knowledge of:	Water quality parameter, Metallic corrosion and its prevention, ceramic and metallic materials in Engineering field, Polymer and nanomaterials, Green chemistry principles and instruments used in analytical techniques

Course Objectives:

1.	To study the different water-based concepts and its importance.
2.	To explain corrosion mechanism, methods of corrosion prevention, metallic materials and ceramic materials.
3.	To explain properties, characterization and uses of different polymers and Nanomaterials.
4.	To explain principles of green chemistry and solve problems of pollution during construction and to impart the basic concepts of instrumental techniques

Curriculum Details:

Course Contents	Duration
Unit 1: Water Chemistry • Introduction • Impurities in natural water • Water quality parameters like pH, acidity, alkalinity, chlorides, total solids and hardness of water (causes, types, and units of hardness) • Ill effects of hard water in steam generation in boilers • Numerical problems on hardness, treatment of hard water by Ion exchange process and Reverse osmosis process (R.O.)	**07 Hrs**

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Course Contents	Duration
Unit 2: Corrosion and its Prevention • Introduction • Types of corrosion - atmospheric corrosion (oxidation corrosion), electrochemical corrosion • Hydrogen evolution and oxygen absorption mechanism • Factors affecting the rate of corrosion • Prevention of corrosion by proper selection of material and proper designing, cathodic protection – sacrificial anodic method and external current method, hot dipping- galvanizing and tinning, electroplating, metal spraying and metal cladding	**07 Hrs**
Unit 3: Materials in civil engineering • **Metallic materials**: Introduction, Alloys - definition and classification, purposes of making an alloys. Ferrous alloys: Plain carbon steel (mild, medium and high), stainless steel. Non-ferrous alloys: Copper alloys – Brass & Bronze, Nickel alloy - Nichrome, Aluminum alloys - Duralumin and Alnico, Tin alloy - Solder metal • **Ceramics Materials:** Definition, classification. Properties of Ceramics, Manufacturing process and chemical composition of Portland cement, Mechanism of setting and hardening	**07 Hrs**
Unit 4: Polymers and Nanomaterials • Introduction, Plastics, thermos-softening and thermosetting plastics industrially important plastics like phenol formaldehyde, Urea formaldehyde and Conducting polymers and Biopolymers (Introduction, examples and applications.)	**07 Hrs**

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Course Contents	Duration
• Introduction to Nanomaterials, Synthesis of Nanomaterials (Bottom up-self-assembly and Top down approaches using methods like Ball milling, Sol-gel Process, Classification of nanomaterials, Graphene, Carbon Nanotubes, Applications of nanomaterial in engineering fields	
Unit 5: Green Chemistry • Introductions of green chemistry, 12 principles of green chemistry, Synthesis of chemicals by green chemistry routes, 3Rs - Reduce, Reuse and Recycle • Disposal of plastics, Biodegradable polymers-need, constituents required factors, properties, applications, Microwave and ultrasound assisted reactions, examples of green synthesis	**07 Hrs**
Unit 6: Instrumental and Analytical Techniques • An introduction of various analytical techniques, advantages and disadvantages of instrumental methods and classical methods **A) Spectrometry**: Introduction of spectroscopy, UV-Vis. Spectrophotometer, (Lamberts and Beer Lambert's law), Single beam spectrophotometer (schematic, working and applications) **B) Chromatography:** Introduction, types, i) TLC and Paper chromatography ii) Gas-liquid chromatography (GLC), basic principle, instrumentation and applications	**07 Hrs**

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Course Outcomes (COs): After successful completion of the course, students will be able to

CO	Statements
102.1	**Apply** the knowledge of water quality parameters and water treatment methods to solve domestic and industrial problems
102.2	Select proper engineering materials for industries and apply the knowledge of corrosion for prevention of corrosion
102.3	**Apply** the knowledge of metallic and ceramic materials on selection of engineering materials during civil construction
102.4	**Utilize** the knowledge of polymer ,Nanomaterials and its characterization techniques in engineering field
102.5	**Utilize** the knowledge of green chemistry during constructions
102.6	**Select** the proper instrumental methods for the analysis of materials

Course Articulation Matrix: Mapping of Course Outcomes (CO) with Program Outcomes (PO)

PO / CO	BTL	1	2	3	4	5	6	7	8	9	10	11	12
102.1	3	3	2	--	--	--	--	--	--	--	--	--	1
102.2	2	3	--	--	--	--	--	--	--	--	--	--	1
102.3	2	3	--	--	--	--	--	--	--	--	--	--	1
102.4	2	3	--	--	--	--	--	--	--	--	--	--	1
102.5	2	3	--	--	--	--	--	--	--	--	--	--	1
102.6	2	3	--	--	--	--	--	--	--	--	--	--	1

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Reference Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Chemistry of Engineering Materials	3rd	R. P. Mani, K. N. Mishra	Cengage Learning	2015
2	Engineering Chemistry	3rd	B.Chinnappan, S. Baskar, R. Dhillon	Wiley India	2015
3	Engineering Chemistry	1st	Palanna. O.G.	TataMc-Graw Hill Publishing Limited	2012
4	Instrumental Methods of Chemical Analysis: Analytical Chemistry	6th	Chatwal, Anand	Himalaya Pub. House, Mumbai	2010

Useful Link /Web Resources:

1. https://archive.nptel.ac.in/courses/122/106/122106028/#
2. https://nptel.ac.in/courses/118104008

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Course Title: Applied Chemistry for Civil Engineering Laboratory	
Course Code : 241CEBSCP102	**Semester:** I
Teaching Scheme: L-T-P: 00-00-02	**Credit :** 01
Evaluation Scheme: ISE:25	**ESE Marks:** 00

Prior Knowledge of:	Experiments based on titration, Handling of Glassware's & Chemicals

Course Objectives:

1.	To test water quality parameters using various titration analysis methods and to test corrosion of metallic materials
2.	To know handling of glassware and simple equipment for chemical analysis.
3.	To synthesize simple advanced materials and estimate concentration of elements in material.

List of Experiments:

Exp. No	Title of Experiments	Duration
01	Determination of total hardness of water by EDTA method.	02 Hrs.
02	Determination of acidity of water.	02 Hrs.
03	Determination of alkalinity of water.	02 Hrs.
04	Determination of chloride content of water by Mohr's method.	02 Hrs.
05	Demonstration of pH meter.	02 Hrs.
06	Determination of suspended solids, dissolved solids and total solids in given water sample.	02 Hrs.
07	Determination of rate of corrosion of aluminum in acidic and basic medium.	02 Hrs.
08	Determination of percentage of copper in brass.	02 Hrs.

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Exp. No	Title of Experiments	Duration
09	Preparation of urea and phenol formaldehyde resin.	02 Hrs.
10	Synthesis and characterization of Nano sized ZnO by precipitation method.	02 Hrs.
11	Estimation of iron by colorimetric method.	02 Hrs.
12	Separation and identification of cations by paper chromatography.	02 Hrs.

Course Outcomes (CO): After successful completion of the course, students will be able to

CO	Statements
102.1	**Analyze** hardness, acidity, alkalinity and chloride content, pH TDS and TSS of water
102.2	**Check the** corrosion of various metallic materials
102.3	**Prepare** various advanced materials
102.4	**Perform** estimation of iron by instrumental methods

Course Articulation Matrix: Mapping of Course Outcomes (CO) with Program Outcomes (PO)

PO / CO	BTL	1	2	3	4	5	6	7	8	9	10	11	12
102.1	3	3	--	--	--	--	--	--	--	1	--	--	1
102.2	2	3	--	--	--	--	--	--	--	1	--	--	1
102.3	2	3	--	--	--	--	--	--	--	1	--	--	1
102.4	2	3	--	--	--	--	--	--	--	1	--	--	1

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Text Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Laboratory manual on engineering chemistry	1st	S. K. Bashin, Dr.Sudha Rani	Dhanpat Rai Publishingcompany Ltd.,New Delhi	2012
2	Engineering Chemistry	15th	P. C. Jain,	Dhanpat Rai Publishing Company Ltd., New Delhi	2014

Reference Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Laboratory manual on engineering chemistry	1st	S. K. Bashin, Dr.Sudha Rani	Dhanpat Rai Publishingcompany Ltd.,New Delhi	2012
2	Engineering Chemistry	15th	P. C. Jain,	Dhanpat Rai Publishing Company Ltd., New Delhi	2014

Useful Link /Web Resources:

1. https://www.vlab.co.in/broad-area-chemical-science

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Course Title: Generative AI	
Course Code: 241CEESCL101	**Semester:** I
Teaching Scheme L-T-P: 03-00-00	**Credits:** 03
Evaluation Scheme ISE-I/MSE/ISE-II: 10/30/10	**ESE Marks:** 50

Prior knowledge of: Basics Knowledge of Computer

Course Objectives:

1.	To study basic principles of generative AI
2.	To study different types of generative models and their applications
3.	To give hands-on experiences with existing generative models and tools
4.	To explore ethical considerations and societal implications of generative AI technologies

Curriculum Details:

Course Contents	Duration
Unit 1: Introduction to Generative AI • What is AI, History, what is Generative AI • Types of Generative models • AI Prompt Writing? Prompts, Type of Prompts • What is text-to-text Generative AI • General Rules for Prompt Writing • Generative language models • ChatGPT 3.5, ChatGPT4.0, Examples, Google Bard, Ethics in AI	**7 Hrs**
Unit 2: Prompt Engineering - NLP and ML Foundations • Techniques for Prompt Engineering • Benefits of Prompt Engineering, what is NLP • What is ML, and examples • Common NLP Tasks - text Classification, language Translation, • Named Entity Recognition (NER) • Question answering, text Generation, sentiment analysis • Text summarization, recommendation systems	**7 Hrs**

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Course Contents	Duration
Unit 3: Tuning and Optimization Techniques • Fine-tuning prompts • Prompt Tuning • Filtering and post-processing • Reinforcement learning • Use cases and applications • Pre-training • Designing effective prompts	**7 Hrs**
Unit 4: AI for Creative Applications • Presentations gamma.ai • TL draw, AI overpowered tools • Image generation: Exploring tools like DALL-E and their creative applications like, generating concept art • product design ideas • Poem generator, video description • Music generation	**7 Hrs**
Unit 5: AI for Productivity Improvement • Rytr for blog idea and outline, business idea pitch • Cover Letter, Job Description • Reply to reviews, Keyword Extractor, Tagline and Headlines etc • ResumeBuilding.com, Blog writing/ Text Summarization using Copy.ai • Image code - Blackbox	**7 Hrs**
Unit 6: Generative AI tools and Case Studies • Hugging face transformers • OpenAI GPT3 API • Google cloud AI platform, Mid Journey, DALL E-2, Google Bard	**7 Hrs**

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Course Contents	Duration
• Case Studies – Token (API) Key generation on LLM (OpenAI, Google, Hugging face) in Google Colab • Hugging face demonstration of various models – image-to-text, • language translation, summarization • text generation, text-to-image • image-to-text, AI-Powered text and image generator, • Use of AI in word, power point and excel	

Course Outcomes (CO):

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

101.1	**Explain** generative AI within the general history with context
101.2	**Select** appropriate models/tools based on the specific requirements of a given task or application
101.3	**Classify** different types of prompts
101.4	**Generate** creative content using generative AI techniques, including text, images, music etc
101.5	**Develop** the skill to build resume, Blog writing and Text Summarization
101.6	**Develop** strategies for responsibly deploying and managing generative AI systems considering issues like privacy, bias and misinformation

Course Articulation Matrix: Mapping of Course Outcomes (CO) with Program Outcomes (PO):

CO	PO												BTL
	1	2	3	4	5	6	7	8	9	10	11	12	
101.1	2	1	-	-	2	-	-	-	-	-	-	1	2
101.2	2	1	-	-	2	-	-	-	-	-	-	1	2
101.3	2	1	-	-	2	-	-	-	-	-	-	1	3
101.4	2	1	-	-	2	-	-	-	-	-	-	1	2
101.5	2	1	-	-	2	-	-	-	-	-	-	1	2
101.6	2	1	-	-	2	-	-	-	-	-	-	1	2

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Reference books:

Sr. No.	Title	Edition	Author	Publisher	Year
1.	Generative AI for everyone	First	Altaf Rehman	Bluerose publishers Pvt.Ltd.	2024
2.	Prompt Engineering for Generative AI	First	Jems Phoenix and mike Taylor	Shroff Publishers and Distributors Pvt. Ltd.	2024
3.	Generative AI For Beginners Playbook	First	Branson Adams	Walking Crow Publishing	2024
4.	Rise of Generative AI and ChatGPT	First	Utpal Chakraborty, Sumit Kumar and Soumyadeep Roy	BPB Publications	2023
5.	Applied Generative AI for Beginners	First	Akshay Kulkarni, Adarsha Shivananda, Anoosh Kulkarni and Dilip Gudivada	Apress	2023

Online Resources:

1. https://www.deeplearning.ai/courses/generative-ai-for-everyone/
2. https://www.coursera.org/learn/introduction-to-generative-ai
3. https://www.w3schools.com/gen_ai/gen_ai_prompt_intro.php
4. https://www.tutorialspoint.com/prompt_engineering/prompt_engineering_introduction.htm
5. https://www.youtube.com/@AI.Overpowered

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Course Title: Generative AI Laboratory	
Course Code: 241CEESCP101	**Semester:** I
Teaching Scheme: L-T-P: 00-00-02	**Credits:** 01
Evaluation Scheme: ISE Marks: 25	**ESE**: 00

Prior knowledge of: Basics Knowledge of Computer

Course Objectives:

1.	To study basic principles of generative AI
2.	To study different types of generative models and their applications
3.	To give hands-on experiences with existing generative models and tools
4.	To explore ethical considerations and societal implications of generative AI technologies

List of Assignments / Practical's

Sr. No.	Name of Assignment	Duration
1	Suggesting 50 innovative ideas to increase sales and reduce costs (Assume suitable data)	2 Hrs
2	Citing references for an article	2 Hrs
3	Summarizing e mails/documents	2 Hrs
4	Resume generation	2 Hrs
5	Creative idea/Business presentation	2 Hrs
6	Examining the techniques used to construct a website or application	2 Hrs
7	Generate stories on a given prompt	2 Hrs
8	Image-to-text conversion	2 Hrs
9	Text to image	2 Hrs
10	Language Translation	2 Hrs
11	Blog writing	2 Hrs
12	Use of AI in word, Power point, and excel	2 Hrs

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Course Outcomes (CO): Upon successful completion of this course, the students will be able to

101.1	**Explain** generative AI within the general history with context
101.2	**Select** appropriate models/tools based on the specific requirements of a given task or application
101.3	**Classify** different types of prompts
101.4	**Generate** creative content using generative AI techniques, including text, images, music etc
101.5	**Develop** the skill to build resume, Blog writing and Text Summarization
101.6	**Develop** strategies for responsibly deploying and managing generative AI systems considering issues like privacy, bias and misinformation

Course Articulation Matrix: Mapping of Course Outcomes (CO) with Program Outcomes (PO):

CO	PO												BTL
	1	2	3	4	5	6	7	8	9	10	11	12	
101.1	2	1	-	-	2	-	-	-	-	-	-	1	2
101.2	2	1	-	-	2	-	-	-	-	-	-	1	2
101.3	2	1	-	-	2	-	-	-	-	-	-	1	3
101.4	2	1	-	-	2	-	-	-	-	-	-	1	2
101.5	2	1	-	-	2	-	-	-	-	-	-	1	2
101.6	2	1	-	-	2	-	-	-	-	-	-	1	2

Reference books:

Sr. No.	Title	Edition	Author	Publisher	Year
1.	Generative AI for everyone	First	Altaf Rehman	Bluerose publishers Pvt.Ltd.	2024
2.	Prompt Engineering for Generative AI	First	Jems Phoenix and mike Taylor	Shroff Publishers and Distributors Pvt. Ltd.	2024
3.	Generative AI For Beginners Playbook	First	Branson Adams	Walking Crow Publishing	2024
4.	Rise of Generative AI and ChatGPT	First	Utpal Chakraborty, Sumit Kumar and Soumyadeep Roy	BPB Publications	2023
5.	Applied Generative AI for Beginners	First	Akshay Kulkarni, Adarsha Shivananda, Anoosh Kulkarni and Dilip Gudivada	Apress	2023

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Online Resources:

1. https://www.deeplearning.ai/courses/generative-ai-for-everyone/
2. https://www.coursera.org/learn/introduction-to-generative-ai
3. https://www.w3schools.com/gen_ai/gen_ai_prompt_intro.php
4. https://www.tutorialspoint.com/prompt_engineering/prompt_engineering_introduction.htm
5. https://www.youtube.com/@AI.Overpowered

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Department of Civil Engineering
F. Y. B. Tech. Curriculum
w.e.f. A.Y. 2024-2025

Course Title: Professional Communication	
Course Code: 241CEAECL 101	**Semester:** I
Teaching Scheme L-T-P: 01-00-00	**Credits:** 01
Evaluation Scheme: - ISE: 25	**ESE:** 00

Prior knowledge of:	Basic English grammar, Basics of communication

Course Objectives:

1.	To **make** students learn important communicative situations, the basics of communication, and its significance in the corporate sector.
2.	To **sharpen** their listening, speaking, reading, writing skills.
3.	To **facilitate** them to draft office documents effectively.
4.	To **enhance** career skills to prepare students industry-ready.

Curriculum Details:

Course Contents	Duration
Unit 1: Language and Communication • Need for effective communication • The process and levels of communication • Professional communication • Communication networks/ flows • Forms and methods (verbal and non-verbal) of communication • Barriers to communication and solutions	**04 Hrs**
Unit 2: Introduction to LSRW • **Listening Skills:** Hearing and listening, Listening as an active skill; Types of Listening; Barriers to effective listening skills	**03Hrs**

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Course Contents	Duration
• **Speaking Skills**: Importance, Various oral business contexts/situations, Group communication, Preparing effective public speeches (Impromptu and Prepared) • **Reading Skills**: Benefits of effective reading, Types of reading (Skimming; Scanning, Intensive reading, Extensive reading) Overcoming common obstacles, Reading comprehension • **Writing Skills:** Importance, Paragraph writing techniques	
Unit 3: Professional Correspondence • **Official correspondence** Principles, structure (elements) Layout (complete block, modified block, semi-block), Types (enquiry and reply, order, claim and adjustment) • **Office drafting** Writing notice, agenda, and minutes of the meeting • **Email writing** Advantages and limitations Style, structure, and content Email etiquette	**04 Hrs**
Unit 4: Career Skills and Ethics • **Resume and cover letter writing** Types of resume Important features of selling resume Cover letter writing • **Job Interviews** Interview preparation	**03Hrs**

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Course Contents	Duration
FAQs (Frequently Asked Questions) • **Guidance for IELTS, TOFEL and GRE** • **Corporate etiquette and ethics**	

Course Outcomes (COs): After successful completion of the course, students will be able to

CO	Statements
101.1	**Implement** verbal and non-verbal codes for effective communication.
101.2	**Demonstrate** language learning skills-LSRW (Listening, Speaking, Reading and Writing).
101.3	**Draft** business documents competently.
101.4	**Improve** employability and readiness for industry demand and career advancement.

Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs)

PO / CO	BTL	1	2	3	4	5	6	7	8	9	10	11	12
101.1	3	-	-	-	-	-	-	-	2	3	3	-	1
101.2	3	-	-	-	-	-	-	-	2	3	3	-	1
101.3	3	-	-	-	-	-	-	-	2	3	3	-	1
101.4	3	-	-	-	-	-	-	-	2	3	3	-	1

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Text Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Technical Communication: Principles and Practice	4th	Meenakshi Raman & Sangita Sharma	Oxford University Press	2022
2	Personality Development and Soft-Skills	2nd	Barun K. Mitra	Oxford University Press	2016
3	Communication Skills	2nd	Sanjay Kumar & Pushp Lata	Oxford University Press	2015
4	Communication Skills	3rd	Meenakshi Raman & Sangeeta Sharma	Oxford University Press	2013

Reference Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Business Communication	2nd	Urmila Rai and S.M. Rai	Himalaya Publishing House Pvt. Ltd.	2014
2	A University Grammar of English	1st	Randolph Quirk and S Greenbaum	Pearson	2007
3	EffectiveTechnicalCommunication	2nd	B.K.Mitra	Oxford University Press	2006
4	EffectiveTechnicalCommunication	2nd	M.AshrafRizvi	McGrawHill Education	2005

Useful Links/Web Resources:

1. https://www.skillsyouneed.com
2. https://www.psychologytoday.com
3. https://www.britishcouncil.in
4. https://www.udemy.com
5. https://www.englishclub.com

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Department of Civil Engineering
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Course Title: Professional Communication Laboratory	
Course Code: 241CEAECP101	**Semester:** I
Teaching Scheme L-T-P:00-00-02	**Credit:**01
Evaluation Scheme: ISE Marks:25	**ESE Marks:** 00

Prior knowledge of:	Basic language learning and people skills

Course Objectives:

1.	To **familiarize** students with English phonology and improve their pronunciation
2.	To **improve** language learning skills (LSRW) by providing ample practice
3.	To **develop** students' verbal and non-verbal communication
4.	To **cultivate** creative thinking and workplace skills

List of Lab Sessions:

Session No	Title of Activities	Duration
01	**Icebreaking: Introducing self and others** Different ways of introducing self and others: demonstration	02 Hrs
02	**Phonetics** Introduction to phonetics - consonants, vowels and diphthongs, stress, intonation in English with video samples	02 Hrs
03	**Remedial English** Vocabulary-building games and identifying errors revising rules of English grammar	02 Hrs
04	**Listening Practice** Listening comprehension, strategies for effective listening with audio/video samples	02 Hrs
05	**Reading Practice** Improving Comprehension Skills, Techniques for good comprehension	02 Hrs
06	**Technical Writing Practice**	02 Hrs

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Session No	Title of Activities	Duration
	Paragraph writing, writing notices, agenda minutes of the meeting, email writing	
07	**Public Speaking** Practicing extempore and prepared speeches	02 Hrs
08	**Group discussion** Group discussions on current topics	02 Hrs
09	**Mock Meetings** Purposes, preparation, and procedure for conducting effective meetings	02 Hrs
10	**Mock Interviews** Preparing for FAQs and facing mock interviews	02 Hrs
11	**Creative Writing** Blog Writing	02 Hrs
12	**Film/Book Appreciation** Showing short films and appreciation of them. Reading novels or short stories and critical analysis of them.	02 Hrs

Course Outcomes (COs): After successful completion of the course, students will be able to

CO	Statements
101.1	**Demonstrate** effective LSRW skills
101.2	**Articulate** words accurately and prepare grammatically correct sentences
101.3	**Deliver** speeches and participate in GDs, business meetings, and mock interviews effectively
101.4	**Draft** business documents and blogs by following writing ethics

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F. Y. B. Tech. Curriculum
w.e.f. A.Y. 2024-2025

Course Articulation Matrix: Mapping of Course Outcomes (CO) with Program Outcomes (PO)

PO / CO	BTL	1	`2	3	4	5	6	7	8	9	10	11	12
101.1	3	-	-	-	-	-	-	-	**2**	**3**	**3**	-	**1**
101.2	3	-	-	-	-	-	-	-	**2**	**3**	**3**	-	**1**
101.3	3	-	-	-	-	-	-	-	**2**	**3**	**3**	-	**1**
101.4	3	-	-	-	-	-	-	-	**2**	**3**	**3**	-	**1**

Text Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	A Practical Course in Spoken English	1st	J.K. Gangaj	PHI Learning Pvt. Ltd	2014
2	English Language Laboratories	2nd	Nira Konar	PHI Learning Pvt. Ltd	2014
3	Better English Pronunciation	2nd	J.D.O Connor	Cambridge University Press,	1980

Reference Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Communication Skills	2nd	Sanjay Kumar & Pushp Lata	Oxford University Press	2015
2	Technical Communication: Principles and Practice	2nd	Meenakshi Raman & Sangita Sharma	Oxford University Press	2011

Useful Links /Web Resources:

1. https://www.indiabix.com
2. https://www.skillsyouneed.com
3. https://interviewbuddy.in
4. https://learnenglish.britishcouncil.org
5. https://www.fluentu.com

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Course Title: Computer Workshop	
Course Code: 241CECVSECL101	**Semester:** I
Teaching Scheme: L-T-P: 01-00-00	**Credits:** 01
Evaluation Scheme: ISE: 25	**ESE Marks:** 00

Prior Knowledge of:	Basic computer knowledge

Course Objectives:

1.	To get familiar with various hardware, software, operating systems and networking
2.	To identify and rectify the onboard computer hardware, software and network related problems
3.	To understand the hardware specifications that are required to run operating system and various application programs

Course Content:

Content	Duration
Unit 1: Computer Architecture **Assembly of Computer** • Introduction to hardware peripherals like RAM, ROM, keyboard, Mouse, processors, etc. • Generation of processors • Working of SMPS • Study of various ports • Steps and precautions to assemble compute **Computer Network Tools** r • Introduction to computer network • Study of various topologies • Preparing the network cable using crimping tools and connectors • Study of various network environments	**07 Hrs**

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Content	Duration
Unit 2: Operating System, Server and Internet **Operating System and Software Installations** • Introduction to operating system • Types of operating system (Windows and Linux). • Window:-Evolution of operating system • Introduction to software. Types of software (MS office, VLC media player, Win RAR), etc. • Linux: Evolution of operating system • Introduction to software • Types of software (open office, web browser, etc.) • Case study of Installations step for operating system and application software's **Server** • Introduction to server • Difference between server and normal desktop • Evolution of servers • Study of various servers like Email, data, domain, etc. **Internet** • Introduction and evolution of internet • Study of various internet-based services like Email, social network, chat • Introduction to cyber security and cyber laws **Driver software installation**	**07 Hrs**

Course Outcomes (CO): At the end of the course, the students should be able to

CO	Statements
101.1	**Understand** the basic concept and structure of computer hardware and networking
101.2	**Identify** the existing configuration of the computer and various restore operations on computer and update application software

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Course Articulation Matrix: Mapping of course outcomes (CO) with program outcomes (PO)

CO \ PO	BTL	1	2	3	4	5	6	7	8	9	10	11	12
101.1	1	--	--	--	--	1	--	--	--	1	--	--	1
101.2	2	--	--	--	--	2	--	--	--	1	--	--	1

Suggested Learning Resources:

Text Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1.	Hardware and Software of Personal Computers	1st	Sanjay K. Bose	New Age International Private Limited	2014
2.	Fundamentals of Computers	6th	V. Raja Raman	PHI Learning	2014
3.	Hardware Bible	6th	Winn L. Rosch	QUE	2003

Reference Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1.	Introduction to Information Technology	2nd	ITL Education Solutions limited	Pearson Education India	2012
2.	PC Hardware and A +Handbook	1st	Kate Chase, Wiley Dreamtech	Microsoft Press US	2004
3.	Complete computer upgrade and Repair book	3rd	Cheryl A Schmidt	Wiley Dreamtech	2002
4.	Introduction to Computers with MS-Office 2000	1st	Alexis Leon & Mathews Leon	McGraw Hill Education	2001

Useful Link /Web Resources:

1. https://turbofuture.com/computers/Dissassembling-and-Assembling-the-computer-system
2. https://www.computerhope.com/jargon/c/computer.html
3. https://www.pluralsight.com/blog/tutorials/troubleshooting-hardware
4. http://business.toshiba.com/downloads/KB/f1Ulds/14047/SoftwareTrouble_EN_(EBN)_Ver01F.pdf
5. https://oer.nios.ac.in/wiki/index.php/TYPES_OF_INTERNET_CONNECTIONS

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Course Title: Computer Workshop Laboratory	
Course Code: 241CEVSECP101	**Semester:** I
Teaching Scheme: L-T-P: 00-00-01	**Credit:** 01
Evaluation Scheme: ISE: 25	**ESE Marks:** 00

Prior Knowledge of:	Basic computer knowledge

Course Objectives:

1.	To get familiar with various hardware, software, operating systems and networking
2.	To identify and rectify the onboard computer hardware, software and network related problems.
3.	To understand the hardware specifications that are required to run operating system and various application programs.

List of Experiments

Sr. No.	Title of Experiments	Duration
01	Desktop/laptop/server type identification and its specification.	**02 Hrs**
02	Introduction of computer architecture and components.	**02 Hrs**
03	Study of peripherals of a computer, components in a CPU and its functions.	**02 Hrs**
04	Study and demonstration of storage devices.	**02 Hrs**
05	A case study on Power Supply Unit (PSU) and its components.	**02 Hrs**
06	Introduction to basics of networking.	**02 Hrs**
07	Study of computer assembly and configuration.	**02 Hrs**
08	Assembling and disassembling of PC.	**02 Hrs**
09	Introduction to Operating System.	**02 Hrs**
10	Installation of Operating Systems – Windows.	**02 Hrs**
11	Installation of Operating Systems –LINUX.	**02 Hrs**
12	Installation of local and network printer.	**02 Hrs**
13	Configuring firewalls and installation of Antivirus software.	**02 Hrs**
14	Introduction to office automation software like MS Word, MS Excel, MS Power Point.	**02 Hrs**

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Minimum 12 Experiments shall be conducted from above list.

Course Outcomes (CO): At the end of the course, the student should be able to

CO	Statements
101.1	Understand the basic concept and structure of computer hardware and networking
101.2	Identify the existing configuration of the computer and various restore operations on computer and update application software

Course Articulation Matrix: Mapping of course outcomes (CO) with program outcomes (PO)

CO \ PO	BTL	1	2	3	4	5	6	7	8	9	10	11	12
101.1	1	--	--	--	--	1	--	--	--	1	--	--	1
101.2	2	--	--	--	--	2	--	--	--	1	--	--	1

Text Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1.	Hardware and Software of Personal Computers	1st	Sanjay K. Bose	New Age International Private Limited	2014
2.	Fundamentals of Computers	6th	V. Raja Raman	PHI Learning	2014
3.	Hardware Bible	6th	Winn L. Rosch	QUE	2003

Reference Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1.	Introduction to Information Technology	2nd	ITL Education Solutions limited	Pearson Education, India	2012
2.	PC Hardware and A +Handbook	1st	Kate Chase, Wiley Dreamtech	Microsoft Press, US	2004
3.	Complete computer upgrade and Repair book	3rd	Cheryl A Schmidt	Wiley Dreamtech	2002
4.	Introduction to Computers with MS-Office 2000	1st	Alexis Leon & Mathews Leon	McGraw Hill Education	2001

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Department of Civil Engineering
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Course Title: Basic Civil Engineering	
Course Code: 241CEPCCL101	**Semester:** I
Teaching Scheme: L-T-P: 02-00-00	**Credits:** 02
Evaluation Scheme ISE-I/MSE/ISE-II: 10/30/10	**ESE Marks:** 00

Prerequisite:	Knowledge of forces, Newton's Laws of Motion, Moment

Course Objectives:

1	Use basic Civil Engineering knowledge of surveying and construction material in real life.
2	Apply concepts of static and dynamics in engineering problems

Curriculum Details:

Course Contents	Duration
Unit 01. Elements of Civil Engineering • Scope of Civil engineering • Importance of Civil engineering in society • Basic material used for construction – bricks, cement, steel, sand, aggregate, stones, paints • Advance Construction equipment's – Excavator, Tower Crane, Paver Machine • Detailed cross section of building – showing components of sub-structure and super-structure and their functions • Load Bearing Structure and Framed Structure	**07 Hrs.**
Unit 02. Branches of Civil Engineering • Structural Engineering • Construction Management	**07 Hrs**

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Course Contents	Duration
• Fluid Mechanics • Water Resource Engineering • Geotechnical Engineering • Surveying • Transportation Engineering – Road, Railways, Air ways • Earthquake Engineering	
Unit 03. Fundamentals of Mechanics and Force System • Force and Classification of force system • Resultant of Parallel force system, • Resultant of Concurrent and non- concurrent, coplanar force system • Free Body Diagram • Conditions of Equilibrium • Types of Load and Types of Beams • Types of Supports and Reactions • Analysis of Simple and compound Beam Using Conditions of equilibrium.	**07 Hrs**
Unit 4 Centroid and Moment of Inertia • Centroid and center of gravity • Moment of Inertia of Standard shapes from first principle • Parallel and perpendicular axis theorem • Radius of gyration • Numerical on moment of inertia of plain and composite figures	**07 Hrs**

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Course Outcomes (CO): At the end of successful completion of course, the students will be able to

CO	Statements
101.1	Explain the importance of Civil engineering
101.2	Describe the importance of various branches of Civil Engineering.
101.3	Apply conditions of equilibrium to find the resultant
101.4	Calculate centroid and moment of inertia

Course Articulation Matrix: Mapping of Course Outcomes (CO) with Program Outcomes (PO)

POs/ COs	1	2	3	4	5	6	7	8	9	10	11	12	BTL
101.1	3	2	-	-	-	-	-	-	-	-	-	-	2
101.2	3	-	-	-	-	-	-	-	-	-	-	-	2
101.3	3	3	-	-	-	-	-	-	-	-	-	2	3
101.4	3	3	-	-	-	-	-	-	-	-	-	2	3

Suggested Learning Resources:

Text Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1.	Elements of Civil Engineering and Mechanics	Revised	N. Balasubramanya	Cengage Learning India Private Limited	2018
2.	Engineering Mechanics and Dynamics	Revised	S. Rajshekaran,	G. Subramaniam Vikas Publishing House Pvt. Ltd	2005

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Reference Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Basic Civil Engineering	1st	Satheesh Gopi	Dorling Kindersley Pvt Ltd	2010
2	Basic Civil Engineering	1st	Uni. Science press	Uni. Science press	2010
3	Engineering Mechanics	3rd	Ferdinand Leon	Row Publication, London	2010
4	Engineering Mechanics	3th	S. S. Bhavikatti,	New Age International (P) Ltd.	2010

Useful Link /Web Resources:

1. https://www.youtube.com/watch?v=MPL2CRy2d7Y&list=PLFmmR9yqCQMgpQz5ZBbWys84Ch5nbiWWJ
2. https://www.youtube.com/watch?v=38Mq1Qff9ag
3. https://www.youtube.com/watch?v=juyJctrCWgk&list=PLDN15nk5uLiBVYBMlotEZiS6ivj147brP
4. https://www.youtube.com/watch?v=76FLXiMLyiE

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Course Title : Liberal Learning Course	
Course Code: 241CECCAP101 & 241CECCAP102	**Semester:** I / II
Teaching Scheme L-T-P : 00-00-04	**Credits :** 02
Evaluation Scheme ISE: 50	**ESE Marks :**00

- Liberal Learning Through Students Clubs and particular areas is a Two-credit course run for First Year B.Tech .
- Students are required to go through the list of liberal learning courses and rank their preferences through google form/JUNO software provided by department at the beginning of semester.
- They will be allocated one area from the list. Experts from particular areas (club) conduct sessions once a week for each area on campus through activities, discussions, presentations, and lecture methods and evaluation out of 50 per area is done for each area throughout the semester.
- Evaluation pattern may differ according to the nature of each area (Club).
- Although there is no pre-defined syllabus, there is an outline which experts normally develop and follow for the sessions.
- However, students may approach the faculty to cover certain topics of their interest in that area during sessions based on students' interest and experts'.
- List of liberal learning courses will get display at the beginning of odd semester.

List of Liberal Learning Courses

Sr. No	Name of the Course
1.	Coding & Programming Club
2.	Photography Club
3.	Art, Craft and Culture Club
4.	German Language Club

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Sr. No	Name of the Course
5.	Yoga
6.	Meditation
7.	Adventure Club
8.	Interior Design
9.	Guitar
10.	Film Making
11.	Music
12.	Painting
13.	Dance
14.	Agriculture Club
15.	Corporate Culture Club
16.	Hotel Management Club
17.	Medical Club
18.	Art of Living Club
19.	Drama
20.	LinguLeads
21.	NCC/NSS
22.	Microsoft Club
23.	Robotics Club
24.	Health & Fitness Club
25.	Bookfast Club (Reading Club)
26.	Media Club
27.	Ted Club-GD, Public Speaking, Debate

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Course Title: Finishing School Training-I	
Course Code: 241CEMCL101	**Semester:** I
Teaching Scheme: L-T-P :3-0-0	**Credits:** 00
Evaluation Scheme ISE: 50	**ESE Marks:** 00

Curriculum Details

Course Contents	Duration
UNIT-I: Learning Basic Aptitude Module-1: Percentage Module-2: Average & Its Applications	**04 Hrs**
UNIT-II: Series Completion Module-1: Number Series Module-2: Letter Series Module-3: Alphanumeric Series	**04 Hrs**
UNIT-III: LSRW-I Module-1. Listening Introduction & Activities Module- 2. Speaking Introduction & Activities Module-3. Reading Introduction & Activities Module-4. Writing Introduction	**05 Hrs**
UNIT-IV: Career Management-1 Module-1: SWOT Analysis Module-2: Goal Setting(Why & How of SMART goals) Module-3: Personality Traits & Self-Assessment Module-4: Competency Mapping	**05 Hrs**
UNIT-V: Interpersonal Skills Module-1: Team Management Module-2: Attitude Building Module-3: Time Management	**05 Hrs**
UNIT VI: Technical Training Module-1: Introduction to C Language Module-2: Identifiers & Data types,Operations Module-3: Control Instructions, Function, Recursion Module-4: Array, Strings, Pointers Module-5: Structure & Union Module-6: Memory Allocation Module-7: Enumeration, Pre-processor Module-8:Command Line Arguments	**18 Hrs**

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Course Title: Rural/Social Internship	
Course Code: 241CEMCP102	**Semester:** I
Teaching Scheme: L-T-P :0-0-0	**Credits:** Grade (Mandatory Course)
Evaluation Scheme ISE: 50	**ESE Marks:** 00

Course Objectives:

1	To provide possible opportunities to learn, understand and sharpen the real time technical / managerial skills required at the job.
2	To exposure to the current technological developments relevant to the subject area of training.
3	To expose students to the engineer's responsibilities and ethics.
4	To understand the social, economic and administrative considerations that influence the working environment of industrial organizations
5	To gain experience in writing technical reports/projects.
6	To understand the social, economic and administrative considerations that influence the working environment of industrial organizations

Curriculum Details

As per the approved structure of curriculum, students will be allowed to do internship during first semester of B. Tech. program. During internship students are required to be visit village/ward/small industry/organization etc

For following activities

1. Prepare and implement plan to create local job opportunities.
2. Prepare and implement plan to improve education quality in village.
3. Preparing an actionable DPR for Doubling the village Income.
4. Developing Sustainable Water Management system.
5. Prepare and Improve a plan to improve health parameters of villagers.
6. Developing and implementing of Low Cost Sanitation facilities
7. Prepare and implement plan to promote Local Tourism through Innovative Approaches
8. Implement/Develop Technology solutions which will improve quality of life.
9. Prepare and implement solution for energy conservation.
10. Prepare and implement plan to Skill village youth and provide employment.
11. Develop localized techniques for Reduction in construction Cost.
12. Prepare and implement plan of sustainable growth of village.

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13. Setting of Information imparting club for women leading to contribution in social and economic issues.
14. Developing and managing Efficient garbage disposable system.
15. Contribution to any national level initiative of Government of India. For eg. Digital India/ Skill India/ Swachh Bharat Internship etc

Every student is required to prepare a file containing documentary proofs of the activities done by him. The evaluation will be done by expert committee constituted by HoD/Departmental Internship In-charge/ faculty mentor.

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Course Title: Applied Mathematics-II	
Course Code: 241CEBSCL103	**Semester:** II
Teaching Scheme: L-T-P : 03-01-00	**Credits:** 03
Evaluation Scheme ISE-I/MSE/ISE-II: 10/30/10	**ESE Marks:** 50

Prior Knowledge of:	Formulae of Derivatives and Integration, Differential Equation

Course Objectives:

1.	To teach mathematical methodology.
2.	To develop mathematical skills and enhance logical thinking power of students.
3.	To provide students with skills in Linear Algebra and Calculus.
4.	To imbibe graduates with mathematical knowledge, computational skills and the ability to deploy these skills effectively in solution of engineering problems.

Curriculum Details:

Course Contents	Duration
Unit 1: Ordinary Differential Equations of First Order and FirstDegree • Definition of differential equation, order and degree of differential equation • Exact differential equations • Non - exact differential equations • Linear differential equations • Bernoulli's differential equations	**07 Hrs**
Unit 2: Applications of Ordinary Differential Equations of First Order and First Degree • Introduction of variable separable form • Orthogonal trajectories. (Cartesian form) • Applications to simple electrical circuits • Newton's law of cooling • Rate of decay and growth	**07 Hrs**

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Course Contents	Duration
Unit 3: Numerical methods to solve Ordinary Differential Equations of First Order and First Degree • Introduction • Picard's method • Taylor's series method • Euler's method • Runge - Kutta's method.(Fourth order)	**07 Hrs**
Unit 4: Numerical Solutions of Algebraic & Transcendental equations • Introduction of Algebraic and Transcendental equations • Bisection method • Newton-Raphson method • Regula-Falsi method • Secant method	**07 Hrs**
Unit 5: Numerical Differentiation • Introduction • Newton's forward difference formula • Newton's backward difference formula • Stirling's central difference formula • Lagrange's interpolation formula	**07 Hrs**
Unit 6: Numerical Methods- Numerical Integration • Trapezoidal Rule • Simpson's $1/3^{rd}$ rule • Simpson's $3/8^{th}$ rule • Weddle's Rule	**07 Hrs**

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Course Outcomes (COs): After successful completion of the course, students will be able to

CO	Statements
103.1	**Solve** ordinary differential equations of first order and first degree
103.2	**Apply** the knowledge of ordinary differential equation of first order and first degree
103.3	**Use** the numerical methods to solve ordinary differential equations
103.4	**Apply** the numerical techniques to solve algebraic & transcendental equations
103.5	**Calculate** the derivative using interpolation formulae
103.6	**Calculate** numerical integration by numerical methods

Course Articulation Matrix: Mapping of Course Outcomes (CO) with Program Outcomes (PO)

CO \ PO	BTL	1	2	3	4	5	6	7	8	9	10	11	12
103.1	2,3	3	2	--	--	1	---	--	--	--	--	--	1
103.2	3	3	2	--	--	--	--	--	--	--	--	--	1
103.3	2,3	3	2	--	--	1	--	--	--	--	--	--	1
103.4	3	2	2	--	--	1	--	--	--	--	--	--	1
103.5	3	2	2	--	--	--	--	--	--	--	--	--	1
103.6	3	2	2	--	--	1	--	--	--	--	--	--	1

Text Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Advanced Engineering Mathematics	7th	Peter V. O'Neil	Cengage Learning	2012
2	Advanced Engineering Mathematics	1st	H. K. Dass	S. Chand Publication, New Delhi	2011
3	A Text Book of Applied Mathematics	7th	P. N. Wartikar, J. N. Wartikar	Vidyarthi Griha Prakashan, Pune	2006
4	Higher Engineering Mathematics	36th	B. S. Grewal	Khanna Publishers	2001

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Reference Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Advanced Engineering Mathematics	5th	Erwin Kreyszig	India Pvt, Ltd.	2014
2	Higher Engineering Mathematics	6th	B. V. Ramana	Tata M/c Graw Hill Publication	2010
3	Numerical Methods for Scientific and Engineering Computation	5th	M. K. Jain	New Age International Pvt. Ltd New Delhi	2007
4	A Textbook of Engineering Mathematics	6th	N. P. Bali, Iyengar	Laxmi Publication	2004

Useful Link /Web Resources:

1. DELNET- http://www.delnet.in
2. NDL-http://ndl.iitkgp.ac.in
3. N-LIST- http://www.nlist.inflib.ac.in
4. https://www.youtube.com/results?search_query=Dr+Navneet+Sangle

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Course Title: Applied Mathematics-II Tutorial	
Course Code: 241CEBSCT103	**Semester**: II
Teaching Scheme: L-T-P : 00-01-00	**Credits**: 01
Evaluation Scheme ISE: 25	**ESE Marks:** 00

Prior Knowledge of:	Formulae of Derivatives and Integration, Differential Equation

Course Objectives:

1.	To teach mathematical methodology.
2.	To develop mathematical skills and enhance logical thinking power of students.
3.	To provide students with skills in applying mathematical techniques to solve civil engineering problems.
4.	To imbibe graduates with mathematical knowledge, computational skills and the ability to deploy these skills effectively in solution of engineering problems.

List of Tutorials

Tut. No	Title of Tutorial	Duration
01	**Ordinary Differential Equations:** Exact and non-exact differential equations.	01 Hr
02	**Ordinary Differential Equations:** Linear and non-linear differential equations.	01 Hr
03	**Applications of Ordinary Differential Equations:** Orthogonal Trajectories. (Cartesian curves), Applications to Simple Electrical Circuits.	01 Hr
04	**Applications of Ordinary Differential Equations:** Newton's law of cooling, Rate of Decay and growth.	01 Hr
05	**Numerical Solution of Ordinary Differential Equations of First Order and First Degree:** Picard's method, Taylor's series method.	01 Hr
06	**Numerical Solution of Ordinary Differential Equations of First Order and First Degree:** Euler's method, Runge-Kutta's method.	01 Hr
07	**Numerical Solutions of Algebraic & Transcendental Equations:** Bisection method, Newton-Raphson method.	01 Hr
08	**Numerical Solutions of Algebraic & Transcendental Equations:** Regula-Falsi method, Secant method.	01 Hr

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Tut. No	Title of Tutorial	Duration
09	Numerical Techniques-I using SCILAB/MATLAB	01 Hr
10	**Numerical Differentiation:** Newton's forward difference formula, Newton's backward difference formula Stirling's Central difference formula, Lagrange's interpolation formula.	01 Hr
11	**Numerical Integration:** Trapezoidal Rule, Simpson's 1/3rd rule, Simpson's 3/8th rule, Weddle's Rule.	01 Hr
12	Numerical Techniques-II using SCILAB/MATLAB	01 Hr

Course Outcomes (COs): After successful completion of the course, students will be able to

CO	Statements
103.1	**Solve** ordinary differential equations of first order and first degree
103.2	**Apply** the knowledge of ordinary differential equation of first order and first degree
103.3	**Use** the numerical methods to solve ordinary differential equations
103.4	**Apply** the numerical techniques to solve algebraic & transcendental equations
103.5	**Calculate** the derivative using interpolation formulae
103.6	**Calculate** numerical integration by numerical methods

Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs)

PO / CO	BTL	1	2	3	4	5	6	7	8	9	10	11	12
103.1	2,3	3	2	--	--	1	---	--	--	--	--	--	1
103.2	3	3	2	--	--	--	--	--	--	--	--	--	1
103.3	2,3	3	2	--	--	1	--	--	--	--	--	--	1
103.4	3	2	2	--	--	1	--	--	--	--	--	--	1
103.5	3	2	2	--	--	--	--	--	--	--	--	--	1
103.6	3	2	2	--	--	1	--	--	--	--	--	--	1

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Text Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Advanced Engineering Mathematics	7th	Peter V. O'Neil	Cengage Learning	2012
2	Advanced Engineering Mathematics	1st	H. K. Dass	S. Chand Publication, New Delhi	2011
3	A Text Book of Applied Mathematics	7th	P. N. Wartikar, J. N. Wartikar	Vidyarthi Griha Prakashan, Pune	2006
4	Higher Engineering Mathematics	36th	B. S. Grewal	Khanna Publishers	2001

Reference Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Advanced Engineering Mathematics	5th	Erwin Kreyszig	India Pvt, Ltd.	2014
2	Higher Engineering Mathematics	6th	B. V. Ramana	Tata M/c Graw Hill Publication	2010
3	Numerical Methods for Scientific and Engineering Computation	5th	M. K. Jain	New Age International Pvt. Ltd New Delhi	2007
4	A Textbook of Engineering Mathematics	6th	N. P. Bali, Iyengar	Laxmi Publication	2004

Useful Link /Web Resources:

1. DELNET- http://www.delnet.in
2. NDL- http://ndl.iitkgp.ac.in
3. N-LIST- http://www.nlist.inflib.ac.in
4. https://www.youtube.com/results?search_query=Dr+Navneet+Sangle

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Course Title: Physics for Civil Engineering	
Course Code: 241CEBSCL104	**Semester:** II
Teaching Scheme: L-T-P :03-00-00	**Credits:** 03
Evaluation Scheme ISE-I/MSE/ISE-II: 10/30/10	**ESE Marks:** 50

Prior Knowledge of:	Classical mechanics, ultrasounds, Kinetics, fluid flow

Course Objectives:

1.	To provide basic concept of laws of motion and ultrasonic.
2.	To expose physics behind elastic properties and kinematics of bodies.
3.	To find forces under free body diagram.

Curriculum Details:

Course Contents	Duration
Unit 1: Force and Motion • Representation of vector, Types of vector, addition and subtraction, • Triangle and Parallelogram Law (Statement only) • Scalar and vector product • Conservation of Linear momentum (derivation), Circular Motion (Uniform, non-uniform) • Central force, expansion and application of centripetal and centrifugal force with examples: • Principle of centrifuge, Application of various forces in lifts • Resultant and Equilibrium of forces, Numerical.	**07 Hrs**
Unit 2: Ultrasonic & Oscillations • Production of Ultrasound using Magneto electric effect • Production of Ultrasound using Piezoelectric effect • Calculation for depth of sea using SONAR • Theory of damped oscillations (Derivation) • Engineering applications of damped oscillation in civil engineering • Resonance and sharpness of resonance. Numerical problems.	**07 Hrs**

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Course Contents	Duration
Unit 3: Elastic properties of materials • Stress-Strain Curve, Elastic Moduli, Poisson's ratio and its limiting values. • Relation between elastic constants (Y, K, and η) • Bending of beams: neutral surface and neutral axis, expression for bending moment of a beam. • Torsion of a cylinder: Expression for couple per unit twist of a solid cylinder, • Torsion pendulum: expression for time period of torsional pendulum and rigidity modulus, Numerical	**07 Hrs**
Unit 4: Kinematics & Kinetics • Acceleration due to gravity, Newton's law of motion, • Rectilinear motion (X-Y coordinates), numerical • curvilinear motion, projectile motion, motion under gravity • Kinetics: D 'Alembert's principle for vertical and horizontal forces. • Applications in Plane motion • Applications in Connected body in pulley system1 • Applications in Connected body in pulley system 2	**07 Hrs**
Unit 5: Fluid Mechanics • Fluid: concept of continuum, Properties • Newton's Law of viscosity, Absolute and Kinematic viscosity • Pascal's law and its applications,Bulk Modulus and Compressibility • Surface tension and capillarity • **Fundamentals of Fluid Flows:** Terminal velocity (expression), Stokes law, numerical. • Concept of flow: Streamline, Turbulent, Path line, Reynolds number	**07 Hrs**
Unit 6: Physics for Sensors • Sensors: Introduction, Sensor systems • Classification of sensors • characteristics, principles • Applications of sensor: Temperature sensor • Vibration sensor • Optical fibre sensor for structural health monitoring	**07 Hrs**

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Course Outcomes (CO): After successful completion of the course, students will be able to

CO	Statements
104.1	**Identify** the forces acting upon an object for given physical description of the situation.
104.2	**Determine** the frequency of ultrasonic wave & explain the solution of damped wave equation in applied physics
104.3	**Explain** elastically analysis of materials for engineering applications
104.4	**Relate** laws of mechanics for system of motions of bodies
104.5	**Apply** the fluid flow mechanics for liquids
104.6	**Explain** the need of nanomaterials in science and technology

Course Articulation Matrix: Mapping of Course Outcomes (CO) with Program Outcomes (PO)

CO \ PO	BTL	1	2	3	4	5	6	7	8	9	10	11	12
104.1	L2,L3	3	2	-	-	-	-	-	-	-	-	-	1
104.2	L2,L3	3	2	-	-	-	-	-	-	-	-	-	1
104.3	L2,L3	3	2	-	-	-	-	-	-	-	-	-	1
104.4	L2,L3	3	2	-	-	-	-	-	-	-	-	-	1
104.5	L2,L3	3	2	-	-	-	-	-	-	1	-	-	1
104.6	L2	3	2	-	-	-	-	-	-	1	-	-	1

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Text Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Engineering Physics	1st	H. K. Malik	Tata McGraw Hill Education	2019
2	A Text Book of Engineering Physics	Revised	M. N. Avadhanulu, P. G. Kshirasagar	S. Chand Publications	2018
3	Engineering Physics	Revised	L.N. Singh	Synergy Knowledge Ware	2016
4	Engineering Physics	Revised	V. Rajendran	Tata McGraw Hill Education	2010
5	Engineering Physics	1st	R.K. Gaur, S.L. Gupta	Dhanpat Rai Publications	1993

Reference Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Fundamentals of Physics	Revised	J. Walker, D. Halliday, R. Resnick	Wiley Publications	2018
2	Engineering Mechanics	3rd	S.S. Bhavikatti.	New Age International (P) Ltd.	2010
3	Engineering Physics	1st	B.K. Pandey and Chaturvedi	Cengage learning Publications	2017
4	Nanotechnology-Principles & Practices	3rd	Sulabha K. Kulkarni	Capital Publication Co. New Delhi	2014
5	Introduction to Solid State Physics	8th	Charles Kittel	John Willey and Sons Inc.	2009
6	Solid State Physics	6th	S. O. Pillai	New edge Internationals	2009

Useful Link /Web Resources:

1. http://hyperphysics.phy-astr.gsu.edu/hbase/index.html
2. https://en.wikipedia.org/wiki/Wave_interference
3. https://en.wikipedia.org/wiki/Introduction_to_quantum_mechanics

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Course Title: Physics for Civil Engineering	
Course Code: 241CEBSCP104	**Semester:** II
Teaching Scheme: L-T-P: 0-0-2	**Credit :** 01
Evaluation Scheme: ISE: 25	**ESE Marks:** 00

Prior Knowledge of:	Optics, magnetic materials, semiconductor basics, graph plotting, slope calculation.

Course Objectives:

1	To make the students understand the concept of physics for the effective application in the field of engineering and technology.
2	To use the knowledge of electron transport in semiconductors.
3	To summarize the factors affecting mechanical properties of fluids.

List of Experiments:

Exp. No	Title of Experiments	Duration
1.	To verify Pascal's law experiment	**02Hrs**
2.	To verify Hooks law experiment	**02 Hrs**
3.	To determine coefficient of viscosity	**02Hrs**
4.	To calculate Young's modulus by bending beam	**02Hrs**
5.	To determine Rigidity Modulus of the suspension wire by Torsional pendulum	**02Hrs**
6.	To measure Hydrostatic pressure measurement	**02Hrs**
7.	To determine the velocity of the ultrasonic wave in water using ultrasonic interferometer	**02Hrs**
8.	To study viscosity by using capillary action flow method	**02Hrs**
9.	To find Reynolds number using Reynolds experiment	**02Hrs**

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Exp. No	Title of Experiments	Duration
10.	To test the electronic components experiment (resisters, capacitors, inductor, diode, transistor, LED and switches using multimeter)	02Hrs
11.	Assignment on pressure measuring devices	02Hrs
12.	Assignment on bending and shear stress	02Hrs

Course Outcomes (CO): After successful completion of the course, students will be able to

CO	Statements
104.1	**Apply** laws of mechanics for system of motions of bodies
104.2	**Explain** elastically properties of materials
104.3	**Explain** ultrasonic interferometer to study velocity of ultrasound in given Liquid
104.4	**Interpret** knowledge related to mechanics of fluids.

Course Articulation Matrix: Mapping of Course Outcomes (CO) with Program Outcomes (PO)

CO \ PO	BTL	1	`2	3	4	5	6	7	8	9	10	11	12
104.1	2	3	-	-	-	1	-	-	-	-	-	-	1
104.2	2	3	-	-	-	1	-	-	-	-	-	-	1
104.3	2	3	-	-	-	1	-	-	-	-	-	-	1
104.4	2	3	-	-	-	1	-	-	-	-	-	-	1

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Text Books:

Sr. No.	Title	Edition	Author	Publisher	Year
1	Engineering Physics	1st	H.K. Malik	Tata McGraw Hill Education	2019
2	A Text Book of Engineering Physics	Revised	M. N. Avadhanulu, P. G. Kshirasagar	S. Chand Publications	2018
3	Engineering Mechanics	3rd	S.S. Bhavikatti	New Age International (P) Ltd.	2010
4	Engineering Physics	Revised	V. Rajendran	Tata McGraw Hill Education	2010
5	Engineering Physics	1st	R.K. Gaur, S.L. Gupta	Dhanpat Rai Publications	1993

Reference Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Fundamentals of Physics	Revised	J.Walker, D.Halliday, R.Resnick	Wiley Publication	2018
2	Engineering Physics	1st	B.K. Pandey and Chaturvedi	Cengage Learning Publications	2017
3	Nanotechnology-Principles & Practices	3rd	Sulabha K. Kulkarni	Capital Publication Co. New Delhi	2014
4	Introduction to Solid State Physics	8th	C.Kittel	John Willey and Sons Inc.	2009
5	Solid State Physics	6th	S.O.Pillai	New edge Internationals,	2009

Useful Link /Web Resources:

1. https://vlab.amrita.edu/?sub=1
2. http://vlabs.iitb.ac.in/vlab/labsps.html

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Course Title: Computer Programming and Problem Solving	
Course Code:241CEESCL102	**Semester:** II
Teaching Scheme: L-T-P : 03-00-00	**Credits:** 03
Evaluation Scheme ISE-I, MSE, ISE-II:10/30/10	**ESE Marks:** 50

Prior Knowledge of:	Basic knowledge of computers.

Course Objectives:

1.	Acquire basic principles of problem-solving using computers.
2.	Learn and use syntax of C programming language to solve basic science and engineering problems.
3.	Select appropriate programming constructs, data structures and functions to build solutions to variety of problems.

Curriculum Details

Course Contents	Duration
Unit 1: Introduction to C programming: • Fundamentals of algorithms, flowcharts. • **Getting started with C**- Basic structure of C program, features of C language, Character set, C tokens, Keywords and Identifiers, Data types and Format Specifier. • Managing Input and Output operations. • **Variables**-Local and Global variables, rules for defining a variable name, variableInitialization-Run time and compile time, variable declaration. • **Constants**-Defining Constant by using preprocessor directive and keyword const. • **Operators-** Arithmetic operators, Relational operators, Logical Operators, Assignmentoperators, Increment and Decrement operators, Conditional operators, Bit-wiseoperators, Special operators. Operator precedence and Associativity.	**07 Hrs**
Unit 2: Programming Constructs: • **Need of Decision-making statements-** Simple 'if' statement, the 'if...else' statement, nesting of 'if...else' statements, the 'else if' ladder, the 'switch' statement, break statement, the 'go to' statement	**07 Hrs**

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Course Contents	Duration
• **Need of looping statements**: The 'for','while','do-while' loop with examples	
Unit 3: Arrays& Strings: • **Arrays**-Types of arrays, declaration arrays, initializing arrays (One Dimensional and Two-Dimensional Array)-Run time Initialization and Compile time Initialization with examples. • **Character Arrays and Strings**- Declaration and Initialization- Run time Initialization and Compile time Initialization with examples, reading string from terminal and writing strings to screen, String handling Functions-strcpy(),strcmp(),strlen(),strcat().	**07 Hrs**
Unit 4: Structures and Unions: • **Structures**-Elements of Structure: Structure definition, declaring structure variables,Structureinitialization. Accessing structure members by using '.' Operator, Arrays of structure, Arrays within structures. • **Unions**- Elements of Union: Union definition, declaring union variables, Union initialization, Comparison of Structure and Unions.	**07 Hrs**
Unit 5: Functions: • Need for Functions, Types of functions (User Defined and Built –In). • **User defined Function**-Elements of UDF-Function Definition, Function declaration, Function call. Actual Parameters, Formal Parameters. • **Categories of functions**-With Argument and with return value, No Argument and with return value, With Argument and No return value, No Argument and No return value.Storage classes (Automatic, Static, Extern, and Register). Passing arrays toa function, Structures and Functions. **Recursion.**	**07 Hrs**
Unit 6: Pointers: • Introduction to Pointers, accessing a value of variable by using Pointers-Declaration ofPointer variable, Initialization of pointer variables, Dereference operator. • Pointers as function arguments-Call by value and call by reference. • Pointers Expression, • Pointersand Arrays, Pointers and Strings, Pointers to Functions, Pointers and structures	**07 Hrs**

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Self-learning topics: Recent trends in IT.

Course Outcomes (CO): After successful completion of the course, students will be able to

CO	Statements
102.1	**Describe** the basic structure of C program and use of different data type.
102.2	**Develop** conditional and Loop statements to write C programs.
102.3	**Explain** the concept of arrays and strings to store homogeneous data.
102.4	**Use** functions to break programs into small module.
102.5	**Explain** concept of structures and union.
102.6	**Use** pointers to access memory location.

Course Articulation Matrix: Mapping of Course Outcomes (CO) with Program Outcomes (PO)

CO \ PO	BTL	1	2	3	4	5	6	7	8	9	10	11	12
102.1	2	3	3	2	--	--	--	--	--	--	--	--	1
102.2	2	3	3	2	--	--	--	--	--	--	--	--	1
102.3	2	3	3	2	--	--	--	--	--	--	--	--	1
102.4	2	3	3	2	--	--	--	--	--	--	--	--	1
102.5	2	3	3	2	--	--	--	--	--	--	--	--	1
102.6	2	2	2	2	--	--	--	--	--	--	--	--	1

Text Books:

Sr.No	Title	Edition	Author(s)	Publisher	Year
1	Programming in ANSI C	8th	E. Balagurusamy	McGraw Hill Education	2019
2	Let Us C	16th	Yashwant Kanetkar	BPB Publication	2017

Reference Books:

Sr.No	Title	Edition	Author(s)	Publisher	Year
1	Programming with ANSIAnd Turbo C	-	Ashok Kamthane	Pearson Education	2002
2	Programming in C	2nd	J.B Dixit	Firewal Media	2011
3	The Complete ReferenceEdition	4th	Herbert Schildt	McGraw-Hill Education	2017

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Course Title: Computer Programming and Problem Solving Laboratory	
Course Code :241CEESCP102	**Semester:** II
Teaching Scheme: L-T-P: 00-00-02	**Credit :** 01
Evaluation Scheme: ISE: 25	**ESE Marks:** 00

Prior Knowledge of:	Basic knowledge of computers.

Course Objectives:

1.	To Develop the ability to analyze a problem, develop an algorithm to solve it
2.	To Understand the concept of a program in a high-level language how it is being translated by a compiler into machine language and then executed
3.	To impart concept like looping, array, functions, structure and unions

List of Experiments:

Exp. No	Title of Experiments	Duration
01	Study different IDE's used for C programming	**02 Hrs**
02	Write C Program/s to explore data types.	**02 Hrs**
03	Write C Program/s to explore constants and variables.	**02 Hrs**
04	Write C Program to perform arithmetic, logical and relational operators.	**02 Hrs**
05	Write C Program using simple control statements: If-else, Do-while.	**02 Hrs**
06	Write C Program using loops statement.	**02 Hrs**
07	Write C Program using switch statement.	**02 Hrs**
08	Write C Program using arrays: Declare and initialization of arrays.	**02 Hrs**
09	Write C Program to demonstrate User defined Functions.	**02 Hrs**
10	Write C Program to demonstrate structures.	**02 Hrs**
11	Write C Program to demonstrate unions.	**02 Hrs**
12	Write C Program to demonstrate use of Pointers.	**02 Hrs**

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Course Outcomes (CO): After successful completion of the course, students will be able to

CO	Statements
102.1	Understand the logic for given problem and provide the solution.
102.2	Explain syntax and construction of C programming.
102.3	Describe the methods of iteration or looping and branching.
102.4	Make use of different data structures like Arrays, Structures, and Unions.

Course Articulation Matrix: Mapping of Course Outcomes (CO) with Program Outcomes PO)

PO / CO	BTL	1	2	3	4	5	6	7	8	9	10	11	12
102.1	2	1	1	1	--	--	--	--	--	--	--	--	1
102.2	2	1	1	1	--	--	--	--	--	--	--	--	1
102.3	2	1	1	1	--	--	--	--	--	--	--	--	1
102.4	2	1	1	1	--	--	--	--	--	--	--	--	1

Text Books:

Sr. No	Title	Edition	Authors	Publisher	Year
1	Programming in ANSI C	Eight Edition	E. Balagurusamy	McGraw Hill Education	2019
2	Let Us C	16th	Yashwant Kanetkar	BPB Publication	2017

Reference Books:

Sr. No	Title	Edition	Authors	Publisher	Year
1	Programming with ANSI And Turbo C	--	Ashok Kamthane	Pearson Education	2002
2	Programming in C	2nd	J.B Dixit	Firewal Media	2011
3	The Complete Reference Edition	4th	Herbert Schildt	McGraw-Hill Education	2017

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Department of Civil Engineering

F. Y. B. Tech. Curriculum

w. e. f. A.Y. 2024-2025

Course Title: Civil Engineering Drawing	
Course Code: 241CEESCL103	**Semester:** II
Teaching Scheme: L-P-T: 03-00-00	**Credits:** 03
Evaluation Scheme ISE-I, MSE, ISE-II:10/30/10	**ESE Marks:** 50

Prerequisite:	Fundamentals of drawings

Course Objectives:

1	Enable them to use computer aided drafting tools to prepare drawings.
2	Bring awareness that engineering drawing is the language of engineers.
3	Impart basic knowledge and skills required to prepare engineering drawings.
4	Visualize and present the orthographic and isometric views with proper dimension and scale.

Course Content:

Content	Duration
Unit I - Introduction to Engineering Drawing: • Fundamentals of Engineering Drawing • Need of Engineering Drawing • Sheet layout, constructions Scales • Sizes of various standard papers. **Graphics using CAD:** • Introduction to CAD software • Graphical User interface of CAD software • Selection of Drawing size and scale • Standard Toolbars, Menus, Tabs, navigational tools,	7 Hrs

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Content	Duration
• Basic Commands to draw 2D objects, • Co-ordinate system and planes, • Viewing Commands, Drawing Limits, Units. • Use of SNAP, GRID and ORTHO mode for selection of points quickly.	
Unit 2- Projections of Solids: • Projections of solids, when axis is perpendicular to one of the reference planes, when axis is inclined to one and parallel to other reference plane, when axis is inclined to both the reference planes, • Projection of Prisms, Pyramids, right circular cylinder, right circular cone.	7 Hrs
Unit 3- Orthographic Projections: • Principle of Orthographic projections, • Introduction to First and Third angle Projection methods, • Obtaining orthographic projections of given pictorial views by using first angle projection method along with sectional views, dimensioning.	7 Hrs
Unit 4- Isometric Projections: • Introduction to isometric projection, • Isometric projections and Isometric views / drawings, • Circles in isometric view, • Isometric views of simple solids and objects, Isometric Scale.	7 Hrs

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Content	Duration
Unit 5- Building Planning • Types of Projection adopted in Building Drawing, • Scales for various types of Drawings, • Types of drawing with appropriate scale & uses of Architectural Drawings - measured drawing, submission / municipal drawing, working/ detailed drawings, • Structural Drawings, Symbols, Conventions and Abbreviations for - Electrical fittings, water supply, sanitary fittings, material for construction etc.	7 Hrs
Unit 6- Building Drawings • Development of drawings: Line plan, location plan, layout plan, floor plan, cross-sections, elevations, roof plans, site plan, • Concept of foundation plan, service plans (plumbing, electrical, furniture and roof drainage).	7 Hrs

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Course Articulation Matrix: Mapping of Course Outcomes (CO) with Program Outcomes (PO)

PO/ CO	1	2	3	4	5	6	7	8	9	10	11	12	BTL
103.1	3	2	-	-	3	-	-		-		-	-	3
103.2	3	2	-	-	3	-	-		-		-	-	3
103.3	3	2	-	-	3	-	-		-		-	-	3
103.4	3	2	-	-	3	-	-		-		-	-	3
103.5	3	2	-	-	3	-	-		-		-	-	3
103.6	3	2	-	-	3	-	-		-		-	-	3

Course Outcomes (COs):

COs	At the end of successful completion of course, the students will be able to…
103.1	Understand modern engineering tools used for engineering drawing.
103.2	Prepare drawing for projection of solid.
103.3	Prepare drawing for orthographic & sectional views.
103.4	Prepare drawing for isometric projection.
103.5	Understand concepts of building planning.
103.6	Prepare and interpret various building drawings.

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Text Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Engineering Drawing	1st	Bhatt, N. D. and Panchal	Charotar Publication, Anand, India	2016
2	Engineering and Graphics	Revised	K. Venugopal, K	New Age International, New Delhi	2015
3	Engineering Drawing with introduction to AutoCAD	Revised	Jolhe, D. A.,	Tata McGraw Hill, New Delhi	2015
4	A Textbook of Engineering Drawing	Revised	Dhawan, R. K	S. Chand, New Delhi	2000

Reference Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	A First Course in Engineering Drawing	Revised	Rathnam, K	Springer Nature Singapore Pte. Ltd., Singapore	2018
2	Engineering Drawing and design	1st	Madsen, D. P. and Madsen, D. A	Delmar Publishers Inc., USA	2016
3	The Fundamentals of Engineering Drawing	3rd	Luzadder, W. J. and Duff, J. M.,	Peachpit Press, USA	1992

Useful Link /Web Resources:

1. https://www.youtube.com/watch?v=17vBdqQaqDA
2. https://www.youtube.com/watch?v=YXKLvp7ItgA
3. https://www.youtube.com/watch?v=7wXypCM3ixk&list=PLES3BP2Z1IbXujfJTC8BlMMnHJewmXYV

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w. e. f. A.Y. 2024-2025

Course Title: Civil Engineering Drawing Laboratory	
Course Code: 241CEESCP103	**Semester:** II
Teaching Scheme: L-P-T: 00-02-00	**Credits:** 01
ISE + MSE Marks: 25	**ESE Marks:** 00

Prerequisite:	Fundamentals of drawings

Course Objectives:

1	Enable them to use computer aided drafting tools to prepare drawings.
2	Bring awareness that engineering drawing is the language of engineers.
3	Impart basic knowledge and skills required to prepare engineering drawings.
4	Visualize and present the orthographic and isometric views with proper dimension and scale.

List of Experiments:

Sheet No.	Description of the Topic	Duration
1	Introduction of basic CAD software commands	2 Hrs.
2	Use and practice of Customization & Annotations	2 Hrs.
3	Draw Basic Drawing (Minimum two problems)	2 Hrs.
4	Draw Basic Drawing (Minimum two problems)	2 Hrs.
5	Draw problems on Projections of Solid (Minimum two problems)	2 Hrs.
6	Draw problems on Projections of Solid (Minimum two problems)	2 Hrs.
7	Draw problems on Orthographic views (Minimum two problems)	2 Hrs.
8	Draw problems on Sectional Orthographic views (Minimum two problems)	2 Hrs.
9	Draw problems based on Isometric projections (Minimum two problems)	2 Hrs.

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Sheet No.	Description of the Topic	Duration
10	Draw common Symbols and conventions used in Engineering	2 Hrs.
11	Prepare a simple building drawing showing plan, section and elevation.	2 Hrs.
12	Prepare a simple building drawing showing plan, section and elevation.	2 Hrs.

Course Articulation Matrix: Mapping of Course Outcomes (CO) with Program Outcomes (PO)

POs/ COs	1	2	3	4	5	6	7	8	9	10	11	12	BTL
103.1	3	2	-	-	3	-	-	-	-	-	-	1	3
103.2	3	2	-	-	3	-	-	-	-	-	-	-	3
103.3	3	2	-	-	3	-	-	-	-	-	-	-	3
103.4	3	2	-	-	3	-	-	-	-	-	-	-	3
103.5	3	2	-	-	3	-	-	-	-	-	-	-	3
103.6	3	2	-	-	3	-	-	-	-	-	-	-	3

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Course Outcomes (COs):

COs	At the end of successful completion of course, the students will be able to…
103.1	Understand modern engineering tools used for engineering drawing.
103.2	Prepare 2-D drawings with appropriate dimensional and geometrical constraints.
103.3	Prepare drawing for projection of solid.
103.4	Prepare drawing for orthographic & sectional views.
103.5	Prepare drawing for isometric projection.
103.6	Prepare the municipal drawing.

Text Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1.	Engineering Drawing	1st	Bhatt, N. D. and Panchal	Charotar Publication, Anand, India	2016
2.	Engineering and Graphics	Revised	K. Venugopal, K	New Age International, New Delhi	2015
3.	Engineering Drawing with introduction to AutoCAD	Revised	Jolhe, D. A.,	Tata McGraw Hill, New Delhi	2015
4.	A Textbook of Engineering Drawing	Revised	Dhawan, R. K	S. Chand, New Delhi	2000

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Reference Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1.	A First Course in Engineering Drawing	Revised	Rathnam, K	Springer Nature Singapore Pte. Ltd., Singapore	2018
2.	Engineering Drawing and design	1st	Madsen, D. P. and Madsen, D. A	Delmar Publishers Inc., USA	2016
3.	The Fundamentals of Engineering Drawing	3rd	Luzadder, W. J. and Duff, J. M.,	Peachpit Press, USA	1992

Useful Link /Web Resources:

1. https://www.youtube.com/watch?v=17vBdqQaqDA
2. https://www.youtube.com/watch?v=YXKLvp7ItgA
3. https://www.youtube.com/watch?v=7wXypCM3ixk&list=PLES3BP2Z1IbXujfJTC8BlMMnHJewmXYV
4. Gazetteer of Kolhapur District.
5. Eaton, Richard Maxwell (2005). The New Cambridge History of India
6. "Translations of Panhala inscriptions". Government of Maharashtra. Retrieved 19 March 2009.
7. "Mahalakshmi Temple - Jewel Among Kolhapur Temples
8. "Inside Temples". mahalaxmikolhapur.com.

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Course Title: Design Thinking Through Innovation	
Course Code: 241CEVSECL102	**Semester:** II
Teaching Scheme: L-T-P: 01-00-00	**Credits:** 01
Evaluation Scheme: ISE: 25	**ESE Marks:** 00

Prior Knowledge of	Understanding, user-centric mindset, collaboration and teamwork, curiosity and open-mindedness, effective communication skills, learning orientation, risk tolerance

Course Objectives:

1.	To familiarize with engineering design process and the basics of design thinking
2.	To bring awareness on idea generation to solve the problems
3.	To familiarize with the various types of prototypes and the techniques used for prototyping

Course Content:

Content	Duration
Unit I: Engineering design, design thinking, and idea generation • Introduction, key concepts of design, a simplified process of engineering design • What is design thinking? - its importance, socio-economical relevance, principles, origin, process of design thinking, relevance of design and design thinking in engineering • Introduction to idea generation, idea generation techniques, processes, define the problem, needs v/s wants, identify philosophy, problem solving tools, case studies • Critical thinking: fundamentals, characteristics, critical v/s ordinary thinking • Critical thinking skills- linking ideas, structuring arguments, five pillars of critical thinking	**07 Hrs**
Unit II: Prototyping and tools for design - Innovation • Prototyping: introduction, need, process, types, fidelity for prototypes, minimum usable prototype [mup] – concept, challenges, etc.,	**07 Hrs**

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Content	Duration
• Prototyping for digital & physical products: concept, what is unique in digital and physical prototypes? • Digital and physical prototypes: preparation; testing prototypes with users • Introduction to different tools used for design and innovation, such as hand saw (wood, PVC, CPVC and steel), spanners, allen key & wrench (flat, ring, adjustable), solder gun, component cutter, tweezer, multi meter, glue gun, hex saw, cutter, wire stripper	

Course Outcomes (COs): At the end of the course, the students should be able to

CO	Statements
102.1	**Learn** structured approach of engineering design and the relevance of design and design thinking in engineering & **Understand** idea generation techniques to find out solutions to the problems
102.2	**Understand** the various types of prototypes and **Inculcate** the techniques used for prototyping

Course Articulation Matrix: Mapping of course outcomes (COs) with program outcomes (POs)

POs / COs	BTL	1	2	3	4	5	6	7	8	9	10	11	12
102.1	1	2	--	--	--	--	--	--	--	--	--	--	1
102.2	2	2	1	--	--	--	--	--	1	--	--	1	1

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Suggested Learning Resources:

Text Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1.	Introduction to Design Thinking	--	S. Salivahanan, S. Suresh Kumar, D. Praveen Sam	Tata Mc Graw Hill, First Edition	2019
2.	The design Thinking Playbook	--	Michael Lewrick	Wiley	2019
3.	Prototyping for designers: developing the best digital and physical products	--	Kathryn McElroy	O'Reilly	2017
4.	"Design thinking: Understand – improve– apply"	--	Hasso Plattner, Christoph Meine and Larry Leifer (eds)	Springer	2011

Reference Books:

Sr. No	Title	Edition	Authors	Publisher	Year
1.	Design thinking – New product essentials from PDMA	1st	Michael G. Luchs, Scott Swan , Abbie Griffin	Wiley	2015
2.	101 Design methods: A structured approach for driving innovation in your organization	1st	Vijay Kumar	Wiley	2012

Useful Link /Web Resources:

1. https://www.ideou.com/pages/design-thinking
2. https://dschool.stanford.edu/
3. https://www.designthinkersacademy.com/usa/
4. https://www.ibm.com/design/thinking/page/toolkit
5. https://hbr.org/2018/09/design-thinking-is-fundamentally-conservative-and preserves-the-status-quo

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Kasaba Bawada, Kolhapur

Course Title: Design Thinking Through Innovation Laboratory	
Course Code: 241CEVSECP102	**Semester:** I
Teaching Scheme: L-T-P: 00-00-01	**Credit:** 01
Evaluation Scheme: ISE: 25	**ESE Marks:** 00

Prior Knowledge of:	Understanding, user-centric mindset, collaboration and teamwork, curiosity and open-mindedness, effective communication skills, learning orientation, risk tolerance

Course Objectives:

1	To discuss various techniques of idea generation
2	To explain the various tools used for innovation
3	To discuss the methods of implementing design thinking in the real world
4	To discuss the implementation of creativity and innovation

List of Experiments

Sr. No.	Title of Experiments/Assignment List	Duration
01	Overview of design thinking: ethical design and critiques, generation of "Idea", problem identification and exercises	**02 Hrs**
02	Brainstorming sessions to find out solution for identified problems	**02 Hrs**
03	Prototyping and modelling challenge, various tools and methodology used for the prototyping	**02 Hrs**
04	Hands-on demonstration of different tools used for design & innovation	**02 Hrs**
05	Hands-on demonstration of soldering machine, function and purpose of soldering machine	**02 Hrs**
06	Explanation and usage of joining & insulation tools and technics	**02 Hrs**
07	Current development in concreate and testing in civil field	**02 Hrs**
08	Micro project: group formation and idea generation	**02 Hrs**

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Sr. No.	Title of Experiments/Assignment List	Duration
09	Creation of prototype and innovative solution	02 Hrs
10	Test and evaluation of prototype	02 Hrs
11	Report drafting - instructions & practices	02 Hrs
12	Presentation & exhibition	02 Hrs

Course Outcomes (CO):

At the end of the course, the student should be able to

CO	Statements
102.1	**Learn** structured approach of engineering design and the relevance of design and design thinking in engineering & **Understand** idea generation techniques to find out solutions to the problems
102.2	**Understand** the various types of prototypes and **Inculcate** the techniques used for prototyping

Course Articulation Matrix: Mapping of course outcomes (CO) with program outcomes (PO)

CO \ PO	BTL	1	2	3	4	5	6	7	8	9	10	11	12
102.1	1	2	--	--	--	--	--	--	--	--	--	--	1
102.2	2	2	1	--	--	--	--	--	1	--	--	1	1

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Text Books:

Sr. No	Title	Edition	Authors	Publisher	Year
1.	Introduction to design thinking	--	S. Salivahanan, S. Suresh Kumar, D. Praveen Sam	Tata Mc Graw Hill, First Edition	2019
2.	The design thinking playbook	--	Michael Lewrick	Wiley	2019
3.	Prototyping for designers: developing the best digital and physical products	--	Kathryn McElroy	O'Reilly	2017
4.	"Design thinking: Understand – improve– apply"	--	Hasso Plattner, Christoph Meine and Larry Leifer (eds)	Springer	2011

Reference Books:

Sr. No.	Title	Edition	Authors	Year
1	Design thinking: understand-improve-apply	--	S. G. Blank	2007
2	Design thinking for innovation research and practice	--	Walter Brenner, Falk Uebernickel, Springer	2016
3	Business design thinking and doing: frameworks, strategies and techniques for sustainable innovation	--	Angele M. Beausoleil	2022

Useful Link /Web Resources:

1. https://www.ideou.com/pages/design-thinking
2. https://dschool.stanford.edu/
3. https://www.designthinkersacademy.com/usa/
4. https://www.ibm.com/design/thinking/page/toolkit
5. https://hbr.org/2018/09/design-thinking-is-fundamentally-conservative-and preserves-the status-quo

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Department of Civil Engineering

F. Y. B. Tech. Curriculum

w.e.f. A.Y. 2024-2025

Course Title: Historical Places in and Around Kolhapur District	
Course Code : 241CEIKSL101	**Semester**: II
Teaching Scheme L-T-P : 02-00-00	**Credits:** 02
Evaluation Scheme ISE-I, MSE, ISE-II: 20/30/00	**ESE Marks:** 00

Contents	Duration
Unit 01: Chhatrapati Shahu Maharaj: A King for Society • Introduction • Life History • Contribution of Rajarshi Shahu Maharaj in various fields as a modern Social Reformer as Women Empowerment in 19th Century • Development in Education • Social Reservation and equality • Agriculture • Industry • Initiation for Radhanagai Village and Dam	**07 Hrs**
Unit 02: A Study of Khidrapur- Kopeshwar • Life History of Khidrapur Kopeshwar Temple • The Wonder of Khidrapur Kopeshwar Temple • Swarga Mandap in Kopeshwar Temple • Sabha Mandap, Antaral Kaksha of Kopeshwar Temple • Beauty of Exterior Architecture of Kopeshwar Temple • Mystery of Black stone • Measures Suggested to Development of Khidrapur	**07 Hrs**
Unit 03 : A Study of Panhala Fort and Pawankhind • History of Panhala Fort • Major Features: Andhar Bawadi • Major Features: Kalavanticha Mahal, Ambarkhana • Major Features: Dharma Koti, Sajja Koti	**07 Hrs**

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Contents	Duration
• Teen Darwaja, Raj Darwaja • Rajdindi Bastion • Journey from Panhalgad to Pawankhind by Chhatrapati Shivaji Raje	
Unit 04: A Study of Mahalaxmi Temple • History and construction of Temple • The Main Shrines Doorway • Darshan and Kurma Mandap • Ganapati Chowk, Garud Mandap • Boundary wall, Entrances and complex • Mahalaxmi Temple Timings • Kiranostav Celebrations	**07 Hrs**

References:

1. Social Movements in India: A Review of Literature – Ghanshy am ShahISBN 0761995145 New Delhi ; Thousand Oaks : Sage Publications, 2004.
2. Rajarshi Shahu Maharaj – Jeevan Vakarya, editor – Ramesh Patnage.
3. Shahu Chhatrapati - Royal Revolutionary – DhananjayKeer.
4. Samajik SanshodhanPadnativaTantre – Dr. Pradeep Aaglave.
5. Kalasekar. T. L: Khidrapur: Khojurao of Maharashtra.
6. Chothe R.G: Temples of Khidrapur, A heritage of India.
7. Kulkarni A. B: Kopeshwar temple of Khidrapur.
8. Gazetteer of Kolhapur District.
9. Eaton, Richard Maxwell (2005). The New Cambridge History of India.
10. "Translations of Panhala inscriptions". Government of Maharashtra. Retrieved 19 March 2009.
11. "Mahalakshmi Temple - Jewel Among Kolhapur Temples.
12. "Inside Temples". mahalaxmikolhapur.com.

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Department of Civil Engineering

F. Y. B. Tech. Curriculum

w.e.f. A.Y. 2024-2025

Course Title: Finishing School Training-II	
Course Code: 241CEMCL103	**Semester:** II
Teaching Scheme: L-T-P :3-0-0	**Credits:** 00
Evaluation Scheme ISE: 50 Grade	**ESE Marks:** 00

Curriculum Details

Course Contents	Duration
UNIT-I: Learning Basic Aptitude Module-1: Ratio & Proportion Module-2: Mixture & Alligation Module-3: HCF & LCM	**06 Hrs**
UNIT-II: Logical Reasoning Module-1: Blood Relations Module-2: Seating Arrangement Module-3: Pattern Completion	**06Hrs**
UNIT-III: Functional English Module-1: Spotting Errors, Sentence Correction/ Sentence Improvement Module-2: Sentence completion Module-3: Sentence Formation/ Ordering of words Module-4: One word Substitution Module-5: Para jumbles	**10 Hrs**
UNIT-IV: Attitude Building-I Module-1. Focus & Discipline Module-2. ASK Model- Corporate Expectations Module-3. Change Management (Changing & Developing habits)	**06 Hrs**
UNIT-V: Technical Training Module-1: C++ Introduction-History of C++,C++ specifications and keywords, Data type and its type, type modifiers and qualifiers,Structure in C/C++, access specifier, Memory Allocation Functions-simple programs. Module-2: Creating Classes and Objects-Access Specifiers,Constructor,Types of Functions Member Functions-Internally Defined, Externally Defined,Inline Function,Friend Function Virtual Function Introduction,Nesting of Member Functions Module-3 - Functions-Function Arguments- Call by Value, Call by Reference,Object as Function Argument, Array of Objects Module-4-Constructor and Destructor Constructor Types-Default, Parameterized, Copy Constructor,Destructor,Concept of Pointers Shallow Copy,Deep Copy Module-5- Exception Handling-Static members,Static functions,Exception Handling	**14 Hrs**

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Course Title: Capstone Project	
Course Code: 241CEMCL104	**Semester:** II
Teaching Scheme: L-T-P: 0-0-0	**Credits:** 00
Evaluation Scheme ISE: 50 Grade	**ESE Marks:** 00

Course Objectives:

1	To inculcate independent learning by problem solving with social context.
2	To engages students in rich and authentic learning experiences.
3	To emphasizes learning activities that are long-term, interdisciplinary and student-centric.
4	To provide every student the opportunity to get involved either individually or as a group so as to develop team skills and learn professionalism.

Curriculum Details

As per the approved structure of curriculum, students will be allowed to do capstone project during second semester of B. Tech. program.

Topics:

Capstone Project may be a theoretical analysis, modeling & simulation, experimentation & analysis, prototype design, fabrication of new equipment, correlation and analysis of data, software development, etc. or a combination of these.

Group Structure:

Working in supervisor/mentor monitored groups; the students plan, manage, and complete a task/project/activity which addresses the stated problem.

1. There should be team/group of 4 -5 students
2. A supervisor/mentor teacher assigned to individual groups

Selection of Project:

The project demo model for learning is recommended. The model begins with the identifying of a problem, often growing out of a question or "wondering". This formulated problem then stands as the starting point for learning. Students design and analyze the problem within an articulated interdisciplinary or subject frame or based on Rural/Social internship.

A problem can be theoretical, practical, social, technical, symbolic, cultural, and/or scientific and grows out of students' wondering within different disciplines and professional environments. A chosen problem has to be exemplary. The problem may involve an interdisciplinary approach in both the analysis and solving phases.

By exemplarity, a problem needs to refer back to a particular practical, scientific, social and/or technical domain. The problem should stand as one specific example or manifestation of more general learning outcomes related to knowledge and/or modes of inquiry.

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There are no commonly shared criteria for what constitutes an acceptable project. Projects vary greatly in the depth of the questions explored, the clarity of the learning goals, the content, and structure of the activity.

1. A few hands-on activities that may or may not be multidisciplinary.
2. Use of technology in meaningful ways to help them investigate, collaborate, analyze, synthesize, and present their learning.
3. Activities may include- Solving real life problem, investigation, /study and Writing reports of in-depth study, fieldwork.

Recommended Guidelines and phases:

Capstone project is learning through activity. One of the teachers can be appointed as guide for capstone project group. Following are the recommended guidelines that will work as an initiator and facilitator in process of completion of Capstone project.

1. In first week of commencement of 2nd semester, let the guide create awareness about capstone project (what, why, and how) among the students. Convey students expected outcomes, assessment process and evaluation criteria.
2. Get groups of students registered preferably 4-5 students per group.
3. Assign guide to each group.
4. Provide guidelines for title identification (Problem can be some real-life situation that needs technology solutions. This situation can be identified by rural/social internship, by meeting people around, visiting various industries, society, and institutes. The solution can be prototype, model, convertible solutions, survey and analysis, simulation, and similar).
5. Let students submit the problem identified in prescribed format (Problem Statement, Initial Survey for topic finalization, Abstract, Software, Hardware required, Title)
6. Guide can approve the problem statements based on feasibility and learning outcomes expected for first year engineering students
7. Guide is to monitor progress of the task during phases of project work. Broadly phases may include- requirements gathering, preparing a solution, technology design for the solution.
8. Weekly monitoring and continuous assessment record are to be maintained by guide.
9. Get the report submitted at the end of semester.

Student is required to prepare a capstone project and file containing documentary proofs of the activities done by him. The evaluation will be done by expert committee constituted by HoD/Departmental capstone project In-charge/ faculty mentor.

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