Kashi Institute of Technology, Varanasi

(An Autonomous Institute of Dr. A.P.J.Abdul Kalam Technical University, Lucknow)

Evaluation Scheme & Syllabus

For

B.Tech. First Year

(Civil Engineering)

(Effective from Session: 2024-25)

MS 23KM, Varanasi – Prayagraj (Allahabad) Highway, Mirzamurad, Varanasi

Uttar Pradesh - 22130

B.Tech. First Year, Semester-I

(Civil Engineering)

S.N.	Course Category	Course Code	Course Title	Evaluation Scheme							
				Type	Periods			FA	SA	Total	Credit
					L	T	P				
1	BSC	BSC101	APPLIED MATHEMATICS-I	T	3	1	0	70	30	100	4
2	BSC	BSC103	BASIC OF COMPUTER	T	3	1	0	70	30	100	4
3	PCC-CE	PCCCE101	FUNDAMENTAL OF CIVIL ENGINEERING	T	3	1	0	70	30	100	4
4	HSMC	HSMC105	SOFT SKILL	T	3	0	0	70	30	100	3
5	HSMC	HSMC155	LANGUAGE LAB	P	0	0	2	70	30	100	1
6	BSC	BSC153	BASIC COMPUTING LAB	P	0	0	2	70	30	100	1
7	PCC-CE	PCCCE151	BASIC CIVIL LAB	P	0	0	2	70	30	100	1
8	ESC	ESC153	ENGINEERING DRAWING	P	0	0	2	70	30	100	1
9	CCA	CCA151	CO-CURRICULAR ACTIVITIES	-	-	-	-	-	-	100	0.5
10	MC	MCGP101	GENERAL PROFICIENCY	-	0	0	0	-	-	100	0.5
Total				**-**	**12**	**3**	**8**	**560**	**240**	**1000**	**20**

B.Tech. First Year, Semester-II

(Civil Engineering)

SN	Course Category	Course Code	Course Title	Evaluation Scheme							
				Type	Period			FA	SA	Total	Credit
					L	T	P				
1	BSC	BSC102	APPLIED MATHEMATICS-II	T	3	1	0	70	30	100	4
2	ESC	ESC102	PROGRAMMING IN C	T	3	1	0	70	30	100	4
3	PCC-CE	PCCCE102	CONSTRUCTION TECHNOLOGY	T	3	1	0	70	30	100	4
4	HSMC	HSMC106	CAREER DEVELOPMENT COMMUNICATION	T	0	0	4	70	30	100	2
5	ESC	ESC154	CAD AND DIGITAL MANUFACTURING	P	0	0	4	70	30	100	2
6	ESC	ESC152	C PROGRAMING LAB	P	0	0	2	70	30	100	1
7	PCCCE	PCCCE152	CONSTRUCTION TECHNOLOGY LAB	P	0	0	2	70	30	100	1
8	ESC	ESC156	WORKSHOP LAB	P	0	0	2	70	30	100	1
9	CCA	CCA152	CO-CURRICULAR ACTIVITIES	-	-	-	-	-	-	100	0.5
10	MC	MCGP102	GENERAL PROFICIENCY	-	-	-	-	-	-	100	0.5
Total				**-**	**9**	**3**	**4**	**560**	**240**	**1000**	**20**

FA: Formative Assessment, **SA**: Summative Assessment, **L**: Lecture, **T**- Tutorial, **P:** Practical

Abbreviation Used:

PCC: Professional Core Courses
HSMC: Humanities, Social Science and Management Course
MOOC: Massive Open Online Course
CCA: Co-Curricular Activities
MC: Mandatory Courses
ESC: Engineering Science Courses
BSC: Basic Science Courses

DETAILED SYLLABI

B.Tech 1St Year

(Semester –I)

- B.Tech -Civil Engineering

(Effective from Session: 2024-25)

B.Tech (Civil Engineering)						
Semester: I			**Course Category Code: BSC**			
Course Code	**Course**		**Period/Week**			**Credit**
			L	**T**	**P**	**C**
BSC101	**Applied Mathematics I**		**3**	**1**	**0**	**4**
Prerequisite	***After completion of the course students are able to -***					**Bloom's Level**
Course Outcome	**CO1**	*Understand the concept of Eigen values, Eigen vectors and apply the concept of rank to evaluate linear simultaneous equations*				K2 & K5
	CO2	*Remember the concept of differentiation to find successive differentiation, Leibnitz Theorem, and find partial and total derivatives*				K1& K5
	CO3	*Apply the concept of partial differentiation to evaluate extrema, series expansion and Jacobians.*				K3 &K5
	CO4	*Remember the concept of Beta and Gamma function; analyze area and volume.*				K1 & K4
	CO5	*Apply the concept of Vector Calculus to analyze and evaluate directional derivative, line, surface and volume integrals.*				K3, K4 & K5
UNIT-1	**Matrices**					**Contact Hours: 8**
Rank of matrix by elementary transformation (Echelon and Normal form); Inverse of the matrix by Gauss-Jardon's method; Consistency of linear system of equations (Homogeneous and non homogeneous equation); Eigen values and Eigen vectors; Cayley-Hamilton theorem with application						**CO1**
UNIT-2	**Differential calculus-I**					**Contact Hour : 8**
Successive Differentiation (nth order derivatives), Leibnitz theorem, Partial derivatives, Euler's Theorem for homogeneous functions and Total derivative.						**CO2**
UNIT-3	**Differential calculus-II**					**Contact Hours: 8**
Expansion of functions by Taylor's and Maclaurin's theorems for functions of one and two variables, Maxima and Minima of functions of several variables, Jacobians.						**CO3**
UNIT-4	**Multiple integration**					**Contact Hours: 8**
Double integral, Triple integral, Change of order of integration, Change of variables, Beta and Gama function and their properties.						**CO4**
UNIT-5	**Vector calculus**					**Contact Hours: 8**
Gradient, Curl and Divergence and their Physical interpretation, Line, Surface and Volume Integrals, Gauss's, Green's and Stoke's divergence theorem						**CO5**
Lecture Hours: 30		**Tutorial Hours :10**				**Total : 40**

Reference Books :

1. *E.Kreyszig,AdvanceEngineeringMathematics,JohnWiley&Sons,2005.*
2. *PeterV.O'Neil,AdvanceEngineeringMathematics,Thomson(Cengage)Learning,2007.*
3. *D.Poole,LinearAlgebra:AModernIntroduction,2ndEdition,Brooks/Cole,2005.*
4. *D.Poole,LinearAlgebra:AModernIntroduction,2ndEdition,Brooks/Cole,2005.*
5. *RayWylieCandLouisCBarret,AdvancedEngineeringMathematics,McGraw-Hill;SixthEdition.*

Text Book:

1..B.V.Ramana,HigherEngineeringMathematics,McGraw-HillPublishingCompanyLtd.,2008.
2. B.S.Grewal,HigherEngineeringMathematics,KhannaPublisher,2005.
3. RK.Jain&SRK.Iyenger,AdvanceEngineeringMathematics,NarosaPublishingHouse2002.
4. Shanti Narayan ,A text Book of Matrices,S.Chand & Co.
5. N.P.Bali. , A text Book of Engineering Mathematics,N.P.Bali
6. H.K.Dass ,Introduction to Engineering Mathematics ,S.Chand & Co.

Video Content:
Unit-1: https://youtu.be/jLP5Xs8Z8yE?si=Nk9ZxUcOZ6YP-lkU https://youtu.be/Pgft33DBmUs?si=t0Ah50E49fnY4ZRn **Unit-2:** https://youtu.be/1Cl2Pje4noo?si=8ZdDhtllyQowAjYS https://youtu.be/gx7NQXl4NC0?si=ZgAIWJcyKpBKFqQW **Unit-3 :** https://youtu.be/AS1UnsPJ8e4?si=PlnSp-IaGrS1c2fC https://youtu.be/8T7Y_nl8yF8?si=j6_Kz3gAuQwKLbMP **Unit-4 :** https://youtu.be/dLqKr9F2cbA?si=KgpQby-ipVsT29Lr https://youtu.be/TccLmZ0GW7g?si=HNIhnsHJWyYi_suM **Unit-5:** https://youtu.be/AGX0-tZ5rgQ?si=xoSLJ9A3Le5hayFo https://youtu.be/WwY50hCSiSc?si=QEJuQXgwssa3VWjO

B.Tech (Civil Engineering)						
Semester : I				**Course Category Code: BSC**		
Course Code	**Course**		**Period/Week**			**Credit**
			L	**T**	**P**	**C**
BSC103	**Basics of Computer**		**3**	**1**	**0**	**4**
Prerequisite	***After completion of course students are able to -***					**Bloom's Level**
Course Outcome	**CO1**	*Identify computer hardware and software.*				K2
	CO2	*Understand the data representation in computers.*				K3,K2
	CO3	*Basic knowledge of computer system and its working.*				K1
	CO4	*Basic knowledge of logical thinking and problem solving.*				K2
UNIT-1	**Introduction of Computer**					**Contact Hours:8**
What is Computer, Basic Applications of Computer; Components of Computer System, Central Processing Unit (CPU), VDU, Keyboard and Mouse, Other input/output Devices, Computer Memory, Concepts of Hardware and Software; Concept of Computing, Data and Information; Applications of IECT; Connecting keyboard, mouse, monitor and printer to CPU and checking power supply.						**CO1**
UNIT-2	**Operating System**					**Contact Hours :8**
What is an Operating System; Basics of Popular Operating Systems; The User Interface, Using Mouse; Using right Button of the Mouse and Moving Icons on the screen, Use of Common Icons, Status Bar, Using Menu and Menu-selection, Running an Application, Viewing of File, Folders and Directories, Creating and Renaming of files and folders, Opening and closing of different Windows; Using help; Creating Short cuts, Basics of O.S Setup; Common utilities.						**CO2 & CO3**
UNIT-3	**Computer Network**					**Contact Hours :8**
Basic of Computer networks; LAN, WAN; Concept of Internet; Applications of Internet; connecting to internet; What is ISP; Knowing the Internet; Basics of internet connectivity related troubleshooting, World Wide Web; Web Browsing softwares, Search Engines; Understanding URL; Domain name; IP Address; Using e-governance website.						**CO3**
UNIT-4	**Word Press**					**Contact Hours: 8**
Word Processing Basics; Opening and Closing of documents; Text creation and Manipulation; Formatting of text; Table handling; Spell check, language setting and thesaurus; Printing of word document.						**CO4**
UNIT-5	**Spread Sheet**					**Contact Hours: 8**
Basics of Spreadsheet; Manipulation of cells; Formulas and Functions; Editing of Spread Sheet, printing of Spread Sheet.						**CO4 & CO5**
Lecture Hours: 30		**Tutorial Hours :10**				**Total :40**
Reference Books						
1. BASIC COMPUTER COURSE by Saumya Ranjan behara ,publish by Vasan publications in 2019						
Text Book:						
1. Computer Fundamentals by P K Sinha ,publish by BPB publication in 2022.						
Video Content:						
1. https://youtu.be/Ojqdty-Oh1M?si=NGR02euwHWsJOSOL *2. https://youtu.be/JFF2vJaN0Cw?si=XkbbbHpgkhwGoAuf* *3. https://youtu.be/GlLRYml8mCY?si=1RNDsl0lQDFTZLx*						

B.Tech (Civil Engineering)						
Semester : I				**Course Category Code: PCC-CE**		
Course Code	**Course**		**Period/Week**			**Credit**
			L	**T**	**P**	**C**
PCCCE101	**Fundamental of Civil Engineering**		**3**	**1**	**0**	**4**
Prerequisite	***After completion of course students are able to -***					**Bloom's Level**
Course Outcome	**CO1**	*To learn about the basics aspects of Civil Engineering.*				K3
	CO2	*Understanding the basic concept of Surveying.*				K2
	CO3	*Basic knowledge of Transportation Engineering.*				K1
	CO4	*To understand the basics of Highway, Railway and Airport Engineering.*				K2
	CO5	*Learn about the basics of irrigation and water supply engineering.*				K4
UNIT-1	**Introduction to Civil Engineering**					**Contact Hours:8**
Introduction, Various disciplines of Civil Engineering, Importance of Civil Engineering in the infrastructure development of the country. Introduction to types of buildings as per NBC, Selection of site for buildings, Components of a residential building, Various functions of a residential building, Introduction to Industrial buildings and types.						**CO1**
UNIT-2	**Introduction to Surveying**					**Contact Hours :8**
Surveying, Principle and objectives of Surveying, Instruments used, Horizontal measurements, Ranging (direct ranging only), Instruments used for ranging, Levelling, Instruments used for Levelling.						**CO2**
UNIT-3	**Introduction to Transportation Engineering**					**Contact Hours :8**
Introduction, planning and design aspects of Transportation Engineering, Modes of Transportation Engineering, Urban engineering: Introduction and Classification of the urban roads.						**CO3**
UNIT-4	**Introduction to Highway, Railway and Airport Engineering**					**Contact Hours :8**
Highway engineering: Historical development, highway planning, classification of highway. Airport engineering: Development, types, definition, characteristics of aircraft, basic terminologies. Traffic engineering: Traffic characteristics, traffic studies, traffic operations Railway Engineering: Cross section of rail track, basic terminologies.						**CO4**
UNIT-5	**Introduction to Irrigation Engineering**					**Contact Hours :8**
Introduction, Types of Irrigation, different types of hydraulic structures, dam and weirs, types of dam, purpose and functions.						**CO5**
Lecture Hours: 30		**Tutorial Hours :10**				**Total : 40**
Reference Books						
1. Concrete Technology – C.S. Reddy *2. Surveying I & II by B.C. Punmia*						
Text Book:						
1. Irrigation Engineering by S. K. Gerge						
Video Content:						
1. https://youtu.be/tA7BhrlY-ic?si=vYh-F8PvS3C26SLU ***2. https://www.youtube.com/live/5aqvi5MFOug?si=JXmDfOl_WyFqIhlQ***						

B.Tech (Civil Engineering)						
Semester : I				**Course Category Code: HSMC**		
Course Code	**Course**		**Period/Week**			**Credit**
			L	**T**	**P**	**C**
HSMC105	**Soft Skill**		**3**	**0**	**0**	**3**
Prerequisite	***After completion of course students are able to -***					**Bloom's Level**
Course Outcome	**CO1**	*Introduce, converse, show interest, Respond.*				K1
	CO2	*Improve decisions through practical exercises, cases.*				K2
	CO3	*Telephone etiquette, instructions, job discussions, debates.*				K3
	CO4	*Present, write effectively and Give feedback.*				K2& K3
	CO5	*Build leadership, organize and Prepare proposals.*				K1& K4
UNIT-1	**Interactions Level I**					**Contact Hours:8**
Introducing/Meeting New People ,Giving Self Introduction ,Discussing Interests and Small Talks, Talking about Experiences ,Interview Skills						**CO1**
UNIT-2	**Interactions Level II**					**Contact Hours :8**
Mock Interview Practice ,Soft Skills and Hard Skills, Polite Conversation, Showing Interest, Apologizing						**CO2**
UNIT-3	**Interactions Level III**					**Contact Hours :8**
Relationship Building- Article Reading, Talking about Job, Formal Discussion Attending Meeting, Letter Writing, and Email Writing, and Giving Advice.						**CO3**
UNIT-4	**Interactions Level IV**					**Contact Hours :8**
Attending Meeting, Letter Writing, Email Writing, Resume/CV Writing, Texting Messages and giving feedback, Group Discussion Etiquettes, Group Discussion-Practice.						**CO4**
UNIT-5	**Interactions Level V**					**Contact Hours :8**
Giving Presentation, Telephonic Etiquettes and Practice Agreeing and Disagreeing, Exhibiting Ideas Persuading others, Debate Etiquette, Debate Practice						**CO5**
Lecture Hours: 40		**Tutorial Hours :00**				**Total :40**

Reference Books

1. How to Win Friends and Influence People by Dale Carnegie Simon and Schuster, 1936.
2. The Art of Communication by K.C. Verma, Author House, 2011.
3. Business Communication by M. Raman, Oxford University Press.
4. S.Ravindranathan, R. Perumalsamy,S. Shanmugiah, English for Effective Oral Communication. Cambridge University Press, 2015.

Text Book:

1. Soft skills by Dr.K.Alex, S.Chand & Company Ltd.,New Delhi,2009.
2. Effective Technical Communication by Dr. Bharti Kukreja and Dr. Anupama Jain, S.K. Kataria & Sons, New Delhi.
3.Communication Skills-I by Archana Sharma, Dr Ombir Singh and Dr.Gyaneshwar Pratap Singh, Asian Publishers Muzaffarnagar, 2018.

Video Content:

1. *https://www.youtube.com/watch?v=7OQHte1Eifc&list=PL8nHpqzOrbFB6X0NuSUGX495zN4SzBcd6*

B.Tech (Civil Engineering)						
Semester : I				**Course Category Code: HSMC**		
Course Code	**Course**		**Period/Week**			**Credit**
			L	**T**	**P**	**C**
HSMC155	**LANGUAGE LAB**		**0**	**0**	**2**	**1**
Prerequisite	***At the end of this course, the students will be able to:***					**Bloom's Level**
Course Outcome	**CO1**	*To facilitate software based learning to provide the required English Language proficiency to students.*				K3
	CO2	*To acquaint students with specific dimensions of communication skills i.e. Reading, Writing, Listening, Thinking and Speaking*				K2
	CO3	*To train students to use the correct and error-free writing by being well versed in rules of English grammar.*				K2
	CO4	*To cultivate relevant technical style of communication and presentation at their work place and also for academic uses.*				K1

LIST OF EXPERIMENT

1. Group Discussion: Practical based on Accurate and Current Grammatical Patterns.
2. Conversational Skills for Interviews under suitable Professional Communication Lab
3. Communication Skills for Seminars/Conferences/Workshops with emphasis on Paralinguistic.
4. Presentation Skills for Technical Paper/Project Reports/ proposals based on proper Stress and Intonation Mechanics.
5. Official/Public Speaking practice sessions based on suitable Rhythmic Patterns.
6. Theme Presentation/ Keynote Presentation based on correct methodologies of argumentation.
7. Individual Speech Delivery/Conferencing with skills to defend Interjections/Quizzes.
8. Argumentative Skills/Role Play Presentation with Stress and Intonation.
9. Comprehension Skills based on Reading and Listening Practical's on a model Audio.
10. Startup presentations, Video portfolio, Extempore, Role play, Just a Minute (JAM) etc.

Practical Hours: 24	**Tutorial Hours :00**	**Total Hours :24**

Reference Books

1. Word Power Made Easy by Norman Lewis, W.R. Goyal Pub. & Distributors, 2009, Delhi.
2. Manual of Practical Communication by L.U.B. Pandey; A.I.T.B.S. Publications India Ltd.,Krishan Nagar, 2013, Delhi.
3. A Course in Phonetics and Spoken English, Sethi & Dhamija:, Prentice Hall
4. English Pronouncing Dictionary, Joans Daniel, Cambridge University Press, 2007.

Text Book:

1. English Grammar, Composition and Usage by N.K. Agrawal & F.T. Wood, Macmillan India Ltd., New Delhi.
2. Effective Communication Skill, Kulbhusan Kumar, RS Salaria, Khanna Publishing House.
3. English Grammar & Composition by Wren & Martin, S.Chand & Co. Ltd., New Delhi.
4. Communication Skills for Engineers and Scientists, Sangeeta Sharma et.al. PHI Learning Pvt. Ltd, 2011, New Delhi.

Video Content:

https://youtu.be/QLqTYtka2Vg?si=9VCxzFb_h1-OB17g
https://youtu.be/vULoIGxBYA4?si=7L4H1CZIdobGxrKl
https://youtu.be/VczVqHJW0gg?si=Epq8d2jEPmzgy7Ys
https://youtu.be/BguYUJ7cWrs?si=Se3J-dRp_x3bCX43
https://youtu.be/guUOmfq303s?si=SCcNDqXAKmQRbtxU

B.Tech (Civil Engineering)						
Semester : I			**Course Category Code: BSC**			
Course Code	**Course**		**Period/Week**			**Credit**
			L	**T**	**P**	**C**
BSC153	**Basic Computer Lab**		**0**	**0**	**2**	**1**
Prerequisite	***At the end of this course, the students will be able to:***					**Bloom's Level**
Course Outcome	**CO1**	*Getting the skills and work effectively on computer application.*				K3
	CO2	*Able to work on office automation tools and can generate report easily.*				K2
	CO3	*Understand the concept of internet and use of internet effectively.*				K2
	CO4	*Analyse the Fundamental of DOS and Linux operating system.*				K1
	CO5	*Understand basics of various OS related concepts, from programmer's point of view, like files, directories, kernel, inodes, APIs, system calls, processes, signals, etc.*				K3

LIST OF EXPERIMENT

1. Working with computer system and identifying peripherals.
2. Working with files and folders.
3. Create, Edit and Save Documents.
4. Use of Bullets, Numbering, Page Formatting in a Word Processing
5. Use of Image and Save
6. Tables in Documents
7. Documents Page Layout
8. Use of mail merge
9. Create, Open and Edit worksheet.
10. Working with Formula and Functions in Worksheet.
11. Sort, Filter and Validate Data
12. Charts for Visual Presentation
13. Worksheet Printing
14. Slide Presentation
15. Slide Presentation Using Tables and Charts
16. Animation Effects to Text and Slides
17. Audio and Video Files Presentation
18. Configuration of Internet Connection

Practical Hours: 24	**Tutorial Hours :00**	**Total Hours: 24**

Reference Books :

1.Analysis & Design of Information System by James A. Senn.
2. System Analysis and Design by Elias M.Awad.
3. System Analysis & Design Hand Book, V.K. Jain, Wiley Dreamtech.

Text Book:

1. *Analysis, Design of Information System,Rajaraman, PHI Management.*

B.Tech (Civil Engineering)						
Semester : I				**Course Category Code: PCC-CE**		
Course Code	**Course**			**Period/Week**		**Credit**
				L	**T**	**P**	**C**
PCCCE151	**Basic Civil Lab**			**0**	**0**	**2**	**1**
Prerequisite	***At the end of this course, the students will be able to:***						**Bloom's Level**
Course Outcome	**CO1**	*To learn about the basics aspects of Civil Engineering.*					K3
	CO2	*Understanding the basic concept of Surveying.*					K2
	CO3	*To understand the basics of Highway, Railway and Airport Engineering.*					K1
	CO4	*Basic knowledge of Transportation Engineering..*					K2
	CO5	*Learn about the basics of irrigation and water supply engineering.*					K4
	LIST OF EXPERIMENT						

1. Setting out of a building (as per building plan) using Tape.
2. Physical Testing of Cement.
3. Field test of Brick.
4. Demonstration of Hydraulic Machines.
5. Demonstration of Modern Surveying instruments.
6. Visual observation of Highway Equipments.
7. Demonstration of Orifice meter.
8. Demonstration of Venturimeter.
9. Study of Different types of Rocks.
10. Demonstration of noise testing Machine.

Practical Hours: 24	**Tutorial Hours :00**	**Total : 24**

Reference Books :

1. Concrete Technology – C.S. Reddy
2. Surveying I & II by B.C. Punmia

Text Book:

1. Irrigation Engineering by S. K. Gerge

Video Content:

1. https://www.youtube.com/watch?v=BhnktJwyPf4
2. https://youtu.be/WxkMR1yS0gY?si=tjAfi9OvUJSDPsdj
3. https://youtu.be/_bfcdRhY7Rw?si=XN-IHgbPwG8MTLFL

<table>
<tr><th colspan="7">B.Tech (Civil Engineering)</th></tr>
<tr><td colspan="4">Semester : I</td><td colspan="3">Course Category Code: ESC</td></tr>
<tr><td rowspan="2">Course Code</td><td colspan="3" rowspan="2">Course</td><td colspan="3">Period/Week</td><td>Credit</td></tr>
<tr><td>L</td><td>T</td><td>P</td><td>C</td></tr>
<tr><td>ESC153</td><td colspan="3">Engineering Drawing Lab</td><td>0</td><td>0</td><td>2</td><td>1</td></tr>
<tr><td>Prerequisite</td><td colspan="5">At the end of this course, the students will be able to:</td><td>Bloom’s Level</td></tr>
<tr><td rowspan="5">Course Outcome</td><td>CO1</td><td colspan="4">Use scales and draw projections of objects</td><td>K1</td></tr>
<tr><td>CO2</td><td colspan="4">Explain views of solids and their sectional surfaces.</td><td>K2</td></tr>
<tr><td>CO3</td><td colspan="4">Analyze and draw isometric projections of objects</td><td>K3</td></tr>
<tr><td>CO4</td><td colspan="4">Demonstrate orthographic representation of perspective views using modern tools.</td><td>K3</td></tr>
<tr><td>CO5</td><td colspan="4">Apply AutoCAD software for creation of engineering drawing and models</td><td>K2</td></tr>
<tr><td>UNIT-1</td><td colspan="5">Introduction</td><td>Contact Hours : 08</td></tr>
<tr><td colspan="5">Principles of Engineering Graphics and their significance. Dimensioning, Lettering. Scales: Plain, Diagonal and Engineering Scales. Orthographic Projection, Projection of Point, Projection of Lines: Projection of straight lines; Projection of lines inclined to one plane and both planes.</td><td>CO1</td></tr>
<tr><td>UNIT-2</td><td colspan="4">Projections</td><td>Contact Hours : 08</td></tr>
<tr><td colspan="5">Projection of polygonal surface and circular lamina located in first quadrant inclined to one or both reference planes. Classification of solids, Projection of solids like prisms, pyramids, cylinder and cone when the axis is inclined to one reference plane by change of position method.</td><td>CO2</td></tr>
<tr><td>UNIT-3</td><td colspan="4">Sections of Solids</td><td>Contact Hours : 08</td></tr>
<tr><td colspan="5">Sections of Solids: Right regular solids and Auxiliary views for the true shape of the sections such as Prism, Cylinder, Pyramid, and Cone. Development of surfaces for various regular solids such as Prism, Cylinder, Pyramid and Cone.</td><td>CO3</td></tr>
<tr><td>UNIT-4</td><td colspan="4">Isometric Projection</td><td>Contact Hours : 08</td></tr>
<tr><td colspan="5">Isometric Projection: Isometric scales, Isometric projections of simple and combination of solids. Perspective Projection: Orthographic representation of perspective views — Plane figures and simple solids, Conversion of pictorial view in to orthographic Projection</td><td>CO4</td></tr>
<tr><td>UNIT-5</td><td colspan="4">AutoCAD</td><td>Contact Hours : 08</td></tr>
<tr><td colspan="5">Introduction to AutoCAD: Basic commands for 2D drawing: Line, Circle, Polyline, Rectangle, Hatch, Fillet, Chamfer, Trim, Extend, Offset, Dim style, etc. Transformation of Projections: Conversion of Isometric Views to Orthographic Views and Vice-Versa in AutoCAD.</td><td>CO5</td></tr>
<tr><td colspan="3">Practical Hours: 24</td><td colspan="2">Tutorial Hours :00</td><td colspan="2">Total : 24</td></tr>
<tr><td colspan="7">Reference Books</td></tr>
<tr><td colspan="7">1. Narayana, K.L. & P Kannaiah (2008), Text book on Engineering Drawing, Scitech Publishers.</td></tr>
<tr><td colspan="7">Text Book:</td></tr>
<tr><td colspan="7">1. Bhatt N.D., Panchal V.M. & Ingle P.R. (2014), Engineering Drawing, Charotar Publishing House.
2. Agrawal B. & Agrawal C.M. (2012), Engineering Graphics, TMH Publication</td></tr>
<tr><td colspan="7">Video Content:</td></tr>
<tr><td colspan="7">1. https://youtu.be/u4Ku-ZABzzo?si=aLaKn2-_SalyP4I4
2. https://youtu.be/e3NEHo8gzs8?si=O2dnLsl8MjheOWWo
3. https://youtu.be/iCLGQNEAs7o?si=DVng7bf4wErCDwaq</td></tr>
</table>

DETAILED SYLLABI

B.Tech 1St Year

(Semester –II)

- B.Tech -Civil Engineering

(Effective from Session: 2024-25)

B.Tech (Civil Engineering)						
Semester: II				**Course Category Code: BSC**		
Course Code	**Course**		**Period/Week**			**Credit**
			L	**T**	**P**	**C**
BSC102	**Applied Mathematics II**		**3**	**1**	**0**	**4**
Prerequisite	***After completion of course students are able to -***					**Bloom's Level**
Course Outcome	**CO1**	*Remember the concept differentiation to evaluate LDE of nth order with constant coefficient and LDE with variable coefficient of 2nd order.*				K2 & K5
	CO2	*Understand and apply the concept of Laplace Transform to evaluate differential equations*				K1& K5
	CO3	*Understand the concept of convergence to analyze the convergence of series and expansion of the function for Fourier series.*				K3 &K5
	CO4	*Apply the concept of analyticity and Harmonic function*				K1 & K4
	CO5	*Apply the concept of Cauchy Integral theorem, Cauchy Integral formula, singularity and calculus of residue to evaluate integrals*				K3, K4 & K5
UNIT-1	**Ordinary Differential Equation of Higher Order**					**Contact Hours: 8**
Linear differential equation of nth order with constant coefficients, Simultaneous linear differential equations, Second order linear differential equations with variable coefficients, Method of variation of parameters, Cauchy-Euler equation.						**CO1**
UNIT-2	**Laplace Transform**					**Contact Hour : 8**
Laplace transform, Properties of Laplace Transform, Laplace transform of periodic function, Inverse Laplace transform, Convolution theorem.						**CO2**
UNIT-3	**Sequence and Series**					**Contact Hours: 8**
Definition of Sequence and series with examples, Convergence of series, Tests for convergence of series, Ratio test, D' Alembert's test, Raabe's test, Comparison test. Fourier series, Half range Fourier sine and cosine series.						**CO3**
UNIT-4	**Complex Variable–Differentiation**					**Contact Hours: 8**
Functions of complex variable, Analytic functions, Cauchy- Riemann equations (Cartesian and Polar form), Harmonic function, Method to find Analytic functions, Milne's Thompson Method.						**CO4**
UNIT-5	**Complex Variable –Integration**					**Contact Hours: 8**
Complex integration, Cauchy- Integral theorem, Cauchy integral formula, singularities and its classification, zeros of analytic functions, Residues, Cauchy's Residue theorem.						**CO5**
Lecture Hours: 30		**Tutorial Hours :10**				**Total : 40**

Reference Books

1. E. Kreyszig, Advance Engineering Mathematics, John Wiley & Sons, 2005.
2. Peter V. O'Neil, Advance Engineering Mathematics, Thomson (Cengage) Learning, 2007.
3. Veerarajan T., Engineering Mathematics for first year, McGraw-Hill, New Delhi, 2008.
4. Charles E Roberts Jr, Ordinary Differential Equations, Application, Model and Computing, CRC Press T&F Group

Text Book:

1. *A text book of Engineering Mathematics by N.P. Bali, University Science Press, New Delhi.*
2. *Introduction to Engineering Mathematics by H K DASS, S Chand And Company Limited, New Delhi.*

Video Content:
https://youtu.be/OET0qwat15o?si=2fje0tet7DxN7U33 https://youtu.be/EDVJotmT584?si=_kvwB2V3OSL6jI8t https://youtu.be/B-6b28uC0NU?si=D0PQJP7UtFTxYBax https://www.youtube.com/live/IMIwvd0UGjM?si=oZhMq2CA4PwfuyFL https://youtu.be/gLXNGl3FsuM?si=X3A6ejxtvm9osL7C

B.Tech (Civil Engineering)

Semester : II			Course Category Code : ESC			
Course Code	**Course**		**Period / Week**			**Credit**
			L	**T**	**P**	**C**
ESC102	**Programing in C**		**3**	**1**	**0**	**4**
Prerequisite	***At the end of this course, the students will be able to:***					**Bloom's Level**
Course Outcome	**CO1**	*Understood the phases of problem solving techniques for simple problems.*				K_2,K_3
	CO2	*Able to write programs using the basic language constructs.*				K_3
	CO3	*Able to build a larger programs using function oriented approaches.*				K_3
	CO4	*Could write efficient programs using advanced concepts to optimize the memory.*				K_2
	CO5	*Could write programs to access data from the secondary storage efficiently.*				K_2,K_3

UNIT – I	**Algorithm Problem Solving**	**Contact Hours :8**
History and Classifications of Computers – Components of Computer – Working Principle of Computer – Hardware – Software and its Types – Applications of Computers. Generations of Programming Languages – Introduction to Number System. Problem solving techniques: Program development life-cycle – Algorithms – building blocks of algorithms - Algorithmic problem solving-Flowchart– Pseudo code		**CO1**
UNIT – II	**Data, Expressions, Statements**	**Contact Hours :8**
Introduction to C –C Program Structure – C Tokens: Keyword, Identifiers, Constants, Variables and Data types (simple and user-defined) – Operators and its types – Operator Precedence – Expression Evaluation – Type Conversion –Managing Input/output operations-Branching Statements – Looping Statements.		**CO2**
UNIT – III	**Arrays and Functions**	**Contact Hours: 8**
Arrays – Two dimensional arrays, Multidimensional arrays. Character arrays.Functions: Function Prototype, Passing Arguments to Function – Call by Value and Call by Reference – Nested function call – Library Functions – User-defined Functions – Recursion.Strings – String I/O functions, String Library functions – Storage classes.		**CO3**
UNIT – IV	**Structures, Unions and Pointers**	**Contact Hours: 8**
Structures – Arrays and structures – Nested structures – Structure as argument to functions–Union. Pointers – Declaration, Initialization and Accessing Pointer variable – Pointers and arrays – pointers as argument and return value – Pointers and strings - Pointers and structures.		**CO4**

UNIT – V	File Management	Contact Hours: 8
Introduction to File Concepts in C – File types – I/O operations on files – File modes – Random access to files – Command line arguments. Dynamic Memory Allocation: MALLOC, CALLOC, FREE, REALLOC. Introduction to preprocessor: Macro substitution directives – File inclusion directives –Compiler Control directives – Miscellaneous directives		**CO5**
Lecture Hours : 30	**Tutorials Hours – 10**	**Total : 40**

Reference Books :

1. *Byron Gottfried & Jitender Chhabra, "Programming with C", Schaum's Outlines Series, 2017.*
2. *Brian W. Kernighan & Dennis Ritchie. "The C Programming Language", Pearson Education India.*

Text Book:

1. *Balagurusamy. E, "Programming in ANSI C", Tata McGraw Hill, Seventh Edition, 2017*

Video Content:

1. *https://youtu.be/irqbmMNs2Bo?si=d9HO8clLvVLuxDxd*
2. *https://youtu.be/si-KFFOW2gw?si=Zf3V8klsbEoE_1Rn*
3. *https://youtu.be/rLf3jnHxSmU?si=QqZoZo96sF34DwQ8*

B.Tech (Civil Engineering)						
Semester: II				**Course Category Code: PCC-CE**		
Course Code	**Course**		**Period/Week**			**Credit**
			L	**T**	**P**	**C**
PCCCE102	**Construction Technology**		**3**	**1**	**0**	**4**
Prerequisite	***After completion of course students are able to -***					**Bloom's Level**
Course Outcome	**CO1**	*To study details regarding property and testing of building materials*				K2 & K5
	CO2	*To study details regarding construction of building components.*				K1& K5
	CO3	*To study property of concrete and concrete mix design*				K3 &K5
	CO4	*To impart the basic concept in functional requirements of building services*				K1 & K4
	CO5	*To develop understanding about framed construction and building failure.*				K3, K4 & K5
UNIT-1	**Construction Materials**					**Contact Hours: 8**
Timber, Mortar, Iron and steel Structural Steel. Modern material used etc. uses of all these types of material as per site conditions.						**CO1**
UNIT-2	**Concrete**					**Contact Hour : 8**
Introduction of concrete, types of concrete, Admixture , Making of concrete , Property of Concrete.						**CO2**
UNIT-3	**Building and its Components**					**Contact Hours: 8**
Foundation and type of foundation, Introduction to cost effective construction, Masonry, Lintel , sand arches , Floor and flooring.						**CO3**
UNIT-4	**Roofs**					**Contact Hours: 8**
Door ,window and ventilators ,finishing work . Tall building , steel and concrete frame , Prefabricated construction , Vertical Transportation.						**CO4**
UNIT-5	**Building Failure**					**Contact Hours: 8**
Introduction to building failure and retrofitting ,Failure in RCC and Steel Structure , Foundation failure .						**CO5**
Lecture Hours: 30		**Tutorial Hours :10**				**Total : 40**

Reference Books

1. B. C. Punmia , building Construction , Laxmi Publication
2. Rangwala S C. , Engineering Material , Charotar Publisher

Text Book:

1. Arrora and bindra, building construction , Dhanpat Rai and sons

Video Content:

1. https://youtu.be/cwnS3U0gES8?si=y7unwdBqkuooAj8C
2. https://www.youtube.com/live/UNAV8qs11OE?si=Xb9_SkYB2UgV1Kar
3. https://youtu.be/dwZkZsBgxms?si=dkn3_LiNqZY-4k0m

B.Tech (Civil Engineering)						
Semester : II				**Course Category Code: HSMC**		
Course Code	**Course**		**Period/Week**			**Credit**
			L	**T**	**P**	**C**
HSMC106	**Career Development Communication**		**0**	**0**	**4**	**2**
Prerequisite	***At the end of this course, the students will be able to:***					**Bloom's Level**
Course Outcome	**CO1**	*Explain the concept, effect, Importance and role of communication in career enhancement and develop the strategies to overcome common communication barriers.*				K1
	CO2	*Apply leadership principles to real-world scenarios and Enhance ability to lead teams and manage change.*				K2
	CO3	*Enhance Non-Verbal Communication Skills. Learn body postures during an interview.*				K3
	CO4	*Improve personality, Enhance self awareness, Increase Self confidence.*				K2,k3
	CO5	*Enhance Public speaking skills, improve time management and handle Q&A Sessions.*				K2
UNIT - I	**Introduction of Communication skills for Career Development**					**Contact Hours:6**
Basic Concepts and Importance of Communication skills in Career Development , Nature and Scope of Communication, Barriers to Communication & how to overcome them.						**CO1**
UNIT - II	**Non- Verbal Communication for Career Development**					**Contact Hours:6**
Body Language and Personal Appearance:- Gestures and Postures, Kinesics and Proxemics, Tips for Improving Non Verbal Communication, Self-Grooming.						**CO2**
UNIT - III	**Communication and Leadership Development**					**Contact Hours:6**
Tips for Improving Non Verbal Communication, Self-Grooming. Leadership:- Roles and Qualities of good leaders, Listening in Professional Contexts, Barriers to listening.						**CO3**
UNIT - IV	**Personality Development**					**Contact Hours:6**
Personality Analysis, SWOT Analysis, Personality and other factors that contribute towards Career Developmant.						**CO4**
UNIT - V	**Presentation skill**					**Contact Hours:6**
Preparation of PowerPoint presentation, Presentation skills, Seminars and Webinars, Etiquettes & Netiquettes to be followed in:- Personal Interview , Telephonic Interviews, Video conferencing & Seminar.						**CO5**
Lecture Hours: 40		**Tutorial Hours :00**				**Total : 40**

Reference Books

1- *Effective Communication by John Adair London: Pan Macmillan Ltd., 2003.*
2- *Personality Development and Soft skills by Barun K Mitra , OUP,2012,New Delhi.*
3- *Soft Skills and Employability ,Sabina Pillai and Agna Fernandez Cambridge University Press 2018.*

Text Book:

1- *Technical communication by Malti Agrawal,Krishna Prakashan Media(P) Ltd.*
2- *Communication Skill-1 by Archana Sharma, ASIAN Publisher.*
3- *Business Communication by Dr. Vinod Mishra & Dr. Narendra Shukla, SBPD Publishing House.*

Video Content:
1.https://youtu.be/K9sDoqOIl18?si=z50-uqUBzKyXCgzy 2. https://youtu.be/VJ7bw3K-9TA?si=DDbDFbBeldexBDcU 3. https://www.youtube.com/live/NVm-t-zFjqo?si=H5el4P-Xch3Qa-TQ 4. https://youtu.be/1NmSdHP7CRI?si=i1IAu9Ssyn80iXqz

<table>
<tr><th colspan="6">B.Tech (Civil Engineering)</th></tr>
<tr><th colspan="3">Semester : II</th><th colspan="3">Course Category Code: ESC</th></tr>
<tr><th rowspan="2">Course Code</th><th rowspan="2" colspan="2">Course</th><th colspan="3">Period/Week</th><th>Credit</th></tr>
<tr><th>L</th><th>T</th><th>P</th><th>C</th></tr>
<tr><td>ESC154</td><td colspan="2">CAD AND DIGITAL MANUFACTURING LAB</td><td>0</td><td>0</td><td>4</td><td>2</td></tr>
<tr><td>Prerequisite</td><td colspan="4">At the end of this course, the students will be able to:</td><td>Bloom's Level</td></tr>
<tr><td rowspan="5">Course Outcome</td><td>CO1</td><td colspan="4">Understand and interpret machine manufacturing drawings</td><td>K3</td></tr>
<tr><td>CO2</td><td colspan="4">Develop 2D and 3D models using high end modeling software's</td><td>K2</td></tr>
<tr><td>CO3</td><td colspan="4">Apply engineering drawing standards as per BIS conventions</td><td>K2</td></tr>
<tr><td>CO4</td><td colspan="4">Understand the CNC control in modern manufacturing system</td><td>K1</td></tr>
<tr><td colspan="5">LIST OF EXPERIMENT</td><td></td></tr>
<tr><td colspan="5">1. Study of CAD in product design process on Limits, Fits, Basics.
2. Detailing and assembly of flange coupling.
3. Detailing and assembly of universal coupling.</td><td>CO1</td></tr>
<tr><td colspan="5">4.Detailing and assembly of Cotter Joint.
5. Detailing and assembly of Knuckle Joint.</td><td>CO2</td></tr>
<tr><td colspan="5">1. Study of reverse engineering, additive manufacturing & rapid prototyping
2. Study of CAM Manual part programming & basics.
3. NC code generation for drilling operation.</td><td>CO3</td></tr>
<tr><td colspan="5">4. NC code generation for step turning operation.
5. Study of principle and working of 3D printers.</td><td>CO4</td></tr>
<tr><td colspan="3">Practical Hours: 24</td><td colspan="2">Tutorial Hours :00</td><td>Total : 24</td></tr>
<tr><td colspan="6">Reference Books</td></tr>
<tr><td colspan="6">1.Pham D T and Dimov S, "Rapid Manufacturing: The Technologies and Applications of Rapid Prototyping", Springer-Verlag, 2001.
2. Ibrahim Zeid and Sivasubramanian R, "CAD/CAM - Theory and Practice", Tata McGraw Hill Education, 2011.</td></tr>
<tr><td colspan="6">Text Book:</td></tr>
<tr><td colspan="6">1. Chua C.K., Leong K.F. and Lim C.S., Rapid Prototyping: Principles and Applications, 3rd Edition, World scientific publications, 2014.</td></tr>
<tr><td colspan="6">Video Content:</td></tr>
<tr><td colspan="6">1. https://youtu.be/QuR-VKis3jU?si=JU-zuIpILm5j1s35
2. https://youtu.be/wJ80uZVaXqo?si=NCn4F6qPdaf6QOb9
3. https://youtu.be/4xW2Tir_-qY?si=uN4NxiLk5Zkc_SHH</td></tr>
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<tr><th>L</th><th>T</th><th>P</th><th>C</th></tr>
<tr><td>ESC152</td><td>C Programing Lab</td><td>0</td><td>0</td><td>2</td><td>1</td></tr>
<tr><td>Prerequisite</td><td colspan="4">At the end of this course, the students will be able to:</td><td>Bloom's Level</td></tr>
<tr><td rowspan="5">Course Outcome</td><td>CO1</td><td colspan="3">Understood the program editing and compilation environment.</td><td>K3</td></tr>
<tr><td>CO2</td><td colspan="3">Able to write simple C programs using most frequently used control structures.</td><td>K2</td></tr>
<tr><td>CO3</td><td colspan="3">Apply the methods problems using arrays and functions.</td><td>K1</td></tr>
<tr><td>CO4</td><td colspan="3">Learnt to handle data processing using structures for simple applications.</td><td>K2</td></tr>
<tr><td>CO5</td><td colspan="3">Write programs that could handle file i/o and pointers.</td><td>K4</td></tr>
<tr><td></td><td colspan="4">LIST OF EXPERIMENT</td><td></td></tr>
<tr><td colspan="5">1. Study of Compilation and execution of simple C programs
2. Basic C Programs, Arithmetic Operations, Area and Circumference of a circ. Swapping with and without Temporary Variables</td><td>CO1</td></tr>
<tr><td colspan="5">3. Programs using Branching statements
a. To check the number as Oddor Even.
b. Greatest of Three Numbers.
c. Counting Vowels.
d. Grading based on Student's Mark.
4. Programs using Control Structures
e. Computing Factorial of a number
f. Fibonacci Series generation
g. Prime Number Checking
Computing Sum of Digit</td><td>CO2</td></tr>
<tr><td colspan="5">5. Programsusing Arrays
a. Sum of'n' numbers
b. Sorting an Array
c. Matrix Addition, Subtraction, Multiplication and Transpose
6. Programsusing Functions
d. Computing nCr
e. Factorial using Recursion
Call by Value and Call by Reference</td><td>CO3</td></tr>
<tr><td colspan="5">7. Programs using String Operations
a. Palindrome Checking
b. Searching and Sorting Names
8. Programs using Structure
c. Student Information System
d. Employee PaySlip Generation
Electricity Bill Generation</td><td>CO4</td></tr>
<tr><td colspan="5">9. Programs using Pointers
a. Pointe rand Array
b. Pointers as argument and return value
c. Pointer and Structure
10. Programs using File Operation</td><td>CO5</td></tr>
</table>

d. Counting No.of Lines,Characters and Black Spaces e. Content copy from one file to another Reading and Writing Data in File		
Practical Hours: 24	**Tutorial Hours :00**	**Total : 24**

Reference Books

1. *Byron Gottfried & Jitender Chhabra, "Programming with C", Schaum's Outlines Series, 2017.*
2. *Brian W. Kernighan & Dennis Ritchie. "The C Programming Language", Pearson Education India.*

Video Content:

1. *https://youtu.be/irqbmMNs2Bo?si=d9HO8clLvVLuxDxd*
2. *https://youtu.be/si-KFFOW2gw?si=Zf3V8klsbEoE_1Rn*
3. *https://youtu.be/rLf3jnHxSmU?si=QqZoZo96sF34DwQ8*

B.Tech (Civil Engineering)					
Semester : II		**Course Category Code: PCC-CE**			
Course Code	**Course**	**Period/Week**			**Credit**
		L	**T**	**P**	**C**
PCCCE152	**Construction Technology Lab**	**0**	**0**	**2**	**1**
Prerequisite	***At the end of this course, the students will be able to:***				**Bloom's Level**
Course Outcome	**CO1**	*To study details regarding property and testing of building materials*			K2 & K5
	CO2	*To study details regarding construction of building components.*			K1& K5
	CO3	*To study property of concrete and concrete mix design*			K3 &K5
	CO4	*To impart the basic concept in functional requirements of building services*			K1 & K4
	CO5	*To develop understanding about framed construction and building failure.*			K3, K4 & K5
	LIST OF EXPERIMENT				
1. Demonstration of Compression testing machine. 2. Compression test of mild steel bar.					**CO1**
3. Impact test on aggregate. 4. Water Absorption test on Bricks					**CO2**
5. Demonstration of Sieves 6. Demonstration and Identification of rocks					**CO3**
7.Compression Test of Bricks 8. Oven test on sand to determine the dry weight					**CO4**
9. Study of bonds in brick 10. Grading of mortar					**CO5**
Practical Hours: 24		**Tutorial Hours :00**			**Total : 24**
Reference Books					
1. B. C. Punmia , building Construction , Laxmi Publication 2. Rangwala S C. , Engineering Material , Charotar Publisher					
Text Book: 1. Arrora and bindra, building construction , Dhanpat Rai and sons					
Video:					
1. https://youtu.be/kffvaXgyDSc?si=6DcD1KwTbJcR1WZg 2. https://youtu.be/msUlIeNWlSE?si=_7aRqwh6mUFsHRY1 3. https://youtu.be/AM-NrQoRIYY?si=XeJIXHjI-NybZo					

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<tr><td>L</td><td>T</td><td>P</td><td>C</td></tr>
<tr><td>ESC156</td><td colspan="2">Workshop Lab</td><td>0</td><td>0</td><td>2</td><td>1</td></tr>
<tr><td>Prerequisite</td><td colspan="5">At the end of this course, the students will be able to:</td><td>Bloom’s Level</td></tr>
<tr><td rowspan="6">Course Outcome</td><td>CO1</td><td colspan="4">Use various engineering materials, tools, machines and measuring equipments.</td><td>K2</td></tr>
<tr><td>CO2</td><td colspan="4">Perform manufacturing operations on components in fitting and carpentry shop.</td><td>K1</td></tr>
<tr><td>CO3</td><td colspan="4">Perform operations in welding and gas cutting</td><td>K3</td></tr>
<tr><td>CO4</td><td colspan="4">Perform operations in mounding & casting</td><td>K1</td></tr>
<tr><td>CO5</td><td colspan="4">Perform machine operations on lathe.</td><td>K2</td></tr>
<tr><td colspan="5">LIST OF EXPERIMENT</td><td></td></tr>
<tr><td colspan="5">1. Introduction to Mechanical workshop material, tools and machines</td><td>CO1</td></tr>
<tr><td colspan="5">2. Perform operations on Lathe - Facing, Plane Turning , step turning, taper turning, threading, knurling and parting.</td><td>CO2</td></tr>
<tr><td colspan="5">3. Preparation of U or V -Shape Male Female Work piece which contains: Filing, Sawing, Drilling, Grinding.
4.Mould preparation and Aluminum casting</td><td>CO3</td></tr>
<tr><td colspan="5">5. Study of Carpentry Tools, Equipment and different joints & Making of Cross Half lap joint, Half lap Dovetail joint and Mortise Tenon Joint.
6. Introduction to BI standards and reading of welding drawings.</td><td>CO4</td></tr>
<tr><td colspan="5">7. Practice of Making following operations
Butt Joint
Lap Joint
TIG Welding
MIG Welding
8. Introduction to Patterns, pattern allowances, ingredients of moulding sand and melting furnaces. Foundry tools and their purposes.</td><td>CO5</td></tr>
<tr><td colspan="3">Practical Hours: 24</td><td colspan="2">Tutorial Hours :00</td><td>Total : 24</td></tr>
<tr><td colspan="7">Reference Books</td></tr>
<tr><td colspan="7">1. Workshop Practice Vol 1, and Vol 2, by HazraChoudhary , Media promoters and Publications
2. Mechanical Workshop Practice, K C John, PHI .</td></tr>
<tr><td colspan="7">Text Book:
1. Workshop Practice, H S Bawa, McGraw Hill</td></tr>
<tr><td colspan="7">Video:</td></tr>
<tr><td colspan="7">1. https://youtu.be/Ft7zxW6Vsls?si=d7Ss5mi4R3WhW3ef

2. https://youtu.be/xQc8EdLwqRc?si=O_MTDoJ72c6AMvxp</td></tr>
</table>