Dr. J.J.Magdum Trust's

Dr.J.J.Magdum College of Engineering, Jaysingpur

STUDENTS INFORMARTION MANUAL
S.Y. B.Tech (2024-25)(Sem-I)

Department of Civil Engineering

Name of Student   :

P.R.N.Number   :

Roll Number   :

Division   :

Academic Year   :

Mobile Number   :

E-mail ID   :

Institute Information

Dr J J Magdum College of Engineering was established by Dr J J Magdum Trust, Jaysingpur in the year 1992 with an objective to promote the cause of higher education. The institute is approved by All India Council of Technical Education (AICTE), New Delhi and Government of Maharashtra, affiliated to Shivaji University, Kolhapur. The college offers B. Tech program in Mechanical, Civil, Computer Science Engineering, Electronics & Tele-Communication, Information Technology and M. Tech program in Civil Engineering-Construction Management.

Undergraduate Programme

Branch	Degree	Intake
Civil Engineering	B.Tech. (Civil Engineering)	60
Mechanical Engineering	B.Tech. (Mechanical Engineering)	60
Computer Science & Engineering	B.Tech.. (Computer Science & Engineering)	60
Information Technology	B.Tech. (Information Technology)	60
Electronics & Telecommunication Engg.	B.Tech. (Electronics & Telecommunication Engg)	60
Artificial Intelligence & Data Science	B.Tech. (Artificial Intelligence & Data Science)	

Post Graduate Programme

Branch	Degree	Intake
Civil(Construction Management) Engineering	M.Tech.(Civil-Construction Management)	18
MCA	Maters of Computer Administration	60

Dr.J.J.Magdum Trust's
Dr.J.J.Magdum College of Engineering
Gat No. (314/330), Shirol – Wadi Road,(Agar Bhag),
Jaysingpur : 416101, Tal : Shirol, Dist : Kolhapur. State : Maharashtra
Website: www.jjmcoe.ac.in, E-mail: principal@jjmcoe.ac.in

Vision of Institute

To be a Leading academic organization, creating skilled and Ethical Human Resources by leveraging Technical Education for Sustainable Development of Society.

Mission of Institute

M1. To produce Competent Technocrats to meet modern societal and industrial challenges.

M2. To create ethical and skilled human resources through quality education and various extension activities and outreach programs

M3. To leverage technical expertise to solve societal issues for its Sustainable Development

Quality Policy

We strive for continual improvement in our performance through methodical academic monitoring, student participation, and use of the innovative teaching-learning processes.

DEPARTMENT OF CIVIL ENGINEERING

The Department of Civil Engineering was established in the year 1992 with a sanctioned intake of 60 along with the establishment of institute intake increases 120 in 2011-12. P.G. Course in Construction & Management started in 2010-11. The department has a good intermingle of experienced and young faculty which works as a team to strengthen the department.

Vision of Department

To contribute to the growth of technical education by providing competent technical manpower with high ethical values.

Mission of Department

To prepare students of high quality with sound knowledge of both theory and practice in Civil Engineering and also exposing them to latest technology in the industry

Programme Educational Objectives (PEO's)

The PEOs of the Programme are;

PEO 1: To prepare graduates for prosperous careers across different sectors of the Civil Engineering Profession by imparting a strong base in mathematical analysis, scientific thinking, and the essential engineering principles required to resolve practical issues.

PEO2: To equip graduates for employment opportunities across government, public, and private sectors within diverse spheres of Civil Engineering.

PEO3: To inspire and train the graduates with the skills required for higher studies as well as to nurture their entrepreneurial aspirations.

Programme Outcomes (PO's)

At the end of successul completion of program, the graduates will be able to,

1. **Engineering Knowledge**: Apply knowledge of mathematics, science, engineering Fundamentals and an engineering specialization to the solution of complex engineering pr
2. **Problem Analysis**: Identify, formulate, research literature and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.
3. **Design/Development of Solutions**: Design solutions for complex engineering problems and design system components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal and environmental
4. **Conduct investigations** of complex problems using research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of information to provide valid
5. **Modern Tool Usage**: Create, select and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modelling to complex engineering activities with an under-standing of the limitations.
6. **The Engineer and Society**: Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering
7. **Environment and Sustainability**: Understand and the impact of professional engineering solutions in societal and environmental contexts and demonstrates knowledge of and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering
9. **Individual and Teamwork**: Function effectively as in visual, and as a member or leader in diverse teams and in multidisciplinary s
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear
11. **Project Management and Finance**: Demonstrate knowledge and understanding of engineering and management principles and apply these too noels on work, as a member and leader instead, to manage projects and in multidisciplinary environment.
12. **Lifelong Learning**: Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological

Program Specific Outcomes (PSO)

The graduates of this Programme will be able,

PSO 1: To meet the needs of public in the design and execution of quality construction work considering societal and environmental factors.

PSO 2: To analyse and design regular and complex structures.

PSO 3: To work effectively as an individual or in a team having acquired leadership skills and manage projects in multidisciplinary environments.

STUDENTS ROLE

As our society/ nation grows & becomes technologically more strong / complex, it needs more trained Engineers. Students can contribute to this professional growth by playing an effective & disciplined role during their studies.

Responsibilities:

1. Punctuality, 100% Attendance & Active participation in All Academic Activities
2. Self-Discipline & good relations with other students, teaching & support staff.
3. Positive attitude, motivation and technical thinking.
4. Participation in Co-Curricular & Extra-Curricular activities.
5. Always carrying Identity Card & following the College Dress Code.
6. Pursuing all-round personality development with good generic skills.
7. Following the Code-of-Conduct by the Department, Institute & University.

Code-of-Conduct:

1. Coming late to Lectures/Practical's, common off, leave without permission is serious offence.
2. Roaming in the campus during academic work or disturbing the campus activities through shouting/ misconduct is not permitted.
3. Use of personal unauthorized electronic gadgets in department premises is objectionable.
4. Attendance less than 75% will lead to semester defaulter & make you ineligible for Exams.
5. Any form of violence, ragging, use of tobacco, alcohol or drugs on campus are serious offences punishable with rustication from the institute &/ legal action.

Let us all- Society, parents, teachers and students join hands & put our best efforts to imbibe the above mentioned behavior in our students.

Laboratory and Classroom Instructions

Laboratory instructions:

- Handle all Devices /equipments carefully
- Follow safety procedures & avoid damage to self and equipment
- Inform to respective faculty before beginning your experiment
- Help to conserve energy, Switch off the equipments tubes & fans before leaving the laboratory
- Inform the lab assistant or lab in-charge when any fault arises during the performance of an experiment
- Report any not working equipment to the lab instructor; don"t open/ remove the cover/ attempt to repair any equipment.
- Do not move the instruments from one laboratory to another , without permission

Classroom instructions:

- Maintain silence in class rooms
- Don"t write anything on seating bench and walls of classroom.
- Keep your mobiles switched off
- Attend classes regularly and be punctual for your classes.
- Your reason of absence should be timely informed to your class teacher with written application.
- Help to conserve energy, Switch off fans and tubes before leaving the classroom.
- Keep the Classrooms clean

Institute Academic Planner (2024- 2025 Part- I)

Sr. No.	Section/ Head	Activity	Date
1	SUK Calender	Start of academic year- SY, TY, B.Tech & M.Tech	1-Jul-2024
2	NSS	One day cleaning activity at college campus.	15-Jul-2024
3	NSS	One day cleaning activity at adopted Village(Jambhali)	20-Jul-2024
4	R&D	Expert Session on " Selecting the good project topic and writing synopsis " (Session to be conducted by each department)	20-Jul-2024
5	FY Department/Registrar	BoS First Year B.Tech	25-Jul-2024
6	R&D	Synopsis presentation and DRC meeting for project synopsis approval	31-Jul-2024
7	NSS	Tree Plantation Program	3-Aug-2024
8	Respective Department/Registrar	BoS SY/TY/ B.Tech	Second Week of August
9	JJM Trust	Independence Day	15-Aug-2024
10	Exam Cell	CIE-I (SY, TY & B.Tech)	16 to 17-Aug-2024
11	R&D	SORT Inauguration & Expert session on research topic	20-Aug-2024
12	Women Cell	Inauguration of Women Cell to empower women/girls of the Institute by conducting various activities	21-Aug-2024
13	Respective Department	Result Decleration CIE-I	23-Aug-2024
14	FY Department	Induction/Orientation of FY Students	26 to 31-Aug-2024**
15	Respective Department	Parents Meet	31-Aug-2024
16	Respective Department	Advisory board meeting	Last Week of August
17	AI&DS	Two-day Workshop for faculty on T.Y. Syllabus training of AIDS	Last Week of August
18	FDC	One day workshop on induction program for newly appointed faculty	Aug-24

19	Dean Academics	Academic Council	First Week of September
20	R&D	First assessment of project (Introduction and literature review presentation) 8/31/2024	2-Sep-2024
21	R&D	Expert session on " Research publication" (Session to be conducted by each department)	3-Sep-2024
22	R&D	Expert Lecture for faculty & students on IPR	6-Sep-2024
23	NSS	Collection of Nirmalya during Ganesh Festival	12 to 17-Sep-2024
24	R&D	Expert Session on Patent Drafting Process for Final Year B.Tech and MCA students	13-Sep-2024
25	R&D	SORT activity-II	21-Sep-2024
26	Women Cell	One day session on to make aware all the ladies/girls about their health by Fitness Instructor	21-Sep-2024
27	Exam Cell	CIE-II (SY, TY & B.Tech)	30-Sep-2024
28	CSE	Two-day Workshop for faculty on Data Analytics	Sep-24
29	Exam Cell	CIE-II (SY, TY & B.Tech)	1-Oct-2024
30	R&D	Second assessment of project (Methodology and future work presentation)	5-Oct-2024
31	Respective Department	Result Decleration CIE-II	7-Oct-2024
32	Alumni Cell	Alumni Meet	13-Oct-2024
33	Women Cell	Workshop on any activity ralated environmental awareness among all the students/faculty/staff by nature lover/ ecologist/ coservationist	19-Oct-2024
34	ENTC	One day workshop for faculty on 3D printing	Oct-24
35	CSE	Two-day Workshop on Linux OS for non-teaching staff	Oct-24
36	MCA	One day Workshop on cloud computing for faculty	Oct-24
37	FDC	One week STTP in coordination with any two departments	Nov-24
38	SUK Calender	Semester End (SY, TY & B.Tech)	30-Nov-2024
39	SUK Calender	Semester End- M.Tech	7-Dec-2024
40	JJM Trust	Dr. J.J.Magdum Jayanti	23-Dec-2024

		Civil	Two-day workshop on For Faculty Structural health monitoring and audit of building	Last week of December

July-24						
SUN	MON	TUE	WED	THU	FRI	SAT
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

Sr.No.	Date	Activity	Section/Head
1	1-Jul-2024	Start of academic year- SY, TY, B.Tech & M.Tech	NSS
2	15-Jul-2024	One day cleaning activity at college campus.	NSS
3	20-Jul-2024	One day cleaning activity at adopted Village(Jambhali)	R&D
4	20-Jul-2024	Expert Session on " Selecting the good project topic and writing synopsis " (Session to be conducted by each department)	R&D
5	31-Jul-2024	Synopsis presentation and DRC meeting for project synopsis approval	R&D

August-24						
SUN	MON	TUE	WED	THU	FRI	SAT
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

Sr.No.	Date	Activity	Section/Head
1	3-Aug-2024	Tree Plantation Program	NSS

2	15-Aug-2024	Independence Day	JJM Trust
3	16 to 17-Aug-2024	CIE-I (SY, TY & B.Tech)	Exam Cell
4	16-Aug-2024	SORT Inauguration & Expert session on research topic 8/20/2024	R&D
5	17-Aug-2024	Inauguration of Women Cell to empower women/girls of the Institute by conducting various activities 8/21/2024	Women Cell
6	23-Aug-2024	Result Decleration CIE-I	Respective Department
7	31-Aug-2024	Parents Meet	Respective Department

September-24						
SUN	**MON**	**TUE**	**WED**	**THU**	**FRI**	**SAT**
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

Sr.No.	Date	Activity	Section/Head
1	2-Sep-2024	First assessment of project (Introduction and literature review presentation) 8/31/2024	R&D
2	3-Sep-2024	Expert session on " Research publication" (Session to be conducted by each department)	R&D
3	6-Sep-2024	Expert Lecture for faculty & students on IPR	R&D
4	12 to 17-Sep-2024	Collection of Nirmalya during Ganesh Festival	NSS
5	13-Sep-2024	Expert Session on Patent Drafting Process for Final Year B.Tech and MCA students	R&D
6	21-Sep-2024	SORT activity-II	R&D
7	21-Sep-2024	One day session on to make aware all the ladies/girls about their health by Fitness Instructor	Women Cell
8	30-Sep-2024	CIE-II (SY, TY & B.Tech)	Exam Cell

October-24						
SUN	MON	TUE	WED	THU	FRI	SAT
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

Sr.No.	Date	Activity	Section/Head
1	1-Oct-2024	CIE-II (SY, TY & B.Tech)	Exam Cell
2	5-Oct-2024	Second assessment of project (Methodology and future work presentation)	R&D
3	7-Oct-2024	Result Decleration CIE-II	Respective Department
4	13-Oct-2024	Alumni Meet	Alumni Cell
5	19-Oct-2024	Workshop on any activity ralated environmental awareness among all the students/faculty/staff by nature lover/ ecologist/ coservationist	Women Cell

Dean, Academics   Principal   Campus Director

TIME TABLE

Academic Year: 2024-25   **Semesters:** I
Department: Civil Engineering   **Class:** SY B.Tech
Class Room No.: B206   **W.e.f.:** 9/9/2024
Class Teacher: Prof. Ms. N. D. Shaikh

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
09.30 am-10.30 am	SOM	FM I	BCM	SUR I	EM III	BCM
10.30 am-11.30 am	SUR I	SOM	EVS	FM I	BCM	BCM
11.30 am -11.40 am	SHORT RECESS					
11.40 am -12.40 pm	FM I	SUR I	NM	BCM	A1 BCM* A2 SOM A3 FM I	NM
12.40 pm -01.40pm	EM III	EM III	SOM	NM		NM
01.40 pm-02.30 pm	LONG RECESS					
02.30 pm-03.30 pm	A1 SOM A2 NM A3 BCM	A1 FM I A2 SUR I A3 NM	A1 SUR I A2 BCM A3 SOM	A1 NM A2 FMI A3 SUR I	EM III (T)	--
03.30 pm-04.30 pm					EVS	--

Name of the Subject	Abb.	Name of Teacher	Place of Practical
Engineering Mathematics-III (TH)	EM-III	Prof Ms M R Naik	------
Surveying-I(TH & PR)	SUR-I	Prof. A. S. Sajane (Th+Pr.1,2,3)	Surveying Lab
Fluid Mechanics-I (TH & PR)	FM-I	Prof. Mrs A. P. Chougule (Th+Pr.1,2,3)	Fluid Mech. Lab
Strength of Material (TH& PR)	SOM	Prof. Ms. N. D. Shaikh (Th+Pr. 1,2,3)	Material Testing Lab
Building Construction & Material (TH & PR)	BCM	Prof. Mrs. S. P. Madnaik (Th+Pr. 2,3) Prof A. S. Sajane (Pr. 1)	Drawing Hall
Numerical Methods (TH)	NM	Prof. Ms. S. S. Khot (Th+Pr. 1,2,3)	Computer Lab
Environmental Studies (TH)	EVS	Prof. P. A. Chougule	------

Second Year CIVIL ENGINEERING – CBCS PATTERN

SEMESTER - III

Sr. No	Course (Subject Title)	THEORY Credits	THEORY No. of Lectur	THEORY Hours	TUTORIAL Credits	TUTORIAL No. of Lectur	TUTORIAL Hours	PRACTICAL Credits	PRACTICAL No. of Lectur	PRACTICAL Hours	THEORY Hours	THEORY Mode	THEORY Marks	THEORY Total Marks	THEORY Min	PRACTICAL Hours	PRACTICAL Max	PRACTICAL Min	TERM WORK Hours	TERM WORK Max	TERM WORK Min
1	BSC-CV301	3	3	3	1	1	1	-	-	-		CIE	30	100	40	As per BOS Guidelines	-	-	2	25	10
												ESE	70								
2	PCC-CV302	3	3	3	-	-	-	1	2	2		CIE	30	100	40		25	10	2	50	20
												ESE	70								
3	ESC-CV303	3	3	3	-	-	-	1	2	2		CIE	30	100	40		25	10	2	25	10
												ESE	70								
4	ESC-CV304	3	3	3	-	-	-	1	2	2		CIE	30	100	40		25	10	2	25	10
												ESE	70								
5	PCC-CV305	4	4	4	-	-	-	1	2	2		CIE	30	100	40		-	-	2	50	20
												ESE	70								
6	ESC-CV306	3	3	3	-	-	-	1	2	2		-	-	-	-		-	-	2	50	20
	TOTAL	19	19	19	1	1	1	5	10	10				500			75			225	

SEMESTER –IV

Sr. No	Course (Subject Title)	THEORY Credits	THEORY No. of Lectur	THEORY Hours	TUTORIAL Credits	TUTORIAL No. of Lectur	TUTORIAL Hours	PRACTICAL Credits	PRACTICAL No. of Lectur	PRACTICAL Hours	THEORY Hours	THEORY Mode	THEORY Marks	THEORY Total Marks	THEORY Min	PRACTICAL Hours	PRACTICAL Max	PRACTICAL Min	TERM WORK Hours	TERM WORK Max	TERM WORK Min
1	ESC-CV401	3	3	3	1	1	1	-	-	-		CIE	30	100	40	As per BOS Guidelines	-	-	2	25	10
												ESE	70								
2	PCC-CV402	3	3	3	-	-	-	1	2	2		CIE	30	100	40		25	10	2	25	10
												ESE	70								
3	PCC-CV403	3	3	3	-	-	-	1	2	2		CIE	30	100	40		25	10	2	25	10
												ESE	70								
4	ESC-CV404	3	3	3	-	-	-	1	2	2		CIE	30	100	40		-	-	2	25	10
												ESE	70								
5	PCC-CV405	3	3	3	-	-	-	2	4	4		CIE	30	100	40		50	20	2	50	20
												ESE	70								
6	ESC-CV406	2	2	2	-	-	-	1	2	2		CIE	30	100	40						
												ESE	70								
7	ESC-CV407	-	-	-	-	-	-	1	2	2		-	-	-	-		-	-	2	50	20
	TOTAL	17	17	17	1	1	1	7	14	14				600			100			200	
	TOTAL	36	36	36	2	2	2	12	24	24				1100			175			425	

CIE- Continuous Internal Evaluation ESE – End Semester Examination

SHIVAJI UNIVERSITY, KOLHAPUR

REVISED SYLLABUS

SECOND YEAR (B. Tech) CBCS

CIVIL ENGINEERING

To be introduced from the academic year 2019-20

(i.e. from June 2019) onwards

ENGINEERING MATHEMATICS-III

Teaching Scheme	Examination Scheme
Lectures : 3 hours/week	ESE : 70 marks
Tutorial : 1 hour/week	CIE : 30 marks
Credits : 4	Term Work : 25 marks

Course Objectives:

1) To develop mathematical skills and enhance thinking power of students.

2) To give the knowledge to the students of Statistics, Linear Differential Equations ,Vector Differential Calculus ,Laplace transforms ,Probability, Numerical Integration with an emphasis on the application of solving engineering problems

3) To prepare students to formulate a mathematical model using engineering skills & interpret the solution in real world.

Course Outcomes:

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

1) Make use of Linear Differential Equations to solve the Civil Engineering problems.

2) Apply knowledge of vector differentiation to find directional derivatives, curl and divergence of vector fields.

3) Describe the statistical data numerically by using Lines of regression and Curve fittings.

4) Solve basic problems in probability theory, including problems involving the binomial, Poisson, and normal distributions.

5) Find Laplace transforms of given functions and use it to solve linear differential equations.

6) Calculate numerical Integration.

SECTION – I

Unit 1. Linear Differential Equations (LDE) and its Applications: **08**

1.1 Linear Differential equations with constant coefficients.

1.2 Rules to find complementary function.

1.3 Methods to find particular Integral (e^{ax}, sinax or cosax, x^m, $e^{ax}x^m$, $e^{ax}sinax$ or $e^{ax}cosax$)

1.4 Cauchy's homogeneous linear differential equations.

1.5 Applications of Linear Differential Equations to Cantilever , Strut , Beam.

Unit 2. Vector Differential Calculus: 07

2.1 Differentiation of vectors.

2.2 Gradient of scalar point function.

2.3 Directional derivative.

2.4 Divergence of vector point function.

2.5 Curl of a vector point function.

2.6 Irrotational, Solenoidal and Scalar potential function of a vector field.

Unit 3. Correlation, Regression & Curve Fitting: 07
   3.1 Introduction.
   3.2 Karl Pearson's Coefficient of Correlation.
   3.3 Lines of regression of bivariate data.
   3.4 Fitting of Curves by method of Least-squares:
        3.4.1 Fitting of Straight lines.
        3.4.2 Fitting of exponential curves.
        3.4.3 Fitting of second degree Parabolic curves.

SECTION – II

Unit 4. Probability Distribution: 06
   4.1 Random variables.
   4.2 Discrete Probability distribution.
   4.3 Continuous probability distribution.
   4.4 Binomial Distribution.
   4.5 Poisson Distribution.
   4.6 Normal Distribution.

Unit 5. Laplace Transform and its Applications:

                                                                         0
7
   5.1 Laplace transform of elementary functions
   5.2 Properties of Laplace transforms(First Shifting , Change of scale property , Multiplication
        & Division by t)
   5.3 Laplace transforms of derivatives and integral.
   5.4 Inverse Laplace transforms by partial fractions & convolution theorem.
   5.5 Solution of Linear differential equation with constant coefficients using Laplace transform

Unit 6. Numerical Integration: 07
   6.1 Newton Cotes formulae
   6.2 Trapezoidal Rule.
   6.3 Simpson's 1/3 rd rule.
   6.4 Simpson's 3/8 th rule.
   6.5 Weddle's Rule.

Reference Books:
   1) Advance Engineering Mathematics by Erwin Kreyszig (Wiley India.)
   2) Mathematical Methods of Science and Engineering, by Kanti B. Datta (Cengage Learning.)
   3) Advanced Engineering Mathematics, 3e, by Jack Goldberg (Oxford University Press.)
   4) Engineering Mathematics by V. Sundaram (Vikas Publication.)
   5) Higher Engineering Mathematics, by B. S. Grewal (Khanna Publication Delhi.)
   6) Higher Engineering Mathematics, by B. V. Ramana (Tata McGraw-Hill)
   7) Advanced Engineering Mathematics, by H. K. Das (S. Chand Publication.)
   8) Applied Mathematics by Navneet D. Sangle (Cengage Publication)

Guidelines regarding the question paper setting

It will be two sections. Each will include four questions having weight age 12, 11, 11, and 12. Out of four questions of each section attempt any three.

First three questions should be on each unit separately and **question no. 4** should be on all the three units (**out of three solve any two**)

End Semester Examination

Question No.	Unit Number	Marks
1	1	12
2	2	11
3	3	11
4	1,2,and 3	12
5	4	12
6	5	11
7	6	11
8	4,5,and 6	12

Assignment Questions

1. If $u = e^x \left(x\cos y - y\sin y \right)$ then determine whether u is harmonic & if it is harmonic & find corresponding analytic function Find the curve of the best fit of the type y □ aebx to the following data by the method of least square.

   x – 1,5,7,9,12

   y – 10,15,12,15,21

2. For a certain data the regression equation are 3x+2y=26 and 6x+y=31.Find x,y,and r.

3. Find the best fitting of the type y □ axb to the following data

   x— 1,2,3,4,5,6

   y— 2,16,54,128,250,432

4. Assume that on the average one telephone number out of 15 called 2 p.m. and 3 p.m. on week days is busy. What is the probability that if 6 randomly selected telephone numbers are called (i) not more than 3 (ii) at

   least 3 of them will be busy

5. If the probability that an individual suffers a bad reaction from a certain injection is 0.001, determine the probability that out of 2000 individuals

   (i) exactly 3   (ii) more than 2 will suffer a bad reaction

15. In an intelligence test administered on 1000 children the average was 42 and

    S.D. was 24   Find the number of children exceeding a score 50 and Number of children lying between 30 and 40

16. In a large institution 2.28% of employees receive income below Rs.4500

    P.M. and 15.87% of employees receive income above Rs 7500P.M. Assuming that the income follows normal distribution. Find the mean and S.D. of the distribution

17. The overall percentage of failures in a certain examination is 20. If six candidates appear in the examination, what is the probability that at least

    five pass the examination?

18. Assume that on the average one telephone number out of 15 called 2 p.m. and 3 p.m. on week days is busy. What is the probability that if 6 randomly selected telephone numbers are called (i) not more than 3 (ii) at

    least 3 of them will be busy

19.

   Evaluate $\int_0^\infty e^{-3t} t \cos t \, dt$

20. If $u = e^x \left(x \cos y - y \sin y \right)$ then determine whether u is harmonic & if it is harmonic & find corresponding analytic function.

SHIVAJI UNIVERSITY, KOLHAPUR

SECOND YEAR B. TECH. (CIVIL) SEMESTER -III

SURVEYING-I

Course	Teaching Scheme					Evaluation Scheme			
						Theory (Marks)		Practical(Marks)	
	L	T	P	Credit	Scheme	Max	Min. for Passing	Max	Min. for Passing
Surveying-I (PCC-CV302)	03	-	02	04	ISE	-	-	50	40%
					CIE	30	40%	-	-
					ESE	70	40%	25	40%

ISE: In semester Evaluation   CIE: Continuous Internal Evaluation   ESE: End Semester Examination

Course Objectives:
1. To obtain a full understanding of the methods of measurement, errors to be expected, and their control.
2. To know the basics of levelling and theodolite survey in elevation and angular measurements.
3. To find out area and volumes using various instruments.
4. To study the significance of plane table surveying in plan making.
5. To be able to use minor instruments with efficiency.
6. To understand the importance of surveying in the field of civil engineering.

Course Outcomes: After completing of this course, student will be able to:
1. Determine linear and angular measurements.
2. Record various measurements in the field book.
3. Find areas of irregular figures.
4. Prepare plans and sections required for civil engineering projects.

SECTION I

Unit 1: Levelling and Contouring: (8)
   a) Introduction to levelling.
   b) Permanent Adjustments of dumpy level.
   c) Reciprocal levelling, Sensitivity of bubble tube, Corrections – curvature and refraction.
   d) Contouring – methods and applications.

Unit 2: Areas and volumes: (5)
a) Planimeter – Area of Zero Circle and Numerical.
b) Area- Trapezoidal, Simpsons rule, Mid - ordinate rule, Average ordinate.
c) Volume- Trapezoidal and Simpsons Rule, Capacity contouring.

Unit 3: Plane Table Surveying: (5)
a) Principles, accessories, significance and adjustments.
b) Methods and applications of plane table survey.

SECTION - II

Unit 4: Theodolite: (6)
a) Vernier theodolite – components, uses and adjustments.
b) Applications – Trigonometrical levelling.

Unit 5: Theodolite Traversing: (7)
a) Objectives, traverse table, plotting.
b) Omitted measurements.

Unit 6: Applications: (5)
a) Usage of minor instruments- Hand Level, Abney Level, Ghat Tracer and Box Sextant.
b) Hydrographic survey.
c) Tunnel survey.

Term Work:
1. Differential and reciprocal levelling, by Auto or Dumpy Level.
2. Two Peg Method.
3. Sensitivity of bubble tube.
4. Methods of plane table survey – any two methods.
5. Measurement of horizontal angles by any two methods.
6. Trigonometrical levelling- when base is accessible.
7. Project drawings

Survey Projects:
1. Block contouring project for at least 100m x 100m- By Auto Level.
2. Theodolite traverse – Pentagon.

Textbooks:
1. Surveying and Levelling Vol. I and Vol. II by T. P. Kanetkar and S.V.Kulkarni, Pune
1. Vidyarthi Griha Prakashan.
2. Surveying and Levelling by Subramanian, Oxford University Press.
3. Surveying, Vol. I & II by Dr. B. C. Punmia, Ashok K. Jain, ArunK.Jain, Laxmi
4. Publications.
5. Surveying and Levelling by N. N. Basak, Tata McGraw Hill.
6. Surveying, Vol. I & II by S. K. Duggal, TataMc-Graw Hill.
7. Surveying and Levelling - R. Agor, Khanna Publishers, New Delhi.

Reference Books:

1. Principles of Surveying. Vol. I by J. G. Olliver, J. Clendinning - Van Nostrand Reinhold.
2. Plane Surveying by A. M. Chandra, New Age International Publishers.
3. Surveying Vol. I & II by Dr. K. R. Arora, Standard Book House.
4. Plane surveying – David Clark.

Guidelines for Question Paper Setting:

1. It will include two sections. Each section will include 4 questions having weightage 12, 11, 11 and 12. **Attempt any three out of 4 Questions from each section.**

2. First three questions should be on each unit separately and Question No.4 should be on all the three units .**Question No.4 and 8 should be of short notes** (Attempt any three out of five)

End Semester Examination

Question No.	Unit No.	Marks
1.	1	12
2.	2	11
3.	3	11
4.	1,2 and 3	12
5.	4	12
6.	5	11
7.	6	11
8.	4,5 and 6	12

Assignment Questions

1. Write short notes on.
   i) Precise leveling.
   ii) Reciprocal leveling
   iii) Sensitivity of bubble tube.
   iv) Auto level and special features in auto level.

2. Explain with neat diagram how the procedure of reciprocal leveling eliminates effect of refraction, curvature and error of collimation.

3. Derive expressions for curvature, refraction and combined correction for curvature and refraction.

4. why is it necessary to consider correction for curvature and refractions? Work out their values for sight length of 1.0 Km.

5. Explain use of precise level. Also explain precautions to be taken in precise leveling.

6. Enlist the fundamental axes of a dumpy level. Indicate the desired relationship amongst them. Describe in detail permanent adjustment of dumpy level.

7. Explain theory of planimeter. Give expressions for calculating area with help of planimeter. State terms used in it.

8. What is 'zero circle' explain briefly. Give the expression of zero circle with meaning of each term.

9. State different methods of computation of area, explain Trapezoidal rule with its statement and derive its expressions.

10. Explain Simpson's rule with its statement and derive its expression. Q5) Compare trapezoid rule and Simpson's rule.

11. An embankment of width 10m and side slopes 1.5:1 is required to be made on a ground which is level in a direction transverse to the center line. The central heights at 20m intervals are 0.83, 1.28, 2.19, 2.52, 1.85, 1.46 and 0.90m.
   Calculate the volume of earthwork according to
     i) Trapezoidal Rule.
     ii) Prismoidal formula.

12. write a detailed note on Intersection method of plane table.

13. write a detailed note on Traversing method of plane table.

14. write a detailed note on Resection method of plane table.

15. Define two point problem, explain the detailed procedure with neat diagram for solving the

   two point problem in the field.

16. Explain the graphical method of solving three point problem.

17. Write a short note on strength of fix.

18. Explain advantages on minor instruments in surveying.

19. Explain Ghat Tracer with neat sketch

20. How will you determine the reduced level of the top of a transmission tower when its

   base is not accessible?

21. Explain by deriving necessary expressions, the double plane method to determine the reduced level of an elevated point.

SECOND YEAR B. TECH. (CIVIL) SEMESTER -III

STRENGTH OF MATERIALS

Course	Teaching Scheme					Evaluation Scheme			
						Theory (Marks)		Practical (Marks)	
	L	T	P	Credit	Scheme	Max.	Min. for Passing	Max.	Min. for Passing
Strength of Materials (ESC-CV303)	03	-	02	04	ISE	-	-	25	40%
					CIE	30	40%	-	-
					ESE	70	40%	25	40%

ISE: In Semester Evaluation   CIE: Continuous Internal Evaluation   ESE: End Semester Examination

Course Objectives:
1. To develop an understanding of the basic principles of Structural Analysis.
2. Study the internal effects and deformations caused by the applied loads.
3. Understand the analysis and design aspects of structural engineering.

Course Outcomes:
After completion of this course students will be able to:
1. Evaluate the response of elastic body for external actions and compute design forces.
2. Evaluate shear force and bending moment of statically determinate structure.
3. Analyze the stress, strain and deformation of elastic bodies under bending and shear actions.
4. Analyze the stress, strain and deformation of elastic bodies under external actions.

SECTION I

Unit 1: Stress & Strain: **(6)**

1.1 Engineering properties of different materials.
1.2 Simple stress and strain, Hooke's law, elastic behavior of the body under external actions.
1.3 Composite sections under axial loading, temperature stresses, elastic constants.
1.4 Normal stresses and strains in three dimensions.

Unit 2: Shear force diagram & bending moment diagram for determinate beams:

(6)

2.1 Concept and definition of SF & BM, relation between SFD, BMD & loading.
2.2 SFD & BMD due to point load, UDL, UVL & moments/couples.

Unit 3: Analysis of trusses: **(6)**

3.1 Introduction to truss.
3.2 Analysis of truss using method of joints & method of sections.

SECTION II

Unit 4: Bending stresses: (6)

4.1 Theory of pure bending.

4.2 Derivation of flexural formula.

4.3 Bending stress for symmetrical & unsymmetrical section.

Unit 5: Shear stresses in beam: (6)

5.1 Shear stress distribution for symmetrical & unsymmetrical section.

Unit 6: Strain Energy: (6)

6.1 Strain energy due to different types of actions, suddenly applied load, gradually applied load & impact load, strain energy method for deflection of determinate beams.

6.2 Analysis of thin walled cylinder.

Term Work:
Term work shall comprise of –

A) Perform at least any Seven from following:
   i. Study of Universal Testing Machine.
   ii. Tensile test on Mild steel and TMT steel.
   iii. Compression test on M.S. and C.I, cement bricks or paving blocks
   iv. Compression test on timber.
   v. Direct shear test on M.S. bar.
   vi. Charpy or Izod Impact test on different metals.
   vii. Bending test on Timber.
   viii. Water absorption and compression test on burnt bricks.
   ix. Hardness test on metals.

B) At least one assignment on each unit.

Text Books:
1. "Strength of Materials" - R.K.Bansal., Laxmi Publications.
2. "Strength of Materials" - S Ramamrutham, DhanapatRai Publications.
3. "Structural Analysis" - Bhavikatti S.S, Vikas Publications house New Dehli.
4. "Strength of Materials" - R.K.Rajput., S.Chand Publications.

Reference Books:
1. "Mechanics of Materials" - Gere and Timoshenko, CBS publishers.
2. "Mechanics of Material" - Beer and Johnston, M.
3. "Strength of Material" - F. L. Singer and Pytel, Harper and Row publication.

It will include two sections. Each section will include 4 questions having weightage 11, 12, 12 and 12. **Question No. 1 & 5 is and solve any 2 out of remaining 3 in each section**

Question No. 1 and 5 should compulsory be on theory

End Semester Examination

Question No.	Unit No.	Marks
1.	1, 2, 3 - Theory	09
2.	1 - Problem	13
3.	2 - Problem	13
4.	3 - Problem	13
5.	4,5,6 - Theory	09
6.	4 - Problem	13
7.	5 - Problem	13
8.	6 - Problem	13

Assignment Questions

1. What is principle of superposition**.**
2. Define Poisson's ratio & volumetric strain.

3. The tensile test was conducted on M.S.bar. The following readings were observed,
   1. Dia. Of bar=3cm
   2. Gauge length=20cm
   3. Load at elastic limit=250kN
   4. Extension at load of 150kN=0.21mm
   5. Max. load=380kN
   6. Total extension=60mm
   7. Dia. Of rod at failure=2.25cm.
   Find: Young's modulus, stress at elastic limit,% elongation & % decrease in area.

4. Define determinate & indeterminate structures

5. A beam ABCDEF is supported at A & E. The beam carries a point load of 58KN acting vertically downloads at B; another point load of 85 KN at point C making an angle of 71.5650 with horizontal; a udl of 18 KN/m from D to F and a clockwise couple of 56 KNm at F. If support A is hinged and support E is roller support, draw SFD & BMD. Length(AB)=0.5m, L(BC)=L(CD)=L(DE)=1m, L(EF)=1.5m.

6. Draw SFD & BMD for the beam shown below.
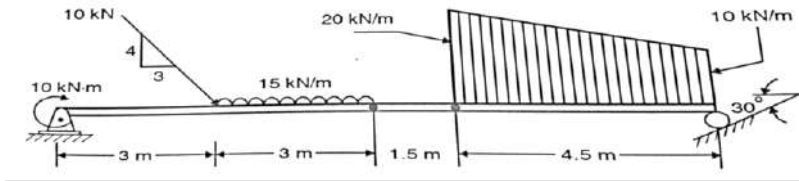
7. Draw SFD & BMD for the beam ABCDE, simply supported at A &D, carries a U.D.L. of 20 KN/m from A to B; a point load of 20 KN at E and a clockwise moment of 40KNm at C. Take AB=2m, BC=CD=1.5m and
DE=1m.

8. A steel penstock 1.2m dia., thick., 15mm subjected to 100m head of water. Calculate the hoop & longitudinal stresses at the bottom of the penstock.
    Take sp.wt. of water 10kN/m^3.

9. A pipe of 1 m dia. carrying a fluid under a press. of 15 MPa. Calculate necessary thickness of pipe if max. permissible stress in pipe material is 120Mpa.

10. Cylindrical shell 2.8m long, 1000mm dia. & thickness 12 mm is subjected to an internal pressure of 1.5 Mpa. Calculate max. intensity of stress induced & also calculate change in dia., length & volume. Take
    E=2x10^{5}Mpa & 1/m=0.3.

11. Determine the horsepower transmitted by a shaft if d= 15cm, N=120 rpm, G=8x10^{10}N/m^2& relative angle of twist is 1/120 rad/m. What is the value
    of maximum shear stress?

12. What are the assumptions made in the theory of simple bending?

13. Derive flexural formula.

14. Rectangular beam 150x300mm (deep) is subjected to max. bending moment of 40kNm. Determine the max. bending stresses in the beam if E=2x10^{4}Mpa. Also determine radius of curvature at the point of max. B.M.

15. A beam simply supported & carries a udl of 45 kN/m over the whole span. The section of the beam is rectangular having depth as 600 mm. If the max. stress in the material of the beam is 125 N/mm^2& M.I. of the section is 7x10^{8}mm^4,find the span of the beam.

16. A 400x400 mm timber is strengthened by the additional steel plates of 400x6.25mm at top & bottom. The composite beam is simply supported at its ends & carries a udl of 30kN/m run on 5m span. Find the max. bending stresses in the steel & timber at the mid span. Take E$_s$=2x10^{5}MPa & E$_t$=0.10x10^{5}MPa.

17. Draw the shear stress distribution diagram for the unsymmetrical I section of dimensions :
    Upper flange-110x25, web-25 thk, lower flange-200x50mm & overall depth-300mm. Take S.F.=500kN.

18. The c/s as shown in the fig. carries S.F.of 600kN. Draw the shear stress distribution across the section. Find the contribution of the shaded portion of the area in resisting the shear force.
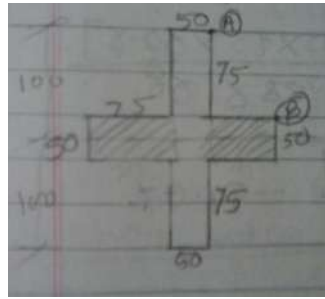

19. Laminated wooden beam 200 mm wide & 300 mm deep is formed by 5, 200x60 mm deep wooden planks glud together. The beam is cantilever with 2.5m span. If the allowable shearing stress in the glud joint is 0.75MPa, find the max. point load , beam can carry at the tip of cantilever.

20. A T section has dimensions: Flange- 200x20 mm , web- 10mm thk. & overall depth- 100mm. This section is used as simply supported beam of span 1.5m. Calculate udl that can be applied over the beam such that max. shear stress anywhere in the section is not to exceed 3N/mm². Also determine max. bending stress.

21. Find vertical deflection of A of the structure shown below. All members have same c/s area.
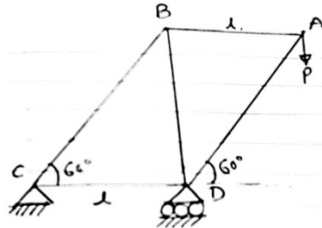
22. .Calculate deflection under point load for beam shown in fig. below.
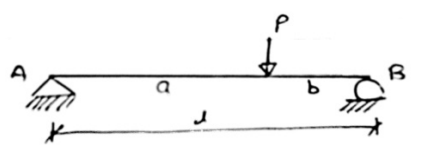
23. Calculate deflection under point load for beam shown in fig. below.
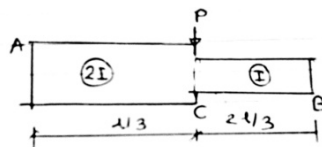
SECOND YEAR B. TECH. (CIVIL) SEMESTER -III

FLUID MECHANICS - I

Course	Teaching Scheme					Evaluation Scheme			
						Theory (Marks)		Practical(Marks)	
	L	T	P	Credit	Scheme	Max.	Min. for Passing	Max.	Min. for Passing
Fluid Mechanics-I (ESC-CV304)	03	-	02	04	ISE	-	-	25	40%
					CIE	30	40%	-	-
					ESE	70	40%	25	40%

ISE: In Semester Evaluation   CIE: Continuous Internal Evaluation   ESE: End Semester Examination

Course Objectives:
1. To study processes and science of fluid and their properties.
2. To study pressure measuring devices and pressure diagram.
3. To apply basic principles in fluid flow problems.
4. To identify the losses in pipes.

Course Outcomes:
After successful completion of this course, student will be able to:
1. Study the basic properties of fluids and their behavior under application of various force systems.
2. Discuss the basic concepts and principles in fluid statics, fluid kinematics and fluid dynamics with their applications in fluid flow problems.
3. Recognize the principles of continuity, momentum and energy as applied to fluid in motion.
4. Apply the equations to analyze problems by making proper assumptions and learn systematic engineering methods to solve practical fluid mechanics problems.

SECTION-I

Unit-1: Properties of fluid: (6)

Introduction: Physical Properties of Fluids (Density, Specific Weight, Specific Volume, Specific Gravity, Viscosity: Dynamic and Kinematic Viscosity, Compressibility, Surface tension, Capillary Effect, Vapour Pressure and Cavitation), Newton's law of viscosity, Types of Fluids. Pressure, Types of Pressure, Pascal's Law, Hydrostatic Law.

Unit-2: Fluid Statics: (7)

A. Pressure Measuring Devices, Pressure Head, Pressure Diagram, Total Pressure and Centre of Pressure, Forces on Plane and Curved Surfaces. Forces on vertical walls, gates and dams.
B. Buoyancy and Floatation: Archimedes's Principle, Metacentre, Stability of Submerged and Floating Bodies.

Unit-3: Fluid Kinematics: **(5)**

Types of Flows, Stream lines, Streak Line, Path Line, Stream Tube, Stream Bundle, Equipotential lines, velocity and acceleration of fluid, Stream Function and Velocity Potential Function, Flow Net- (Properties and Uses), Continuity Equation (3-D Cartesian Form).

SECTION-II

Unit-4: Fluid Kinetics: **(7)**

Forces Acting on Fluid in Motion, Euler's Equation along a Streamline, Bernaulies equations, Bernoulli's Theorem assumptions, Limitations and modifications.

Bernoulli's Applications: Venturimeter (Horizontal andVertical), Orificemeter, Orifices, Time required for Emptying the Tank, Concept of HGL and TEL.Therotical and Experimental determination of hydraulic coefficients of orifice. Introduction of mouthpiece and Rotameter.

Unit-5: Laminar and Turbulent Flow: **(6)**
A. Laminar Flow and Turbulent Flow: Reynold's Experiment, Hazen Poisulle's Equation for Viscous Flow through Circular Pipes, Prandtl Mixing Length Theory, Introduction to Moody's Chart.

B. Boundary Layer Theory: Concept, Various Thicknesses (Nominal, Displacement, Momentum, Energy), Hydraulically Smooth and Rough Boundaries, Separation of Boundary Layer, Control of Separation.

Unit-6: Losses in Pipes: **(5)**
A. Major and Minor Losses, Darcy-Wiesbach Equation, Concept of Equivalent Pipe, Dupit's Equation.

B. Pipes in Series, Parallel and Syphon, Two Reservoir Problems, Three Reservoir Problems Concept of Water hammer. Surge Tanks (Function, Location and Uses).

Term work:
Perform at least Eight Experiments from the Following:
1. Study of Pressure Measuring Devices.
2. Measurement of Discharge.
3. Determination of Metacentric Height for Floating Bodies.
4. Verification of Bernoulli's Theorem.
5. Calibration of Venturimeter.
6. Calibration of Orificemeter.
7. Determination of Hydraulic Coefficients of Orifice.
8. Reynold's Experiment.
9. Determination of Friction Factor for Given Pipe.
10. Determination of Minor Losses in a Given Pipe.
11. Study of Moody's Chart.

Text Books:
1. Fluid Mechanics – A.K. Jain – Khanna Pub., Delhi.
2. Fluid Mechanics – Hydraulic and Hydraulic Mechanics -Modi/Seth – Standard Book House, Delhi.
3. Fluid Mechanics – S. Nagrathanam – Khanna Pub., Delhi.
4. Fluid Mechanics – Garde-Mirajgaonkar – Nemchandand Bros., Roorkee.
5. Fluid Mechanics – Arora.
6. Fluid Mechanics through Problems – Garde R. J.
7. Fluid Mechanics and hydraulic machine-R.K.Bansal, Laxmi Pubication.

Reference books:
1. Fluid Mechanics – Streeter-McGraw-Hill International Book Co., Auckland.
2. Elementary Fluid Mechanics – H. Rouse – Toppan C. Ltd. Tokyo.
3. Fundamentals of Fluid Mechanics, Munson, Young, Okiishi, Huebesch, Wiley Publication.
4. Fluid Mechanics – Shames - McGraw-Hill International Book Co., Auckland.

Guidelines regarding the question paper setting:

It will include two sections. Each section will include 4 questions having weightage 11, 12, 11 and 12. **Out of 4 Questions of each section attempt any three.**

First three questions should be on each unit separately and Question No.4 should be on all the three units. **Question No.4 and 8 should be of short notes**.

End Semester Examination

Question No.	Unit No.	Marks
1.	1	11
2.	2	12
3.	3	11
4.	1,2 and 3	12
5.	4	11
6.	5	12
7.	6	11
8.	4,5 and 6	12

Assignment Questions

1. Explain Physical properties of fluids

2. Define Dimensions and Dimensional homogeneity.

3. Describe Newtons law of viscosity

4. Enlist & explain types of fluids

5. What are the Dimensionless Numbers and model laws.

6. Define Pascal' s Law and Hydrostatic Law

7. Explain the Archimede's principle.

8. Write note on Pressure Diagram and Center of pressure

9. How will you check Stability of Submerged and Floating Bodies

10. What are the different Types of Pressure?

11. What is Flows Stream lines?

12. What is continuity Equation?

13. What is the Stream Bundle, stream Function and Velocity Potential Function?

14. What are Properties and Uses of Flow Net ?

15. Give Forces Acting on fluid in motion

16. Explain Concept of HGL and TEL

17. Write the equation for Time Required for Emptying the Tank

18. Explain Venturimeter (Horizontal and vertical) Orifice meter and Orif

19. Reynolds's Experiment, Hazen poisulle's equation for viscous flow through circular pipes

20. Prandtl mixing length theory

21. Concept,various thicknesses (nominal , displacement, momentum, energy)

22. Hydraulically smooth and rough boundaries

23. What is mean by Pipes in series, parallel and syphon

24. State & explain Dupit's equation

25. What is the design of surge tanks?

SHIVAJI UNIVERSITY, KOLHAPUR

SECOND YEAR B. TECH. (CIVIL) SEMESTER -III

BUILDING CONSTRUCTION AND MATERIALS

Course	Teaching Scheme					Evaluation Scheme			
						Theory (Marks)		Practical(Marks)	
	L	T	P	Credit	Scheme	Max.	Min. for passing	Max.	Min. for passing
Building Construction and Materials (PCC-CV305)	04	-	02	05	ISE	-	-	50	40%
					CIE	30	40%	-	-
					ESE	70	40%	-	-

ISE: In Semester Evaluation   CIE: Continuous internal Evaluation   ESE: End Semester Examination

Course Objectives:
1. To understand the properties and suitability of building materials.
2. To understand the different building components.
3. To understand the masonry work by using stones, bricks, blocks.
4. To understand the various types of doors and windows with their components.
5. To understand the requirements of good stairs and design of stairs.
6. To understand different types of roofs and floors.

Course Outcomes:
After completion of this course students will be able to:
1. Know the building Materials.
2. Describe properties and suitability of various building materials.
3. State the different building components.
4. Demonstrate different bonds in brick masonary.
5. Produce drawings of different building components.
6. Explain different types of roof coverings & types of flooring.

SECTION I

Unit 1: Engineering properties and use of following materials: **(9)**

   1.1 Stones – Requirements of good building stone, uses of building stones.

   1.2 Bricks – Manufacturing, Types (clay bricks, fly ash, cellular light weight concrete brick, aerated cement concrete brick or autoclave brick) and Engineering Properties.

   1.3 Timber – Natural and Artificial wood and their application in Civil Engineering.

   1.4 Steel – Standard structural sections, steel as reinforcement.

   1.5 Tiles - Ceramic, Vitrified, Natural Stone, Paving Blocks.

   1.6 Miscellaneous – Aluminium, Glass, Plastic.

Unit 2: (9)
a) **Basic requirements of a building as a whole:** Strength and stability, Dimensional stability, comfort and convenience, damp prevention, water-proofing techniques, heat insulation, day lighting and ventilation. Sound insulation and anti termite treatment.

b) **Building components and their basic requirements** : Foundations, plinth, walls and columns in superstructure, floors, doors and windows, sills, lintels and weather sheds, roofs, steps and stairs, utility fixtures.

c) **Formwork**: Materials (wooden, steel and aluminium).

d) **Foundations**: Types and their suitability (Stepped, isolated, combined, strip, raft, strap or cantilever, pile.)

Unit: 3 (6)
a) **Stone Masonry** – Random Rubble, Uncoursed Rubble, Coursed Rubble and Ashlar Masonry.
b) **Brickwork and Brick Bonds** - English, Flemish, Composite masonry.

SECTION II
Unit: 4 (8)
a) **Lintel**: Necessity, Materials: wood, stone, brick, steel, R.C.C. and reinforced brick lintels.
b) **Doors** – Classification, T.W. Paneled Door, Flush Door, Aluminum Glazed Doors, Steel Doors, fixtures and fastening.
c) **Windows** - Classification, T.W. Glazed Windows, Aluminum Glazed Windows, fixtures and fastening.

Unit: 5 (8)
Stairs: Technical terms, requirements of a good stair, uses, types, materials for construction. Design of stairs (Dog Legged, quarter turn and Open Well), Ramps, lifts and escalator.

Unit: 6 (8)
a) **Roofs and Roof coverings:** Terms used. Roof and their selection, pitched roofs and their types, Steel Trusses types and their suitability, roof covering, material, details, fixtures manglore tiles, A. C., G. I. and Precoated sheets, concept of proflex (truss less) roof and their selection.
b) **Construction of floors:** Concrete Flooring, R.C.C. slabs, R.C.C. beams and slab. Flat slab floor.
c) **Waterproofing:** Materials, methods and systems.

Term Work:
1. Drawing to a Scale, Draw on Half Imperial Drawing Sheet.
   a. Foundations: - Isolated, Combined Footing, Under Reamed Piles. (With reinforcement details)
   b. Stone Masonry: UCR, Course Rubble.
   c. Brick masonry: English bond, Flemish bond.
   d. Doors: T.W. Paneled Door.
   e. Windows: T.W., Glazed and aluminium Window.
   f. Stairs: Dog legged, quarter turn and Open well.

2. Sketch Book:
   a. Lettering, Symbols, Types of lines and dimensioning as per IS 962.
   b. Doors: Flush doors, Revolving door, Collapsible door and rolling shutter.
   c. Windows: Louvered window, Sliding Window, Bay window, Casement window, Dormer Window, Corner Window.
   d. Roofs: Line Sketches of steel trusses for different spans.
   e. Stairs: Quarter turn, bifurcated, Spiral, Geometrical.
   f. Lifts and Ramps.
   g. Formwork: footing, column and beam.

Text Book:
1. Building Construction – B.C.Punmia (Laxmi Publications).
2. Basic Civil Engineering – G. K. Hiraskar (DhanpatRai Publications).
3. A Text Book of Building Construction – S.P. Arora, S.P. Bindra (Dhanpat Rai Publications).
4. Construction Technology (Volume 1 to 4) – R. Chudley (ELBS).
5. A Course in Civil Engineering Drawing – V.B.Sikka (S.K.Kataria and Sons)
6. Civil Engineering Drawing – M. Chakraborty.
7. Engineering Materials – R.K.Rajput (S Chand).

References Book:
1. A to Z of Practical Building Construction and Its Management- Sandeep Mantri SatyaPrakashan, New Delhi.
2. Handbook of Building Construction- M. M. Goyal (Amrindra Consultancy).

Codes of standards:
1. SP 7- National Building Code Group 1 to 5- B.I.S. New Delhi.
2. I.S. 962 – 1989 Code for Practice for Architectural and Building Drawings.

Guidelines for Question Paper Setting:

End Semester Examination

Question No	Unit No	Marks	Remark
1	1	11	Solve any 3
2	2	12	
3	3	11	
4	1,2.3	12	
5	4	12	Drawing problem on Door or window
6	5	18	Drawing problem on Dog legged, Open well & quarter turn staircase
7	6	5	Solve any one
8	4,5,6	5	

Assignment Questions

1. What are the characteristics of good building stone? Give the uses of marble and sand stone in construction.

2. What are the characteristics of first class brick? How will you test quality of bricks?

3. What is coarse aggregate? What are the different kinds of it used in making concrete?

4. Give the names and uses of any three types of cement other than Portland cement.

5. Brief the various factors which influence cay lighting and ventilation as a requirement in residential building.

6. Write a short note on load coming over a building. Explain the function of foundation. Explain any one type of foundation.

7. What are the basic requirements of a building as a whole?

8. Write a short note on requirements of formwork.

9. Compare English bond add Flemish bond with neat sketch

10. Draw a cross section of stone masonry wall and show string course, corbel,through stone, parapet, DPC, sill and lintel.

11. What is the significance of bonding in brickwork? Explain by sketches.

12. Draw to a scale the plan, elevation and section of T.W. paneled door from following data: Clear opening-1000*2100 mm frame size-75*125 mm Style-125*40 mm top rail and bottom rail125*40mm Lock rail-150*40 mm No. of panels-4 No. of shutters-2 Show different fixture.

13. Write a short note on arches and lintels.

14. Write a short note on staircase.

15. Design a R.C.C dog legged staircase for a residential building with suitable scale. The distance between the floors is 3 m. The stair hall size is 2m*4m. Draw plan and section. Assume suitable data wherever necessary. Write the design steps.

16. Write a short note on ramps and escalator.

17. Which are the techniques for water proofing?

18. Write a short note on truss.

SHIVAJI UNIVERSITY, KOLHAPUR

SECOND YEAR B. TECH. (CIVIL) SEMESTER -III

NUMERICAL METHODS

Course	Teaching Scheme					Evaluation Scheme			
						Theory (Marks)		Practical(Marks)	
	L	T	P	Credit	Scheme	Max.	Min. for Passing	Max.	Min. for Passing
Numerical Methods (ESC-CV306)	03	-	02	04	ISE	-	-	50	40%
					CIE	-	-	-	-
					ESE	-	-	-	-

ISE: In Semester Evaluation   CIE: Continuous Internal Evaluation   ESE: End Semester Examination

Course Objectives:
1. To introduce the concept of Numerical differentiation.
2. To introduce Numerical methods for evaluating definite integrals.
3. To learn fitting of straight lines and parabola.
4. To introduce the concept of Linear Programming Problem.
5. To understand methods of solution of partial differential equations.
6. To solve problems in civil engineering.

Course Outcomes:
After completion of this course students will be able to:
1. Identify, classify and choose the most appropriate numerical method for solving a problem.
2. Illustrate basic theory of correlation and regression.
3. Form and solve Linear Programming Problem.
4. Use methods of solutions to solve classical problems.
5. Deploy skills effectively in the solution of problems in civil engineering.

SECTION I
Unit 1: Numerical Differentiation: **(6)**
    1.1 Finite differences and difference operators.
    1.2 Newton's forward and backward formulae.
    1.3 Lagrange's interpolation formula.
    1.4 Sterling central difference formulas.

    Unit 2: Numerical Integration: **(6)**
  2.1 Trapezoidal Rule.
  2.2 Simpson's 1/3rd and 3/8th rules Gradient of scalar point function and directional derivative.
  2.3 Romberg integration-recursive formula.

    Unit 3: Curve Fitting:
3.1 Correlation and regression.   **(6)**
3.2 Lines of regression of bivariate data.
3.3 Fitting of curves by methods of least squares (straight-line and parabola).

SECTION II

Unit 4: Linear Programming: **(6)**
    4.1 Types of solutions to linear programming problems.
    4.2 Formation of L.P.P.
    4.3 Simplex method to solveLinear Programming Problem.

Unit 5: Partial Differential Equations: **(6)**
    5.1 Elliptical equation.
    5.2 Laplace equation.
    5.3 Liebmen's method.

Unit 6: Calculus of variation: **(6)**
    6.1. Introduction and definition.
    6.2 Euler's Equation, Extremal.
    6.3 Isoperimetric problem.

Term Work:
- Batch wise Practical's are to be conducted. The number of students per batch should be as per University pattern for practical batches.
- Programs on applications to civil engineering problems using C and C++ Language
  1. Trapezoidal Rule
  2. Simpson's $1/3^{rd}$ rule.
  3. Simpson's $3/8^{th}$ rule.
  4. Newton's forward formula.
  5. Least square method.
  6. Linear Programming Problem by simplex method.
  7. Solution of Laplace equation.
  8. Lagrange's interpolation formula.

Minimum number of practical should be 6 covering all topics.

Text Books:
1. A text book of Applied Mathematics, Vol.I by P. N. Wartikar & J. N. Wartikar, Pune, Vidyarthi Griha Prakashan, Pune.

2. Higher Engineering Mathematics by Dr. B. S. Grewal, Khanna Publishers, Delhi.

Reference Books:
1. Advanced Engineering Mathematics by Erwin Kreyszig, Wiley India Pvt. Ltd.

2. Advanced Engineering Mathematics by H. K. Dass, S. Chand, New Delhi.

3. A text book of Engineering Mathematics Volume I by Peter V. O'Neil and Santosh K.Sengar, Cengage Learning.

4. Mathematical methods of Science and Engineering by Kanti B. Datta, Cengage Learning.

5. A text book of Engineering Mathematics by N. P. Bali, Iyengar, Laxmi Publications (P) Ltd., New Delhi.

Assignment Questions

1. Explain Solution of Nonlinear and Transcendental equations

2. Calculate Roots of equations by Bisection method

3. Solve numerical by finite differences and difference method.

4. Explain Gauss forward and backward formulae

5. Explain Interpolation with unevenly space data.

6. Solve numerical by Simpson's 1/3 and 3/8 rules.

7. Explain errors in numerical analysis.

8. Perform matrix inversion.

9. Solution of transcendental and system of algebraic equations.

10. Jacobi's method

11. Solve by Euler's method

12. Solve Runge Kutta methods of 2nd and 4th order

13. Write a program and use numerical method for Major and minor losses

14. Write a program and use numerical method Problems Formulation of various problems of Civil Engineering

15. Write a program and use numerical method Calculation of Seepage and development of flow nets

Department of Civil Engineering

RUBRIC for Project-Work Assessment

	UNACEPTABLE	DEVELOPING	GOOD	EXCELLENT
Selection of Project	☐ Neither Sponsored nor well explored. ☐ Very Low Utility. ☐ Low Scope for Skills demonstration.	☐ Not Sponsored but some exploration. ☐ Low Utility. ☐ Some Scope for Skills demonstration.	☐ Partially Sponsored and sufficiently explored. ☐ Acceptable Utility. ☐ Adequate Scope for Skills demonstration.	☐ Fully Sponsored and well explored. ☐ High Utility. ☐ High Scope for Skills demonstration.
Clarity of Objectives.	☐ Little efforts put in Identification & Formulation. ☐ Objectives Need major reworking. ☐ Unclear Presentation of Intentions.	☐ Some efforts put in Identification & Formulation. ☐ Objectives Need Some reworking. ☐ Needs some clarity in Presentation of Intentions.	☐ Sufficient efforts put in Identification & Formulation. ☐ Acceptable Objectives. ☐ Acceptable clarity in Presentation of Intentions.	☐ Thorough efforts put in Identification & Formulation. ☐ Very Clear Objectives. ☐ High Clarity in Presentation of Intentions.
Problem Solving	☐ Little use of Engg. Knowledge. ☐ No Engineering tools used. ☐ Little use of Design Skills	☐ Some use of Engg. Knowledge. ☐ Some Engineering tools used. ☐ Some Design Skills used.	☐ Sufficient use of Engg. Knowledge. ☐ Acceptable use of Engineering tools. ☐ Acceptable use of Design Skills.	☐ Excellent use of Engg. Knowledge. ☐ Sufficient use of Engineering tools. ☐ Sufficient use of Design Skills
Team-Work.	☐ Unclear work distribution. ☐ Very Low Team Communication. ☐ Team attitudes are Negative.	☐ Some form of work distribution. ☐ Low Team Communication. ☐ Team Attitudes need improvement.	☐ Clear work distribution. ☐ Acceptable Team Communication. ☐ Team Attitudes are Acceptable.	☐ Very Clear work distribution. ☐ Good team Communication. ☐ Team Attitudes are very positive.
Demonstration and Report.	☐ Un-organized demonstration. ☐ Very Low Attainment of objectives. ☐ Report is imprecise, incomplete & inconclusive.	☐ Some order in Demonstration. ☐ Low Attainment of Objectives. ☐ Report is somewhat imprecise, incomplete & inconclusive.	☐ Acceptable order in Demonstration. ☐ Adequate Attainment of Objectives. ☐ Report is precise, complete & conclusive.	☐ Very Clear order in Demonstration. ☐ Full attainment of Objectives. ☐ Report is very precise, complete & conclusive.

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Student Self Assessment RUBRIC for Term-Work Assessment

CRITERIA	UNACEPTABLE	DEVELOPING	GOOD	EXCELLENT
Lecture Attendance & Involvement.	☐ My Attendance is Very Low. ☐ I am Inattentive in class ☐ I Never involve in the Q/A during Lecture	☐ My Attendance is Low ☐ I am Sometimes Attentive in class ☐ I Sometimes involve in Q/A during Lecture	☐ My Attendance is Acceptable. ☐ I am Mostly Attentive in class ☐ I Generally involve in Q/A during the Lecture	☐ I have full Attendance ☐ I am Always Attentive in class ☐ I Eagerly involve in Q/A during the Lecture
Lab work Attendance & Involvement.	☐ My Attendance is Very Low ☐ I don"t Come prepared. ☐ I Avoid involvement in Lab work.	☐ My Attendance is Low ☐ Sometimes I come prepared. ☐ I am Sometimes involved in Lab work.	☐ My Attendance is Acceptable. ☐ Mostly I am prepared. ☐ I am Generally involved in Lab work.	☐ I have Full Attendance. ☐ I come Always prepared. ☐ I Eagerly involve in all Lab work.
Lab work **report** writing , Assignments & Submissions	☐ None of my submissions are on Time. ☐ My Submission lack readability & clarity.	☐ Few of my submissions are on time ☐ Some of my submissions are readable & clear.	☐ Most of my submissions are on time. ☐ Most of my submissions are readable & clear.	☐ All of my submissions are on time. ☐ All of my submissions are readable & clear.
Efforts made in Class **Tests**.	☐ I Appear Unprepared. ☐ My Average Score is Very Low	☐ My Preparation & presentation is not sufficient. ☐ My Average Score is Low	☐ My preparation & presentation is Adequate ☐ My Average Score is Acceptable	☐ My preparation & presentation is excellent ☐ My Average Score is High
Oral Communication to Questions on Subject/ course contents.	☐ I become Anxious & Uncomfortable. ☐ I Make No effort to understand the Questions ☐ My Communication in not clear.	☐ Sometimes I am Relaxed & Comfortable. ☐ I Make Some effort to understand the Questions. ☐ My Communication is barely clear.	☐ Mostly I am Relaxed & Comfortable. ☐ I Make effort to understand the Questions. ☐ My Communication is mostly clear	☐ I am Always Relaxed & Comfortable. ☐ I Understand the Questions Effortlessly. ☐ My Communication is always very clear.

Dr. J.J. Magdum College of Engineering, Jaysingpur.
Department of Civil Engineering
Department Staff

Academic Year – 2022-23

	Name of the Faculty	Designation	Personal Mobile No.	Mail Id
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12				
13				
14				
15				
16				

Dr. J.J. Magdum College of Engineering, Jaysingpur.
Department of Civil Engineering
Department Staff

Sr. No	Name of the Staff	Designation	Contact Numbers
01	Mr. Patil A.V.	Sr. Tech.Asst.	8390243660
02	Mr. Kolap G.G.	Tech.Asst.	9890624396
03			
04			
05			
06			

ACTIVITY RECORD
(COUNSELING, CO/EXTRA CURRICULAR, LEAVE)

Counseling Staff Name:

Date	Topic	Suggestion

Co/Extra Curricular Activities:

Date	Activity Name	Participation level	Outcome

Leave Record:

Sr. No.	From	To	Reason	Permitting Staff	Remark

Notes: