LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (Autonomous)
L.B. Reddy Nagar, Mylavaram-521230, A.P, INDIA
Affiliated to JNTUK, Kakinada & Approved by AICTE New Delhi
NAAC Accredited with "A" grade, New Delhi & Certified by ISO 9001:2015
DEPARTMENT OF CIVIL ENGINEERING
http://www.lbrce.ac.in, hodcivil@lbrce.ac.in Ph: 08659-222933, Fax: 08659-222931

COURSE HANDOUT

Part-A

PROGRAM : B.Tech., V-Sem., Civil

ACADEMIC YEAR : 2018-19

COURSE NAME & CODE : Structural Analysis -II (S 394)

L-T-P STRUCTURE : 3-1-0

COURSE CREDITS : 3

COURSE INSTRUCTOR : **M.Satyanarayana**

COURSE COORDINATOR : **M.Satyanarayana**

PRE-REQUISITES: Strength of materials, Structural analysis -II

COURSE EDUCATIONAL OBJECTIVES (CEOs) :

1. To learn the procedures for analyzing three-hinged and two-hinged arches
2. To learn the impact of moving loads on structures.
3. To draw influence lines for analysis purpose.
4. To know the principles of analyzing the continuous beams and portal frames
5. To know the basics of stiffness and flexibility methods for structural loads analysis

COURSE OUTCOMES (COs):

CO1 : Analyze the three hinged and three hinged arches.
CO2 : Estimate the impact of moving loads on structure.
CO3 : Draw the influence lines for analysis purpose.
CO4 : Analyze the continuous beams and portal frames by Kani's Method.
CO5 : Understand the basics of stiffness and flexibility methods for structural loads analysis. **etc .,,**

COURSE ARTICULATION MATRIX (Correlation between COs&POs,PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	2	1	2	2		1	2	2		3	3	2
CO2	3	3	3	2	1	2	2		1	2	2		3	3	2
CO3	3	3	3	2	1	2	2		2	2	2		3	3	2
CO4	3	3	3	3	1	2	2		2	2	2		3	3	2
CO5	3	3	3	3	1	2	2		2	2	2		3	3	2

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**
1- Slight (Low), **2** – Moderate (Medium), **3** - Substantial (High).

BOS APPROVED TEXT BOOKS:

T1 Bhavikathi a Text book on "Analysis of Structures" – Vol. I & 2, Vikas publications, 3rd Edition2005

T2 Vazrani & Ratwani "Theory of Structures Analysis of structures" – KhannaPublications.

BOS APPROVED REFERENCE BOOKS:

R1 Wang. C. K., Intermediate Structural Analysis, McGraw Hill Publishing Co., Tokyo, Fourth Edition, 1989.

R2 Jindal, R. L., Indeterminate Structural Analysis, S.Chand & Co. New Delhi, Third Edition, 1997.

Part-B

COURSE DELIVERY PLAN (LESSON PLAN): Section-A/B/C

UNIT-I : ARCHES

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Introduction about SA-II	1	11/06/18		TLM-1	CO 1	T1	
2.	Introduction about Arches, Components of Arches & its types	1	13/06/18		TLM-1	CO 1	T1	
3.	Three hinged Arch, Parabolic arch & its derivation	1	14/06/18		TLM-1	CO 1	T1	
4.	Parabolic arch & its derivation	1	15/06/18		TLM-1	CO 1	T1	
5.	Problems on parabolic arch	1	15/06/18		TLM-1	CO 1	T1	
6.	Springing at different levels	1	18/06/18		TLM-1	CO 1	T1	
7.	Problems on springing at different levels	1	20/06/18		TLM-1	CO 1	T1	
8.	Linear Arch& Eddy's theorem	1	21/06/18		TLM-1	CO 1	T1	
9.	**Tutorial-I**	1	22/06/18		TLM-3			
10.	Two hinged Arches and its derivation	1	25/06/18		TLM-1	CO 1	T1	
11.	Problems on Two hinged arches	1	27/06/18		TLM-1	CO 1	T1	
12.	Problems on two hinged arches	1	28/06/18		TLM-1	CO 1	T1	
13.	Problems on two hinged arches, Fixed Arch	1	29/06/18		TLM-1	CO 1	T1	
14.	Tied arch & Temperature changes in Arches	1	02/07/18		TLM-1	CO 1	T1	
15.	**Tutorial-II**	1	04/07/18		TLM-3			
No. of classes required to complete UNIT-I		13			No. of classes taken:			

UNIT-II : MOVING LOADS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
16.	Introduction about Moving loads, classification of loads & Simply Supported Beams	1	05/07/18		TLM-1	CO 2	T1	
17.	Dérivation about UDL longer than the span	1	06/07/18		TLM-1	CO 2	T1	
18.	Problems on Single Concentrated load	1	09/07/18		TLM-1	CO 2	T1	
19.	UDL longer than span derivation & Problems	1	11/07/18		TLM-1	CO 2	T1	
20.	UDL shorter than span, Problems on UDL shorter than span	2	12/07/18, 13/07/18		TLM-1	CO 2	T1	
21.	**TUTORIAL-III**	1	16/07/18		TLM-3			
22.	Two Concentrated load derivation & Problems on Two Concentrated load derivation	2	18/07/18, 19/07/18		TLM-1	CO 2	T1	
23.	UVL Derivation & Problems	2	20/07/18, 23/07/18		TLM-1	CO 2	T1	
24.	Multi Wheel axial loads Derivation and problems	1	25/07/18		TLM-1	CO 2	T1	
25.	Problems on multi wheel axial loads	1	26/07/18, 27/07/18		TLM-1	CO 2	T1	
26.	**TUTORIAL-IV**	1	30/07/18		TLM-1			
No. of classes required to complete UNIT-II		14			No. of classes taken:			

UNIT-III : MOVING LOADS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
27.	Introduction about Influence line& Derivation of Point load	1	06/08/18		TLM-1	CO 3	T2	
28.	Problems on unit	1	08/08/18		TLM-1	CO 3		

	load						T2	
29.	Derivation about UDL shorter & longer than span	1	09/08/18		TLM-1	CO 3	T2	
30.	Problems on Point load	1	10/08/18		TLM-1	CO 3	T2	
31.	Problems on Multi point load	1	13/08/18		TLM-1	CO 3	T2	
32.	Problems on Multi point load	1	13/08/18		TLM-1	CO 3	T2	
33.	**TUTORIAL-V**	1	16/08/18		TLM-3			
34.	Problems on UDL shorter than span	1	17/08/18		TLM-1	CO 3	T2	
35.	Problems on UDL longer than span	1	20/08/18		TLM-1	CO 3	T2	
36.	Problems on Shorter and longer than the span	1	23/08/18		TLM-1	CO 3	T2	
37.	**TUTORIAL-VI**	1	24/08/18		TLM-3			
38.	TUTORIAL-8							
No. of classes required to complete UNIT-III		12			No. of classes taken:			

UNIT-IV : KANI'S METHOD

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
39.	Introduction about Kani's method & Derivation about Relative stiffness	1	27/08/18		TLM-1	CO 4	T1	
40.	Problems on continuous beams by Kani's method	1	29/08/18		TLM-1	CO 4	T1	
41.	Problems on continuous beams by Kani's method	1	30/08/18		TLM-1	CO 4	T1	
42.	Problems on frames by Kani's method	1	31/08/18		TLM-1	CO 4	T1	
43.	Problems on frames by Kani's method	1	05/09/18		TLM-1	CO 4	T1	
44.	Problems on rigid frame by Kani's method	1	06/09/18		TLM-1	CO 4	T1	
45.	**TUTORIAL-VII**	1	07/09/18		TLM-3			
46.	Problems on without sway by Kani's method	1	10/09/18		TLM-1	CO 4	T1	
47.	Sway derivation	1	10/09/18		TLM-1	CO 4	T1	

48.	Problems on sway without storey	1	12/09/18		TLM-1	CO 4	T1	
49.	Problems on sway without storey	1	12/09/18		TLM-1	CO 4	T1	
50.	**TUTORIAL-VIII**	1	14/09/18		TLM-3			
No. of classes required to complete UNIT-IV		13			No. of classes taken:			

UNIT-V : MATRIX STIFFNESS METHOD

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
51.	Introduction about Flexibility matrix and stiffness method& Steps on flexibility matrix method	1	17/09/18		TLM-1	CO 5	R1	
52.	Problems on flexibility matrix method	2	19/09/18, 20/09/18		TLM-1	CO 5	R1	
53.	Problems on flexibility matrix method	1	24/09/18		TLM-1	CO 5	R1	
54.	Stiffness matrix method steps and problem	2	26/09/18, 27/09/18		TLM-3	CO 5	R1	
55.	**TUTORIAL-IX**	1	01/10/18		TLM-1			
56.	Problems on stiffness matrix method	1	03/10/18		TLM-1	CO 5	R1	
57.	Problems on stiffness matrix method	2	04/10/18		TLM-1	CO 5	R1	
58.	Revision & **TUTORIAL-X**	1	05/10/18		TLM-3			
59.								
60.								
No. of classes required to complete UNIT-V		11			No. of classes taken:			

Contents beyond the Syllabus

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign
61.	Analysis of Frames by using Flexibility Matrix Method				TLM-1			
62.	Analysis of Frames by using Stiffness Matrix Method				TLM-1			
63.								

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

Part - C

EVALUATION PROCESS:

Evaluation Task	**COs**	**Marks**
Assignment/Quiz – 1	1	A1=5
Assignment/Quiz – 2	2	A2=5
I-Mid Examination	1,2	B1=20
Assignment/Quiz – 3	3	A3=5
Assignment/Quiz – 4	4	A4=5
Assignment/Quiz – 5	5	A5=5
II-Mid Examination	3,4,5	B2=20
Evaluation of Assignment/Quiz Marks: A=(A1+A2+A3+A4+A5)/5	1,2,3,4,5	A=5
Evaluation of Mid Marks: B=75% of Max(B1,B2)+25% of Min(B1,B2)	1,2,3,4,5	B=20
Cumulative Internal Examination : A+B	**1,2,3,4,5**	**A+B=25**
Semester End Examinations	**1,2,3,4,5**	**C=75**
Total Marks: A+B+C	**1,2,3,4,5**	**100**

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

1. To possess knowledge in both fundamental and application aspects of mathematical, scientific, engineering principles to analyze complex engineering problems for meeting the national and international requirements and demonstrating the need for sustainable development.
2. To adapt to the modern engineering tools for planning, analysis, design, implementation of analytical data and assess their relevant significance in societal and legal issues necessary in their professional career.
3. To exhibit professionalism, ethical attitude, communication, managerial skills, team work and social responsibility in their profession and adapt to current trends by engaging in continuous learning.

PROGRAMME OUTCOMES (POs):

At the end of the programme, the students will possess-

a. An ability to apply knowledge of mathematics, science, and engineering for engineering applications of national and international requirements.
b. An ability to identify-, formulate-, and analyze- complex engineering problems
c. An ability to design the experiments, analyze and interpret the data
d. An ability to use the techniques, skills, resources and modern engineering tools necessary to solve civil engineering problems
e. An ability to assess reasoning informed by contextual knowledge to assess health, safety, legal and cultural issues relevant to professional engineering practice
f. An ability to demonstrate the knowledge needed for sustainable development

g. An ability to apply ethical principles and responsibilities in engineering practice
h. An ability to function effectively as an individual and as a team member or leader in multi disciplinary settings
i. An ability to communicate effectively
j. An ability to demonstrate knowledge of engineering and management principles and apply to one's own work either as a member or as a team leader in managing projects
k. An ability to engage in life-long learning to keep abreast with technological changes

PSO's

PSO1: Possesses necessary skill set to analyze and design various systems using analytical and software tools related to civil engineering

PSO2: Possesses ability to plan, examine and analyze the various laboratory tests required for the professional demands

PSO3: Possesses basic technical skills to pursue higher studies and professional practice in civil engineering domain

Course Instructor	Module Coordinator	HOD

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COURSE HANDOUT

PROGRAM : B.Tech., V-Sem., CIVIL

ACADEMIC YEAR : 2018-19

COURSE NAME & CODE : GEO TECHNICAL ENGINEERING – I- S255

L-T-P STRUCTURE : 4-1-0

COURSE CREDITS : 3

COURSE INSTRUCTOR : **B. NARASIMHA RAO**

COURSE COORDINATOR : **B. NARASIMHA RAO**

PRE-REQUISITE: NIL

COURSE OBJECTIVE:

1. Creating awareness about soils and their engineering importance.
2. Getting aquatinted with various procedures and tests for classifying soils.
3. Develop relationships among various parameters.
4. Knowledge about behaviour of soils under various drainage conditions.
5. Learning the procedures for performing computations for determination of strength parameters of soil using various theories.

COURSE OUTCOMES (CO)

CO1: Understand soil as a building material and load bearing member..
CO2: Perform different procedures for classifying soils..
CO3: Asses the influence of soil water relationship..
CO4: Analyze engineering behavior of soils under different load/ drainage conditions.
CO5: Analyze the influence of field conditions on strength and consolidation properties of soils.

COURSE ARTICULATION MATRIX (Correlation between COs&POs,PSOs):

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PSO 1	PSO 2	PSO 3
CO1	**3**		**2**	**2**	**2**	**2**	**3**			**2**	**3**		**3**	**2**
CO2	**3**	**3**	**3**	**1**	**1**	**2**	**3**			**2**	**3**	**3**	**3**	**2**
CO3	**3**	**3**	**3**	**1**	**1**	**2**	**3**			**2**	**3**	**3**	**3**	**2**
CO4	**3**	**3**	**3**	**1**	**1**	**2**	**3**			**2**	**3**	**3**	**3**	**2**
CO5	**3**	**3**	**3**	**1**	**1**	**2**	**3**			**2**	**3**	**3**	**3**	**2**

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**
1- Slight(Low), **2 -** Moderate(Medium), **3 -** Substantial (High)

BOS APPROVED TEXT BOOKS:

T1 Arora K.R, "**Soil Mechanics and Foundation Engineering**", Standard Publishers & Distributors, Nai Sarak, Delhi. 1987.

T2 Murthy.V.N.S, "**A Text book of Soil Mechanics and Foundation Engineering**", KripaTechnical Consultants, Bangalore, 1992

T3 Venkataramaiah, "**Geotechnical Engineering**", Wiley Eastern Ltd., Madras, 1993.

BOS APPROVED REFERENCE BOOKS:

R1 Taylor. D.W, "**Fundamentals of Soil Mechanics**", Asia Publishing house, 1948.

R2 Terzaghi and Peck, "**Soil Mechanics in Engineering**", Asia Publishing house.

COURSE DELIVERY PLAN (LESSON PLAN): Civil

UNIT-I : Types and physical properties of soil and Consistency and plasticity characteristics of Soil

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Introduction	1	11/06/2018		**TLM-1**	CO1	**T1**	
2.	Soil definition and types of soils	1	13/06/2018		**TLM-1**	CO1	**T1**	
3.	Physical properties of soils &determination	1	15/06/2018		**TLM-8**	CO1	**T1**	
4.	Three phase diagram explanation and Volume-volume relationships W-W & W-V relationships	1	18/06/2018		**TLM-1**	CO1	**T1**	
5.	Derivations	1	20/06/2018		**TLM-4**	CO1	**T1**	
6.	Problems on relationships	1	22/06/2018		**TLM-4**	CO1	**T1**	
7.	**Tutorial-1**	1	23/06/2018		**TLM-3**			
8.	Sieve analysis and Problem on sieve analysis	1	25/06/2018		**TLM-8 and 4**	CO1	**T1**	
9.	Consistency limits and Consistency indices	1	27/06/2018		**TLM-1**	CO1	**T1**	
10.	Hydrometer method and IS classification of soils	1	29/06/2018		**TLM-1**	CO1	**T1**	
11.	Problems	1	30/06/2018		**TLM-4**	CO1	**T1**	
12.	Problems	1	02/07/2018		**TLM-4**	CO1	**T1**	
13.	**Tutorial-2**	1	04/07/2018		**TLM-3**	CO1		
14.	Assignment/Quiz-1	1	06/07/2018		**TLM-6**	CO1		
No. of classes required to complete UNIT-I		11			No. of classes taken: 11			

UNIT-II : Permeability characteristics of soils and Concept of effective stress in soils

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekl
15.	Permeability introduction & Darcy's law	1	07/07/2018		**TLM-1**	CO2	**T1**	
16.	C-H permeability test and V-H permeability test	1	09/07/2018		**TLM-8**	CO2	**T1**	
17.	Field tests and Indirect methods	1	11/07/2018		**TLM-1**	CO2	**T1**	
18.	Factors affecting permeability and Permeability of layered soils	1	13/07/2018		TLM-1	CO2	**T1**	
19.	Problems	1	14/07/2018		TLM-4	CO2	**T1**	
20.	Terzaghi's effective stress concept	1	16/07/2018		TLM-1	CO2	**T1**	
21.	**Tutorial-3**	1	18/07/2018		TLM-3			
22.	Seepage flow & seepage pressure	1	20/07/2018		TLM-1	CO2	**T1**	
23.	Quick sand condition & i_c	1	21/07/2018		TLM-1	CO2	**T1**	
24.	Flow net and problems	1	23/07/2018		TLM-4	CO2	**T1**	
25.	Problems	1	25/07/2018		TLM-4	CO2	**T1**	
26.	**Tutorial-4**	1	27/07/2018		TLM-3	CO1		
27.	Assignment/Quiz-2	1	28/07/2018		TLM-6	CO1		
No. of classes required to complete UNIT-II		10			No. of classes taken:			

UNIT-III : Shear strength of soils

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
28.	Introduction of shear strength of soils	1	06/08/2018		**TLM-1**	CO3	**T3**	
29.	Stress systems with p.p parallel to co-ordinate axis and Mohr's circle	1	08/08/2018		**TLM-1**	CO3	**T3**	
30.	Stress systems with p.p inclined to co-ordinate axis	1	10/08/2018		**TLM-1**	CO3	**T3**	
31.	Stress systems with vertical & horizontal plane	1	11/08/2018		**TLM-4**	CO3	**T3**	

32.	**Tutorial -5**	1	13/08/2018		**TLM-3**			
33.	Direct shear test and problems	1	17/08/2018		**TLM-8 and 4**	CO3	**T3**	
34.	Triaxial compression test and problems	1	18/08/2018		**TLM-8 and 4**	CO3	**T3**	
35.	Unconfined compression test and problems	1	20/08/2018		**TLM-8 and 4**	CO3	**T3**	
36.	Vane shear test and problems	1	24/08/2018		**TLM-8 and 4**	CO3	**T3**	
37.	**Tutorial -6**	1	25/08/2018		**TLM-3**	CO1		
38.	Assignment/Quiz-3	1	27/08/2018		**TLM-6**	CO1		
No. of classes required to complete UNIT-III		08			No. of classes taken:			

UNIT-IV: Stress Distribution in soils and Soil Compaction

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
39.	Vertical stress under point load strip load and circular load ()	1	29/08/2018		**TLM-1**	CO4	**T2**	
40.	problems	1	31/08/2018		**TLM-4**	CO4	**T2**	
41.	Isobars and problems	1	01/09/2018		**TLM-1**	CO4	**T2**	
42.	Westergaard solution	1	05/09/2018		**TLM-4**	CO4	**T2**	
43.	**Tutorial -7**	1	07/09/2018		**TLM-3**			
44.	Standard Proctor Test and Modified Proctor Test	1	08/09/2018		**TLM-8**	CO4	**T2**	
45.	Problems	1	10/09/2018		**TLM-4**	CO4	**T2**	
46.	Problems	1	12/09/2018		**TLM-4**	CO4	**T2**	
47.	Proctore Needle	1	14/09/2018		**TLM-4**	CO4	**T2**	
48.	**Tutorial-8**	1	15/09/2018		**TLM-3**	CO1	**T2**	
49.	Assignment/Quiz-4	1	17/09/2018		**TLM-6**	CO1	**T2**	
No. of classes required to complete UNIT-IV		08			No. of classes taken:			

UNIT-V : Compressibility characteristics of soils

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
50.	Terzaghi's spring analogy method and Basic definitions	1	19/09/2018		**TLM-1**	CO5	**T3**	
51.	Degree of consolidation and Consolidation test	1	22/09/2018		**TLM-1**	CO5	**T3**	
52.	Square root of time method and Log time method	1	24/09/2018		**TLM-1**	CO5	**T3**	
53.	Consolidation settlement	1	26/09/2018		**TLM-4**	CO5	**T3**	
54.	**Tutorial -9**	1	28/09/2018		**TLM-3**			
55.	Problems	1	29/09/2018		**TLM-**	CO5	**T1**	
56.	Problems	1	01/10/2018		**TLM-4**	CO5	**T1**	
57.	Problems	1	03/10/2018		**TLM-4**	CO5	**T1**	
58.	**Tutorial -10**	1	05/10/2018		**TLM-3**	CO1		
59.	Assignment/Quiz-5	1	06/10/2018		**TLM-5**	CO1		
No. of classes required to complete UNIT-V		07			No. of classes taken:			

Teaching Learning Methods					
TLM1	Chalk and Talk	**TLM4**	Problem Solving	**TLM7**	Seminars or GD
TLM2	PPT	**TLM5**	Programming	**TLM8**	Lab Demo
TLM3	Tutorial	**TLM6**	Assignment or Quiz	**TLM9**	Case Study

EVALUATION PROCESS:

Evaluation Task	**COs**	**Marks**
Assignment/Quiz – 1	1	A1=5
Assignment/Quiz – 2	2	A2=5
I-Mid Examination	1,2	B1=20
Assignment/Quiz – 3	3	A3=5
Assignment/Quiz – 4	4	A4=5
Assignment/Quiz – 5	5	A5=5
II-Mid Examination	3,4,5	B2=20
Evaluation of Assignment/Quiz Marks: A=(A1+A2+A3+A4+A5)/5	1,2,3,4,5	A=5
Evaluation of Mid Marks: B=75% of Max(B1,B2)+25% of Min(B1,B2)	1,2,3,4,5	B=20
Cumulative Internal Examination : A+B	**1,2,3,4,5**	**A+B=25**
Semester End Examinations	**1,2,3,4,5**	**C=75**
Total Marks: A+B+C	**1,2,3,4,5**	**100**

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

1. To possess knowledge in both fundamental and application aspects of mathematical, scientific, engineering principles to analyze complex engineering problems for meeting the national and international requirements and demonstrating the need for sustainable development.
2. To adapt to the modern engineering tools for planning, analysis, design, implementation of analytical data and assess their relevant significance in societal and legal issues necessary in their professional career.
3. To exhibit professionalism, ethical attitude, communication, managerial skills, team work and social responsibility in their profession and adapt to current trends by engaging in continuous learning.

PROGRAMME OUTCOMES (POs):

At the end of the programme, the students will possess-

l. An ability to apply knowledge of mathematics, science, and engineering for engineering applications of national and international requirements.
m. An ability to identify-, formulate-, and analyze- complex engineering problems
n. An ability to design the experiments, analyze and interpret the data
o. An ability to use the techniques, skills, resources and modern engineering tools necessary to solve civil engineering problems
p. An ability to assess reasoning informed by contextual knowledge to assess health, safety, legal and cultural issues relevant to professional engineering practice
q. An ability to demonstrate the knowledge needed for sustainable development
r. An ability to apply ethical principles and responsibilities in engineering practice
s. An ability to function effectively as an individual and as a team member or leader in multi disciplinary settings
t. An ability to communicate effectively
u. An ability to demonstrate knowledge of engineering and management principles and apply to one's own work either as a member or as a team leader in managing projects
v. An ability to engage in life-long learning to keep abreast with technological changes

PSO's

PSO1: Possesses necessary skill set to analyze and design various systems using analytical and software tools related to civil engineering

PSO2: Possesses ability to plan, examine and analyze the various laboratory tests required for the professional demands

PSO3: Possesses basic technical skills to pursue higher studies and professional practice in civil engineering domain

Course Instructor	Module Coordinator	HOD

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COURSE HANDOUT

Part-A

PROGRAM : B.Tech, V-SEM, Civil

ACADEMIC YEAR : 2018-19

COURSE NAME & CODE : **Transportation Engineering -I** - S 412

L-T-P STRUCTURE : 3-1-0

COURSE CREDITS : 3

COURSE INSTRUCTOR : **M.Manoj kumar**

COURSE COORDINATOR : **M.Manoj kumar**

PRE-REQUISITES: Nil

COURSE EDUCATIONAL OBJECTIVES (CEOs):

1. Know the transportation development in India
2. Learn the significance of individual elements of highway geometry
3. Identify and analyze the components of traffic management
4. Learn the technical parameters related to the quality of highway materials and construction methods.
5. Study about the design methodology of pavements using IRC codes and failures of each pavement.

COURSE OUTCOMES (COs):

CO1	Understand the road network development and Highway planning in India
CO2	Design various geometric elements of the roads based on the geographical conditions
CO3	Understand the different traffic characteristics and analyze the data
CO4	Analyze various highway materials for their suitability for highway construction
CO5	Apply different design methods for pavement construction

COURSE ARTICULATION MATRIX (Correlation between COs &POs, PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1						**2**		**3**		**2**			**1**	**1**	
CO2		**3**						**3**		**2**			**2**	**2**	
CO3		**3**						**3**		**2**				**1**	
CO4		**3**	**2**			**1**		**3**							**2**
CO5		**3**	**2**			**1**		**3**		**2**			**2**	**2**	

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**

1- Slight (Low), **2 –** Moderate (Medium), **3 -** Substantial (High)

BOS APPROVED TEXT BOOKS:

T1 Khanna,S.K and Justo, "**Highway Engineering**", New Chand and Bros, Roorkee, 10th edition, 2009.

T2 Khanna,S.K and Arora,M.G & Jain,S.S, "**Airport Planning and Design**", New Chand and Bros, Roorkee, 2004.

BOS APPROVED REFERENCE BOOKS:

R1 Kadiyali,L.R., "**Principles and Practice of Highway Engineering**", Khanna Publishers Ltd. New Delhi, 2000

R2 Sehgal,S.B and Bhanot,B.L, "**Highway and Airport Engineering**", S.Chand and Company Ltd. New Delhi,

Part-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT- I: Highway planning and Alignment

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Introduction	1	11/06/18		1	CO 1	T1	
2.	History of road development in India	1	12/06/18		1	CO 1	T1	
3.	Jayakar committee recommendations	1	14/06/18		1	CO 1	T1	
4.	Institutions for highway planning design	1	18/06/18		1	CO 1	T1	
5.	Implementation at different levels	1	19/06/18		1	CO 1	T1	
6.	Engineering surveys for alignment	1	21/06/18		1	CO 1	T1	
7.	**Tutorial-I**	1	23/06/18		3			
8.	Road patterns	1	25/06/18		1	CO 1	T1	
9.	Methods of surveying	1	26/06/18		1	CO 1	T1	
10.	GIS and GPS techniques in highway alignment, IRC classification roads	1	28/06/18		1	CO 1	T1	
11.	Highway cross sectional elements	1	30/06/18		1	CO 1	T1	
12.	Right of way, carriage way, camber.	1	02/07/18		1	CO 1	T1	
13.	Kerbs, shoulders and foot paths.	1	03/07/18		1	CO 1	T1	

14.	**Tutorial-II**	1	05/07/18		3			
15.	QUIZZ	1	07/07/18		3			
No. of classes required to complete UNIT-I					No. of classes taken:			

UNIT-II: Geometric Elements

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
16.	Introduction of geometrics of highway	1	09/07/18		1	CO 2	T1	
17.	Horizontal and vertical alignment	1	10/07/18		1	CO 2	T1	
18.	Super elevation and Design of super elevation	1	12/07/18		1	CO 2	T1	
19.	Widening of pavements	1	14/07/18		1	CO 2	T1	
20.	Problems	2	16/07/18		1	CO 2	T1	
21.	**TUTORIAL-III**	1	17/07/18		3			
22.	Gradients and their types	2	19/07/18		1	CO 2	T1	
23.	Sight distance and their types- PROBLEMS	2	21/07/18		1	CO 2	T1	
24.	PIEV theory	1	23/07/18		1	CO 2	T1	
25.	Applications of PIEV theory	1	24/07/18		1	CO 2	T1	
26.	**TUTORIAL-IV**	1	26/07/18		3			
No. of classes required to complete UNIT-II					No. of classes taken:			

UNIT-III : Traffic Engineering And Management:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
27.	Introduction to traffic engineering	1	28/07/18		1	CO 3	T2	
28.	Basic parameters of traffic	1	6/08/18		1	CO 3		
29.	Traffic volume studies	1	7/08/18		1	CO 3	T2	
30.	Presentation of traffic volume	1	9/08/18		1	CO 3	T2	
31.	Speed studies – types of speed studies	1	11/08/18		1	CO 3	T2	
32.	Data collection and presentation	1	13/08/18		1	CO 3	T2	
33.	**TUTORIAL-V**	1	14/08/18		3			
34.	Parking studies	1	16/08/18		1	CO 3	T2	
35.	Road accidents – causes and preventive measures	1	18/08/18		1	CO 3	T2	
36.	Accident recording , Condition and collision diagram	1	20/08/18		1	CO 3	T2	
37.	Traffic signs , Need and specifications of road markings	1	21/08/18		1	CO 3	T2	
38.	**TUTORIAL-VI**		23/08/18		3			
No. of classes required to complete UNIT-III					No. of classes taken:			

UNIT-IV: Highway Materials and Construction

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
39.	Highway materials Introduction	1	25/08/18		1	CO 4	T1	
40.	Properties of materials	1	27/08/18		1	CO 4	T1	

41.	Tests on soil and aggregates	1	28/08/18		4	CO 4	T1	
42.	Tests on bitumen	1	30/08/18		4	CO 4	T1	
43.	Construction of earth road, gravel	1	1/09/18		1	CO 4	T1	
44.	Construction of WBM	1	4/09/18		1	CO 4	T1	
45.	**TUTORIAL-VII**	1	6/09/18		3			
46.	Construction of cement concrete roads	1	8/09/18		1	CO 4	T1	
47.	bituminous road	1	10/09/18		1	CO 4	T1	
48.	BOT and BOLT concepts	1	11/09/18		1	CO 4	T1	
49.	QUIZZ	1	15/09/18		1	CO 4	T1	
50.	**TUTORIAL-VIII**	1	17/09/18		3			
No. of classes required to complete UNIT-IV					No. of classes taken:			

UNIT-V: Highway Design and Maintenance

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
51.	Introduction to highway design	1	18/09/18		1	CO 5	R1	
52.	Design principles of flexible and rigid pavements	2	20/09/18		1	CO 5	R1	
53.	Design of flexible pavement --Design problems	1	22/09/18		1	CO 5	R1	
54.	Design of rigid pavement	2	24/09/18		1	CO 5	R1	
55.	**TUTORIAL-IX**	1	25/09/18		3			
56.	Failures in rigid pavement	1	27/09/18		1	CO 5	R1	
57.	Failures in flexible pavement	2	29/09/18		1	CO 5	R1	
58.	**TUTORIAL-X**	1	1/10/18		3			
59.	Special repairs		4/10/18		1	CO 5	R1	

60.	REVISION		6/10/18					
No. of classes required to complete UNIT-V					No. of classes taken:			

Contents beyond the Syllabus

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign
64.								
65.								
66.								

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

Part – C

EVALUATION PROCESS:

Evaluation Task	COs	Marks
Assignment/Quiz – 1	1	A1=5
Assignment/Quiz – 2	2	A2=5
I-Mid Examination	1,2	B1=20
Assignment/Quiz – 3	3	A3=5
Assignment/Quiz – 4	4	A4=5
Assignment/Quiz – 5	5	A5=5
II-Mid Examination	3,4,5	B2=20
Evaluation of Assignment/Quiz Marks: A=(A1+A2+A3+A4+A5)/5	1,2,3,4,5	A=5
Evaluation of Mid Marks: B=75% of Max(B1,B2)+25% of Min(B1,B2)	1,2,3,4,5	B=20
Cumulative Internal Examination : A+B	**1,2,3,4,5**	**A+B=25**
Semester End Examinations	**1,2,3,4,5**	**C=75**
Total Marks: A+B+C	**1,2,3,4,5**	**100**

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

1. To possess knowledge in both fundamental and application aspects of mathematical, scientific, engineering principles to analyze complex engineering problems for meeting the national and international requirements and demonstrating the need for sustainable development.
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PROGRAMME OUTCOMES (POs):

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d. An ability to use the techniques, skills, resources and modern engineering tools necessary to solve civil engineering problems
e. An ability to assess reasoning informed by contextual knowledge to assess health, safety, legal and cultural issues relevant to professional engineering practice
f. An ability to demonstrate the knowledge needed for sustainable development
g. An ability to apply ethical principles and responsibilities in engineering practice
h. An ability to function effectively as an individual and as a team member or leader in multi disciplinary settings
i. An ability to communicate effectively
j. An ability to demonstrate knowledge of engineering and management principles and apply to one's own work either as a member or as a team leader in managing projects
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PSO's

PSO1: Possesses necessary skill set to analyze and design various systems using analytical and software tools related to civil engineering

PSO2: Possesses ability to plan, examine and analyze the various laboratory tests required for the professional demands

PSO3: Possesses basic technical skills to pursue higher studies and professional practice in civil engineering domain

Course Instructor	Module Coordinator	HOD

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COURSE HANDOUT

Part-A

PROGRAM : B.Tech, V-SEM, Civil

ACADEMIC YEAR : 2018-19

COURSE NAME & CODE : **Design of reinforced concrete structures-I** - S 183

L-T-P STRUCTURE : 3-1-0

COURSE CREDITS : 3

COURSE INSTRUCTOR : **B.Rama Krishna**

COURSE COORDINATOR : **B.Rama Krishna**

PRE-REQUISITES: SM-I, SM-II

COURSE EDUCATIONAL OBJECTIVES (CEOs):

6. To learn the design principles of working stress and limit state designs as per IS 456-2000
7. To know the design parameters of singly reinforced, doubly reinforced and flanged beam elements for flexure as well as their load carrying capacities
8. To learn the procedures for designing beam element subjected to shear, torsion and bond.
9. To know the design parameters of short and long columns subjected to axial loads and moments using SP:16 Charts.
10. To learn the design parameters and associated principles in the design of slabs and footings.

COURSE OUTCOMES (COs):

CO1: Design singly and doubly reinforced beam using working stress method.
CO2: Design singly and doubly reinforced beam using limit state method
CO3: Design the beams subjected to shear and torsion.
CO4: Design one way and two way slabs
CO5: Design RC long and short columns

COURSE ARTICULATION MATRIX (Correlation between COs &POs, PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	3		1	1					2		3	1	1
CO2	2	2	3		1	1					2		3	1	1
CO3	2	2	3		1	1					2		3	1	1
CO4	2	2	3		1	1					2		3	1	1
CO5	2	2	3		1	1					2		3	1	1

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**

1- Slight (Low), **2 –** Moderate (Medium), **3 -** Substantial (High).

BOS APPROVED TEXT BOOKS:

T1 Ashpk K. Jain, "Reinforced concrete limit state design", New Chand & Bros, Roorkee, 1993.

T2 Krishna Raju N and Pranesh R.N "Reinforced concrete design IS 456-2000, Principles and practice" New age International (P) Ltd, New Delhi,2003.

BOS APPROVED REFERENCE BOOKS:

R1 Gambhir M.I "Reinforced concrete design", Macmilan India Limited, 1993.

Part-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT- I: CONCEPT OF WORKING STRESS METHOD

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Introduction to working stress method	1	11/06/18		TLM1	CO 1	T1	
2.	Design of singly reinforced sections	1	12/06/18		TLM1	CO 1	T1	
3.	Design of doubly reinforced sections	1	14/06/18		TLM1	CO 1	T1	
4.	Design problems	1	15/06/18		TLM1	CO 1	T1	
5.	**Tutorial-1**	1	18/06/18		TLM3	CO 1	T1	
6.	Design problems	1	19/06/18		TLM1	CO 1	T1	
7.	Design problems	1	21/06/18		TLM1	CO 1	T1	
8.	Calculation for deflection	1	22/06/18		TLM1	CO1	T1	
9.	Calculation of crack width	1	25/06/18		TLM1	CO 1	T1	
10.	Design problems	1	26/06/18		TLM1	CO 1	T1	
11.	**Tutorial-2**	1	28/06/18		TLM3	CO 1	T1	
No. of classes required to complete UNIT-I		09			No. of classes taken:			

UNIT-II: PRINCIPLES OF LIMIT STATE METHOD OF DESIGN

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
12.	Introduction	1	29/06/18		TLM1	CO 2	T1	
13.	characteristic load and strength	1	02/07/18		TLM1	CO 2	T1	
14.	Partial safety factor, l/d ratio	1	03/07/18		TLM1	CO 2	T1	
	stress block parameters	1	05/07/18		TLM1	CO 2	T1	
16.	balance and under reinforced	1	06/07/18		TLM1	CO 2	T1	
17.	Design of singly reinforced rectangular section.	1	09/07/18		TLM1	CO 2	T1	
18.	**Tutorial-3**	1	10/07/18		TLM3			
19.	Design problems	1	12/07/18		TLM1	CO 2	T1	
20.	Design problems	1	13/07/18		TLM1	CO 2	T1	
21.	design of doubly reinforced rectangular section	1	16/07/18		TLM1	CO 2	T1	
22.	Design problems	1	17/07/18		TLM1	CO2	T1	
23.	Design of flanged beams	1	19/07/18		TLM1	CO 2	T1	
24.	Design problems	1	20/07/18		TLM1	CO 2	T1	
25.	Design problems	1	23/07/18		TLM1	CO 2	T1	
26.	**Tutorial-4**	1	24/07/18		TLM3			
No. of classes required to complete UNIT-II		13			No. of classes taken:			

UNIT-III : LIMIT STATE OF COLLAPSE-SHEAR AND TORSION

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
27.	Introduction	1	26/07/18		TLM1	CO 3	T2	
28.	Procedure for design of shear	1	27/07/18		TLM1	CO 3	T2	
29.	Design of vertical stirrups	1	6/08/18		TLM1	CO 3	T2	
30.	Design problems	1	7/08/18		TLM1	CO 3	T2	
31.	Design of inclined stirrups	1	9/08/18		TLM1	CO 3	T2	
32.	Design problems	1	10/08/18		TLM1	CO 3	T2	
33.	**Tutorial-5**	1	13/08/18		TLM3			
34.	Design problems	1	14/08/18		TLM1	CO 3	T2	
35.	Design problems	1	16/08/18		TLM1	CO 3	T2	
36.	Design for torsion	1	17/08/18		TLM1	CO 3	T2	
37.	Design problems	1	20/08/18		TLM1	CO 3	T2	
38.	**Tutorial-6**	1	21/08/18		TLM3			
No. of classes required to complete UNIT-III		10			No. of classes taken:			

UNIT-IV: DESIGN OF SLABS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
39.	Introduction to slabs	1	23/08/18		TLM1	CO 4	T1	
40.	Types of slabs	1	24/08/18		TLM1	CO 4	T1	
41.	Design procedure for one way slab	1	27/08/18		TLM1	CO 4	T1	
42.	Design problems	1	28/08/18		TLM1	CO 4	T1	
43.	Design problems	1	30/08/18		TLM1	CO 4	T1	

44.	**Tutorial-7**	1	31/08/18		TLM1			
45.	Design procedure for two way slab	1	4/09/18		TLM1	CO 4	T1	
46.	Design problems	1	6/09/18		TLM1			
47.	Design problems	1	7/09/18		TLM1	CO 4	T1	
48.	Design procedure for one way continuous slab	1	10/09/18		TLM1	CO 4	T1	
49.	Design problems	1	11/09/18		TLM1	CO 4	T1	
50.	**Tutorial-8**	1	14/09/18		TLM3			
No. of classes required to complete UNIT-IV		12			No. of classes taken:			

UNIT-V: LIMIT STATE OF COLLAPSE-COMPRESSION

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
51.	Introduction to columns	1	17/09/18		TLM1	CO 5	T1	
52.	Design of rectangular columns	1	18/09/18		TLM1	CO 5	T1	
53.	Design of square columns	1	20/09/18		TLM1	CO 5	T1	
54.	Design of circular columns	1	24/09/18		TLM1	CO 5	T1	
55.	Design problems	1	25/09/18		TLM1	CO 5	T1	
56.	**Tutorial-7**	1	27/09/18		TLM3			
57.	Design of columns subjected to bending	1	28/09/18		TLM1	CO 5	T1	
58.	Design of long columns	1	1/10/18		TLM1	CO 5	T1	
59.	Design problems	1	4/10/18		TLM1	CO 5	T1	
60.	Revision	1	5/10/18		TLM3			
No. of classes required to complete UNIT-V		9			No. of classes taken:			
		Tutorial-8						

Contents beyond the Syllabus

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

ACADEMIC CALENDAR:

Description	From	To	Weeks
I Phase of Instructions	11-06-2018	28-07-2018	7W
I Mid Examinations	30-07-2018	04-08-2018	1W
II Phase of Instructions	06-08-2018	13-10-2018	9W
II Mid Examinations	08-10-2018	13-10-2018	1W
Preparation and Practicals	15-10-2018	27-10-2018	2W
Semester End Examinations	29-10-2018	10-11-2018	2W

Part – C

EVALUATION PROCESS:

Evaluation Task	COs	Marks
Assignment/Quiz – 1	1	A1=5
Assignment/Quiz – 2	2	A2=5
I-Mid Examination	1,2	B1=20
Assignment/Quiz – 3	3	A3=5
Assignment/Quiz – 4	4	A4=5
Assignment/Quiz – 5	5	A5=5
II-Mid Examination	3,4,5	B2=20
Evaluation of Assignment/Quiz Marks: A=(A1+A2+A3+A4+A5)/5	1,2,3,4,5	A=5
Evaluation of Mid Marks: B=75% of Max(B1,B2)+25% of Min(B1,B2)	1,2,3,4,5	B=20
Cumulative Internal Examination : A+B	**1,2,3,4,5**	**A+B=25**
Semester End Examinations	**1,2,3,4,5**	**C=75**
Total Marks: A+B+C	**1,2,3,4,5**	**100**

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

1. To possess knowledge in both fundamental and application aspects of mathematical, scientific, engineering principles to analyze complex engineering problems for meeting the national and international requirements and demonstrating the need for sustainable development.
2. To adapt to the modern engineering tools for planning, analysis, design, implementation of analytical data and assess their relevant significance in societal and legal issues necessary in their professional career.
3. To exhibit professionalism, ethical attitude, communication, managerial skills, team work and social responsibility in their profession and adapt to current trends by engaging in continuous learning.

PROGRAMME OUTCOMES (POs):

At the end of the programme, the students will possess-

a. An ability to apply knowledge of mathematics, science, and engineering for engineering applications of national and international requirements.
b. An ability to identify-, formulate-, and analyze- complex engineering problems
c. An ability to design the experiments, analyze and interpret the data
d. An ability to use the techniques, skills, resources and modern engineering tools necessary to solve civil engineering problems
e. An ability to assess reasoning informed by contextual knowledge to assess health, safety, legal and cultural issues relevant to professional engineering practice
f. An ability to demonstrate the knowledge needed for sustainable development
g. An ability to apply ethical principles and responsibilities in engineering practice
h. An ability to function effectively as an individual and as a team member or leader in multi disciplinary settings
i. An ability to communicate effectively
j. An ability to demonstrate knowledge of engineering and management principles and apply to one's own work either as a member or as a team leader in managing projects
k. An ability to engage in life-long learning to keep abreast with technological changes

PSO's

PSO1: Possesses necessary skill set to analyze and design various systems using analytical and software tools related to civil engineering

PSO2: Possesses ability to plan, examine and analyze the various laboratory tests required for the professional demands

PSO3: Possesses basic technical skills to pursue higher studies and professional practice in civil engineering domain

Course Instructor	Module Coordinator	HOD

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (Autonomous)
L.B. Reddy Nagar, Mylavaram-521230, A.P, INDIA
Affiliated to JNTUK, Kakinada & Approved by AICTE New Delhi
NAAC Accredited with "A" grade, New Delhi & Certified by ISO 9001:2015
DEPARTMENT OF CIVIL ENGINEERING
http://www.lbrce.ac.in, hodcivil@lbrce.ac.in Ph: 08659-222933, Fax: 08659-222931

COURSE HANDOUT

PROGRAM : B.Tech., V-Sem., CIVIL
ACADEMIC YEAR : 2018-19
COURSE NAME & CODE : HYDROLOGY (S265)
L-T-P STRUCTURE : 3-1-0
COURSE CREDITS : 3
COURSE INSTRUCTOR : J.Rangaiah
COURSE COORDINATOR : J.Rangaiah
PRE-REQUISITE : Applied Mechanics, Mechanics of Fluids, Hydraulics and Hydraulic Machinery

COURSE OBJECTIVE :

1. Learn the fundamentals of hydrology and its importance in development of water resources
2. Study the different types of irrigation methods,
3. Study of water quality criteria and significance of soil-water-plant relationship
4. Understand the unit hydrograph.
5. Learn about the Geological formation of the aquifers radial flow to wells in confined and unconfined aquifers

COURSE OUTCOMES (CO):

At the end of the course, the student will be able to:
CO1: Aware of fundamentals of Irrigation practices
CO2: Identify appropriate method of irrigation based on field conditions
CO3: Estimate the moisture availability for irrigation and check the suitability of available water for irrigation purposes
CO4: Estimate direct run off from total rain fall, and develop the corresponding hydrographs
CO5: Estimate the ground water potential based on theoretical principles

COURSE ARTICULATION MATRIX (Correlation between Cos & POs, PSOs):

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	**2**	**2**	**1**	**1**		**2**	**2**			**1**			**3**	**1**	
CO2	**2**	**2**	**1**	**1**		**2**	**2**			**1**			**3**	**1**	
CO3	**2**	**2**	**1**	**1**		**2**	**2**			**1**			**3**	**1**	
CO4	**2**	**2**	**1**	**1**		**2**	**2**			**1**			**3**	**1**	
CO5	**2**	**2**	**1**	**1**		**2**	**2**			**1**			**3**	**1**	

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**
1- Slight (Low), **2** – Moderate (Medium), **3** - Substantial (High).

BOS APPROVED TEXT BOOKS:

T1 Subramanya.K., "Engineering Hydrology", Tata McGraw Hill, New Delhi , 1999
T2 Jayarami Reddy.P., "Hydrology", Tata McGraw Hill, New Delhi , 1999

BOS APPROVED REFERENCE BOOKS:

R1 Santhosh Kumar Garg, "Irrigation Engineering and Hydraulic Structures," Khann Publishers, New Delhi, 2003
R2 Punmia.B.C, "Irrigation and Water Power Engineering," Standard Publishers, New Delhi, 1997.
R3 Vijay P.Singh, "Elementary Hydrology", Prentice Hall of India, New Delhi, 1994.
R4 Ragunath.H., "Hydrology", Wiley Eastern Limited, New Delhi, 1998.

COURSE DELIVERY PLAN (LESSON PLAN): Civil

UNIT-I

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Introduction to Engineering hydrology	1	12/06/2018		TLM-1	CO1	T1	
2.	Engineering hydrology and its applications, Hydrologic cycle	1	13/06/2018		TLM-2	CO1	T1	
3.	Precipitation: Types & Forms of precipitation	1	14/06/2018		TLM-2	CO1	T1	
4.	Rainfall Measurement-Types of Rain Gauges	1	15/06/2018		TLM-2	CO1	T1	
5.	Problems	1	19/06/2018		TLM-1	CO1	T1	
6.	Rain Gauge Network- Problems	1	20/06/2018		TLM-1	CO1	T1	
7.	Average Rainfall over a Basin	1	21/06/2018		TLM-1	CO1	T1	
8.	**Tutorial-1**	1	22/06/2018		TLM-3	CO1	T1	
9.	Consistency of Rainfall Data & Frequency of Rainfall	1	27/06/2018		TLM-2	CO1	T1	
10.	Intensity-Duration-Frequency Curves	1	28/06/2018		TLM-1	CO1	T1	
11.	Probable Maximum Precipitation	1	29/06/2018		TLM-1	CO1	T1	
12.	**Tutorial-2**	1	03/07/2018		TLM-3	CO1	T1	
No. of classes required to complete UNIT-II		12			No. of classes taken:			

UNIT-II

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
13.	Introduction to Abstractions, Evaporation & Factors Affecting Evaporation	1	05/07/2018		TLM-2	CO2	T2	
14.	Measurement of Evaporation & Evaporation Reduction	1	06/07/2018		TLM-2	CO2	T2	
15.	Evapotranspiration & Factors Affecting Evapotranspiration	1	10/07/2018		TLM-2	CO2	T2	
16.	Measurement of Evapotranspiration	1	11/07/2018		TLM-2	CO2	T2	
17.	Infiltration, Factors Affecting Infiltration	1	12/07/2018		TLM-2	CO2	T2	
18.	Measurement of Infiltration, Infiltration Indices	1	13/07/2018		TLM-2	CO2	T2	
19.	**Tutorial-3**	1	17/07/2018		TLM-3	CO2	T1	
20.	Runoff : Factors Affecting Runoff & Components of Runoff	1	18/07/2018		TLM-1	CO2	T1	
21.	Computation of Runoff-Rational Method	1	19/07/2018		TLM-1	CO2	T1	
22.	Computation of Runoff- SCS Method	1	20/07/2018		TLM-1	CO2	T1	
23.	**Tutorial-4**	1	24/08/2018		TLM-3	CO2	T1	
24.	Separation of Base Flow	1	25/07/2018		TLM-1	CO2	T2	
No. of classes required to complete UNIT-II		12			No. of classes taken:			

UNIT-III

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
25.	Types of Irrigation	1	26/07/2018		TLM-2	CO3	R2	
26.	Methods of Application of Irrigation Water	1	27/07/2018		TLM-2	CO3	R2	
27.	Water Logging and Drainage,	1	07/08/2018		TLM-1	CO3	R2	

	Standards of Quality for Irrigation Water							
28.	Principal Crops and Crop Seasons, Crop Rotation, Soil-Water-Plant Relationship	1	08/08/2018		TLM-1	CO3	R2	
29.	Vertical Distribution of Soil Moisture, Soil Moisture Tension	1	09/08/2018		TLM-1	CO3	R2	
30.	**Tutorial-5**	1	10/08/2018		TLM-3	CO3	R2	
31.	Consumptive Use, Estimation of Consumptive Use	1	14/08/2018		TLM-4	CO3	R2	
32.	Duty and Delta, Factors Affecting Duty	1	16/08/2018		TLM-1	CO3	R2	
33.	Depth and Frequency of Irrigation, Irrigation Efficiencies	1	17/08/2018		TLM-1	CO3	R2	
34.	**Tutorial-6**	1	21/08/2018		TLM-3	CO3	R2	
No. of classes required to complete UNIT-III		10			No. of classes taken:			

UNIT-IV

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
35.	Unit Hydrograph, Assumption, Derivation of Unit Hydrograph	1	23/08/2018		TLM-2	CO4	T1	
36.	Unit Hydrographs of Different Durations	1	24/08/2018		TLM-2	CO4	T1	
37.	Principle of Superposition	1	28/08/2018		TLM-1	CO4	T1	
38.	S-Hydrograph Methods	1	29/08/2018		TLM-1	CO4	T1	
39.	Limitations and Applications of UH,	1	30/08/2018		TLM-1	CO4	T1	

	Synthetic Unit Hydrograph							
40.	Stream Gauging Direct and Indirect Methods	1	31/08/2018		TLM-2	CO4	T1	
41.	Floods-Causes and Effects	1	04/09/2018		TLM-1	CO4	T1	
42.	**Tutorial-7**	1	05/09/2018		TLM-3	CO4	T1	
43.	Flood Frequency Analysis-Gumbel's Method, Log Pearson Type III Method	1	06/09/2018		TLM-1	CO4	T1	
44.	Flood Control Methods	1	07/09/2018		TLM-1	CO4	T1	
45.	Flood Routing-Hydrologic Routing, Channel Routing	1	11/09/2018		TLM-1	CO4	T1	
46.	Reservoir Routing-Muskingum And Pulse Method of Routing.	1	12/09/2018		TLM-2	CO4	T1	
47.	**Tutorial-8**	1	14/09/2018		TLM-3	CO4	T1	
No. of classes required to complete UNIT-IV		13			No. of classes taken:			

UNIT-V

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
48.	Ground Water : Occurrence, Types of Aquifers, Aquifer Parameters	1	18/09/2018		TLM-2	CO5	T2	
49.	Types of Wells	1	19/09/2018		TLM-1	CO5	T2	
50.	Darcy's Law	1	20/09/2018		TLM-1	CO5	T2	
51.	**Tutorial-9**	1	25/09/2018		TLM-3	CO5	T2	
52.	Dupuit's	1	26/09/2018		TLM-1	CO5	T2	

	Equation							
53.	Steady Radial Flow to Wells in Confined and Unconfined Aquifers	1	27/09/2018		TLM-1	CO5	T2	
54.	Steady Radial Flow to Wells in Confined and Unconfined Aquifers	1	28/09/2018		TLM-1	CO5	T2	
55.	Problems	1	03/10/2018		TLM-1	CO5	T2	
56.	Yield of an Open Well- Recuperation Test.	1	04/10/2018		TLM-1	CO5	T2	
57.	**Tutorial-10**	1	05/10/2018		TLM-3	CO5	T2	
No. of classes required to complete UNIT-V		10			No. of classes taken:			

Contents beyond the Syllabus

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
58.								
59.								
60.								

Teaching Learning Methods					
TLM1	Chalk and Talk	TLM4	Problem Solving	TLM7	Seminars or GD
TLM2	PPT	TLM5	Programming	TLM8	Lab Demo
TLM3	Tutorial	TLM6	Assignment or Quiz	TLM9	Case Study

ACADEMIC CALENDAR

Description	From	To	Weeks
I Phase of Instructions	11-06-2018	28-07-2018	7W
I Mid Examinations	30-08-2018	04-08-2018	1W
II Phase of Instructions	06-08-2018	06-10-2018	9W
II Mid Examinations	08-10-2018	13-10-2018	1W
Preparation and Practicals	15-10-2018	27-10-2018	2W
Semester End Examinations	29-10-2018	10-11-2018	2W

EVALUATION PROCESS

Evaluation Task	COs	Marks
Assignment/Quiz – 1	1	A1=5
Assignment/Quiz – 2	2	A2=5
I-Mid Examination	1,2	B1=20
Assignment/Quiz – 3	3	A3=5
Assignment/Quiz – 4	4	A4=5
Assignment/Quiz – 5	5	A5=5
II-Mid Examination	3,4,5	B2=20
Evaluation of Assignment/Quiz Marks: A=(A1+A2+A3+A4+A5)/5	1,2,3,4,5	A=5
Evaluation of Mid Marks: B=75% of Max(B1,B2)+25% of Min(B1,B2)	1,2,3,4,5	B=20
Cumulative Internal Examination : A+B	**1,2,3,4,5**	**A+B=25**
Semester End Examinations	**1,2,3,4,5**	**C=75**
Total Marks: A+B+C	**1,2,3,4,5**	**100**

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

1. To possess knowledge in both fundamental and application aspects of mathematical, scientific, engineering principles to analyze complex engineering problems for meeting the national and international requirements and demonstrating the need for sustainable development.
2. To adapt to the modern engineering tools for planning, analysis, design, implementation of analytical data and assess their relevant significance in societal and legal issues necessary in their professional career.
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At the end of the programme, the students will possess-

a. An ability to apply knowledge of mathematics, science, and engineering for engineering applications of national and international requirements.
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d. An ability to use the techniques, skills, resources and modern engineering tools necessary to solve civil engineering problems.
e. An ability to assess reasoning informed by contextual knowledge to assess health, safety, legal and cultural issues relevant to professional engineering practice.
f. An ability to demonstrate the knowledge needed for sustainable development.
g. An ability to apply ethical principles and responsibilities in engineering practice.
h. An ability to function effectively as an individual and as a team member or leader in multi disciplinary settings.
i. An ability to communicate effectively.
j. An ability to demonstrate knowledge of engineering and management principles and apply to one's own work either as a member or as a team leader in managing projects.
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PSO's

PSO1: Possesses necessary skill set to analyze and design various systems using analytical and software tools related to civil engineering

PSO2: Possesses ability to plan, examine and analyze the various laboratory tests required for the professional demands

PSO3: Possesses basic technical skills to pursue higher studies and professional practice in civil engineering domain

Course Instructor	Module Coordinator	HOD

LAKKIREDDY BALI REDDY COLLEGE OF ENGINEERING
DEPARTMENT OF CIVIL ENGINEERING
(Autonomous & Affiliated to JNTUK, Kakinada & Approved by AICTE, New Delhi, NAAC Accredited with 'A' grade, Accredited by NBA, Certified by ISO 9001:2015)
L B Reddy Nagar, Mylavaram-521 230, Krishna District, Andhra Pradesh.

COURSE HANDOUT

PROGRAM : B.Tech., V-Sem., CE
ACADEMIC YEAR : 2017-18
COURSE NAME & CODE : **Water Supply Engineering - S 423**
L-T-P STRUCTURE : 3-1-0
COURSE CREDITS : 3
COURSE INSTRUCTOR : **Dr V. Ramakrishna**
COURSE COORDINATOR : **Dr V. Ramakrishna**
PRE-REQUISITE: Nil

Course Educational Objectives (CEOs): The course aims at teaching the fundamental concepts involved in the water supply system such as identification and tapping of water sources, examination of physical, chemical and bacteriological characteristics, and estimation of water demand. The student will be able to design the water treatment and distribution systems.

Course Outcomes (COs): At the end of the course, the student will be able to :
CO1: Illustrate the various water sources, water demands and infiltration galleries of a water supply system.
CO2: Describe the intake structures, pumps, pipe materials used in water supply system and establish the water quality parameters to define the water quality.
CO3: Design the water treatment systems based on the fundamental principles.
CO4: Examine the various advanced treatment techniques used for water treatment.
CO5: Appraise the best distribution methods suitable for water supply to a community.

4. Course Articulation Matrix:

Course Code	COs	Programme Outcomes												PSOs		
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
S 423	CO1	2	1		1	1	1					1	1	1	1	1
	CO2	2	1	3	2	2	1					1	1	2	2	1
	CO3	3	2	2	2	1	1					1	1	2	2	3
	CO4	2	1	1	1	1	1					1	1	1	1	1
	CO5	1	2	1	1	1	1					1	1	2	2	1
1 = Slight (Low) 2 = Moderate (Medium) 3-Substantial (High)																

BOS APPROVED TEXT BOOKS:

T1 Garg.S.K, "Water Supply Engineering", Khanna Publishers 11th Edition, New Delhi, 2017

BOS APPROVED REFERENCE BOOKS:

R1 Punmia B.C, Jain and Jain, "Water Supply Engineering", Laxmi Publications, New Delhi, 2016.
R2 Birdie G.S, Birdie J.S, "Water Supply and Sanitary Engineering", Dhanpat Rai Publishing Company, New Delhi, 1998.
R3 Modi P.N. "Water Supply Engineering", Standard Publishing House, 5th Edition, 2016.
R4 Peavy, Rowe and G Tchobanoglous, "Environmental Engineering", McGraw Hill Publications, New Delhi, 1985.
R5 Manual on Water Supply and Treatment, Ministry of Urban Development, New Delhi, 1999

COURSE DELIVERY PLAN (LESSON PLAN)

UNIT-I: WATER SOURCES AND DEMAND

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
67.	Components of water supply	1	12.6.18		1	CO1	T1, R1	
68.	Population forecast	1	13.6.18		1	CO1	T1, R1	
69.	Problems	1	14.6.18		1	CO1	T1, R1	
70.	Logistic curve method	1	19.6.18		1	CO1	T1, R1	
71.	Water Demand	1	20.6.18		1	CO1	T1, R1	
72.	Aquifers, Drawdown	1	21.6.18		1	CO1	T1, R1	
73.	Infiltration galleries	1	23.6.18		1	CO1	T1, R1	
74.	Problems	1	26.6.18		1	CO1	T1, R1	
75.	Mass curve	1	27.6.18		1	CO1	T1, R1	
76.	Tutorial-1	1	28.6.18		3	CO1	T1, R1	
77.	Tutorial-2	1	30.6.18		3	CO1	T1, R1	
78.	Quiz/Revision	1			6	CO1	T1, R1	
No. of classes required to complete UNIT-I		12			No. of classes taken:			

UNIT-II: WATER TRANSPORT AND QUALITY PARAMETERS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
79.	Intakes	1	3.7.18		1	CO2	T1, R1	
80.	Pumps, Problems	1	4.7.18		1	CO2	T1, R1	
81.	Water quality parameters	1	5.7.18		1	CO2	T1, R1	
82.	Chemical parameters	1	7.7.18		1	CO2	T1, R1	
83.	Problems	1	10.7.18		1	CO2	T1, R1	
84.	Bacteriological parameters	1	11.7.18		1	CO2	T1, R1	
85.	Pipe testing, Pipe laying	1	12.7.18		1	CO2	T1, R1	
86.	Pipe materials, Pipe joints	1	14.7.18		1	CO2	T1, R1	
87.	Tutorial-3	1	17.7.18		3	CO2	T1, R1	
88.	Tutorial-4	1	18.7.18		3	CO2	T1, R1	
89.	Revision/Quiz	1	19.7.18		6	CO2	T1, R1	
90.	Revision/Quiz	1	21.7.18		2	CO2	T1, R1	
No. of classes required to complete UNIT-II		11			No. of classes taken:			

Mid-I Exam: Jul 31 – Aug 4, 2018

UNIT-III: WATER TREATMENT UNITS: SEDIMENTATION AND COAGULATION

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly

91.	Water treatment overview	1	24.7.18		1	CO3	T1, R1	
92.	Stokes law	1	25.7.18		1	CO3	T1, R1	
93.	Problems	1	26.7.18		1	CO3	T1, R1	
94.	Sedimentation tank	1	28.7.18		1	CO3	T1, R1	
95.	Problems	1	2.8.18		1	CO3	T1, R1	
96.	Tutorial-5	1	4.8.18		3	CO3	T1, R1	
97.	Coagulation	1	7.8.18		4	CO3	T1, R1	
98.	Flash mixer	1	8.8.18		4	CO3	T1, R1	
99.	Flocculator	1	9.8.18		4	CO3	T1, R1	
100.	Clariflocculator	1	11.8.18		1	CO3	T1, R1	
101.	Tutorial-6	1	14.8.18		1	CO3	T1, R1	
102.	Revision/Quiz	1	16.8.18		1	CO3	T1, R1	
103.	Revision	1	18.8.18		1	CO3	T1, R1	
No. of classes required to complete UNIT-III		16			No. of classes taken: 16			

UNIT-IV: WATER TREATMENT UNITS: FILTRATION AND ADVANCED TREATMENT

S.No.	Topics to be cover1ed	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekl
104.	Filtration- Mechanism	1	21.8.18		1	CO3	T1, R1	
105.	Rapid sand filter	1	23.8.18		1	CO3	T1, R1	
106.	Design of RSF	1	25.8.18		1	CO3	T1, R1	
107.	Filter Hydraulics	1	25.8.18		1	CO3	T1, R1	
108.	Filter Hydraulics	1	28.8.18		1	CO3	T1, R1	
109.	Filter Bed expansion	1	29.8.18		1	CO3	T1, R1	
110.	Slow sand filter	1	30.8.18		1	CO3	T1, R1	
111.	Tutorial-7	1	1.9.18		3	CO3	T1, R1	
112.	Disinfection	1	5.9.18		1	CO3	T1, R1	
113.	Types of chlorination	1	6.9.18		1	CO3	T1, R1	
114.	Water softening – Lime soda process	1	8.9.18		1	CO3	T1, R1	
115.	Other methods of water softening	1	11.9.18		2	CO3	T1, R1	
116.	Advanced water treatment	1	12.9.18		2	CO3	T1, R1	
117.	Advanced water treatment	1	15.9.18		2	CO4	T1, R1	
118.	Quiz/Tutorial-8	1	18.9.18		3	CO4	T1, R1	
No. of classes required to complete UNIT-IV		15			No. of classes taken:			

UNIT-V: WATER DSITRIBUTION SYSTEMS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Week

119.	Water distribution systems	1	19.9.18		1	CO5	T1, R1	
120.	Distribution reservoirs	1	20.9.18		1	CO5	T1, R1	
121.	Problems	1	22.9.18		1	CO5	T1, R1	
122.	Layouts of distribution system	1	25.9.18		1	CO5	T1, R1	
123.	Pipe network analysis	1	26.9.18		1	CO5	T1, R1	
124.	Pipe network analysis	1	28.9.18		1	CO5	T1, R1	
125.	Tutorial-9	1	29.9.18		3	CO5	T1, R1	
126.	House Plumbing systems	1	3.10.18		2	CO5	T1, R1	
127.	Quiz/Tutorial-10	1	4.10.18		4	CO5	T1, R1	
No. of classes required to complete UNIT-V		9			No. of classes taken:			

CONTENTS BEYOND THE SYLLABUS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekl
128.	Case studies	1	6.10.18		9	CO 1-5	T1, R1	

Mid-II Exam: Oct 8 – 13, 2018

Teaching Learning Methods					
TLM1	Chalk and Talk	**TLM4**	Problem Solving	**TLM7**	Seminars or GD
TLM2	PPT	**TLM5**	Programming	**TLM8**	Lab Demo
TLM3	Tutorial	**TLM6**	Assignment or Quiz	**TLM9**	Case Study

EVALUATION PROCESS

Evaluation Task	**COs**	**Marks**
Assignment/Quiz – 1	1	A1=5
Assignment/Quiz – 2	2	A2=5
I-Mid Examination	1,2	B1=20
Assignment/Quiz – 3	3	A3=5
Assignment/Quiz – 4	4	A4=5
Assignment/Quiz – 5	5	A5=5
II-Mid Examination	3,4,5	B2=20
Evaluation of Assignment/Quiz Marks: A= (A1+A2+A3+A4+A5)/5	1,2,3,4,5	A=5
Evaluation of Mid Marks: B = 75% of Max (B1, B2) + 25% of Min (B1,B2)	1,2,3,4,5	B=20
Cumulative Internal Examination : A+B	**1,2,3,4,5**	**A+B=25**
Semester End Examinations	**1,2,3,4,5**	**C=75**
Total Marks: A+B+C	**1,2,3,4,5**	**100**

PROGRAM EDUCATIONAL OBJECTIVES:

1. To possess knowledge in both fundamental and application aspects of mathematical, scientific, engineering principles to analyze complex engineering problems for meeting the national and international requirements and demonstrating the need for sustainable development.
2. To adapt to the modern engineering tools for planning, analysis, design, implementation of analytical data and assess their relevant significance in societal and legal issues necessary in their professional career.
3. To exhibit professionalism, ethical attitude, communication, managerial skills, team work and social responsibility in their profession and adapt to current trends by engaging in continuous learning.

PROGRAM OUTCOMES:

At the end of the programme, the students will be able to -

a) An ability to apply knowledge of mathematics, science, and engineering for civil engineering applications of national and international requirements.
b) An ability to identify-, formulate-, and analyze- complex engineering problems
c) An ability to design the experiments, analyze and interpret the data
d) An ability to use the techniques, skills, resources and modern engineering tools necessary to solve civil engineering problems
e) An ability to assess reasoning informed by contextual knowledge to assess health, safety, legal and cultural issues relevant to professional engineering practice
f) An ability to demonstrate the knowledge needed for sustainable development
g) An ability to apply ethical principles and responsibilities in engineering practice
h) An ability to function effectively as an individual and as a team member or leader in multi disciplinary settings
i) An ability to communicate effectively
j) An ability to demonstrate knowledge of engineering and management principles and apply to one's own work either as a member or as a team leader in managing projects
k) An ability to engage in life-long learning to keep abreast with technological changes

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO1: Possesses necessary skill set to analyze and design various systems using analytical and software tools related to civil engineering

PSO2: Possesses ability to plan, examine and analyze the various laboratory test required for the professional demands

PSO3: Possesses basic technical skills to pursue higher studies and professional practice n civil engineering domain

Course Instructor Dr V. Ramakrishna	**Course Coordinator** Dr V. Ramakrishna	**Module Coordinator** **J. Rangaiah**	**HOD** Dr V. Ramakrishna

	LakireddyBalireddy College of Engineering College L.B.Reddy Nagar, Mylavaram , Krishna District, A.P **FRESHMAN ENGINEERING DEPARTMENT**				
	LESSON PLAN				
	Subject **:**	**ECPS- L119**			
	Academic Year :	**2018-19**	Semester :	**V**	**Date: 11.06.2018 To 06.10.2018**
	Year :	**III**	Section :	**CIVIL**	

Course Educational Objectives

In this course, the students will learn to

- Gather information and to organize ideas relevantly and coherently.
- Participate in group discussions, Debates and Face interviews.
- Write project/research reports/technical reports/ formal letters.
- Make oral presentations.
- Transfer information from non-verbal to verbal texts and vice versa.

Course Outcomes

After the completion of this course, prospective engineers will have the ability to

- Make power point presentations and oral presentations.
- Articulate English with good pronunciation.
- Face competitive exams like GRE, TOEFL, IELTS etc.
- Face interviews and skillfully manage through group discussions
- Negotiate skillfully for better placement.

Syllabus:

- Vocabulary building – synonyms and antonyms, one-word substitutes, analogy, idioms and phrases, verbal & alphabet series.
- Oral Presentations – JAM
- Functional English - starting a conversation – responding appropriately and relevantly – using the right body language – role play in different situations.
- Group Discussion – dynamics of group discussion, intervention, summarizing, modulation of voice, body language, relevance, fluency and coherence.
- Making power point presentations.
- Interview Skills – concept and process, pre-interview planning, opening strategies, answering strategies, practicing mock-interviews.
- Resume' writing – structure and presentation, planning, defining the career objective, projecting ones strengths and skill-sets, summary, formats and styles, letter-writing.
- Reading comprehension – reading for facts, guessing meanings from context, scanning, skimming, inferring meaning, and critical reading.

Minimum Requirement:

The English Language Lab shall have two parts:

i. **The Computer aided Language Lab** for 60 students with 60 systems, one master console, LAN facility and English language software for self- study by learners.
ii. **The Communication Skills Lab** with movable chairs and audio-visual aids with a P.A System, a T. V., a digital stereo –audio & video system and camcorder etc.

System Requirement (Hardware component):

Computer network with LAN with minimum 60 multimedia systems with the following specifications:

i. P – IV Processor
    1. Speed – 2.8 GHZ
    2. RAM – 512 MB Minimum
    3. Hard Disk – 80 GB
ii. Headphones of High quality

Suggested Software:

1.Globarena's software 2. Young India's Clarity software

Books Recommended:

1. Stephen Bailey , "Academic Writing- A Practical guide for students", Rontledge Falmer, London & New York, 2004.
2. Dr A Ramakrishna Rao, Dr G Natanam & Prof SA Sankaranarayanan, "English Language Communication : A Reader cum Lab Manual, Anuradha Publications, Chennai
3. DELTA's key to the Next Generation TOEFL Test: Advanced Skill Practice, New Age International (P) Ltd., Publishers, New Delhi.
4. Books on TOEFL/GRE/GMAT/CAT by Barron's/cup
5. IELTS series with CDs by Cambridge University Press.

S.No	Teaching Learning Process (TLP)	Delivery Methods (DM)	Assessment Methods (AM)
1	Solving Real world problem	Chalk & Talk	Assignments
2	Explaining application before theory	ICT tools	Quiz
3	Solving problems	Group discussions	Tutorials
4	Designing of experiments	Industrial visit	Surprise Tests
5	Problems on environmental, economics, health & safety	Field work	Mid Exams
6	Problems on professional & ethics	Case studies	Model Exam
7	Seminar	Mini Projects	END Exams
8	Problems using software	Numerical treatment	
9	Self study	Design / Exercises	

Batch I

S. No.	No. of Lecture Hours	Tentative Dates	Topics	Actual Dates	TLP	DM	AM
1	3	11-06-2018	General Introduction		1	1	
2	3	18-06-2018	JAM/ Synonyms		4,9	2,6	2,4
3	3	25-06-2018	JAM/ Synonyms		4,9	2,6	2,4
4	3	02-07-2018	JAM/ Synonyms		4,9	2,6	2,4
5	3	09-07-2018	JAM/ Synonyms		4,9	2,6	2,4
6	3	16-07-2018	Role play/Antonyms		4,9	9	2,4
7	3	23-07-2018	Role play/ Antonyms		4,9	9	2,4
8	3	06-08-2018	Group Discussions/Analogy & Idioms		7,9	2	2,4
9	3	13-08-2018	Group Discussions/ Analogy & Idioms		7,9	2	2,4
10	3	20-08-2018	PPT/one-word substitutes		4,9	3	2,4
11	3	27-08-2018	PPT/ one-word substitutes		4,9	3	2,4
12	3	10-09-2018	Resume Writing/ Reading Comprehension		4,9	3	2,3
13	3	17-09-2018	Mock Interviews/ Verbal reasoning		9	3,6	6
14	3	24-09-2018	Mock Interviews/ Verbal reasoning		9	3,6	6
15	3	01-10-2018	LAB internal exam				6,7

30/7 4/8 8/10 13/10

Batch II

S. No.	No. of Lecture	Tentative Dates	Topics	Actual Dates	TLP	DM	AM
1	3	23-06-2018	General Introduction		1	1	
2	3	30-06-2018	JAM/ Synonyms		4,9	2,6	2,4
3	3	07-07-2018	JAM/ Synonyms		4,9	2,6	2,4
4	3	14-07-2018	JAM/ Synonyms		4,9	2,6	2,4
5	3	21-07-2018	Role play/Antonyms		4,9	2,6	2,4
6	3	28-07-2018	Role play/ Antonyms		4,9	9	2,4
7	3	11-08-2018	Group Discussions/Analogy & Idioms		4,9	9	2,4
8	3	18-08-2018	Group Discussions/ Analogy & Idioms		7,9	2	2,4
9	3	25-08-2018	PPT/one-word substitutes		7,9	2	2,4
10	3	01-09-2018	PPT/ one-word substitutes		4,9	3	2,4
11	3	08-09-2018	Resume Writing/ Reading Comprehension		4,9	3	2,4
12	3	15-09-2018	Mock Interviews/ Verbal reasoning		4,9	3	2,3
13	3	22-09-2018	Mock Interviews/ Verbal reasoning		9	3,6	6
14	3	29-09-2018	LAB internal exam				6,7

	Instructor	Course Coordinator	Module Coordinator	HOD
Name	Mr B.Sagar	Dr.B.Samrajya Lakshmi	Dr.B.Samrajya Lakshmi	Dr.A.Rami Reddy
Sign with Date				

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ADVANCED SURVEY FIELD WORK(L186)

LIST OF EXPERIMENTS

COURSE: V SEMESTER **A.Y: 2018-19**

I CYCLE

1. (a) Study of Transit Theodolite
   (b) Measurement of Horizontal Angle by Repetition Method
   (c) Measurement of Horizontal Angle by Reiteration Method
2. Closed Traversing using Theodolite Survey
3. (a) Measurement of Vertical Angles
   (b) Heights and Distances - Single Plane Method
4. (a) Tacheometer Constants
   (b) Tacheometry - Stadia System

II CYCLE

1. (a) Study of Total Station
   (b) Measurement of Horizontal Angle, Horizontal Distance, Vertical Distance and Vertical Angle [Total Station]
2. Area and Perimeter by Total Station
3. (a) Stake out of The Given Points by Total Station
   (b) Remote Distance Measurement (RDM) by Total Station
4. (a) Distance Between Two Given Points by Total Station
   (b) Determine the Point Coordinates by Total Station
5. Setting out The Foundation Plan of The Building
6. Contouring by Block Levelling
7. Simple Circular Curve by Linear Method
8. Simple Circular Curve by Rankine Method

Lab-In charge

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ADVANCED SURVEY FIELD WORK

COURSE :V SEMESTER **A.Y: 2018-19**

I Cycle Schedule: BATCH-A (Monday)

Sl.No	Name of the Experiment	Tentative Date	Actual Date
1	(a) Study of Transit Theodolite	11/06/2018	
	(b) Measurement of Horizontal Angle by Repetition Method (c) Measurement of Horizontal Angle by Reiteration Method	18/06/2018	
2	Closed Traversing using Theodolite Survey	25/06/2018	
3	(a) Measurement of Vertical Angles (b) Heights and Distances - Single Plane Method	02/07/2018	
4	(a) Tacheometer Constants (b) Tacheometry - Stadia System	09/07/2018	

I Cycle Schedule: BATCH-B (Saturday)

Sl.No	Name of the Experiment	Tentative Date	Actual Date
1	(a) Study of Transit Theodolite	23/06/2018	
	(b) Measurement of Horizontal Angle by Repetition Method (c) Measurement of Horizontal Angle by Reiteration Method	30/06/2018	
2	Closed Traversing using Theodolite Survey	07/07/2018	
3	(a) Measurement of Vertical Angles (b) Heights and Distances - Single Plane Method	14/07/2018	
4	(a) Tacheometer Constants (b) Tacheometry - Stadia System	21/07/2018	

Lab-In charge

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ADVANCED SURVEY FIELD WORK

COURSE: V SEMESTER **A.Y: 2018-19**

II Cycle Schedule: BATCH-A (Monday)

Sl.No	Name of the Experiment	A_1, A_2, A_3	A_1, A_2, A_3	A_4, A_5, A_6	A_4, A_5, A_6
		Tentative Date	Actual Date	Tentative Date	Actual Date
1	(a) Study of Total Station (b) Measurement of Horizontal Angle, Horizontal Distance, Vertical Distance and Vertical Angle [Total Station]	16/07/2018		20/08/2018	
2	Area and Perimeter by Total Station	23/07/2018		27/08/2018	
3	(a) Stake out of The Given Points by Total Station (b) Remote Distance Measurement (RDM) by Total Station	06/08/2018		10/10/2018	
4	(a) Distance Between Two Given Points by Total Station (b) Determine the Point Coordinates by Total Station	13/08/2018		17/10/2018	
5	Setting out The Foundation Plan of The Building	20/08/2018		16/07/2018	
6	Contouring by Block Levelling	27/08/2018		23/07/2018	
7	Simple Circular Curve by Linear Method	10/10/2018		06/08/2018	
8	Simple Circular Curve by Rankine Method	17/10/2018		13/08/2018	
9	Internal Test	24/10/2018		24/10/2018	

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ADVANCED SURVEY FIELD WORK

COURSE: V SEMESTER **A.Y: 2018-19**

II Cycle Schedule: BATCH-B (Saturday)

Sl.No	Name of the Experiment	B_1, B_2, B_3	B_1, B_2, B_3	B_4, B_5, B_6	B_4, B_5, B_6
		Tentative Date	Actual Date	Tentative Date	Actual Date
1	(a) Study of Total Station (b) Measurement of Horizontal Angle, Horizontal Distance, Vertical Distance and Vertical Angle [Total Station]	28/07/2018		08/09/2018	
2	Area and Perimeter by Total Station	11/08/2018		15/09/2018	
3	(a) Stake out of The Given Points by Total Station (b) Remote Distance Measurement (RDM) by Total Station	18/08/2018		22/09/2018	
4	(a) Distance Between Two Given Points by Total Station (b) Determine the Point Coordinates by Total Station	25/08/2018		29/09/2018	
5	Setting out The Foundation Plan of The Building	08/09/2018		28/07/2018	
6	Contouring by Block Levelling	15/09/2018		11/08/2018	
7	Simple Circular Curve by Linear Method	22/09/2018		18/08/2018	
8	Simple Circular Curve by Rankine Method	29/09/2018		25/08/2018	
9	Internal Test	06/10/2018		06/10/2018	

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ADVANCED SURVEY FIELD WORK

COURSE: V SEMESTER **A.Y: 2018-19**

BATCH:A (Monday)	BATCH:B(Saturday)
A_1 -----15761A0112 & 16761A0101 to 16761A0105	B_1 ----16761A0136 to 16761A0143
A_2 -----16761A0106 to 16761A0112	B_2 ---- 16761A0144to 16761A0150
A_3 -----16761A0113 to 16761A0118	B_3 ---- 16761A0151 to 16761A0156
A_4 ----- 16761A0119 to 16761A0125	B_4 ---- 16761A0157 to 16761A0158 17765A0101 to 17765A0103
A_5 ----- 16761A0126 to 16761A0130	B_5 ----17765A0104 to 17765A0108
A_6-----16761A0131 to 16761A0135	B_6-----17765A0109 to 17765A0113

Batch – A: 15761A0112 & 16761A0101 to 16761A0135

Batch – B: 16761A0136 to 16761A0158 & 17765A0101 to 17765A0113

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ADVANCED SURVEY FIELD WORK

COURSE: V SEMESTER **A.Y: 2018-19**

LAB TIMETABLE

Day	FN	AN
Monday	**V Semester Batch- A**	
Tuesday		
Wednesday		
Thursday	III Semester Batch- B	
Friday	III Semester Batch- A	
Saturday	**V Semester Batch- B**	

V SEMESTER

Batch – A:15761A0112 & 16761A0101to 16761A0135

Batch – B:16761A0136 to 16761A0158& 17765A0101 to 17765A0113

Lab-In charge