#132, AECS Layout, IT Park Road, Kundalahalli, Bangalore – 560 037
T:+9180 28524466 / 77

CMR INSTITUTE OF TECHNOLOGY

Session wise – Course Plan

Department of Mathematics

SEMESTER : IV
NAME OF THE FACULTY : Thulasi.L
BRANCH : Civil A &B
DATE OF COMMENCEMENT : 13.02.2017
SUBJECT : ENGG MATHS IV
DATE OF CLOSING : 02.06.2017
SUBJECT CODE : 15MAT41
CLASS STRENGTH : 120
NO OF HRS/WK : 6
TOTAL HOURS : 67

S. No	Chapter no (No of hrs planned for the chapter)	DATE	Topics planned for the session	Teaching Aids	Assignments/Tests planned for the chapter	Topics covered As per plan
1	1/1	13.2.17	**INTRODUCTION** .	Chalk , Duster		
2	2/1	14.2.17	Taylor's series method	,,		
3	3/1	15.2.17	Taylor's series method	,,		
4	4/1	16.2.17	Modified Euler's method	,,	Assignment- I	
5	5/1	17.2.17	Modified Euler's method	,,		
6	6/1	18.2.17	Runge - Kutta method of fourth order			
7	7/1	20 .2.17	Milne's Method			
8	8/1	21.2.17	AdamsBashforth Method			

9	1/2	22.2.17	**Numerical Methods**: Numerical solution of second order ordinary differential equations : Runge-Kutta method	„		
10	2/2	27.2.17	Numerical solution of second order ordinary differential equations : RungeKutta Method	„		
11	3/2	28.2.17	Numerical solution of second order ordinary differential equations : Milne's method	„		
12	4/2	01.03.17	Numerical solution of second order ordinary differential equations : Milne's method	„	Revision Test I	
13	1/3	02.03.17	Introduction complex variables	"		
14	2/3	06.03.17	Analytic functions-Cauchy-Riemann equations in Cartesian forms.	„		
15	3/3	07.03.17	Cartesian equations in polar form	„		
16	4/3	08.03.17	Properties of analytic functions.	„		
17	6/3	09.03.17-10.03.17	Properties and construction of analytic functions.	„		
18	9/3	11.3.17-13.3.17	Complex line integrals-Cauchy's theorem and Cauchy's integral formula	„	Assignment- II	
19	11/3	14.3.17-15.3.17	Residue, poles, Cauchy's Residue theorem (without proof) and problems	„		
20	12/3	16.7.13-17.7.13	**Transformations:** Conformal transformations, discussion of transformations: $w = z^2$, $w = e^z$, $w = z + 1/z$, $z \neq 0$	"	Revision Test II	
21	14/3	18.3.17-20.3.17	Discussion of transformations: $w = z + 1/z$, $z \neq 0$ problems	"		
19	16/3	21.3.17-	Bilinear transformations-problems	"		

		22.3.17				
20	1/4	22.3.17	**Probability Distributions:** Random variables (discrete and continuous), probability mass/density functions.	,,		
21	1/4	31.3.17- 1.4.17	Binomial distribution	,,	Assignment –III	
22	1/4	3.4.17	Poisson distribution	,,		
23	4/5	4.4.17	Exponential distributions-problems			
24	1/5	5.4.17	Normal distribution problems			
25	1/5	6.4.17	**Sampling Theory:** Sampling, Sampling distributions, standard error,	,,		
26	1/5	17.4.17- 18.4.17	Test of hypothesis for means and proportions	,,		
27	1/5	19.4.17- 20.4.17	Confidence limits for means			
28	1/5	21.4.17- 22.4.17	Confidence limits for means-problems		Revision Test III	
29	1/5	23.4.17	Student's t-distribution			
30	1/5	24.4.17	Student's t-distribution		Assignment –IV	
31	1/5	25.4.17	Chi-square distribution as a test of goodness of fit.			
32	1/5	26.4.17	Chi-square distribution as a test of goodness of fit-- problems	,,		
33	1/5	27.4.17	Test of hypothesis for means and proportions	,,		
34	1/5	28.4.17	Test of hypothesis for means and proportions	,,		
35	4/5	30.4.17	**Stochastic process:** Stochastic processes, probability vector	,,	Assignment –V	
36	3/6	2.5.17- 4.5.17	Stochastic matrices, fixed points, regular stochastic matrices,	,,	RevisionTest IV	

37	5/6	5.5.17- 6.5.17	Markov chains, higher transition probability, simple problems.	"		
38	6/6	11.5.17	**Special Functions:** Series solution-Frobenius method.			
39	7/6	12.5.17	Series solution of Bessel's differential equation leading to $J_n(x)$-Bessel's function of first kind.	,,		
40	8/6	12.5.17	Bessel's function of first kind-properties	,,		
41	9/6	13.5.17	Bessel's function -recurrence relations and orthogonality.	,,		
42	10/6	15.5.17	Series solution of Legendre's differential equation leading to $P_n(x)$	,,		
43	11/6	16.5.17	Legendre polynomials	,,	Assignment –VI	
44	12/6	17.5.17- 21.5.17	Rodrigue's formula, problems	,,		
		21 .5.17 - 24.5.17	Revision			

#132, AECS Layout, IT Park Road, Kundalahalli, Bangalore – 560 037
T:+9180 28524466 / 77

CMR INSTITUTE OF TECHNOLOGY

Session wise – Course Plan

Department of Civil Engineering

SEMESTER : 4th A & B
BRANCH : Civil
SUBJECT : Analysis of Determinate Structures
SUBJECT CODE: 15CV42
NO OF HRS/WK: 6

NAME OF THE FACULTY : Mr. Mohamed Yusuf
DATE OF COMMENCEMENT : 13/02/2017
DATE OF CLOSING : 24/05/2017
CLASS STRENGTH : 49
TOTAL HRS : 80

Session No	Chapter no (No of hrs planed for the chapter)	Topics planned for the session	Teaching Aids	Assignments/ Tests planned for the chapter
1	**1/1**	Introduction, sign convention, basic concepts	Board, chalk, duster	
2	**2/1**	Forms of structures, Conditions of equilibrium,	,,	
3	**3/1**	Linear and Non linear structures, Determinate and indeterminate structures [Static and Kinematics]. Degree of freedom	,,	
4	**4/1**	Numerical examples on determining Degrees of freedom.	,,	
5	**5/1**	Introduction to trusses, analysis of trusses	,,	
6	**6/1**	Analysis of truss by method of joints	,,	
7	**7/1**	Analysis of truss by method of joints	,,	Assignment- I
8	**8/1**	Analysis of truss by method of sections	Board, chalk, duster	
9	**1/2**	Introduction to deflection of beams	,,	
10	**2/2**	Explanation of theorems on moment area	,,	

11	**3/2**	Numerical examples on moment area method	,,	
12	**4/2**	Numerical examples on moment area method	,,	
13	**5/2**	Numerical examples on moment area method	,,	
14	**6/2**	Numerical examples on moment area method	,,	
15	**7/2**	Numerical examples on moment area method		
16	**8/2**	Numerical examples on moment area method		
17	**9/2**	Numerical examples on moment area method		
18	**10/2**	Numerical examples on moment area method	,,	
19	**11/2**	Numerical examples on moment area method	,,	Assignment III
20	**12/2**	**Introduction to conjugate beam method**	,,	
21	**13/2**	Numerical examples on conjugate beam method	,,	
22	**14/2**	Numerical examples on conjugate beam method	,,	
23	**15/2**	Numerical examples on conjugate beam method		
24	**16/2**	Numerical examples on conjugate beam method	Board, chalk, duster	
25	**1/3**	**Introduction to strain energy method**	,,	
26	**2/3**	Strain energy and complimentary strain energy	,,	
27	**3/3**	Strain energy due to axial load, bending and shear	,,	Assignmnt –IV
28	**4/3**	Theorem of minimum potential energy, Law of conservation of energy, Principle of virtual work,	,,	
29	**5/3**	The first and second theorem of Castigliano	,,	
30	**6/3**	problems on beams	,,	
31	**7/3**	problems on frames	,,	

32	**8/3**	problems on trusses	,,	
33	**9/3**	Betti's law, Clarke - Maxwell's theorem of reciprocal deflection	Board, chalk, duster	Assignment -V
34	**1/4**	Analysis of beams by unit load method	,,	
35	**2/4**	Analysis of frames by unit load method	,,	
36	**3/4**	Analysis of trusses by unit load method	,,	
37	**4/4**	Analysis of beams by strain energy method	,,	
38	**5/4**	Analysis of frames by strain energy method	,,	
39	**6/4**	Analysis of trusses by strain energy method	,,	
40	**1/5**	Introduction to Cables and Arches	,,	
41	**2/5**	Analysis of three hinged circular arches with supports at same levels	,,	
42	**3/5**	Analysis of parabolic arches with supports at same levels	,,	
43	**4/5**	Analysis of parabolic arches with supports at same levels	,,	
44	**5/5**	Analysis of parabolic arches with supports at same levels	,,	
45	**6/5**	Analysis of parabolic arches with supports at same levels	,,	
46	**7/5**	Analysis of parabolic arches with supports at same levels	,,	
47	**8/5**	Analysis of three hinged circular arches with supports at same levels	,,	
48	**9/5**	Analysis of three hinged circular arches with supports at same levels	,,	
49	**10/5**	Analysis of parabolic arches with supports at different levels	Board, chalk, duster	
50	**11/5**	Analysis of parabolic arches with supports at different levels	,,	
51	**12/5**	Analysis of three hinged circular arches with supports at different levels	,,	
52	**13/5**	Analysis of three hinged circular arches with supports at different levels	,,	

53	**14/5**	Analysis of three hinged circular arches with supports at different levels	,,	
54	**15/5**	Analysis of cables under point loads and UDL, length of cables (Supports at same levels and at different levels)	,,	
55	**16/5**	Analysis of cables under point loads and UDL, length of cables (Supports at same levels and at different levels)	,,	
56	**17/5**	Analysis of cables under point loads and UDL, length of cables (Supports at same levels and at different levels)	,,	
57	**1/6**	**Introduction to Analysis of two hinged parabolic Arch**	,,	
58	**2/6**	Analysis of two hinged parabolic Arch	,,	
59	**3/6**	Numerical examples on two hinged parabolic Arch	,,	
60	**4/6**	Numerical examples on two hinged parabolic Arch	,,	
61	**5/6**	Numerical examples on two hinged parabolic Arch		
62	**7/6**	Analysis of two hinged circular Arch		
63	**8/6**	Numerical examples on two hinged circular Arch		
64	**9/6**	Numerical examples on two hinged circular Arch		
65	**1/7**	Introduction to Three moment Equation		
66	**2/7**	Theorem of three moment equation		
67	**3/7**	Numerical examples on continuous beam		
68	**4/7**	Numerical examples on continuous beam		
69	**5/7**	Numerical examples on continuous beam		
70	**6/7**	Numerical examples on fixed beam		
71	**7/7**	Numerical examples on fixed beam		
72	**8/7**	Numerical examples on fixed beam		
73	**1/8**	Rolling Load and Influence Lines Explanation of Rolling load and influence lines		
74	**2/8**	Rolling load analysis for simply supported beams for several point loads and fractional UDL		
75	**3/8**	Rolling load analysis for simply supported beams for several point loads and fractional UDL		
76	**4/8**	Influence line diagram for reaction, SF and BM at a given section for the given numerical problems		

77	**5/8**	Influence line diagram for reaction, SF and BM at a given section for the given numerical problems		
78	**6/8**	Influence line diagram for reaction, SF and BM at a given section for the given numerical problems		
79	**7/8**	Influence line diagram for reaction, SF and BM at a given section for the given numerical problems		
80	**8/8**	Influence line diagram for reaction, SF and BM at a given section for the given numerical problems		

Sessional #	**Syllabus**
T1	Class # 01 – 80
RB 1	Class # 01 – 80

Book Type	**Code**	**Author & Title**	**Publication info**	
			Edition & Publisher	**ISBN #**
Text Book	TB1	Theory of structures by S.Ramamrutham	Dhanpath Rai	81 -219-0003-4
Reference Book	RB1	Structural analysis by G.S.Pandit	Tata Mc Graw Hill	978-81-775-8587-2

Signature of faculty Signature of HOD Signature of Principal

#132, AECS Layout, IT Park Road, Kundalahalli,
Bangalore – 560 037 T:+9180 28524466 / 77 Bangalore – 560 037

CMR
INSTITUTE OF
TECHNOLOY

DEPARTMENT OF CIVIL ENGINEERING

Subject Code: 10CV43 **Subject Name: Applied Hydraulics**

SEMESTER : IVA & B **NAME OF THE FACULTY : Dr.Giridhar**
BRANCH : CIVIL **DATE OF COMMENCEMENT : 13.01.2017**
SUBJECT : HYDRAULICS AND HYDRAULIC MACHINES **DATE OF CLOSING : 24.05.2017**
SUBJECT CODE : 15CV43 **CLASS STRENGTH : 60**
NO OF HRS/ WK: 6 **TOTAL HRS : 60**

Session No	Chapter no (No of hrs planed for the chapter)	Topics planned for the session	Teaching Aids	Assignments/ Tests planned for the chapter	Topics covered As per plan
1	1/4	Introduction. Impulse- Momentum equation. Theory and derivation	Board, chalk		
2	2/4	Direct impact of a jet on a stationary flat plate	,,		
3	1/2	Introduction. Discussion on Fluid Mechanics topics	,,		
4	3/4	Oblique impact of a jet on a stationary flat plate,	,,		
5	2/2	Open Channel Flow, Geometric properties of Rectangular	,,	Assignment -I	
6	4/4	Problems on impact of jet on stationary plates	,,		
7	5/4	Direct impact on a moving plate,	,,		
8	3/2	Geometric properties of Trapezoidal and Circular channels(derivation)	,,		
9	6/4	Direct impact of a jet on a series of flat vanes on a wheel	Board, chalk		
10	4/2	Derivation of Chezy's Equation, Manning's Equation	,,		
11	7/4	Conditions for maximum hydraulic efficiency.	,,		
12	8/4	Impact of a jet on a hinged flat plate	,,		
13	5/2	Most economical open channels- Rectangular	,,		
14	9/4	Problems on the above moving plates	,,		
15	6/2	Most economical open channels-	,,	Assignment –II	

		triangular channels			
16	10/4	Problems on hinged plates	,,		
17	1/5	Introduction, Force exerted by a jet on a fixed curved vane, moving curved vane.	Board, chalk		
18	7/2	Most economical open channels-trapezoidal conduits	,,		
19	2/5	Problems on Force exerted by a jet on a fixed curved vane, moving curved vane.	,,		
20	8/2	Most economical open channels- Circular conduits	,,		
21	3/5	Introduction to concept of velocity triangles,	,,		
22	4/5	Problems on concept of velocity triangles	,,		
23	9/2	Problems on most economical channels	,,		
24	5/5	Impact of jet on a series of curved vanes-problems	Board, chalk		
25	10/2	Problems on most economical channels	"		
26	6/5	Problems on Impact of jet on a series of curved vanes-	,,		
27	1/5	Introduction to Turbines, Classification of Turbines.	,,		
28	1/3	Introduction, Specific energy, Specific energy diagram,	,,		
29	2/5	Pelton wheel- components, working	,,		
30	2/3	Critical depth, Conditions for Critical flow- Theory	,,		
31	3/5	Velocity triangle of a pelton wheel	,,		
32	4/5	Maximum Power, efficiency, working proportions	,,	Assignment - III	
33	3/3	Problem on critical depth	,,		
34	5/5	Problems on Pelton wheel	Board, chalk		
35	4/3	Hydraulic jump in a Horizontal Rectangular Channel- Theory	,,		
36	1/4	Introduction, Components, Working Properties of the Turbine.	,,		
37	2/4	Velocity triangles for the Kaplan turbine	,,		
38	5/3	Problems on hydraulic jump	,,		
39	3/4	Discharge of the Turbines, Number of Blades	,,		
40	6/3	Dynamic equation for Non-Uniform flow in an Open channel,	,,		
41	4/4	Draft Tube: Types, efficiency of a Draft tube	,,		
42	5/4	Problems on draft tube	,,		

43	7/3	Classification of Surface profiles	,,		
44	6/4	Introduction to Cavitation in Turbines.	,,		
45	8/4	Simple problems on Surface profiles	,,		
46	7/4	Problems on Kaplan turbine	Board, chalk	Assignment - IV	
47	1/5	Introduction to pumps. Different types of Pumps - Classification	,,		
48	1/1	Introduction, Systems of units, Dimensions of quantities	,,		
49	2/3	Priming, methods of priming. Heads and Efficiencies of pumps			
50	2/1	Dimensional Homogeneity of an equation. Analysis- Raleigh's method			
51	3/4	Equation for work done, minimum starting speed, velocity triangles			
52	4/4	Multistage Centrifugal Pumps : Pumps in Series	,,		
53	3/1	Dimensional Homogeneity of an equation. Analysis- Buckingham's Π	Board, chalk, duster		
54	5/5	Multistage Centrifugal Pumps and Pumps in parallel	,,		
55	4/1	Problems using Raleigh's method and Buckingham's π method	,,		
56	6/5	Characteristic Curves for a Single stage Centrifugal Pumps	,,		
57	7/5	Problems on centrifugal pumps	,,		
58	5/1	Model Studies, Similitude, Non-dimensional numbers: Froude models	,,		
59	6/1	Undistorted and Distorted models. Reynolds's models	Board, chalk		
60	7/1	Problems on the different models	,,		

Syllabus for Sessionals:

Sessional #	Syllabus
T1	Class # 01 – 30
T2	Class # 31 – 52
T3	Class # 31-60

Literature:

Book Type	Code	Author & Title	Publication info	
			Edition & Publisher	ISBN #
Text Book	TB1	R. K. Rajput, " A Text Book of Fluid Mechanics and Hydraulic Machines"	2006 Edition, S Chand & Co	81 219 1666 6
Text Book	TB2	N. Narayana Pillai, " Principals of Fluid Mechanics & Fluid Machines"	2009 Edition, University Press	978 81 7371 675 1
Text Book	TB3	Madan Mohan Das, " Fluid Mechanics and Turbomachines"	2009 Edition, PHI	978 81 203 3523 3
References	RB1	Dr. R. K. Bansal, " A Textbook of Fluid Mechanics and Hydraulic Machines"	2008 Edition, Laxmi Publications	978 81 318 0815 3
References	RB2	Dr. P. N. Modi & Dr. S. M. Seth, " Hydraulics and Fluid Mechanics including Hydraulic machines"	18^{th} Edition 2011, Rajsons Publications	818940126 2

#132, AECS Layout, IT Park Road, Kundalahalli, Bangalore – 560 037
T:+9180 28524466 / 77

CMR INSTITUTE OF TECHNOLOGY

Session wise – Course Plan

Department of Civil Engineering

SEMESTER :IV A NAME OF THE FACULTY : MrShivakumara M J
BRANCH : CIV DATE OF COMMENCEMENT :13.02.2017
SUBJECT : Concrete Technology
DATE OF CLOSING : 24.05.2017
SUBJECT CODE :15CV44 CLASS STRENGTH : 49
NO OF HRS/WK : 5 TOTAL HRS :55

Session No	Chapter no (No of hrsplaned for the chapter)	Topics planned for the session	Teaching Aids	Assignments/ Tests planned for the chapter	Topics covered As per plan
1	**1/1**	Introduction to the subject Concrete Technology, Discussion on Learning objectives and outcome of the subject.	Board, chalk, duster		
2	**2/1**	Cement – Cement manufacturing process, steps to reduce carbon footprint,	Board, chalk, duster		
3	**3/1**	chemical composition and their importance, hydration of cement, types of cement. Testing of cement.	Board, chalk, duster		
4	**4/1**	Coarse aggregate: Importance of size, shape and texture.	Board, chalk, duster		
5	**5/1**	Coarse aggregate: Grading and blending of aggregate. Testing on aggregate, requirement.	PPT and Video		
6	**6/1**	Recycled aggregates Water – qualities of water.	Board, chalk, duster		
7	**7/1**	Fine aggregate: Functions, requirement.	Board, chalk, duster		

8	**8/1**	Fine aggregate: Alternatives to River sand, M-sand introduction and manufacturing.	Board, chalk, duster		
9	**9/1**	Chemical admixtures – plasticizers, accelerators, retarders and air entraining agents.	Board, chalk, duster		
10	**10/1**	Mineral admixtures – Pozzolanic and cementitious materials, Flyash, GGBS, silica fumes, Metakaolin and rice husk ash.	Board, chalk, duster	Assignment- I	
11	**11/1**	Class test on Module 1			
12	**½**	Introduction to Module 2.	,,		
13	**2/2**	Workability-factors affecting workability. Measurement of workability.	,,		
14	**3/2**	Measurement of workability– slump, Compaction factor and Vee-Bee Consistometer tests, flow tests.	PPT and Video		
15	**4/2**	Segregation and bleeding.	Board, chalk, duster		
16	**5/2**	Process of manufacturing of concrete- Batching, Mixing, Transporting.	Board, chalk, duster		
17	**6/2**	Process of manufacturing of concrete- Placing and Compaction.	Board, chalk, duster		
18	**7/2**	Curing – Methods of curing – Water curing, membrane curing, steam curing, accelerated curing, selfcuring.	,,		
19	**8/2**	Good and Bad practices of making and using fresh concrete.	,,	Assignment – II	
20	**9/2**	Effect of heat of hydration during mass concreting at project sites.	,,		
21	**10/2**	Class Test-2 on Module 2			
22	**1/3**	Introduction to Module 3 Hardened concrete.	Board, chalk, duster		

23	**2/3**	Factors influencing strength, W/C ratio, gel/space ratio, Maturity concept,	Board, chalk, duster		
24	**3/3**	Testing of hardened concrete,	PPT and Video		
25	**4/3**	Creep –factors affecting creep.	Board, chalk, duster		
26	**5/3**	Shrinkage of concrete – plastic shrinking and drying shrinkage, Factors affecting shrinkage.	,,		
27	**6/3**	Definition and significance of durability. Internal and external factors influencing durability,	,,		
28	**7/3**	Mechanisms- Sulphate attack – chloride attack, carbonation, freezing and thawing.	,,	Assignmnt – III	
29	**8/3**	Corrosion, Durability requirements as per IS-456.	,,		
30	**9/3**	Insitu testing of concrete- Penetration and pull out test, rebound hammer test, Principal, applications and limitations.	PPT and Video		
31	**10/3**	Ultrasonic pulse velocity, core extraction – Principal, applications and limitations.	PPT and Video		
32	**11/3**	Class test on Module 3 Hardened concrete.			
33	**¼**	Introduction to Module 4, Concrete mix proportioning.	Board, chalk, duster		
34	**2/4**	Concept of Mix Design with and without admixtures.	,,		
35	**¾**	Variables in proportioning.	,,		
36	**4/4**	Exposure conditions,	,,		
37	**5/4**	Class test on Unit-4	,,		
38	**6/4**	Selection criteria of ingredients used for mix design,	,,		
39	**7/4**	Procedure of mix proportioning. Numerical Examples of Mix	,,		

		Proportioning using IS-10262			
40	**8/4**	Mix proportioning for different grade concrete Examples.	,,		
41	**9/4**	Mix proportioning for different grade concrete Examples.	,,		
42	**10/4**	Mix proportioning for different grade concrete Examples.	,,	Assignment – IV	
43	**12/4**	Class test on Module 4	,,		
44	**1/5**	Introduction to Module 5 Special concretes.	,,		
45	**2/5**	RMC- manufacture and requirement as per QCI-RMCPCS, properties, advantages and disadvantages.	,,		
46	**3/5**	RMC- manufacture and requirement as per QCI-RMCPCS, properties, advantages and disadvantages.	,,		
47	**4/5**	. Self-Compacting concrete-concept, materials, tests, properties, application and typical mix.	,,		
48	**5/5**	. Self-Compacting concrete-concept, materials, tests, properties, application and typical mix.	,,		
49	**6/5**	Fiber reinforced concrete - Fibers types, properties, application of FRC.	,,		
50	**7/5**	Light weight concrete-material properties and types.	,,		
51	**8/5**	Typical light weight concrete mix and applications.	,,	Assignment – V	
52	**9/5**	Industry orientation.	,,		
53	**10/5**	Class test			
54	**11/5**	Mock Exam			
55	**3/7**	Discussion on Performance			

#132, AECS Layout, IT Park Road, Kundalahalli, Bangalore – 560 037
T:+9180 28524466 / 77

CMR INSTITUTE OF TECHNOLOGY

Session wise – Course Plan

Department of Civil Engineering

SEMESTER :IV A
BRANCH : CIV
SUBJECT : Concrete Technology
SUBJECT CODE :15CV44
NO OF HRS/WK : 5

NAME OF THE FACULTY : Mr Shivakumara M J
DATE OF COMMENCEMENT :13.02.2017
DATE OF CLOSING : 24.05.2017
CLASS STRENGTH : 49
TOTAL HRS :55

Session No	Chapter no (No of hrsplaned for the chapter)	Topics planned for the session	Teaching Aids	Assignments/ Tests planned for the chapter	Topics covered As per plan
1	**1/1**	Introduction to the subject Concrete Technology, Discussion on Learning objectives and outcome of the subject.	Board, chalk, duster		
2	**2/1**	Cement – Cement manufacturing process, steps to reduce carbon footprint,	Board, chalk, duster		
3	**3/1**	chemical composition and their importance, hydration of cement, types of cement. Testing of cement.	Board, chalk, duster		
4	**4/1**	Coarse aggregate: Importance of size, shape and texture.	Board, chalk, duster		
5	**5/1**	Coarse aggregate: Grading and blending of aggregate. Testing on aggregate, requirement.	PPT and Video		
6	**6/1**	Recycled aggregates Water – qualities of water.	Board, chalk, duster		
7	**7/1**	Fine aggregate: Functions, requirement.	Board, chalk, duster		

8	**8/1**	Fine aggregate: Alternatives to River sand, M-sand introduction and manufacturing.	Board, chalk, duster		
9	**9/1**	Chemical admixtures – plasticizers, accelerators, retarders and air entraining agents.	Board, chalk, duster		
10	**10/1**	Mineral admixtures – Pozzolanic and cementitious materials, Flyash, GGBS, silica fumes, Metakaolin and rice husk ash.	Board, chalk, duster	Assignment- I	
11	**11/1**	Class test on Module 1			
12	**½**	Introduction to Module 2.	,,		
13	**2/2**	Workability-factors affecting workability. Measurement of workability.	,,		
14	**3/2**	Measurement of workability– slump, Compaction factor and Vee-Bee Consistometer tests, flow tests.	PPT and Video		
15	**4/2**	Segregation and bleeding.	Board, chalk, duster		
16	**5/2**	Process of manufacturing of concrete- Batching, Mixing, Transporting.	Board, chalk, duster		
17	**6/2**	Process of manufacturing of concrete- Placing and Compaction.	Board, chalk, duster		
18	**7/2**	Curing – Methods of curing – Water curing, membrane curing, steam curing, accelerated curing, selfcuring.	,,		
19	**8/2**	Good and Bad practices of making and using fresh concrete.	,,	Assignment – II	
20	**9/2**	Effect of heat of hydration during mass concreting at project sites.	,,		
21	**10/2**	Class Test-2 on Module 2			
22	**1/3**	Introduction to Module 3 Hardened concrete.	Board, chalk, duster		

23	**2/3**	Factors influencing strength, W/C ratio, gel/space ratio, Maturity concept,	Board, chalk, duster		
24	**3/3**	Testing of hardened concrete,	PPT and Video		
25	**4/3**	Creep –factors affecting creep.	Board, chalk, duster		
26	**5/3**	Shrinkage of concrete – plastic shrinking and drying shrinkage, Factors affecting shrinkage.	,,		
27	**6/3**	Definition and significance of durability. Internal and external factors influencing durability,	,,		
28	**7/3**	Mechanisms- Sulphate attack – chloride attack, carbonation, freezing and thawing.	,,	Assignmnt – III	
29	**8/3**	Corrosion, Durability requirements as per IS-456.	,,		
30	**9/3**	Insitu testing of concrete- Penetration and pull out test, rebound hammer test, Principal, applications and limitations.	PPT and Video		
31	**10/3**	Ultrasonic pulse velocity, core extraction – Principal, applications and limitations.	PPT and Video		
32	**11/3**	Class test on Module 3 Hardened concrete.			
33	**¼**	Introduction to Module 4, Concrete mix proportioning.	Board, chalk, duster		
34	**2/4**	Concept of Mix Design with and without admixtures.	,,		
35	**¾**	Variables in proportioning.	,,		
36	**4/4**	Exposure conditions,	,,		
37	**5/4**	Class test on Unit-4	,,		
38	**6/4**	Selection criteria of ingredients used for mix design,	,,		
39	**7/4**	Procedure of mix proportioning. Numerical Examples of Mix	,,		

		Proportioning using IS-10262			
40	**8/4**	Mix proportioning for different grade concrete Examples.	,,		
41	**9/4**	Mix proportioning for different grade concrete Examples.	,,		
42	**10/4**	Mix proportioning for different grade concrete Examples.	,,	Assignment – IV	
43	**12/4**	Class test on Module 4	,,		
44	**1/5**	Introduction to Module 5 Special concretes.	,,		
45	**2/5**	RMC- manufacture and requirement as per QCI-RMCPCS, properties, advantages and disadvantages.	,,		
46	**3/5**	RMC- manufacture and requirement as per QCI-RMCPCS, properties, advantages and disadvantages.	,,		
47	**4/5**	. Self-Compacting concrete-concept, materials, tests, properties, application and typical mix.	,,		
48	**5/5**	. Self-Compacting concrete-concept, materials, tests, properties, application and typical mix.	,,		
49	**6/5**	Fiber reinforced concrete - Fibers types, properties, application of FRC.	,,		
50	**7/5**	Light weight concrete-material properties and types.	,,		
51	**8/5**	Typical light weight concrete mix and applications.	,,	Assignment – V	
52	**9/5**	Industry orientation.	,,		
53	**10/5**	Class test			
54	**11/5**	Mock Exam			
55	**3/7**	Discussion on Performance			

#132, AECS Layout, IT Park Road, Kundalahalli, Bangalore – 560 037
T:+9180 28524466 / 77

CMR INSTITUTE OF TECHNOLOGY

Session wise – Course Plan

Department of Civil Engineering

SEMESTER : IV A& B
BRANCH : CV
SUBJECT : BGE
SUBJECT CODE : 15CV45
NO OF HRS/WK : 6

NAME OF THE FACULTY : Dr Asha M Nair
DATE OF COMMENCEMENT : 13.02.2017
DATE OF CLOSING : 03.06.2017
CLASS STRENGTH : 54
TOTAL HRS : 66

Session No	Chapter no (No of hrs planed for the chapter)	Topics planned for the session	Teaching Aids	Assignments/ Tests planned for the chapter
1.		Over view of this subject, challenges of a geotechnical engineer.		
2.		Origin of soil, prescribed books, History of soil mechanics		
3	**1/1**	Phase diagram and basic relationships	Board, chalk, duster	
4	**2/1**	Relationships between dry density, bulk density, water content and dry density and percentage air voids.	,,	
3	**3/1**	Problems on phase diagram	,,	
4	**4/1**	Index properties, definition, water content as an index property and its determination	,,	
5	**5/1**	Specific gravity and its determination	,,	
6	**6/1**	Stoke's law and expression for particle diameter, Sedimentation analysis.	,,	

7	**7/1**	Hydrometer principle, soil suspension preparation	,,	
8	**8/1**	Video on particle size determination using hydrometer, sand bath method, calcium carbide method for w/c determination	ppt and video	
9	**9/1**	Limitations of sedimentation analysis, particle size distribution curve, uses	,,	Assignment-I
10	**10/1**	C_u and C_c , problem on grain size distribution curve	,,	
11	**11/1**	Insitu density determination- core cutter and sand replacement method	,,	
12	**12/1**	Consistency limit, LL, PL, and SL	,,	
13	**13/1**	Toughness index and activity of clay, relative density, problems	,,	
14	**14/1**	Unified and BIS soil classification systems.	,,	
15	**1/2**	Types of soil structure, Types of bonds- primary bond (covalent bond, metallic bond and ionic bond)	,,	
16	**2/2**	Secondary bonds (hydrogen bond, van der waals forces). Diffused double layer theory	,,	
17	**3/2**	Basic structural unit of clay mineral, tetrahedral unit, octahedral unit, cation exchange capacity	,,	
18	**4/2**	Types of clay minerals, kaolinite, illite and montmorillonite	,,	
19	**5/2**	Definition, principle of compaction, standard proctor compaction test	,,	
20	**6/2**	Modified proctor compaction test – Numerical problems	,,	
21	**7/2**	Factors affecting compaction and effect of compaction on soil properties	,,	
22	**8/2**	Field compaction control – compactive effort and method, lift thickness and number of passes	,,	Assignment - II
23	**9/2**	Field compaction control (continued)- proctors needle	,,	
24	**10/2**	Compacting equipments and their suitability.	,,	
25	**11/2**	Video on field compaction methods	ppt and video	Assignment –III

26	**1/3**	Permeability, Darcy's law- assumption and validity, coefficient of permeability	,,	
27	**2/3**	Determination of permeability laboratory method – Numerical problems		
28	**3/3**	Determination of permeability field method – Numerical problem	,,	
29	**4/3**	Factors affecting permeability, permeability of stratified soils – Numerical problems	,,	
30	**5/3**	Seepage velocity, superficial velocity and coefficient of percolation- Numerical problems	,,	
31	**6/3**	Quick sand phenomena and capillary phenomena	,,	
32	**7/3**	Laplace equation-assumptions and limitations.	,,	
33	**8/3**	Derivation of Laplace equation.	Board, chalk, duster	
34	**9/3**	Flow nets- characteristics and applications	,,	
35	**10/3**	Flow nets for sheet piles and below the dam section	PPT	Assignmnt – IV
36	**11/3**	Phreatic line (Casagrande's method –with and without toe filter),	Board, chalk, duster	
37	**12/3**	Flow through dams, design of dam filters	,,	
38	**13/3**	Effective stress concept- total , effective and neutral stress - Numerical problems	,,	
39	**14/3**	Impact of the effective stress in construction of structures, Quick sand phenomena	,,	
40	**1/4**	Definition, Mass-spring analogy	,,	
41	**2/4**	Terzaghi's one dimensional consolidation theory-assumption and limitations.	,,	
42	**3/4**	Derivation of Governing differential Equation	,,	Assignment - V

43	**4/4**	Pre-consolidation pressure and its determination by Casagrande's method.	,,	
44	**5/4**	Normally consolidated, under consolidated and over consolidated soils.	,,	
45	**6/4**	Determination of consolidation characteristics of soil compression index and coefficient of consolidation – Square root of time fitting method	,,	
46	**7/4**	Numerical problem	,,	
47	**8/4**	Determination of consolidation characteristics of soil compression index and coefficient of consolidation – Logarithmic time fitting method	,,	
48	**9/4**	Numerical problem	,,	
49	**10/4**	Primary and secondary consolidation.	Board, chalk, duster	
50	**1/5**	Concept of shear strength,	,,	
51	**2/5**	Mohr–Coulomb Failure Criterion	,,	Assignment - VI
52	**3/5**	Modified Mohr–Coulomb Criterion	,,	
53	**4/5**	Concept of pore pressure, Total and effective shear strength parameters	,,	
54	**5/5**	Factors affecting shear strength of soils	Board, chalk, duster	
55	**6/5**	Thixotrophy and sensitivity,	,,	
56	**7/5**	Measurement of shear strength parameters – Direct shear test, Problems	,,	
57	**8/5**	Tri axial Compression test – UU Condition	,,	
58	**9/5**	Tri axial Compression test – CU Condition	,,	
59	**10/5**	Tri axial Compression test – CD Condition	Board, chalk, duster	

60	**11/5**	Unconfined compression test- Numerical problem	,,	
61	**12/5**	Vane shear test	,,	
62	**13/5**	Total and effective stress paths.	,,	
63		Revision	,,	
64		Revision	,,	
65		Revision	,,	
66		Revision	,,	

#132, AECS Layout, IT Park Road, Kundalahalli, Bangalore – 560

037 T:+9180 28524466 / 77

CMR INSTITUTE OF TECHNOLOGY

Session wise – Course Plan

Department of Civil Engineering

SEMESTER : IV 'A'
BRANCH : CIV
SUBJECT : Advanced Surveying
SUBJECT CODE : 15CV46
NO OF HRS/WK : 5

NAME OF THE FACULTY : Mr Kiran RG
DATE OF : 13-02-2017
DATE OF CLOSING : 24-05-2017
CLASS STRENGTH : 49
TOTAL HRS :

Session No	Topics planned for the session	Teaching Aids	Assignments/ Tests planned for the chapter	Topics covered As per plan
1.	**Module -1: Curve Surveying** Curves – Necessity – Types, Simple curves, Elements, Designation of curves	**Chalk-talk**		
2.	Setting out simple curves by linear methods (numerical problems on offsets from long chord & chord produced method)	„		
3.	Setting out curves by Rankines deflection angle method (numerical problems)	„		
4.	Compound curves, Elements, Design of compound curves	**Visual Aids**		
5.	Setting out of compound curves (numerical problems)	**Chalk-talk**		
6.	Reverse curve between two parallel straights (numerical problems on Equal radius and unequal radius)	„		
7.	Transition curves Characteristics	„		

8.	Numerical problems on Length of Transition curve	**„**		
9.	Numerical problems on Length of Transition curve	**„**		
10.	Vertical curves –Types – (theory)	**Chalk-talk**		
11.	**Module -2: Geodetic Surveying and Theory of Errors** Geodetic Surveying: Principle and Classification of triangulation system	**„**	**Assignment 1**	
12.	Selection of base line and stations, Orders of triangulation, Triangulation figures	**„**		
13.	Reduction to Centre, Selection and marking of stations	**„**		
14.	Theory of Errors: Introduction, types of errors, definitions	**„**		
15.	Laws of accidental errors, laws of weights, theory of least squares	**„**		
16.	Laws of accidental errors, laws of weights, theory of least squares	**„**		
17.	Rules for giving weights and distribution of errors to the field observations	**„**		
18.	Rules for giving weights and distribution of errors to the field observations	**PPT**		
19.	Determination of the most probable values of quantities	**Chalk-talk**		
20.	Determination of the most probable values of quantities	**„**	**Assignment 2**	
21.	**Module -3: Introduction to Field Astronomy –** Introduction	**„**		
22.	Earth & celestial sphere	**„**		
23.	Earth and celestial coordinate systems	**„**		
24.	Earth and celestial coordinate systems	**„**		
25.	Spherical triangle	**„**		
26.	Spherical triangle	**„**		
27.	Astronomical triangle	**„**		

28.	Astronomical triangle	„		
29.	Napier's rule	„		
30.	Napier's rule	„		
31.	**Module -4: Aerial Photogrammetry-** Introduction	„	**Assignment 3**	
32.	Uses of Aerial Photogrammetry, Aerial photographs	„		
33.	Definitions, Scale of vertical and tilted photograph (simple problems)	„		
34.	Scale of vertical and tilted photograph (simple problems)	„		
35.	Ground Co-ordinates (simple problems)	„		
36.	Ground Co-ordinates (simple problems)	„		
37.	Relief Displacements (Derivation)	„		
38.	Ground control, Procedure of aerial survey, overlaps and mosaics	**Chalk-talk**		
39.	Ground control, Procedure of aerial survey, overlaps and mosaics	„		
40.	Stereoscopes, Derivation Parallax(Derivation)	„		
41.	**Module -5: Modern Surveying Instruments-** Introduction	„	**Assignment 4**	
42.	Electromagnetic spectrum, Electromagnetic distance measurement	„		
43.	Electromagnetic spectrum, Electromagnetic distance measurement	„		
44.	Total station	„		
45.	Total station	„		
46.	Lidar scanners for topographical survey	„		
47.	Remote Sensing: Introduction, Principles of energy interaction in atmosphere and	„		

	earth surface features			
48.	Remote Sensing: Introduction, Principles of energy interaction in atmosphere and earth surface features Contd.	„		
49.	Image interpretation techniques, visual interpretation	„		
50.	Digital image processing, Global Positioning system	„		
51.	Geographical Information System: Definition of GIS, Key Components of GIS	„		
52.	Functions of GIS, Spatial data, spatial information system Geospatial analysis	„		
53.	Integration of Remote sensing and GIS	„		
54.	Applications in Civil Engineering(transportation, town planning)	„	**Assignment 5**	

#132, AECS Layout, IT Park Road, Kundalahalli, Bangalore – 560

037 T:+9180 28524466 / 77

CMR INSTITUTE OF TECHNOLOGY

Session wise – Course Plan

Department of Civil Engineering

SEMESTER : IV 'B'
BRANCH : CIV
SUBJECT : Advanced Surveying
SUBJECT CODE : 15CV46
NO OF HRS/WK : 5

NAME OF THE FACULTY : Mr Kiran RG
DATE OF : 13-02-2017
DATE OF CLOSING : 24-05-2017
CLASS STRENGTH : 49
TOTAL HRS :

Session No	Topics planned for the session	Teaching Aids	Assignments/ Tests planned for the chapter	Topics covered As per plan
1.	**Module -1: Curve Surveying** Curves – Necessity – Types, Simple curves, Elements, Designation of curves	**Chalk-talk**		
2.	Setting out simple curves by linear methods (numerical problems on offsets from long chord & chord produced method)	„		
3.	Setting out curves by Rankines deflection angle method (numerical problems)	„		
4.	Compound curves, Elements, Design of compound curves	**Visual Aids**		
5.	Setting out of compound curves (numerical problems)	**Chalk-talk**		
6.	Reverse curve between two parallel straights (numerical problems on Equal radius and unequal radius)	„		
7.	Transition curves Characteristics	„		

8.	Numerical problems on Length of Transition curve	**„**		
9.	Numerical problems on Length of Transition curve	**„**		
10.	Vertical curves –Types – (theory)	**Chalk-talk**		
11.	**Module -2: Geodetic Surveying and Theory of Errors** Geodetic Surveying: Principle and Classification of triangulation system	**„**	**Assignment 1**	
12.	Selection of base line and stations, Orders of triangulation, Triangulation figures	**„**		
13.	Reduction to Centre, Selection and marking of stations	**„**		
14.	Theory of Errors: Introduction, types of errors, definitions	**„**		
15.	Laws of accidental errors, laws of weights, theory of least squares	**„**		
16.	Laws of accidental errors, laws of weights, theory of least squares	**„**		
17.	Rules for giving weights and distribution of errors to the field observations	**„**		
18.	Rules for giving weights and distribution of errors to the field observations	**PPT**		
19.	Determination of the most probable values of quantities	**Chalk-talk**		
20.	Determination of the most probable values of quantities	**„**	**Assignment 2**	
21.	**Module -3: Introduction to Field Astronomy –** Introduction	**„**		
22.	Earth & celestial sphere	**„**		
23.	Earth and celestial coordinate systems	**„**		
24.	Earth and celestial coordinate systems	**„**		
25.	Spherical triangle	**„**		
26.	Spherical triangle	**„**		
27.	Astronomical triangle	**„**		

28.	Astronomical triangle	„		
29.	Napier's rule	„		
30.	Napier's rule	„		
31.	**Module -4: Aerial Photogrammetry-** Introduction	„	**Assignment 3**	
32.	Uses of Aerial Photogrammetry, Aerial photographs	„		
33.	Definitions, Scale of vertical and tilted photograph (simple problems)	„		
34.	Scale of vertical and tilted photograph (simple problems)	„		
35.	Ground Co-ordinates (simple problems)	„		
36.	Ground Co-ordinates (simple problems)	„		
37.	Relief Displacements (Derivation)	„		
38.	Ground control, Procedure of aerial survey, overlaps and mosaics	**Chalk-talk**		
39.	Ground control, Procedure of aerial survey, overlaps and mosaics	„		
40.	Stereoscopes, Derivation Parallax(Derivation)	„		
41.	**Module -5: Modern Surveying Instruments-** Introduction	„	**Assignment 4**	
42.	Electromagnetic spectrum, Electromagnetic distance measurement	„		
43.	Electromagnetic spectrum, Electromagnetic distance measurement	„		
44.	Total station	„		
45.	Total station	„		
46.	Lidar scanners for topographical survey	„		
47.	Remote Sensing: Introduction, Principles of energy interaction in atmosphere and	„		

	earth surface features			
48.	Remote Sensing: Introduction, Principles of energy interaction in atmosphere and earth surface features Contd.	„		
49.	Image interpretation techniques, visual interpretation	„		
50.	Digital image processing, Global Positioning system	„		
51.	Geographical Information System: Definition of GIS, Key Components of GIS	„		
52.	Functions of GIS, Spatial data, spatial information system Geospatial analysis	„		
53.	Integration of Remote sensing and GIS	„		
54.	Applications in Civil Engineering(transportation, town planning)	„	**Assignment 5**	