Ref No:

Sri Krishna Institute of Technology, Bangalore

COURSE PLAN

Academic Year 2019-2020

Program:	B E – Civil engineering
Semester :	2
Course Code:	18CIV24
Course Title:	Elements of Civil Engineering and Mechanics
Credit / L-T-P:	3 / 3-0-0
Total Contact Hours:	40
Course Plan Author:	RAMYA B/YESHASHWINI R V/ SHIVASHANKAR R

Academic Evaluation and Monitoring Cell

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A. COURSE INFORMATION

1. Course Overview

Degree:	BE	Program:	CIVIL
Semester:	2019/1st	Academic Year:	2019-20
Course Title:	Elements of civil engineering and mechanics	Course Code:	18CIV14
Credit / L-T-P:	03	SEE Duration:	180 Minutes
Total Contact Hours:	40	SEE Marks:	60 Marks
CIA Marks:	40	Assignment	1 / Module
Course Plan Author:	RAMYA B/YESHASHWINI R V/ SHIVASHANKAR R	Sign ..	Dt:
Checked By:		Sign ..	Dt:
CO Targets	BE	SEE Target:	CIVIL

Note: Define CIA and SEE % targets based on previous performance.

2. Course Content

Content / Syllabus of the course as prescribed by University or designed by institute.

Module	Content	Teaching Hours	Blooms Learning Levels
1	Introduction to Civil Engineering Scope of different fields of Civil Engineering – Surveying, Building Materials, Construction Technology, Geotechnical Engineering, Structural Engineering, Hydraulics, WaterResources and Irrigation Engineering, Transportation Engineering, Environmental Engineering.1Infrastructure: Types of infrastructure, Role of Civil Engineer in theInfrastructural Development, Effect of the infrastructural facilities onsocio-economic development of a country. Introduction to Engineering Mechanics: Basic idealizations – Particle, Continuum and Rigid body; Newton's lawsBForce and its characteristics, types of forces-Gravity, Lateral and its distribution on surfaces, Classification of force systems, Principle of physical independence, superposition, transmissibility of forces, , Introduction to SI units.Couple, Moment of a couple, Characteristics of couple, Moment of a force, Equivalent force – Couple system; Numerical problems on moment of forces and couples, on equivalent force – couple system.	8	L3
2	Concepts: Resultants and Equilibrium Composition of forces – Definition of Resultant; Composition of coplanar -concurrent force system, Parallelogram Law of forces, Principle of resolved parts; Numerical problems on composition of coplanar concurrent force systems. Equilibrium of forces – Definition of Equilibrant; Conditions of static equilibrium for different force systems, Lami's theorem; Numerical problems on equilibrium of coplanar – concurrent and non-concurrent force systems.Application- Static Friction in rigid bodies in contact Types of friction, Laws of static friction, Limiting friction, Angle of friction, angle of repose; Impending motion on horizontal and inclined planes;Numerical Problems on single and two blocks on inclined planes	8	L3
3	Support Reaction in beams Types of Loads and Supports, statically determinate beams, Numerical problems onsupport reactions for statically determinate beams with Point load (Normal and inclined) and uniformly distributed	8	L3

	and uniformly varying loads and Moments. Types of trusses, analysis of statically determinate trusses using method of joints and method of section		
4	Introduction to the concept, centroid of line and area, centroid of basic geometrical figures, computing centroid for– T, L, I, Z and full/quadrant circular sections and their built up sections. Numerical problems Introduction to the concept, Radius of gyration, Parallel axis theorem, Perpendicular axis theorem, Moment of Inertia of basic planar figures, computing moment of Inertia for – T, L, I, Z and full/quadrant circular sections and their built up sections. Numerical problems	8	L3
5	Concepts and Applications Definitions – Displacement – Average velocity – Instantaneous velocity – Speed – Acceleration – Average acceleration – Variable acceleration – Acceleration due to gravity – Newton's Laws of Motion. D' Alembert's principle and its application in plane motion and connected bodies including pulleys	8	L3
-	**Total**		

3. Course Material

Books & other material as recommended by university (A, B) and additional resources used by course teacher (C).

1. Understanding: Concept simulation / video ; one per concept ; to understand the concepts ; 15 – 30 minutes
2. Design: Simulation and design tools used – software tools used ; Free / open source
3. Research: Recent developments on the concepts – publications in journals; conferences etc.

Modules	Details	Chapters in book	Availability
A	**Text books (Title, Authors, Edition, Publisher, Year.)**	**-**	**-**
1, 2, 3, 4, 5	Elements of civil engineering and mechanics by M.N.Shesha Prakash and Ganesh, 3rd Revised edition	3, 4	In Lib / In Dept
1,2,3,4	Elements of civil engineering and mechanics by S,S, Bhavikatti , New Age Internqtional Publisher,New Delhi,4th edition	2, 4	In Lib/ In dept
B	**Reference books (Title, Authors, Edition, Publisher, Year.)**	**-**	**-**
1, 2	Engineering Mechanics by D.H.Young and J.V.Rao,TATA McGraw Hill Book Company,New Delhi	2,4	Not Available
3, 4, 5	Elements of civil engineering and mechanics by S,S, Bhavikatti , New Age Internqtional Publisher,New Delhi,4th edition		
C	**Concept Videos or Simulation for Understanding**	**-**	**-**
C1			
C2			
C3			
C4			
C5			
D	**Software Tools for Design**	**-**	**-**
E	**Recent Developments for Research**	**-**	**-**
F	**Others (Web, Video, Simulation, Notes etc.)**	**-**	**-**
1			

4. Course Prerequisites

Refer to GL01. If prerequisites are not taught earlier, GAP in curriculum needs to be addressed. Include in Remarks and implement in B.5.
Students must have learnt the following Courses / Topics with described Content . . .

Modules	Course Code	Course Name	Topic / Description	Sem	Remarks	Blooms Level
1	18CIV14	Elements of civil engineering and mechanics	1.Knowledge of Mathematics 2.Knowledge of Physics	1		L3

5. Content for Placement, Profession, HE and GATE

The content is not included in this course, but required to meet industry & profession requirements and help students for Placement, GATE, Higher Education, Entrepreneurship, etc. Identifying Area / Content requires experts consultation in the area.
Topics included are like, a. Advanced Topics, b. Recent Developments, c. Certificate Courses, d. Course Projects, e. New Software Tools, f. GATE Topics, g. NPTEL Videos, h. Swayam videos etc.

Modules	Topic / Description	Area	Remarks	Blooms Level

B. OBE PARAMETERS

1. Course Outcomes

Expected learning outcomes of the course, which will be mapped to POs.

Modules	Course Code.#	Course Outcome **At the end of the course, student should be able to . . .**	Teach. Hours	Instr Method	Assessment Method	Blooms' Level
1	18CIV14.1	Students should be able to describe the scope of various fields of civil engineering	2	Scope of civil engineering	BB,ppt	C.I.E,Unit test,Assignment
1	18CIV14.2	Students should be able to illustrate forces on couple system and moment of forces	6	Resolution of Forces	BB	C.I.E,Unit test,Assignment
2	18CIV14.3	Students should be able to Calculate the resultant of force system subjected to various load	4	Resultant of Concurrent forces	BB,Tutorial	C.I.E,Unit test,Assignment
2	18CIV14.4	Students should be able to Apply laws of friction and types of friction	3	Friction and Equilibrium	BB	C.I.E,Unit test,Assignment
3	18CIV14.5	Students should be able to compute the reactive force that develop as result of external load	3	Resolving of Support Reaction	BB,Tutorial	C.I.E,Unit test,Assignment
3	18CIV14.6	Students should be able to calculate the trusses by method of joints and section	5	Analysis of trusses	BB	C.I.E,Unit test,Assignment
4	18CIV14.7	Students should be able to determine centroid of built up section	4	Location of Centroid	BB,Tutorial	C.I.E,Unit test,Assignment
4	18CIV14.8	Students should be able to calculate M.I of full/quadrant circular section	4	Determination of Moment of Inertia	BB,Tutorial	C.I.E,Unit test,Assignment
5	18CIV14.9	Students should be able to	6	kinematics	BB	C.I.E,Unit

		illustrate relationship between motion of bodies				test,Assignment
5	18CIV14.10	Students should be able to describe relationship between plane motion and connected bodies	2	kinetics	BB	C.I.E,Unit test,Assignment
-	**-**	**Total**	**50**	**-**	**-**	**L2-L4**

2. Course Applications

Write 1 or 2 applications per CO.
Students should be able to employ / apply the course learnings to . . .

Modules	Application Area Compiled from Module Applications.	CO	Level
1	Basic fields of civil engineering , Force system and resolution of forces	CO1	L2
2	Equilibrium forces and friction in rigid body	CO2	L3
3	Support reaction and forces acting on trusses	CO3	L3
4	Centroid and moment of inertia	CO4	L3
5	Concept of kinematics and kinetics	CO5	L3

3. Articulation Matrix

CO – PO Mapping with mapping level for each CO-PO pair, with course average attainment.

-	-	Course Outcomes	Program Outcomes														-
Modules	CO.#	**At the end of the course student should be able to . . .**	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2	PS O3	Level
1																		
2																		
3																		
4																		
5																		
-	**15EE662.**	Average																**-**
-	*PO, PSO*	*1.Engineering Knowledge; 2.Problem Analysis; 3.Design / Development of Solutions; 4.Conduct Investigations of Complex Problems; 5.Modern Tool Usage; 6.The Engineer and Society; 7.Environment and Sustainability; 8.Ethics; 9.Individual and Teamwork; 10.Communication; 11.Project Management and Finance; 12.Life-long Learning; S1.Software Engineering; S2.Data Base Management; S3.Web Design*																

4. Curricular Gap and Content

Topics & contents not covered (from A.4), but essential for the course to address POs and PSOs.

Modules	Gap Topic	Actions Planned	Schedule Planned	Resources Person	PO Mapping
1		Seminar	2nd week / date	Dr XYZ, Inst	List from B4 above
2		Seminar	3rd Week		

C. COURSE ASSESSMENT

1. Course Coverage

Assessment of learning outcomes for Internal and end semester evaluation.

Modules	Title	Teach. Hours	No. of question in Exam						CO	Levels
			CIA-1	CIA-2	CIA-3	Asg	Extra Asg	SEE		
1	Introduction to Civil Engineering	8	2	-	-	1	1	2	CO1	L2,L3

	&Engineering Mechanics									
2	Analysis of Concurrent Force Systems	8	2	-	-	1	1	2	CO2	L3
3	Analysis of Non-Concurrent Force Systems	8	-	2	-	1	1	2	CO3	L3
4	Centroids and Moments of Inertia of Engineering Sections:	8	-	2	-	1	1	2	CO4	L3
5	Kinematics and Kinetics	8	-	-	4	1	1	2	CO5	L3
-	**Total**	**50**	**4**	**4**	**4**	**5**	**5**	**10**	**-**	**-**

2. Continuous Internal Assessment (CIA)

Assessment of learning outcomes for Internal exams. Blooms Level in last column shall match with A.2.

Modules	Evaluation	Weightage in Marks	CO	Levels
1, 2	CIA Exam – 1	30	CO1, CO2, CO3,CO4	L2,L3,L4
3, 4	CIA Exam – 2	30	CO5	
5	CIA Exam – 3	30		
1, 2	Assignment - 1	10	CO1, CO2, CO3,CO4	L2,L3,L4
3, 4	Assignment - 2	10	CO5	
5	Assignment - 3	10		
1, 2	Seminar - 1		-	-
3, 4	Seminar - 2		-	-
5	Seminar - 3		-	-
1, 2	Quiz - 1		-	-
3, 4	Quiz - 2		-	-
5	Quiz - 3		-	-
1 - 5	Other Activities – Mini Project	-	CO4,CO5	L2
	Final CIA Marks		**-**	**-**

D1. TEACHING PLAN - 1

Module - 1

Title:		Appr Time:	10 Hrs
a	***Course Outcomes***	**CO**	**Blooms**
	The student should be able to:		
1	describe the scope of various fields of civil engineering	CO1	L2
2	illustrate forces on couple system and moment of forces	CO1	L3
b	***Course Schedule***	-	-
Class No	**Portion covered per hour**	**-**	**-**
1	Introduction to Civil Engineering Scope of different fields of Civil Engineering – Surveying, Building Materials, Construction Technology, Geotechnical Engineering, Structural Engineering, Hydraulics, WaterResources and Irrigation Engineering, Transportation Engineering, Environmental Engineering.	CO1	
2	Infrastructure: Types of infrastructure, Role of Civil Engineer in theInfrastructural Development, Effect of the infrastructural facilities onsocio-economic development of a country.	CO1	
3	Introduction to Engineering Mechanics: Basic idealizations – Particle, Continuum and Rigid body; Newton's lawsBForce and its characteristics, types of forces-Gravity, Lateral and its distribution on surfaces,	CO1	
4	Classification of force systems, Principle of physical independence,	CO1	

	superposition, transmissibility of forces, , Introduction to SI units		
5	Couple, Moment of a couple, Characteristics of couple, Moment of a force, Equivalent force – Couple system	CO1	
6	Numerical problems on moment of forces and couples, on equivalent force – couple system.	CO1	
7	Numerical problems on moment of forces and couples, on equivalent force – couple system.	CO1	
8	Numerical problems on moment of forces and couples, on equivalent force – couple system.	CO1	
c	**Application Areas**		
-	Students should be able employ / apply the Module learnings to . . .		
1	Basic fields of civil engineering	CO1	L3
2	Resolve the forces acting on body	CO1	L3
d	**Review Questions**		
-			
1	Discuss briefly the role of Civil Engineers in the infrastructure development of a country	CO1	L1
2	Differentiate between flexible and rigid pavement	CO1	L3
3	Bring out briefly scope of following specialization of civil engineering i) Environmental Engineering ii) Geotechnical Engineering	CO1	L2
4	Explain briefly the classification of roads.	CO1	L4
5	Define force. Explain the classification of force system	CO1	L2
6	Explain i)Principle of transmissibility of forces. ii)Principle of physical independence of forces	CO1	L5
7	Define couple. Explain characteristics of couple	CO1	L2
8	Bring out briefly scope of following specialization of civil engineering i) Structural Engineering i) Transportation Engineering	CO1	L3
9	A force of 630N is acting on a block as shown in the **fig-1**. Find the i)Horizontal & vertical components ii)Inclined to the plane and right angles to the plane	CO1	L4
10	Replace 1000N force at point A, which is acting at point B as shown in the **fig-2.** Also find the moment at A.	CO1	L1
11	A square A B C D as forces acting at along its sides as shown in the **fig-3.** Find the value of P & Q, if the system reduces the couple. Also find the magnitude of the couple.	CO1	L4
e	**Experiences**	-	-
1		CO1	L2
2			

Module – 2

Title:		Appr Time:	10 Hrs
a	***Course Outcomes***	**CO**	**Blooms**
-	The student should be able to:	-	**Level**
1	Calculate the resultant of force system subjected to various load	CO2	L3
2	Apply laws of friction and types of friction	CO2	L3
b	***Course Schedule***	-	-
Class No	**Portion covered per hour**	**-**	**-**
9	Resultants and Equilibrium Composition of forces – Definition of Resultant; Composition of coplanar -concurrent force system,	CO2	L3
10	Parallelogram Law of forces, Principle of resolved parts; Numerical problems on composition of coplanar concurrent force systems.	CO2	L3

11	Equilibrium of forces – Definition of Equilibrant; Conditions of static equilibrium for different force systems, Lami's theorem	CO2	L3
12	Numerical problems on equilibrium of coplanar – concurrent and non-concurrent force systems	CO2	L3
13	Application- Static Friction in rigid bodies in contact Types of friction, Laws of static friction,	CO2	L3
14	Limiting friction, Angle of friction, angle of repose; Impending motion on horizontal and inclined planes	CO2	L3
15	Numerical Problems on single and two blocks on inclined planes	CO2	L3
16	Numerical Problems on single and two blocks on inclined planes	CO2	L3
c	**Application Areas**	**-**	**-**
-	Students should be able employ / apply the Module learnings to . . .	-	-
1	Concurrent forces	CO2	L3
2	Equilibrium and friction	CO2	L4
d	**Review Questions**	-	-
-		CO2	L3
1	State and prove Parallelogram law of forces	CO2	L3
2	Explain different types of friction	CO2	L3
3	State and prove Lami'stheorem	CO2	L3
4	Define i) Angle of friction ii) Angle of Repose	CO2	L3
5	Define i) Equilibrant ii) Resultant force	CO2	L3
6	Define friction & Explain laws of static friction	CO2	L3
7	Explain with sketch Cone friction	CO2	L3
8	Determine the reaction at contact points for spheres A & B as shown in fig Q 2(a).It is given that WA = 1200N, WB = 1500N, dA = 400mm, dB = 900mm	CO2	L3
e	**Experiences**	-	-
1		CO2	L2
2			

E1. CIA EXAM – 1

a. Model Question Paper - 1

Crs Code:	18CIV24	Sem:	II	Marks:	30	Time:	75 Minutes

Course:

-	-	**Note: Answer all questions, each carry equal marks. Module : 1, 2**	**Marks**	**CO**	**Level**
1	a	Define couple. Explain characteristics of couple	5	CO1	L2
	b	Bring out briefly scope of following specialization of civil engineering i) Structural Engineering i) Transportation Engineering	5	CO1	L2
	c	A force of 630N is acting on a block as shown in the **fig-1**. Find the i)Horizontal & vertical components ii)Inclined to the plane and right angles to the plane	5	CO1	L3
1	a	Define force. Explain the classification of force system	5	CO1	L3
	b	Explain i)Principle of transmissibility of forces. ii)Principle of physical independence of forces	5	CO1	L3
	c	Replace 1000N force at point A, which is acting at point B as shown in the **fig-2.** Also find the moment at A	5	CO1	L3
3	a	State and prove Parallelogram law of forces	5	CO1	L3
	b	Define i) Angle of friction ii) Angle of Repose	5	CO1	L3
	c	A square A B C D as forces acting at along its sides as shown in the **fig-3.** Find the value of P & Q, if the system reduces the couple. Also find the magnitude of the couple.	5	CO1	L3

4	a	Explain with sketch Cone friction	5	CO1	L3
	b	State and prove Lami'stheorem	5	CO1	L3
	c	Determine the reaction at contact points for spheres A & B as shown in fig Q 2(a).It is given that WA = 1200N, WB = 1500N, dA = 400mm, dB = 900mm	5	CO1	L3

b. Assignment -1

Model Assignment Questions							
Crs Code:	18CIV24	Sem:	II	Marks:	30	Time:	
Course:	Elements of Civil Engineering and Mechanics			Module : 1, 2			
Note: Each student to answer 2-3 assignments. Each assignment carries equal mark.							

SNo	Assignment Description	Marks	CO	Level
1	Discuss briefly the role of Civil Engineers in the infrastructure development of a country	5	CO1	L3
2	Differentiate between flexible and rigid pavement	5	CO1	L3
3	Bring out briefly scope of following specialization of civil engineering i) Environmental Engineering ii) Geotechnical Engineering	5	CO1	L3
4	Explain briefly the classification of roads.	5	CO1	L3
5	Define force. Explain the classification of force system	5	CO1	L3
6	Explain i)Principle of transmissibility of forces. ii)Principle of physical independence of forces	5	CO1	L3
7	Define couple. Explain characteristics of couple	5	CO1	L3
8	Bring out briefly scope of following specialization of civil engineering i) Structural Engineering i) Transportation Engineering	5	CO1	L3
9	A force of 630N is acting on a block as shown in the **fig-1**. Find the i)Horizontal & vertical components ii)Inclined to the plane and right angles to the plane	5	CO1	L3
10	Replace 1000N force at point A, which is acting at point B as shown in the **fig-2.** Also find the moment at A.	5	CO1	L3
11	A square A B C D as forces acting at along its sides as shown in the **fig-3.** Find the value of P & Q, if the system reduces the couple. Also find the magnitude of the couple.	5	CO1	L3
12	State and prove Parallelogram law of forces	5	CO1	L3
13	Explain different types of friction	5	CO1	L3
14	State and prove Lami'stheorem	5	CO2	L3
15	Define i) Angle of friction ii) Angle of Repose	5	CO2	L3
16	Define i) Equilibrant ii) Resultant force	5	CO2	L3
17	Define friction & Explain laws of static friction	5	CO2	L3
18	Explain with sketch Cone friction	5	CO2	L3
19	Determine the reaction at contact points for spheres A & B as shown in fig Q 2(a).It is given that WA = 1200N, WB = 1500N, dA = 400mm, dB = 900mm	5	CO2	L3

D2. TEACHING PLAN - 2

Module – 3

Title:		Appr Time:	10 Hrs
a	***Course Outcomes***	**CO**	**Blooms**
-	At the end of the topic the student should be able to . . .	-	**Level**
	compute the reactive force that develop as result of external load	CO3	L3
	calculate the trusses by method of joints and section	CO3	L3
b	***Course Schedule***		
Class No	**Portion covered per hour**	**-**	-
17	Support Reaction in beams Types of Loads and Supports, statically determinate beams	CO3	L3
18	Numerical problems on support reactions for statically determinate beams with Point load (Normal and inclined) and	CO3	L3
19	Numerical problems on uniformly distributed and uniformly varying loads and Moments.	CO3	L3
20	Numerical problems on uniformly distributed and uniformly varying loads and Moments.	CO3	L3
21	Types of trusses,	CO3	L3
22	analysis of statically determinate trusses using method of joints and method of section	CO3	L3
23	analysis of statically determinate trusses using method of joints and method of section	CO3	L3
24	analysis of statically determinate trusses using method of joints and method of section	CO3	L3
		CO3	L3
	Application Areas	CO3	L3
	Support reaction	CO3	L3
c	Analyzing the forces acting on trusses	CO3	-
-		CO3	L2
	Review Questions	CO3	
	Explain different types of statically determinate beams	CO3	
	Explain different types of statically indeterminate beams	CO3	L3
d	What is mean by support reaction	CO3	-
-	Explain different types of supports and loads in the analysis of beam	CO3	-
	Determine the reaction at the supports for the system as shown in fig	CO3	L3
	Find the support reaction for beam loaded as shown in fig	CO3	L3
	Define trusses	CO3	L3
	What are the assumption are made in analyzing the simple truss	CO3	L3
	Explain classification of trusses	CO3	L3
	Differentiate between method of joint and method of section	CO3	L3
	Analysis of statically determinate trusses using method of joints shown in fig	CO3	L3
e	**Experiences**	-	-
1		CO3	L2,L3
2			

Module – 4

Title:	Data Transmission and Telemetry Measurement of Non – Electrical Quantities	Appr Time:	10 Hrs
a	***Course Outcomes***	**CO**	**Blooms**
-	At the end of the topic the student should be able to . . .	-	**Level**
1	determine centroid of built up section	CO4	L3
2	Calculate M.I of full/quadrant circular section	CO4	
b	***Course Schedule***		
Class No	**Portion covered per hour**	**-**	**-**
25	Introduction to the concept, centroid of line and area, centroid of basic geometrical figures	CO4	L3
26	computing centroid for– T, L, I, Z and full/quadrant circular sections and their built up sections.	CO4	L3
27	computing centroid for– T, L, I, Z and full/quadrant circular sections and their built up sections.	CO4	L3
28	Numerical problems on centroid for– T, L, I, Z and full/quadrant circular sections and their built up sections.	CO4	L3
29	ntroduction to the concept, Radius of gyration, Parallel axis theorem, Perpendicular axis theorem,	CO4	L3
30	Moment of Inertia of basic planar figures, computing moment of Inertia for – T, L, I, Z and full/quadrant circular sections and their built up sections	CO4	L3
31	Moment of Inertia of basic planar figures, computing moment of Inertia for – T, L, I, Z and full/quadrant circular sections and their built up sections	CO4	L3
32	Moment of Inertia of basic planar figures, computing moment of Inertia for – T, L, I, Z and full/quadrant circular sections and their built up sections	CO4	L3
c	**Application Areas**	**-**	**-**
-	Students should be able employ / apply the Module learnings to . . .	-	-
	Calculating the area and center of gravity of geometric figures	CO4	L3
	Computing the radius of gyration of geometric figures	CO4	L3
d	**Review Questions**	-	-
-	The attainment of the module learning assessed through following questions	-	-
1	Define centroid	CO4	L3
2	Determine the centroid of quarter circle	CO4	L3
3	Determine the centroid of triangle by method of integration	CO4	L3
4	Determine the centroid of lamina as shown in fig	CO4	L3
5	Determine the centroid of semi circle by method of integration	CO4	L3
6	Define 2nd moment of force	CO4	L3
7	What is mean by radius of gyration and explain	CO4	L3
8	State and prove parallel axis theorem	CO4	L3
9	State and prove perdendicular axis theorem	CO4	L3
10	Determine the MI of semi circle by method of integration	CO4	L3
11	Determine the MI of lamina as shown in fig	CO4	L3
12	Determine the centroid of shaded part as shown in fig	CO4	L3
e	**Experiences**	-	-
1		CO4	L2
2			

E2. CIA EXAM – 2

a. Model Question Paper - 2

Crs Code:	18CIV24	Sem:	II	Marks:	30	Time	75 minutes

Course:		Elements of Civil Engineering and Mechanics			
-	-	**Note: Answer any 2 questions, each carry equal marks.**	**Marks**	**CO**	**Level**
1	a	Explain different types of supports and loads in the analysis of beam	5	CO4	L3
	b	Determine the reaction at the supports for the system as shown in fig	5	CO4	L3
2	a	Differentiate between method of joint and method of section	5	CO4	L3
	b	Analysis of statically determinate trusses using method of joints shown in fig	5	CO4	L3
3	a	Determine the centroid of quarter circle	5	CO4	L3
	b	Determine the centroid of lamina as shown in fig	5	CO4	L3
4	a	Determine the centroid of semi circle by method of integration	5	CO4	L3
	b	Determine the centroid of shaded part as shown in fig	5	CO4	L3

b. Assignment – 2

Model Assignment Questions							
Crs Code:	18CIV24	Sem:	II	Marks:	5	Time:	90 – 120 minutes
Course:	Elements of civil engineering and mechanics						

SNo	Assignment Description	Marks	CO	Level
1	Explain different types of statically indeterminate beams	**5**	**CO4**	**L3**
2	What is mean by support reaction	**5**	**CO4**	**L3**
3	Explain different types of supports and loads in the analysis of beam	**5**	**CO4**	**L3**
4	Determine the reaction at the supports for the system as shown in fig	**5**	**CO4**	**L3**
5	Find the support reaction for beam loaded as shown in fig	**5**	**CO4**	**L3**
6	Define trusses	**5**	**CO4**	**L3**
7	What are the assumption are made in analyzing the simple truss	**5**	**CO4**	**L3**
8	Explain classification of trusses	**5**	**CO4**	**L3**
9	Differentiate between method of joint and method of section	**5**	**CO4**	**L3**
10	Analysis of statically determinate trusses using method of joints shown in fig	**5**	**CO4**	**L3**
11	Define centroid	**5**	**CO4**	**L3**
12	Determine the centroid of quarter circle	**5**	**CO4**	**L3**
13	Determine the centroid of triangle by method of integration	**5**	**CO4**	**L3**
14	Determine the centroid of lamina as shown in fig	**5**	**CO4**	**L3**
15	Determine the centroid of semi circle by method of integration	**5**	**CO4**	**L3**
16	Define 2nd moment of force	**5**	**CO4**	**L3**
17	What is mean by radius of gyration and explain	**5**	**CO4**	**L3**
18	State and prove parallel axis theorem	**5**	**CO4**	**L3**
19	State and prove perdendicular axis theorem	**5**	**CO4**	**L3**
	Determine the MI of semi circle by method of integration	**5**	**CO4**	**L3**
	Determine the MI of lamina as shown in fig	**5**	**CO4**	**L3**
	Determine the centroid of shaded part as shown in fig	**5**	**CO4**	**L3**
	What are the assumption are made in analyzing the simple truss	**5**	**CO4**	**L3**

D3. TEACHING PLAN - 3

Module – 5

Title:	Loop and Horn Antenna and Antenna Types	Appr Time:	10 Hrs
a	***Course Outcomes***	**CO**	**Blooms**
-	At the end of the topic the student should be able to . . .	-	**Level**
1	illustrate relationship between motion of bodies		
2	describe relationship between plane motion and connected bodies		
b	***Course Schedule***	-	-
Class No	**Portion covered per hour**	**-**	**-**
33	illustrate relationship between motion of bodies	CO5	L3
34	describe relationship between plane motion and connected bodies	CO5	L3
35	illustrate relationship between motion of bodies	CO5	L3
36	describe relationship between plane motion and connected bodies	CO5	L3
37	illustrate relationship between motion of bodies	CO5	L3
38	describe relationship between plane motion and connected bodies	CO5	L3
39	illustrate relationship between motion of bodies	CO5	L3
40	describe relationship between plane motion and connected bodies	CO5	L3
c	**Application Areas**	**-**	**-**
-	Students should be able employ / apply the Module learnings to . . .	-	-
	Kinematics		
	Kinetics		
d	**Review Questions**	-	-
-	The attainment of the module learning assessed through following questions	-	-
1	Define i) displacement ii) speed iii) uniform velocity iv) average velocity	CO5	L3
2	State and explain Newtons law of motion	CO5	L3
3	Derive relationship between linear acceleration and angular acceleration	CO5	L3
4	Derive relationship between r.p.m and angular velocity	CO5	L3
5	A wheel is rotating about a fixed axis at 20 r.p.m is uniformly accelerated for 70 sec, during which time it makes 50 revolution. Determine I) angular velocity at the end of this interval and ii) time required for the speed to reach 110 rpm	CO5	L3
6	A burglar's car starts with an acceleratin of 2 m/sec2. A police van came after 10 sec and continued to chase the burglar's car with an uniform velocity of 40 m/sec. Find the time taken by the police van to overtake the burglar's car.	CO5	L3
7	Define: i) Instantaneous velocity ii) Uniform acceleration iii) Variable acceleration iv) Retardation	CO5	L3
8	What is a projectile? Define: i) Angle of projection ii) Horizontal Range iii) Vertical Height iv) Time of fligh	CO5	L3
9	State and explain D' Alemberts principle	CO5	L3
10	What is Banking (super elevation) and why it is provided?	CO5	L3
11	Define:i) Centrifugal Force ii) Centripetal force iii) Centripetal Acceleration	CO5	L3
12	Instantaneous velocity – Speed – Acceleration – Average acceleration	CO5	L3
13	Variable acceleration – Acceleration due to gravity – Newton's Laws of Motion.	CO5	L3
14	Variable acceleration – Acceleration due to gravity – Newton's Laws of Motion.	CO5	L3
e	**Experiences**	-	-
1		CO5	L2
2		CO5	

E3. CIA EXAM – 3

a. Model Question Paper - 3

Crs Code	18CIV14	Sem:	VII	Marks:	30	Time:	75 minutes		
Course:	Elements of Civil Engineering and Mechanics								
-	**-**	**Note: Answer all questions, each carry equal marks. Module : 5**					**Marks**	**CO**	**Level**
1	a	State and prove parallel axis theorem					5	CO5	L3
	b	Determine the MI of semi circle by method of integration					5	CO5	L3
2	a	Determine the MI of lamina as shown in fig					5	CO5	L3
	b	Determine the radius of gyration for the lamina as shown in fig					5	CO5	L3
3	a	Derive relationship between linear acceleration and angular acceleration					5	CO5	L3
	b	A burglar's car starts with an acceleratin of 2 m/sec2. A police van came after 10 sec and continued to chase the burglar's car with an uniform velocity of 40 m/sec. Find the time taken by the police van to overtake the burglar's car.					5	CO5	L3
		OR							
4	a	State and explain D' Alemberts principle					5	CO5	L3
	b	Define:i) Centrifugal Force ii) Centripetal force iii) Centripetal Acceleration					5	CO5	L3

b. Assignment – 3

Model Assignment Questions							
Crs Code:	18CIV24	Sem:	II	Marks:	5	Time:	90 – 120 minutes
Course:	Elements of Civil Engineering and Mechanics						
Note: Each student to answer 2-3 assignments. Each assignment carries equal mark.							

SNo	Assignment Description	Marks	CO	Level
1	Define: i) Displacement ii) Velocity iii) Acceleration iv) Speed v) Decelaration vi) Average velocity	**5**	**CO5**	L3
2	What is Banking (super elevation) and why it is provided?	**5**	**CO5**	L3
3	What is a projectile? Define: i) Angle of projection ii) Horizontal Range iii) Vertical Height iv) Time of flight	**5**	**CO5**	L3
4	Define:i) Centrifugal Force ii) Centripetal force iii) Centripetal Acceleration	**5**	**CO5**	L3
5	Define: i) Instantaneous velocity ii) Uniform acceleration iii) Variable acceleration iv) Retardation	**5**	**CO5**	L3
6	Define i) displacement ii) speed iii) uniform velocity iv) average velocity	**5**	**CO5**	L3
7	State and explain Newtons law of motion	**5**	**CO5**	L3
8	Derive relationship between linear acceleration and angular acceleration	**5**	**CO5**	L3
9	Derive relationship between r.p.m and angular velocity	**5**	**CO5**	L3
10	A wheel is rotating about a fixed axis at 20 r.p.m is uniformly accelerated for 70 sec, during which time it makes 50 revolution. Determine I) angular velocity at the end of this interval and ii) time required for the speed to reach 110 rpm	**5**	**CO5**	L3
11	A burglar's car starts with an acceleratin of 2 m/sec2. A police van came after 10 sec and continued to chase the burglar's car with an uniform velocity of 40 m/sec. Find the time taken by the police van to overtake the burglar's car.	**5**	**CO5**	L3
12	Define: i) Instantaneous velocity ii) Uniform acceleration iii) Variable acceleration iv) Retardation	**5**	**CO5**	L3

13	What is a projectile? Define: i) Angle of projection ii) Horizontal Range iii) Vertical Height iv) Time of fligh	**5**	**CO5**	L3
14	State and explain D' Alemberts principle	**5**	**CO5**	L3
15	A wheel is rotating about a fixed axis at 20 r.p.m is uniformly accelerated for 70 sec, during which time it makes 50 revolution. Determine I) angular velocity at the end of this interval and ii) time required for the speed to reach 110 rpm	**5**	**CO5**	L3
16	A burglar's car starts with an acceleratin of 2 m/sec2. A police van came after 10 sec and continued to chase the burglar's car with an uniform velocity of 40 m/sec. Find the time taken by the police van to overtake the burglar's car.	**5**	**CO5**	L3

F. EXAM PREPARATION

1. University Model Question Paper

Course:		SElements of Civil Engineering and Mechanics					Month / Year	May /2018	
Crs Code:		18CIV24	Sem:	II	Marks:	100	Time:	180 minutes	
Module		Answer all FIVE full questions. All questions carry equal marks.					**Marks**	**CO**	**Level**
1	a	Define couple. Explain characteristics of couple					6	CO1	L3
	b	Bring out briefly scope of following specialization of civil engineering i) Structural Engineering ii) Transportation Engineering					6	CO1	L3
	c	A force of 630N is acting on a block as shown in the **fig-1**. Find the i)Horizontal & vertical components ii)Inclined to the plane and right angles to the plane					8	CO1	L3
		OR							L3
	a	Define force. Explain the classification of force system					6	CO1	L3
	b	Explain i)Principle of transmissibility of forces. ii)Principle of physical independence of forces					6	CO1	L3
	c	Replace 1000N force at point A, which is acting at point B as shown in the **fig-2.** Also find the moment at A					8	CO1	L3
2	a	Explain with sketch Cone friction					6	CO2	L3
	b	State and prove Lami'stheorem					6	CO2	L3
	c	Determine the reaction at contact points for spheres A & B as shown in fig Q 2(a).It is given that WA = 1200N, WB = 1500N, dA = 400mm, dB = 900mm					8	CO2	L3
		OR							
	a	State and prove Parallelogram law of forces					6	CO2	L3
	b	Define i) Angle of friction ii) Angle of Repose					6	CO2	L3
	c	A square A B C D as forces acting at along its sides as shown in the **fig-4.** Find the value of P & Q, if the system reduces the couple. Also find the magnitude of the couple.					8	CO2	L3
3	a	Explain different types of supports and loads in the analysis of beam					7	CO3	L3
	b	Determine the reaction at the supports for the system as shown in **fig 5**					8	CO3	L3
		OR							
	a	Differentiate between method of joint and method of section					7	CO3	L3
	b	Analysis of statically determinate trusses using method of joints shown in **fig 6**					8	CO3	L3

4	a	Determine the centroid of semi circle by method of integration	6	CO4	L3
	b	State and prove parallel axis theorem	6	CO4	L3
	c	Determine the radius of gyration for the lamina as shown in **fig 7**	8	CO4	L3
		OR			
	a	Determine the MI of semi circle by method of integration	6	CO4	L3
	b	Determine the centroid of I section	6	CO4	L3
	c	Determine the centroid of shaded part as shown in **fig 8**	8	CO4	L3
5	a	State and explain D' Alemberts principle	6	CO5	L3
	b	What is a projectile? Define: i) Angle of projection ii) Horizontal Range iii) Vertical Height iv) Time of fligh	6	CO5	L3
	c	A burglar's car starts with an acceleratin of 2 m/sec2. A police van came after 10 sec and continued to chase the burglar's car with an uniform velocity of 40 m/sec. Find the time taken by the police van to overtake the burglar's car.	8	CO5	L3

2. SEE Important Questions

Course:	Elements of Civil Engineering and Mechanics					Month / Year	May /2018	
Crs Code:	18CIV24	Sem:	II	Marks:	100	Time:	180 minutes	
	Note	Answer all FIVE full questions. All questions carry equal marks.				-	-	
Module	Qno.	Important Question				**Marks**	**CO**	**Year**
1	1	Define couple. Explain characteristics of couple				6	CO1	
	2	Bring out briefly scope of following specialization of civil engineering i) Structural Engineering ii) Transportation Engineering				6	CO1	
	3	A force of 630N is acting on a block as shown in the **fig-1**. Find the i)Horizontal & vertical components ii)Inclined to the plane and right angles to the plane				8	CO1	
	4	Define force. Explain the classification of force system				6	CO1	
	5	Explain i)Principle of transmissibility of forces. ii)Principle of physical independence of forces				6	CO1	
2	1	Explain with sketch Cone friction				6	CO2	
	2	State and prove Lami'stheorem				6	CO2	
	3	State and prove Parallelogram law of forces				6	CO2	
	4	Define i) Angle of friction ii) Angle of Repose				6	CO2	
	5	A square A B C D as forces acting at along its sides as shown in the **fig-4.** Find the value of P & Q, if the system reduces the couple. Also find the magnitude of the couple.				8	CO2	
3	1	Explain different types of supports and loads in the analysis of beam				6	CO3	
	2	Determine the reaction at the supports for the system as shown in **fig 5**				8	CO3	
	3	Differentiate between method of joint and method of section				6	CO3	
	4	Analysis of statically determinate trusses using method of joints shown in **fig 6**				8	CO3	
4	1	Determine the centroid of semi circle by method of integration				6	CO4	
	2	State and prove parallel axis theorem				6	CO4	
	3	Determine the radius of gyration for the lamina as shown in **fig 7**				8	CO4	
	4	Determine the MI of semi circle by method of integration				6	CO4	

	5	Determine the centroid of I section	8	CO4	
5	1	State and explain D' Alemberts principle	6	CO5	
	2	What is a projectile? Define: i) Angle of projection ii) Horizontal Range iii) Vertical Height iv) Time of fligh	6	CO5	
	3	What is Banking (super elevation) and why it is provided?	6	CO5	
	4	Define:i) Centrifugal Force ii) Centripetal force iii) Centripetal Acceleration	6	CO5	
	5	A burglar's car starts with an acceleratin of 2 m/sec2. A police van came after 10 sec and continued to chase the burglar's car with an uniform velocity of 40 m/sec. Find the time taken by the police van to overtake the burglar's car.	8	CO5	

Course Outcome Computation

Academic Year:

Odd / Even semester

INTERNAL TEST	**T1**						**T2**						**T3**			
Course Outcome	**CO 1**		**CO 2**		**CO 3**		**CO 4**		**CO 5**		**CO 6**		**CO7**		**CO 8**	
QUESTION NO	**Q1**	**LV**	**Q2**	**LV**	**Q3**	**LV**	**Q1**	**LV**	**Q2**	**LV**	**Q3**	**LV**	**Q1**	**LV**	**Q2**	**LV**
MAX MARKS																
USN-1																
USN-2																
USN-3																
USN-4																
USN-5																
USN-6																
Average CO Attainment																

LV Threshold : 3:>60%, 2:>=50% and <=60%, 1: <=49%

CO1 Computation :(2+2+2+3)/4 = 10/4=2.5

PO Computation

Program Outcome	PO1	PO3	PO3	PO1	PO12	PO12	PO6	PO1
Weight of CO - PO								
Course Outcome	CO1	CO2	CO3	CO4	CO5	CO6	CO7	CO8
Test/Quiz/Lab	T1			T2			T3	
QUESTION NO	Q1	LV	Q2 LV	Q3 LV	Q1 LV	Q2 LV	Q3 LV	Q1 LV	Q2 LV
MAX MARKS								
USN-1								
USN-2								
USN-3								

USN-4
USN-5
USN-6
Average CO Attainment