RAJEEV INSTITUTE OF TECHNOLOGY

HASSAN-573201, KARNATAKA
(Affiliated to VTU, Belagavi., Approved by AICTE New Delhi.)
Department of Mechanical Engineering

COURSE MODULES OF THE SUBJECT TAUGHT FOR THE SESSION
June 2023-September 2023

Course Syllabus with CO's

Faculty Name: **Rajashekhar G Sannamani** Academic Year: **2022 - 2023**							
Department: **Mechanical Engineering**							
Course Code	Course Title	Core/ Elective	Prerequisite	Contact Hours			Total Hrs/ Sessions
				L	T	P	
BCEDK203	Computer Aided Engineering Drawing	Core (Inter Disciplinary)	Basic Geometry	**2**	**-**	**2**	**40**
Objectives	**Course Learning Objective:** **The course will enable the students to:** CLO1: To understand the basic principles and conventions of engineering drawing CLO2: To use drawing as a communication mode CLO3: To generate pictorial views using CAD software CLO4: To understand the development of surfaces CLO5: To visualize engineering components						
Pedagogy (General Instruction)	Students should be made to aware of powerful communication tool – Drawing. Simple Case studies can be suitably selected by the teacher for hands on practice to induce the feel of fruitfulness of learning. Appropriate Models, Charts, Videos, shall be used to enhance visualization before hands on practice.						
Topics Covered as per Syllabus							

MODULE-1	**8 HOURS**

Introduction: for CIE only

Significance of Engineering drawing, BIS Conventions of Engineering Drawing, Free hand sketching of engineering drawing, Scales.

Introduction to Computer Aided Drafting software, Co-ordinate system and reference planes HP, VP, RPP & LPP of 2D/3D environment. Selection of drawing sheet size and scale. Commands and creation of Lines, coordinate points, axes, polylines, square, rectangle, polygons, splines, circles, ellipse, text, move, copy, off-set, mirror, rotate, trim, extend, break, chamfer, fillet and curves.

Orthographic Projections of Points, Lines and Planes:

Introduction to Orthographic projections, Orthographic projections of points in all the quadrants. Orthographic projections of lines. (Placed in First quadrant only)

Orthographic projections of planes viz triangle, square, rectangle, pentagon, hexagon and circular laminae. (Placed in First quadrant only).

Application on projections of Lines & Planes (For CIE only)

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MODULE-2	8 HOURS

Orthographic Projection of Solids:
Orthographic projection of right regular solids (Solids Resting on HP only);
Prisms & Pyramids (triangle, square, rectangle, pentagon, hexagon), Cylinders, Cones, Cubes, &Tetrahedron. Application problems on projection of solids.

MODULE-3	8 HOURS

Isometric Projections:
Isometric scale, Isometric projection of hexahedron (cube), right regular prisms, pyramids, cylinders, cones and spheres. Isometric projection of combination of two simple solids.
Conversion of simple isometric drawings into orthographic views.
Problems on applications of Isometric projections of simple objects / engineering components.

MODULE-4	8 HOURS

Development of Lateral Surfaces of Solids:

Development of lateral surfaces of right regular prisms, cylinders, pyramids, and cones resting with base on HP only. Development of their frustums and truncations.

Problems on applications of development of lateral surfaces like, funnels and trays.

Problems on applications of development of lateral surfaces of transition pieces connecting circular duct and rectangular duct (For CIE Only)

MODULE-5	8 HOURS

Multidisciplinary Applications & Practice (For CIE Only):

Free hand Sketching; True free hand, Guided Free hand, Roads, Buildings, Utensils, Hand tools & Furniture's etc

Drawing Simple Mechanisms; Bicycles, Tricycles, Gear trains, Ratchets, two-wheeler cart & Four- wheeler carts to dimensions etc

Electric Wiring and lighting diagrams; Like, Automatic fire alarm, Call bell system, UPS system, Basic power distribution system using suitable software

Basic Building Drawing; Like, Architectural floor plan, basic foundation drawing, steel structures- Frames, bridges, trusses using Auto CAD or suitable software,

Electronics Engineering Drawings- Like, Simple Electronics Circuit Drawings.

Graphs & Charts: Like Column chart, Pie chart, Line charts, Gantt charts, etc. using Microsoft Excel or any suitable software.

List of Text Books

1) Bhatt, N.D., Engineering Drawing: Plane and Solid Geometry, 53rd edition, Charotar Publishing House Pvt. Limited, 2019.

2) Engineering Graphics – K R Gopalakrishna, 32nd edition, 2005 – Subash Publishers Bangalore.

List of Reference Books

1. **Computer Aided Engineering Drawing** by Dr. M H Annaiah, Dr C N Chandrappa and Dr B Sudheer Premkumar Fifth edition, New Age International Publishers.
2. Luzadder Warren J., Duff John M., **Fundamentals of Engineering Drawing: with an Introduction to Interactive Computer Graphics for Design and Production**, Prentice-Hall of India Pvt. Ltd.,New Delhi, Eastern Economy Edition, 2005.
3. Dhawan R. K., **A Textbook of Engineering Drawing**, 3/e, S. Chand Publishing, 2019.
4. Venugopal K., **Engineering Drawing and Graphics**, New Age International publishers, 2014.
5. Parthasarathy N. S., Vela Murali, **Engineering Drawing**, Oxford University Press, 2015.Bhattacharya S. K., Electrical Engineering Drawing, New Age International publishers,

second edition 1998, reprint 2005. Chris Schroder, **Printed Circuit Board Design using AutoCAD**, Newnes, 1997.	

List of URLs, Text Books, Notes, Multimedia Content, etc

Video Demonstration of Different types of automation and Mechanisms:
1. **Engineering Graphics Manual Sketching Practice Videos:**
https://youtube.com/playlist?list=PL_MG9eHBPyZ5mQ7F2bQi5nJ
YguMcdK7No

Course Outcomes	At the end of the course the student will be able to: CO 1. Draw and communicate the objects with definite shape and dimensions CO 2. Recognize and Draw the shape and size of objects through different views CO 3. Develop the lateral surfaces of the object CO 4. Create a Drawing views using CAD software. CO5. Identify the interdisciplinary engineering components or systems through its graphical representation.

Assessment Details (both CIE and SEE)

Continuous Internal Evaluation (CIE)
- CIE shall be evaluated for max marks 100. Marks obtained shall be accounted for CIE final marks, reducing it by 50%.
- CIE component should comprise of
- Continuous evaluation of Drawing work of students as and when the Modules are covered on the basis of below detailed weightage.
- At least one closed book Test covering all the modules on the basis of below detailed weightage. Weightage for Test and Continuous evaluation shall be suitably decided by respective course coordinators.

Module	Max. Marks Weightage	Evaluation Weightage in Marks	
		Computer Display & Print out (a)	**Preparatory Sketchin g (b)**
Module-1	15	10	05
Module-2	20	15	05
Module-3	20	20	00
Module-4	20	20	00
Module-5	25	15	10
Total	**100**	**80**	**20**
Consideration of CIE Marks	Total of (a)+ (b) ÷ 2= Final CIE Marks		

Semester End Examination (SEE)
- SEE shall be conducted and evaluated for maximum marks 100. Marks obtained shall be accounted for SEE final marks, reducing it by 50%
- Question paper shall be set jointly by both Internal and External Examiner and made available for each batch as per schedule. **Questions are to be set preferably from Text Books.**
- Evaluation shall be carried jointly by both the examiners.
- Scheme of Evaluation: To be defined by the examiners jointly and the same shall be submitted to the university along with question paper.
- One full question shall be set from each of the Module from Modules 1,2,3,4 as

per the below tabled weightage details. **However, the student may be awarded full marks, if he/she completes solution on computer display without sketch.**

The Correlation of Course Outcomes (CO's) and Program Outcomes (PO's)

Subject Code: BCEDK103	TITLE: Computer Aided Engineering Drawing							Faculty: Mr. Vinay L			
List of Course Outcomes	**Program Outcomes**										
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO-1	3	2		-	3	1	-	1	1	3	-	2
CO-2	3	2		-	3	1	-	1	1	3	-	2
CO-3	3	2		-	3	1	-	1	1	3	-	2
CO-4	3	3			3	1	1		1	3		1
CO-5	3	2			3				1	3		2

Note: 3 = Strong Contribution 2 = Average Contribution 1 = Weak Contribution - = No Contribution