
	<b>SRI VIDYA COLLEGE OF ENGINEERING &amp; TECHNOLOGY</b> <b><u>COURSE PLAN</u></b>	
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**DEPARTMENT OF MECHANICAL ENGINEERING**

ACADEMIC YEAR: 2018-19

Subject Code	<b>ME6501</b>	<b>L</b>	<b>P</b>	<b>T</b>	<b>C</b>
Subject Title	<b>COMPUTER AIDED DESIGN</b>	3	0	0	3
Year / Dept / Sem/sec	III / Mechanical / V/A&B	Regulation Year		2013	
Faculty Name / Desg / Dept	Mr.P.Anandakumar, Asst.Prof. / Mechanical				
Course Prerequisite	Basic knowledge about raster screen and graphics.				
Course Objectives (CO)	<p><b>CO1:</b> Explain fundamental concepts within computer graphics such as geometrical transformations, illumination models, surfaces, solids and rendering.</p> <p><b>CO2:</b> Explain the ideas in some fundamental algorithms for computer graphics.</p> <p><b>CO3:</b> Demonstrate the concept of geometric dimension and tolerance.</p> <p><b>CO4:</b> Overview of how computers are being used in mechanical component design</p>				
Expected Course Outcome (ECO)	<p>At the end of the course, the students should be able to:</p> <p><b>ECO1:</b> Knowledge of the principle of computer graphics.</p> <p><b>ECO2:</b> Understand the interactive computer graphics standards.</p> <p><b>ECO3:</b> Enhance their perspective of modern computer system with modelling, analysis and interpretation of 2D and 3D visual information.</p> <p><b>ECO4:</b> Differentiate the most common modeling approaches.</p>				
Programme Educational Objective (PEO)	<p><b>PEO1:</b> The graduates of mechanical engineering would develop continual receptiveness for scientific and engineering knowledge by learning and face the arriving challenges in their field.</p> <p><b>PEO2:</b> The graduates of mechanical engineering would have been trained with a range of analytically integrate the fundamentals</p> <p><b>PEO3:</b> The graduates of mechanical engineering would excel in communication and interpersonal skills as professional engineers</p>				

Mapping of CO & PEO												
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1												
CO2												
CO3												
<b>Bridging the Curriculum Gap</b> (Additional Topics beyond syllabus / Seminars / Assignments)	<b>BCG1:</b> To know the basic knowledge about computer graphics like (rotation, rendering & coloring) using molding software. <b>BCG2:</b> Make a three dimensional model make using modeling software and transfer different and explain.											
Related Website URLs	<b>W1:</b> www.mastercam.com <b>W2:</b> www.aimusa.org											
Related Video Course Materials	<b>V1:</b> NPTEL-computer aided drafting. <b>V2:</b> NPTEL-computer graphics.											
Text books	<b>T1:</b> Ibrahim Zeid “Mastering CAD CAM” Tata McGraw-Hill Publishing Co.2007											
Reference Books	<b>R1:</b> Chris McMahan and Jimmie Browne “CAD/CAM Principles”, "Practice and Manufacturing management “ Second Edition, Pearson Education, 1999. <b>R2:</b> William M Neumann and Robert F.Sproul “Principles of Computer Graphics”, McGraw Hill Book Co. Singapore, 1989. <b>R3:</b> Donald Hearn and M. Pauline Baker “Computer Graphics”. Prentice Hall, Inc, 1992. <b>R4:</b> Foley, Wan Dam, Feiner and Hughes - "Computer graphics principles & practice" Pearson Education - 2003.											

S.No	Topic Name	Book	Page no	Mode of delivery	No of hrs	Cumulative hrs
<b>UNIT I - FUNDAMENTALS OF COMPUTER GRAPHICS</b>						
1.	Product cycle- Design process	T1	5	BB	2	2
2.	sequential and concurrent engineering	T1	765	BB	1	3
3.	Computer aided design – CAD system architecture	T1	8-10	BB	1	4
4.	Computer graphics – co-ordinate systems- 2D and 3D transformations homogeneous Coordinates	T1	461-480	BB	3	7
5.	Line drawing -Clipping- viewing transformation	T1	331-342	BB	2	9

<b>UNIT II - GEOMETRIC MODELING</b>						
<b>1.</b>	Representation of curves	<b>T1</b>	<b>151</b>	<b>BB</b>	<b>1</b>	<b>10</b>
<b>2.</b>	Hermite curve- Bezier curve, B-spline curves-rational curves	<b>T1</b>	<b>198-206</b>	<b>BB</b>	<b>2</b>	<b>12</b>
<b>3.</b>	Techniques for surface modeling	<b>T1</b>	<b>345</b>	<b>BB</b>	<b>1</b>	<b>13</b>
<b>4.</b>	surface patch- Coons and bicubic patches- Bezier and B-spline surfaces.	<b>T1</b>	<b>353-355</b>	<b>BB</b>	<b>3</b>	<b>16</b>
<b>5.</b>	Solid modeling techniques- CSG and B-rep	<b>T1</b>	<b>375-378</b>	<b>BB</b>	<b>2</b>	<b>18</b>
<b>UNIT III - VISUAL REALISM</b>						
<b>1.</b>	Hidden Line removal algorithms	<b>T1</b>	<b>505-522</b>	<b>BB</b>	<b>2</b>	<b>20</b>
<b>2.</b>	Hidden Surface removal algorithms	<b>T1</b>	<b>523-524</b>	<b>BB</b>	<b>2</b>	<b>22</b>
<b>3.</b>	Hidden Solid removal algorithms	<b>T1</b>	<b>525-534</b>	<b>BB</b>	<b>2</b>	<b>24</b>
<b>4.</b>	shading – colouring	<b>T1</b>	<b>536-550</b>	<b>BB</b>	<b>2</b>	<b>26</b>
<b>5.</b>	computer animation	<b>T1</b>		<b>BB</b>	<b>1</b>	<b>27</b>
<b>UNIT IV - ASSEMBLY OF PARTS</b>						
<b>1.</b>	Assembly modeling	<b>T1</b>	<b>617</b>	<b>BB</b>	<b>1</b>	<b>28</b>
<b>2.</b>	interferences of positions and orientation	<b>T1</b>	<b>618-619</b>	<b>BB</b>	<b>2</b>	<b>30</b>
<b>3.</b>	tolerance analysis-mass property calculations	<b>T1</b>	<b>620-622</b>	<b>BB</b>	<b>2</b>	<b>32</b>
<b>4.</b>	tolerance analysis	<b>T1</b>	<b>643-644</b>	<b>BB</b>	<b>1</b>	<b>33</b>
<b>5.</b>	mechanism simulation and interference checking	<b>T1</b>	<b>655-660</b>	<b>BB</b>	<b>3</b>	<b>36</b>
<b>UNIT V - CAD STANDARDS</b>						
<b>1.</b>	Standards for computer graphics	<b>T1</b>	<b>737</b>	<b>BB</b>	<b>2</b>	<b>38</b>
<b>2.</b>	Graphical Kernel System (GKS)	<b>T1</b>	<b>734</b>	<b>BB</b>	<b>1</b>	<b>39</b>
<b>3.</b>	standards for exchange images- Open Graphics Library (OpenGL)	<b>T1</b>	<b>735-739</b>	<b>BB</b>	<b>2</b>	<b>41</b>
<b>4.</b>	Data exchange standards - IGES, STEP, CALS etc.	<b>T1</b>	<b>740-747</b>	<b>BB</b>	<b>2</b>	<b>43</b>
<b>5.</b>	communication standards	<b>T1</b>	<b>748-750</b>	<b>BB</b>	<b>2</b>	<b>45</b>

	<i>Prepared by</i>	<i>Approved by</i>
Signature		
Name	Mr.P.Anandakumar	Dr.G.Baskaran
Designation	Assistant Professor / MECH	Professor & HOD (MECH)
Signed date		