



SSM INSTITUTE OF ENGINEERING AND TECHNOLOGY

Dindigul- Palani Highway, Dindigul - 624 002.

Department of Mechanical Engineering

From,

Dr.M.Sabareeswaran ,

Associate Professor,

SSM Institute of Engineering and Technology,

Dindigul

To

The Principal,

SSM Institute of Engineering and Technology,

Dindigul

Respected Sir,

Sub: Proposal for conducting value added course "Cad Modeling in Industrial Applications" for fourth year mechanical students-Reg

It is planned to conduct the training program on "Cad Modeling in Industrial Applications" for IV year Mechanical students from 11.09.2018 to 28.09.2018 between 5.00 PM and 6.00 PM. We assure that this will be very useful for the students to enhance their knowledge in the field of robotics.

Your approval is requested to conduct this program.

Thanking you

Course Coordinator

HoD/Mech.Engg

Principal



SSM INSTITUTE OF ENGINEERING AND TECHNOLOGY *

Dindigul- Palani Highway, Dindigul – 624 002.

Department of Mechanical Engineering

11.09.2018

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Course Coordinator

HoD/Mech.Engg

Principal



SSM INSTITUTE OF ENGINEERING AND TECHNOLOGY

Dindigul- Palani Highway, Dindigul – 624 002.

Department of Mechanical Engineering

11.09.2018

Syllabus

“Cad Modeling in Industrial Applications”

Course Title: CAD Modeling in Industrial Applications (2018)

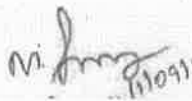
Instructor: Dr.M.Sabareeswaran


Course Description:

This course provides an in-depth exploration of Computer-Aided Design (CAD) modeling techniques as applied to industrial applications. Students will gain hands-on experience with industry-standard CAD software and learn to create 3D models for various industrial purposes.

S.No	Cumulative Sessions	Topics Covered
1	1-2	<ul style="list-style-type: none">• Introduction to CAD and Industrial Design• Overview of CAD software• Understanding the role of CAD in industrial design• Introduction to industry standards and best practices
2	3-4	<ul style="list-style-type: none">• Fundamentals of 2D Sketching and Constraints• Basic 2D sketching techniques• Applying constraints and dimensions• Sketch editing and modification
3	5-6	<ul style="list-style-type: none">• Introduction to 3D Modeling• Transition from 2D to 3D modeling• Extrusions, revolutions, and sweeps• Creating basic 3D shapes
4	7-8	<ul style="list-style-type: none">• Advanced 3D Modeling Techniques• Boolean operations• Lofting and sweeping in 3D• Introduction to parametric modeling
5	9-10	<ul style="list-style-type: none">• Assemblies and Component Modeling• Building assemblies• Managing and organizing components• Exploded views and animations
6	11-12	<ul style="list-style-type: none">• Surface Modeling• Creating and editing complex surfaces

		<ul style="list-style-type: none"> • Blending and filleting surfaces • Surface analysis and quality control
7	13-14	<ul style="list-style-type: none"> • Simulation and Analysis • Finite Element Analysis (FEA) basics • Stress analysis and simulation • Optimization of designs
8	15-16	<ul style="list-style-type: none"> • Final Project and Presentations • Applying learned skills to an industrial design project • Presentation of final projects and peer review • Recap and discussion on future trends in CAD for industrial applications


Course Coordinator


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Department of Mechanical Engineering

11.09.2018

Student Name List

S.No	Reg.No	Name of the Student	S.No	Reg.No	Name of the Student
1	922115114002	ABHISHEK S	35	922115114310	PARTHASARATHY S
2	922115114006	AMJATH KAHN M	36	922115114311	PRABU KUMAR M
3	922115114007	ARUN KUMAR T	37	922115114313	RAVIKIRAN B
4	922115114011	BABU D	38	922115114316	SURESH S
5	922115114012	BALAGURU K	39	922115114318	TAMIL MANI A
6	922115114018	DINESH KUMAR M	40	922115114703	MOTHILAL SANJAY
7	922115114021	GANESH KUMAR P			
8	922115114027	HENRY IMMANUVEL D			
9	922115114034	KARTHIKEYAN A			
10	922115114053	NAVANEETHAN B S			
11	922115114057	NIRMAL KUMAR R			
12	922115114060	PARTHASARATHI R			
13	922115114061	PARTHIBAN B			
14	922115114065	PRAKANTH Y			
15	922115114075	RAMAKRISHNAN S			
16	922115114078	RAM KUMAR SABARI V			
17	922115114093	SIVAKUMAR C			
18	922115114094	SIVARANJAN R			
19	922115114100	SURYA M			
20	922115114103	THIRUMALAI SAMY M			
21	922115114104	THIRUMURUGAN M			
22	922115114107	VENGATESWARAN M			
23	922115114109	VENKATESWARAN S			
24	922115114110	VIGNESH M			
25	922115114113	VIJAYA PRASATH N			
26	922115114114	VIJAYA VIGNESWARAN			
27	922115114116	VISHNU SURYA			
28	922115114117	VISWANATH S			
29	922115114118	YUVARAJ K			
30	922115114301	AJITH KUMAR T S			
31	922115114302	ANAND A			
32	922115114305	DAVID XAVIER S			
33	922115114307	KHADAR ARAPATHI			
34	922115114308	MAHENDRAN T			


Course Coordinator


HoD/Mech.Engg


Principal

Report with Photos

Introduction:

The year 2018 marked a significant milestone in the realm of industrial applications, particularly in the field of Computer-Aided Design (CAD) modeling. This report provides an enriched overview of the advancements, applications, and impact of CAD modeling within the industrial landscape during this pivotal year.

Key Highlights:

Technological Advancements:

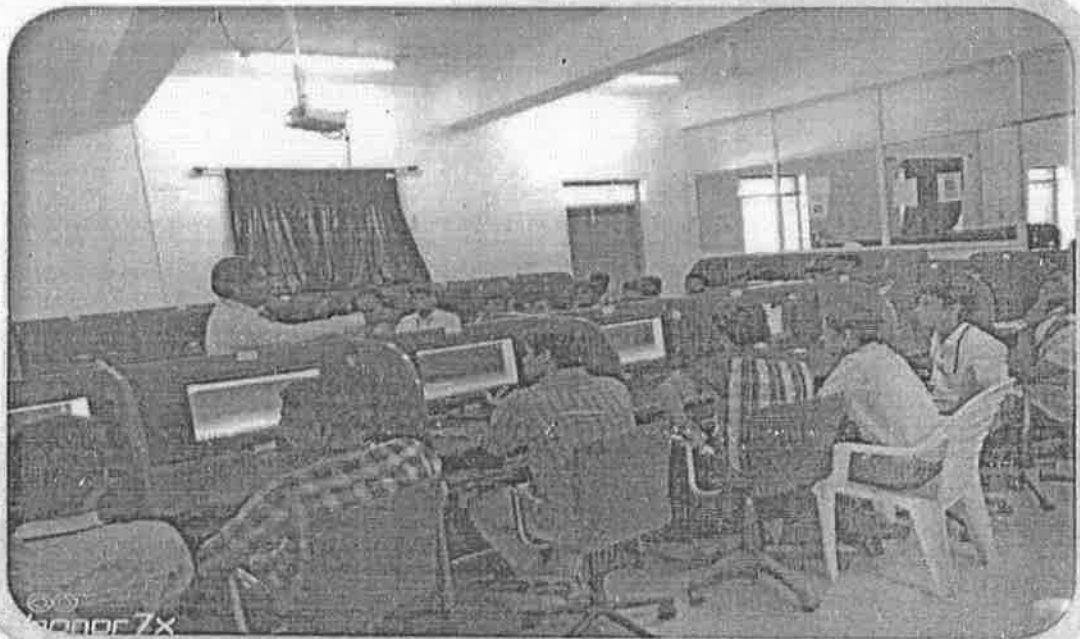
The year 2018 witnessed remarkable strides in CAD technology, with the introduction of cutting-edge features such as real-time rendering, advanced simulation capabilities, and enhanced collaboration tools. These innovations not only streamlined the design process but also elevated the quality of industrial models.

Integration with Industry 4.0:

CAD modeling played a pivotal role in the integration of Industry 4.0 principles. The seamless connection between CAD systems and smart manufacturing processes enabled a more agile and responsive industrial ecosystem. This integration facilitated data-driven decision-making, predictive maintenance, and improved overall efficiency.

Application Diversity:

CAD modeling found applications across a diverse range of industries, including automotive, aerospace, manufacturing, and architecture. The ability to create intricate and precise 3D models proved instrumental in prototyping, product development, and the optimization of manufacturing processes.



SSM INSTITUTE OF ENGINEERING AND TECHNOLOGY
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DEPARTMENT OF MECHANICAL ENGINEERING

Assessment Mark Statement on CAD Modeling in Industrial Applications

S.No.	Univ Reg. No.	Name of the Student	Initial	Marks(100)
1	922115114002	ABHISHEK S	S	80
2	922115114006	AMATH KAHN M	M	90
3	922115114007	ARUN KUMAR T	T	80
4	922115114011	BABU D	D	85
5	922115114012	BALAGURU K	K	90
6	922115114018	DINESH KUMAR M	M	80
7	922115114021	GANESH KUMAR P	P	100
8	922115114027	HENRYIMMANUEL D	D	80
9	922115114034	KARTHIKEYAN A	A	90
10	922115114053	Navaneethan	B.S	85
11	922115114057	Nirmal Kumar	R	90
12	922115114060	Parthasarathi	R	80
13	922115114061	Parthiban	B	70
14	922115114065	Prakanth	Y	85
15	922115114075	Ramakrishnan	S	80
16	922115114078	Ram Kumar Sabari	V	90
17	922115114093	Sivakumar	C	85
18	922115114094	Sivaranjan	R	100
19	922115114100	SURYA	M	85
20	922115114103	THIRUMALAISAMY	M	80
21	922115114104	THIRUMURUGAN	M	80
22	922115114107	VENKATESWARAN	M	70
23	922115114109	VENKATESWARAN	S	75
24	922115114110	VIGNESH	M	85
25	922115114113	VUAYA PRASATH	N	75
26	922115114114	VUAYA VIGNESWARAN	A	90
27	922115114116	VISHNU SURYA PRAKASH	S	80
28	922115114117	VISWANATH	S	100
29	922115114118	YUVARAJ	K	90
30	922115114301	AJITH KUMAR	TS	85
31	922115114302	ANAND	A	75
32	922115114305	DAVID XAVIER	S	80
33	922115114307	KHADAR ARAFATH	I	90
34	922115114308	MAHENDRAN	T	85
35	922115114310	PARTHASARATHY	S	80
36	922115114311	PRABU KUMAR	M	70
37	922115114313	RAVIKIRAN	B	90
38	922115114316	SURESH	S	100
39	922115114518	TAMIL MANI	A	85
40	922115114703	Motilal Sanjay	E	90

[Signature]
Faculty Incharge

[Signature]
HOD / MECN. ENGE



SSM INSTITUTE OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF MECHANICAL ENGINEERING

Attendance Statement on CAD Modeling in Industrial Applications

S.No.	Univ. Reg. No.	Name of the Student	Initial	11.09.2018	12.09.2018	14.09.2018	15.09.2018	17.09.2018	18.09.2018	19.09.2018	20.09.2018	22.09.2018	24.09.2018	25.09.2018	26.09.2018	28.09.2018
1	922115114002	ABHISHEK S	S	P	P	P	P	P	P	P	P	P	P	P	P	P
2	922115114006	AMJATH KAHN M	M	P	P	P	P	P	P	P	P	P	P	P	P	P
3	922115114007	ARUN KUMAR T	T	P	P	P	P	P	P	P	P	P	P	P	P	P
4	922115114011	BABU D	D	P	P	P	P	P	P	P	P	P	P	P	P	P
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6	922115114018	DINESH KUMAR M	M	P	P	P	P	P	P	P	P	P	P	P	P	P
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11	922115114057	Nirmal Kumar	R	P	P	P	P	P	P	P	P	P	P	P	P	P
12	922115114060	Parthasarathi	R	P	P	P	P	P	P	P	P	P	P	P	P	P
13	922115114061	Parthiban	B	P	P	P	P	P	P	P	P	P	P	P	P	P
14	922115114065	Prakanth	Y	P	P	P	P	P	P	P	P	P	P	P	P	P
15	922115114075	Ramakrishnan	S	A	P	P	P	P	P	P	P	P	P	P	P	P
16	922115114078	Ram Kumar Sabari	V	P	P	P	P	P	P	P	P	P	P	P	P	P
17	922115114093	Sivakumar	C	P	P	P	P	P	P	P	P	P	P	P	P	P
18	922115114094	Sivaranjan	R	P	P	P	P	P	P	P	P	P	P	P	P	P
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38	922115114316	SURESH	A	P	P	P	P	P	P	P	P	P	P	P	P	P
39	922115114318	TAMIL MANI	S	P	P	P	P	P	P	P	P	P	P	P	P	P
40	922115114703	Motilal Sanjay	E	P	P	P	P	P	P	P	P	P	P	P	P	P

N. Jay
Faculty Incharge

h.s.

HoD/Mech.Engg

Principal

Assessment test "Cad Modeling in Industrial Applications"

Title of the Value Added Course	CAD Modeling in Industrial Applications
Course Instructor	Dr.M.Sabareeswaran
Name of the Student	S. ABHISHEK
Register number of the Student	922115114002

Question 1:

Which of the following is a primary advantage of using Computer-Aided Design (CAD) in industrial applications?

- ☒ a) Increased production cost
- b) Reduced design flexibility
- c) Improved design accuracy
- d) Slower product development

Question 2:

What does CAD stand for in the context of industrial applications?

- a) Centralized Automation Design
- ☒ b) Computer-Aided Design
- c) Creative Algorithmic Development
- d) Control and Analysis of Designs

Question 3:

Which CAD modeling technique is commonly used for creating 3D representations of objects?

- a) 2D Sketching
- b) Wireframe modeling
- ☒ c) Parametric modeling
- d) Isometric projection

Question 4:

What is the purpose of the extrusion feature in CAD modeling?

- a) To add material to an existing object
- b) To remove material from an existing object

- ✓ c) To create a 3D object by pushing or pulling a 2D sketch
- d) To change the color of an object

Question 5:

Which file format is commonly used for exchanging CAD models between different software applications?

- a) PDF
- b) JPEG
- ✓ c) STL
- d) TXT

Question 6:

In CAD modeling, what does the term "assembly" refer to?

- a) A group of designers working together
- b) A collection of 2D sketches
- ✓ c) A combination of multiple 3D parts or components
- d) The process of creating parametric models

Question 7:

What is the significance of parametric modeling in CAD?

- a) It allows for the creation of artistic designs
- ✓ b) It enables the use of mathematical equations to define object properties
- c) It focuses on 2D representations only
- d) It is mainly used for animation purposes

Question 8:

Which CAD tool is known for its parametric modeling capabilities and is widely used in industrial design?

- a) AutoCAD
- ✓ b) SolidWorks
- c) Rhino
- d) Blender

Question 9:

What role does CAD play in the prototyping phase of product development?

- a) It is not involved in prototyping
- b) It helps create physical models directly
- ✓ c) It allows for virtual testing and visualization before physical prototyping
- d) It only generates 2D drawings for prototypes

Question 10:

Which of the following is a benefit of using CAD in collaborative design?

- a) Limited access to design files
- b) Difficulty in version control
- ✓ c) Enhanced communication among team members
- d) Slow data transfer between team members

Question 11:

Which CAD modeling approach is based on defining geometric constraints and relationships between objects?

- a) Direct modeling
- ✓ b) Constraint-based modeling
- c) Surface modeling
- d) Mesh modeling

Question 12:

What is the purpose of rendering in CAD?

- ✓ a) To simplify complex models
- b) To create 2D drawings
- c) To generate realistic images of 3D models
- d) To analyze stress and strain in designs

Question 13:

Which of the following is a disadvantage of using CAD in industrial applications?

- a) Increased design iteration speed
- b) Lack of precision in modeling
- ✓ c) Difficulty in learning and using CAD software
- d) Limited support for parametric modeling

Question 14:

What does the term "BOM" stand for in the context of CAD and industrial applications?

- ☒ a) Best Order Management
- b) Bill of Materials
- c) Basic Object Modeling
- d) Binary Output Module

Question 15:

What role does CAD play in the field of Computer-Aided Engineering (CAE)?

- a) It is not related to CAE
- b) It is used for documentation purposes only
- ☒ c) It assists in simulating and analyzing designs
- d) It focuses solely on 2D modeling

Question 16:

Which CAD feature allows designers to quickly make changes to a model without rebuilding it?

- ☒ a) Direct modeling
- b) Parametric modeling
- c) Assembly modeling
- d) Surface modeling

Question 17:

What is the purpose of CAM (Computer-Aided Manufacturing) in the context of CAD?

- a) To create realistic renderings of designs
- b) To analyze stress and strain in designs
- ☒ c) To generate toolpaths for machining operations
- d) To organize design files in a collaborative environment

Question 18:

In CAD, what does the term "fillet" refer to?

- a) A type of 3D printer
- b) A rounded interior corner of an object
- c) The process of removing material from a model
- ☒ d) A tool used for 2D sketching

Question 19:

Which CAD modeling technique is suitable for creating complex, organic shapes?

- a) Wireframe modeling
- b) Parametric modeling
- ✓ c) Surface modeling
- d) Assembly modeling

Question 20:

What is the significance of version control in CAD?

- a) It helps in creating multiple copies of a design file
- b) It ensures that only one person can work on a design at a time
- ✓ c) It keeps track of changes made to a design and allows for easy collaboration
- d) It restricts access to CAD software updates

S. Hishar



mbz

Assessment test "Cad Modeling in Industrial Applications"

Title of the Value Added Course	CAD Modeling in Industrial Applications
Course Instructor	Dr.M.Sabareeswaran
Name of the Student	GIANESH KUMAR P
Register number of the Student	922115114021

Question 1:

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- d) It restricts access to CAD software updates



Handwritten signature in red ink.

Handwritten signature in blue ink: P. Ganesan

Assessment test "Cad Modeling in Industrial Applications"

Title of the Value Added Course	CAD Modeling in Industrial Applications
Course Instructor	Dr.M.Sabareeswaran
Name of the Student	R. NIRMAL KUMAR
Register number of the Student	922115114057

Question 1:

Which of the following is a primary advantage of using Computer-Aided Design (CAD) in industrial applications?

- ☒ a) Increased production cost
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Question 3:

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- a) 2D Sketching
- b) Wireframe modeling
- ☒ c) Parametric modeling
- d) Isometric projection

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- d) To change the color of an object

Question 5:

Which file format is commonly used for exchanging CAD models between different software applications?

- a) PDF
- b) JPEG
- ✓ c) STL
- d) TXT

Question 6:

In CAD modeling, what does the term "assembly" refer to?

- a) A group of designers working together
- b) A collection of 2D sketches
- ✓ c) A combination of multiple 3D parts or components
- d) The process of creating parametric models

Question 7:

What is the significance of parametric modeling in CAD?

- a) It allows for the creation of artistic designs
- ✓ b) It enables the use of mathematical equations to define object properties
- c) It focuses on 2D representations only
- d) It is mainly used for animation purposes

Question 8:

Which CAD tool is known for its parametric modeling capabilities and is widely used in industrial design?

- a) AutoCAD
- ✓ b) SolidWorks
- c) Rhino
- d) Blender

Question 9:

What role does CAD play in the prototyping phase of product development?

- a) It is not involved in prototyping
- ✓ b) It helps create physical models directly
- ✓ c) It allows for virtual testing and visualization before physical prototyping
- d) It only generates 2D drawings for prototypes

Question 10:

Which of the following is a benefit of using CAD in collaborative design?

- a) Limited access to design files
- b) Difficulty in version control
- ✓ c) Enhanced communication among team members
- d) Slow data transfer between team members

Question 11:

Which CAD modeling approach is based on defining geometric constraints and relationships between objects?

- ✓ a) Direct modeling
- ✓ b) Constraint-based modeling
- c) Surface modeling
- d) Mesh modeling

Question 12:

What is the purpose of rendering in CAD?

- a) To simplify complex models
- b) To create 2D drawings
- ✓ c) To generate realistic images of 3D models
- d) To analyze stress and strain in designs

Question 13:

Which of the following is a disadvantage of using CAD in industrial applications?

- a) Increased design iteration speed
- b) Lack of precision in modeling
- ✓ c) Difficulty in learning and using CAD software
- d) Limited support for parametric modeling

Question 14:

What does the term "BOM" stand for in the context of CAD and industrial applications?

- a) Best Order Management
- ✓ b) Bill of Materials
- ✓ c) Basic Object Modeling
- d) Binary Output Module

Question 15:

What role does CAD play in the field of Computer-Aided Engineering (CAE)?

- a) It is not related to CAE
- b) It is used for documentation purposes only
- ✓ c) It assists in simulating and analyzing designs
- d) It focuses solely on 2D modeling

Question 16:

Which CAD feature allows designers to quickly make changes to a model without rebuilding it?

- ✓ a) Direct modeling
- ✓ b) Parametric modeling
- c) Assembly modeling
- d) Surface modeling

Question 17:

What is the purpose of CAM (Computer-Aided Manufacturing) in the context of CAD?

- a) To create realistic renderings of designs
- b) To analyze stress and strain in designs
- ✓ c) To generate toolpaths for machining operations
- d) To organize design files in a collaborative environment

Question 18:

In CAD, what does the term "fillet" refer to?

- ✓ a) A type of 3D printer
- b) A rounded interior corner of an object
- ✓ c) The process of removing material from a model
- d) A tool used for 2D sketching

Question 19:

Which CAD modeling technique is suitable for creating complex, organic shapes?

- a) Wireframe modeling
- b) Parametric modeling
- ✓ c) Surface modeling
- d) Assembly modeling

Question 20:

What is the significance of version control in CAD?

- a) It helps in creating multiple copies of a design file
- b) It ensures that only one person can work on a design at a time
- ✓ c) It keeps track of changes made to a design and allows for easy collaboration
- d) It restricts access to CAD software updates

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This is to Certify that **S.ABHISHEK(922115114002)**
of **IV Year Mechanical Engineering, SSM Institute of
Engineering and Technology**, has successfully completed the
**Value Added Course Entitled "CAD MODELING IN INDUSTRIAL
APPLICATIONS"** in the year of **2018-2019 odd semester.**

Faculty Incharge

Principal