

A Practical Course on “3D Designing/Modeling Using CATIA”

TRAINING OBJECTIVES

CATIA is one of the world's leading high-end integrated CAD/CAM/CAE systems. CATIA V5 is state of the art solid modeling software used in automotive and aerospace industry by companies like: Chrysler, Toyota, BMW, Bombardier, Lockheed and Boeing.

It is extensively used by many mould making, tool and die, and sheet metal companies. The emphasis of this training is on the graphical communication of solutions to mechanical engineering design problems. This training should provide a solid background for solid modeling and assembly for digital product development. By the end of this CATIA Fundamental Training, Trainee/participants should be able to apply the fundamentals of solid modeling including feature based parametric CAD by completing a three dimensional part; explain the engineering design process and the role of engineering graphics in digital design and analysis; create a 3D assembly model, demonstrate the management of CAD data files and integrated data management documentations; and understand the product lifecycle management (PLM).

Computer aided design process (CAD/CAM/CAE) has revolutionized the process of product design. Modern techniques have integrated the design cycle from concept inception to production drawing generation seamlessly. Time to market has been reduced substantially by the application of these methods. This course will focus on the product design in digital environment and design procedure implementation using CAD/CAM applications for better, efficient and fast product development

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CURRICULUM SALIENT'S

Entry Level:

B.Sc Engineering (Mechanical, metallurgy and material sciences, chemical) / Diploma of Associate Engineer (DAE) in mechanical, metallurgy, chemical technology , Manufacturers, Supervisors, Technicians, Technicians/ Trainers / Instructors /Intermediate/Matric etc.

Name of Course: A Practical Course on “3D Designing/Modeling Using CATIA”

Duration of Course: Three (03) Months

Total Training Hours: 360 Credit hours

Training Hours per Day: 06 Credit hours

Training Methodology: Practical 90 %
Theory 10%

Medium of Instruction: English

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SKILL COMPETENCY DETAILS:

At the end of this course the student will be able to:

1. Apply design concepts for the task in CAD/CAM environment.
2. Understand how to make the best use of Computer Aided techniques in a production environment.
3. The student will be able to develop design using CATIA software etc.



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KNOLEDGE PROFICIENCY DETAIL:

The trainee of this course will develop and enhance his knowledge regarding material evaluation and develop his capacity in the following ways:

- Providing standards for measuring the material quality.
- Providing standards for implementation of quality testing methods & practices at organization level.
- Focusing learning on the critical aspects needed for success in the job and organization. etc



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CURRICULUM DELIVERY STRUCTURE

For 03- Months

	Curriculum Delivery	Revision	Test	Total
Weeks	1-10	11	12	12
	10	1	1	12

Scheme of Studies

(3D Designing Using CATIA- 03 Months Course)

Sr. No	Topics	Training (Hrs for Theory)	Training (Hrs for Practical)
1.	Introduction	7	0
2.	Work Benches	02	0
3.	Sketcher	12	65
4.	Part Design	25	90
5.	Assembly Design	16	85
6.	Drafting	10	48
Total		72 Hrs	288 Hrs
Grand Total		360 hours	

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Detail of Course Contents of 3D Designing Using CATIA

(3D Designing Using CATIA -03 Months Course)

Sr. No	Topics	Training (Hrs for Theory)	Training (Hrs for Practical)
1.	INTRODUCTION 1.1 Dassault Systems and Products. 1.2 CATIA, PLM and Industries using CATIA 1.3 Parametric/ Feature based modeling 1.4 Supported File Formats 1.5 Syllabus modules 1.6 Starting CATIA V5 R2012 1.7 Customization of Workbench and entering a workbench. 1.8 Mouse navigation 1.9 Toolbars 1.10 Hot Keys 1.11 Color Schemes 1.12 General Commands 1.13 Design Intent	07	0
2.	WORKBENCHES 2.1 Sketcher 2.2 Part Design 2.3 Surface Design 2.4 Assembly design 2.5 Drafting	02	0
3.	SKETCHERS 3.1 Entering the sketcher workbench 3.2 Toolbars 3.3 Workbench 3.4 Standard 3.5 Sketch Tools 3.6 Profile 3.7 Operation	12	65

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	3.8 Constraint 3.9 View 3.10 Properties 3.11 Visualization 3.12 User Selection Filter 3.13 Customization and Options 3.14 General 3.15 Display 3.16 Parameters and Measure 3.17 Tips and Workshop		
4.	PART DESIGN 4.1 Common Toolbars 4.2 Standard 4.3 View 4.4 Workbench 4.5 Select 4.6 Sketcher Toolbar 4.7 Sketch Based Features 4.8 Pad 4.9 Pockets 4.10 Shaft 4.11 Groove 4.12 Hole 4.13 Rib 4.14 Slot 4.15 Solid Combine 4.16 Stiffener 4.17 Multi-sections Solid 4.18 Remove Multi-Sections Solid 4.19 Fillets 4.20 Chamfers 4.21 Drafts 4.22 Shell 4.23 Thickness 4.24 Thread /Tap 4.25 Remove 4.26 Face Transformation Features 4.27 Translation 4.28 Rotation	25	90

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	4.29 Symmetry 4.30 Mirror 4.31 Patterns 4.32 Scaling 4.33 Apply Material Toolbar 4.34 Tips and Workshop		
6.	ASSEMBLY DESIGN 6.1 Top Down and Bottom Up Assembly 6.2 Common Toolbars 6.3 Product Structure Tools 6.4 Move and Manipulating parts using compass 6.5 Constraints 6.6 Assembly Features 6.7 Catalogue 6.8 Measure 6.9 Tips and Workshop	16	85
7.	DRAFTING 7.1 Page set up and Customization 7.2 Layouts and Templates 7.3 Common Toolbars 7.4 Generative Design Toolbars 7.5 Geometry Creations 7.6 Modification Tools 7.7 Interactive Design Toolbars 7.8 Generating Views 7.9 Billing of Materials 7.10 Generate Dimensions 7.11 Dress Up 7.12 Dimensioning 7.13 Annotation 7.14 GD & T 7.15 Tips and Workshop	10	48
		72 Hr	288 Hr
		360 hours	

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List of Machinery / Equipment / Tool / Lab. or Workshop

(For The Class of 25 Students)

List of Lab / Workshop		One
Sr. No	Nomenclature of Equipments /Tools	Quantity
1.	Latest Computers (Complete Set)	25
2.	Multimedia projector (optional)	01
3.	Software	01
4.	Lab(for 25 Students)	01

Employability of Pass-Outs

Employability of pass-outs in “3D Designing Using CATIA” trade is expected in the following sectors: -

1. Self-employment
2. Pakistan Atomic Energy
3. POF
4. HIT
5. HMC
6. NDC
7. HMC
8. PMO
9. PAC
10. KRL
11. Naval Shipyard
12. Atom Energy
13. Surgical industry
14. Automobile Industry.
15. Engineering sector etc

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Reference Books

1. CATIA workbook V5

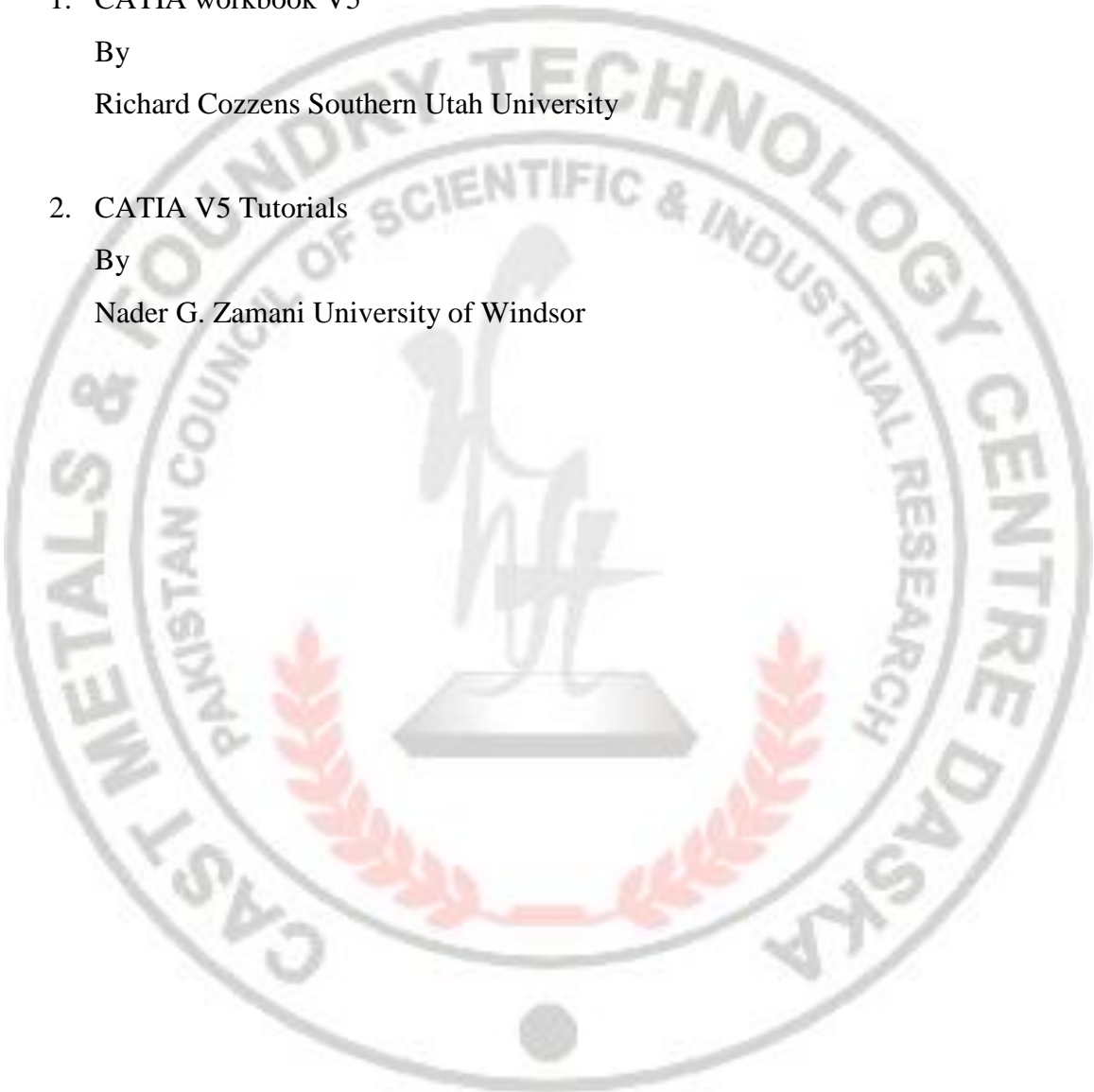
By

Richard Cozzens Southern Utah University

2. CATIA V5 Tutorials

By

Nader G. Zamani University of Windsor



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Minimum Qualification of Instructor

B.Sc Mechanical/Metallurgical/Industrial Engineering /B. Tech/BS Mechanical
with 02 years experience in the relevant field Or DAE with 03 years experience in
relevant discipline

