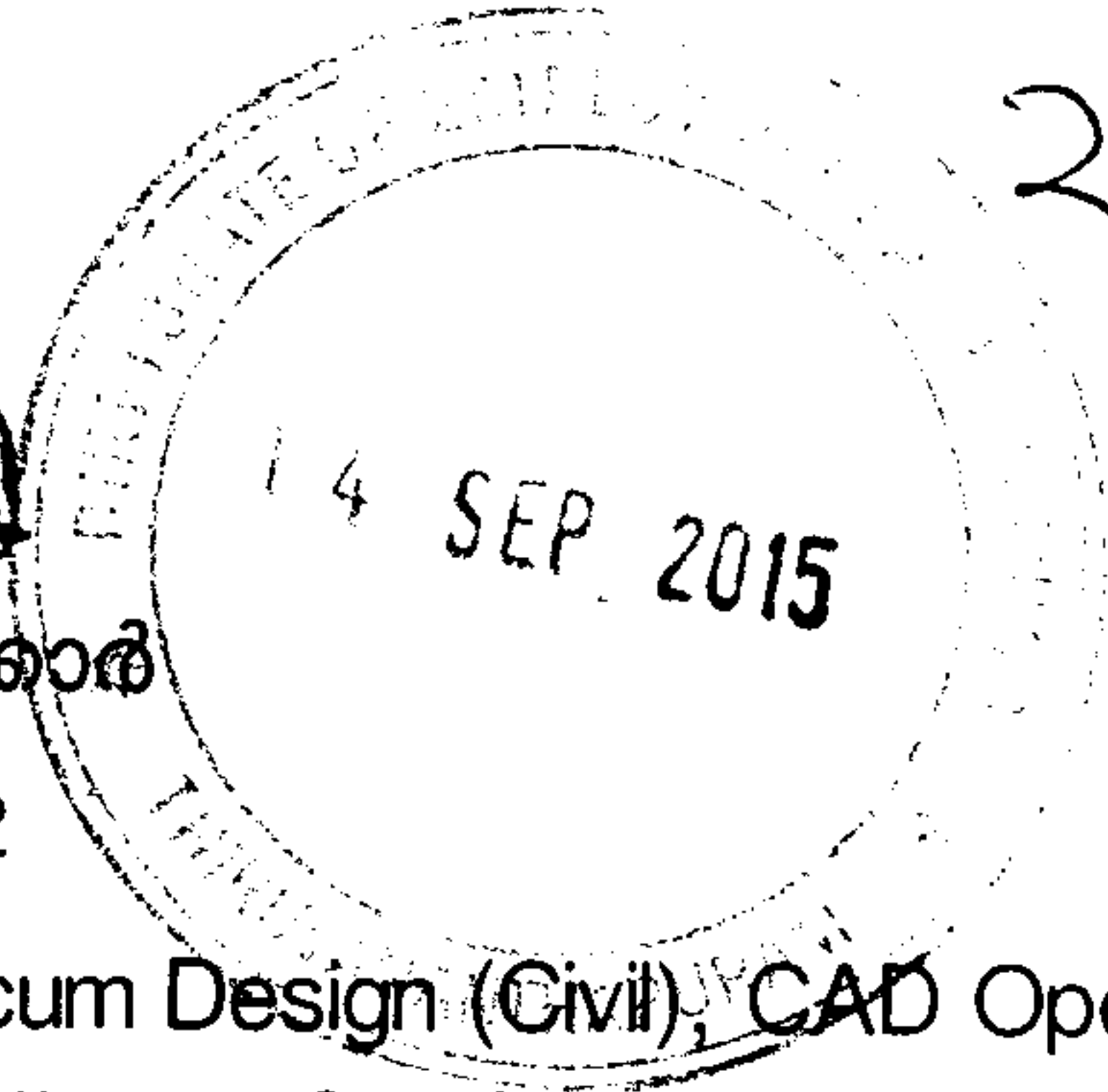




കേരള സർക്കാർ
സംഗ്രഹം



വ്യാവസായിക പരിശീലന വകുപ്പ് - CAD Operator cum Design (Civil), CAD Operator cum Design (Mechanical) എന്നീ കോഴ്സുകളുടെ സിലബസ് അംഗീകരിച്ച് ഉത്തരവ് പുറപ്പെടുവിക്കുന്നു.

തൊഴിലും നൈപുണ്യവും (സി) വകുപ്പ്

സ.ഉ. (സാധാ)നം.1229/2015/തൊഴിൽ

തിരുവനന്തപുരം, തീയതി 3.9.2015

- പരാമർശം - 1. ട്രെയിനിംഗ് ഡയറക്ടറുടെ 13.11.2014 ലെ സി2/5737/13 നമ്പർ കത്ത്.
- 2. ട്രെയിനിംഗ് ഡയറക്ടറുടെ 24.7.2015 ലെ സി2/5737/13 നമ്പർ കത്ത്.

ഉത്തരവ്

പരാമർശ പ്രകാരം ട്രെയിനിംഗ് ഡയറക്ടർ ലഭ്യമാക്കിയിട്ടുള്ള CAD Operator cum Design (Civil), CAD Operator cum Design (Mechanical) എന്നീ അർദ്ധവർഷ കോഴ്സുകളുടെ സിലബസ് (അനുബന്ധമായി ഉൾപ്പെടുത്തിയിട്ടുണ്ട്) അംഗീകരിച്ച് ഉത്തരവാകുന്നു.

(ഗവർണ്ണറുടെ ഉത്തരവിൻ പ്രകാരം)

സി.എം. അജയ മോഹൻ,
അണ്ടർ സെക്രട്ടറി.

ട്രെയിനിംഗ് ഡയറക്ടർ, തിരുവനന്തപുരം.

പ്രിൻസിപ്പൽ അക്കൗണ്ടന്റ് ജനറൽ (ആഡിറ്റ്) കേരള, തിരുവനന്തപുരം.

അക്കൗണ്ടന്റ് ജനറൽ (എ ആന്റ് ഇ/ഡി.ബി. സെൽ) കേരള, തിരുവനന്തപുരം.

വിവര പൊതുജന സമ്പർക്ക വകുപ്പ്. (ഗവ. വെബ്സൈറ്റിൽ നൽകുന്നതിനായി)

കരുതൽ ഫയൽ / ഓഫീസ് കോപ്പി.

ഉത്തരവിൻ പ്രകാരം,

C2
11/09
സെക്ഷൻ ഓഫീസർ.

9/14/15

14/9

Course Name: CAD Operator cum Design (Civil)

Subject Code:

Type of Institution: ITI/Vocational

Number of weeks for the course:

SCHEME OF INSTRUCTION, EXAMINATION & CERTIFICATION

Subject	Practical Hours/Week	Examination			
		Assessment Marks			Total
CAD Operator Cum Design (Civil)	25	Internal	Theory Cum CAD Product Exam	Viva	
		15	75	10	

RATIONALE:

The main objective of this subject is to understand the basic and the latest trend in the Architectural Engineering Construction segment. In this course the basic concepts and tools of Building Information Modeling is introduced that allows us the ability to virtually explore both the tools (Autodesk AutoCAD and Autodesk Revit Architecture) to complete a building project before it's built. Companies often adopt the digital solutions that are available with the goal of improving communication between Building Design stakeholders, owner, contractor, architect etc. The mix of theoretical and the product knowledge will enable every student to succeed in today's world.

Relevance for the trade of "CAD OPERATOR/CUM-DESIGN (CIVIL) DESIGN ASSISTANT (CIVIL)"

THEORY:

"CAD Operator cum Design (Civil)"....already formulated

SOFTWARE PRODUCT TOPICS:

AutoCAD Training

AutoCAD	
Chapter1: Introduction to CAD	
Chapter2: Introduction to Coordinate systems	
Chapter3: Overview on 2D Modeling	
Chapter 4: Taking the AutoCAD Tour	<ul style="list-style-type: none"> • Navigating the Working Environment • Working with Files

	Chapter 5: Manipulating Objects	<ul style="list-style-type: none"> • Displaying Objects • Selecting Objects in the Drawing • Changing an Object's Position • Creating New Objects from Existing Objects • Changing the Angle of an Object's Position • Creating a Mirror Image of Existing Objects • Creating Object Patterns • Changing an Object's Size
	Chapter 6: Creating Basic Drawings	<ul style="list-style-type: none"> • Inputting Data • Creating Basic Objects • Using Object Snaps & Object Snap Tracking • Using Polar Tracking & Polar Snap • Working with Units • Using Function Keys
	Chapter 7: Annotating Drawings, Hatching Objects	<ul style="list-style-type: none"> • Creating Multiline Text • Creating Single Line Text • Using Text Styles • Editing Text • Hatching Objects • Editing Hatch Objects
	Chapter 8: Dimensioning	<ul style="list-style-type: none"> • Creating Dimensions • Using Dimension Styles • Editing Dimensions
	Chapter 9: Drawing Organization and Inquiry Commands	<ul style="list-style-type: none"> • Using Layers • Changing Object Properties • Matching Object Properties • Using the Properties Palette • Using Line Types • Using Inquiry Commands
	Chapter 10: Altering Objects	<ul style="list-style-type: none"> • Define Boundaries through Trimming and Extending Objects • Creating Parallel and Offset Geometry

		<ul style="list-style-type: none">• Joining Objects• Breaking an Object into Two Objects• Applying a Radius and Angled Corner to Two Objects• Changing Part of an Object's Shape
	Chapter 11: Working with Reusable Content	<ul style="list-style-type: none">• Using Blocks• Working with Design Center™• Using Tool Palettes
	Chapter 12: Drawing Objects, Manipulating Objects and Data	<ul style="list-style-type: none">• Multilines• Revision Clouds• Wipeouts• Regions• Using Quick Select• Purging Objects• Point Objects• Dividing and Measuring Objects• Geometry Calculator
	Chapter 13: Creating Additional Drawing Objects & Creating Tables	<ul style="list-style-type: none">• Working with Polylines• Creating Splines• Creating Ellipses• Using Tables• Table Styles• Creating and Modifying Tables• Creating Tables from External Data
	Chapter 14: Layouts, Views & Plotting	<ul style="list-style-type: none">• Using Layouts• Using Page Setups• Using Viewports• Plotting Drawings• Creating Layouts• Modifying Layouts and Using Page Setups• Creating Layout Viewports• Working with Layout Viewports• Controlling Object Visibility in Layout Viewports

	Chapter 15: Template Drawing Creation	<ul style="list-style-type: none"> • Using Drawing Templates
	Chapter 16: Reusable Content	<ul style="list-style-type: none"> • Using DesignCenter™ • Managing and Sharing Tool Palettes • Using External References • Importing Other Filetypes
	Chapter 17: Working with Blocks and Attributes	<ul style="list-style-type: none"> • Creating Blocks with Attributes • Edit and Extract Attributes
	Chapter 18: Dynamic Blocks	<ul style="list-style-type: none"> • Using Dynamic Blocks • Defining Parameters & Actions • Creating Dynamic Blocks
	Chapter 19: Introduction to 3D Modeling & Types of 3D objects	
	Chapter 20: Solid Modeling	<ul style="list-style-type: none"> • Creating Solid Primitives • Creating Models from 2D Profiles • Creating Composite Solids • Working in 3D • Converting 2D Objects to

Chapter 24: Materials & Render

Autodesk Revit Architecture

Autodesk Revit Architecture		
	Chapter 1: Introduction to Building Information Modeling	<ul style="list-style-type: none"> • Building Information Modeling for Architectural Design
	Chapter 2: Revit Architecture Basics	<ul style="list-style-type: none"> • Exploring the User Interface • Working with Revit Elements and Families • Starting a Project • Importing CAD Data • Fundamental of Massing Studies • Creating / Modifying Topographic surface
	Chapter 3: The Basics of the Building Model	<ul style="list-style-type: none"> • Creating and Modifying Levels • Creating and Modifying Grids • Adding Columns • Creating a Basic Floor Plan • Adding and Modifying Walls • Working with Compound Walls • Using Editing Tools • Adding and Modifying Doors • Adding and Modifying Windows
	Chapter 4: Viewing the Building Model	<ul style="list-style-type: none"> • Viewing the Building Model • Managing Views • Controlling Object Visibility • Working with Section and Elevation Views • Creating and Modifying 3D Views
	Chapter 5: Using Dimensions and Constraints	<ul style="list-style-type: none"> • Working with Dimensions • Applying and Removing Constraints
	Chapter 6: Developing the Building	<ul style="list-style-type: none"> • Creating and Modifying Floors

	Model	<ul style="list-style-type: none"> • Working with Ceilings • Creating Openings • Adding and Modifying Roofs • Creating / Editing Curtain Walls • Adding Stairs, Railings and Ramps
	Chapter 7: Detailing Your Design	<ul style="list-style-type: none"> • Creating Callout Views • Working with Text and Tags • Working with Detail Views • Working with Drafting Views
	Chapter 8: Documenting / Annotating Your Design	<ul style="list-style-type: none"> • Creating and Modifying Schedules • Creating Rooms / Area Tags and Schedules • Creating Legends and Keynotes

Project & Viva

1. Project Work (20Hrs)
2. Project Assessment with a Viva and Project Evaluation

GLOBAL AUTODESK CERTIFICATION

For students to avail the Global Autodesk Certification for the Products that they have learnt, they have an option.

Please refer to following website for more information <http://www.autodesk.com/certification>

Suggested Materials

- Mastering Autodesk AutoCAD by Sybex
- Mastering Autodesk Revit Architecture by Sybex

Course topics and duration may be modified by the instructor based upon the knowledge and skill level of the course participants.

Course Name: **CAD Operator cum Design (Mechanical)**

Subject Code:

Type of Institution: ITI/Vocational

No. of weeks for the course:

SCHEME OF INSTRUCTION, EXAMINATION & CERTIFICATION

Subject	Practical	Examination			
CAD Operator Cum Design (Mechanical)	Hours/Week	Assessment Marks			
	25	Internal Project	Theory Cum CAD Product Exam	Viva	Total
		20	70	10	100

RATIONALE:

The main objective of this subject is to understand the basic and latest trend in the Manufacturing space i.e., Digital prototyping for product design, this course deals with the basic concept of Digital prototyping (DP) and the digital tools (Autodesk AutoCAD and Autodesk Inventor). DP is a technology that allows us ability to virtually explore a complete product before it's built. Companies often adopt Digital Prototyping with the goal of improving communication between product development stakeholders, getting products to market faster, and facilitating product innovation. The mix of theory and the product knowledge will enable every student to succeed in today's world.

Syllabus for the trade of "CAD OPERATOR cum DESIGN ASSISTANT (Mechanical)"

THEORY:

"CAD Operator cum Design (Mechanical)"already formulated

SOFTWARE PRODUCT TOPICS:

AutoCAD Training

	AutoCAD	
	Chapter1: Introduction to CAD	
	Chapter2: Introduction to Coordinate systems	
	Chapter3: Overview on 2D Modeling	
	Chapter 4: Taking the AutoCAD Tour	<ul style="list-style-type: none"> • Navigating the Working Environment • Working with Files

		<ul style="list-style-type: none"> • Displaying Objects
	Chapter 5: Manipulating Objects	<ul style="list-style-type: none"> • Selecting Objects in the Drawing • Changing an Object's Position • Creating New Objects from Existing Objects • Changing the Angle of an Object's Position • Creating a Mirror Image of Existing Objects • Creating Object Patterns • Changing an Object's Size
	Chapter 6: Creating Basic Drawings	<ul style="list-style-type: none"> • Inputting Data • Creating Basic Objects • Using Object Snaps & Object Snap Tracking • Using Polar Tracking & Polar Snap • Working with Units • Using Function Keys
	Chapter 7: Annotating Drawings, Hatching Objects	<ul style="list-style-type: none"> • Creating Multiline Text • Creating Single Line Text • Using Text Styles • Editing Text • Hatching Objects • Editing Hatch Objects
	Chapter 8: Dimensioning	<ul style="list-style-type: none"> • Creating Dimensions • Using Dimension Styles • Editing Dimensions
	Chapter 9: Drawing Organization and Inquiry Commands	<ul style="list-style-type: none"> • Using Layers • Changing Object Properties • Matching Object Properties • Using the Properties Palette • Using Line types • Using Inquiry Commands
	Chapter 10: Altering Objects	<ul style="list-style-type: none"> • Define Boundaries through Trimming and Extending Objects • Creating Parallel and Offset Geometry

		<ul style="list-style-type: none">• Joining Objects• Breaking an Object into Two Objects• Applying a Radius and Angled Corner to Two Objects• Changing Part of an Object's Shape
	Chapter 11: Working with Reusable Content	<ul style="list-style-type: none">• Using Blocks• Working with Design Center™• Using Tool Palettes
	Chapter 12: Drawing Objects, Manipulating Objects and Data	<ul style="list-style-type: none">• Multilines• Revision Clouds• Wipeouts• Regions• Using Quick Select• Purging Objects• Point Objects• Dividing and Measuring Objects• Geometry Calculator
	Chapter 13: Creating Additional Drawing Objects & Creating Tables	<ul style="list-style-type: none">• Working with Polylines• Creating Splines• Creating Ellipses• Using Tables• Table Styles• Creating and Modifying Tables• Creating Tables from External Data
	Chapter 14: Layouts, Views & Plotting	<ul style="list-style-type: none">• Using Layouts• Using Page Setups• Using Viewports• Plotting Drawings• Creating Layouts• Modifying Layouts and Using Page Setups• Creating Layout Viewports• Working with Layout Viewports• Controlling Object Visibility in Layout Viewports

		0
Chapter 13: Template Drawing Creation	<ul style="list-style-type: none"> Using Drawing Templates 	
Chapter 16: Reusable Content	<ul style="list-style-type: none"> Using DesignCenter™ Managing and Sharing Tool Palettes Using External References Importing Other Filetypes 	
Chapter 17: Working with Blocks and Attributes	<ul style="list-style-type: none"> Creating Blocks with Attributes Edit and Extract Attributes 	
Chapter 18: Dynamic Blocks	<ul style="list-style-type: none"> Using Dynamic Blocks Defining Parameters & Actions Creating Dynamic Blocks 	
Chapter 19: Introduction to 3D Modeling & Types of 3D objects		
Chapter 20: Solid Modeling	<ul style="list-style-type: none"> Creating Solid Primitives Creating Models from 2D Profiles Creating Composite Solids Working in 3D Converting 2D Objects to Solids or Surfaces 	
Chapter 21: Editing of 3D models	<ul style="list-style-type: none"> Adding Detail to Your Solid Models Converting Objects Editing Solid Models Extracting Geometry from Solid Models Changing the Model Position User Coordinate System Duplicating the Model Getting Information from 3D Objects 	
Chapter 22: Sections & Elevation	<ul style="list-style-type: none"> Sectioning a Solid Model & Generating 3D Geometry Elevations 	
Chapter 23: Lights, Camera		

Autodesk Inventor

Autodesk Inventor		
Chapter 1: Introduction to Inventor and Digital Prototyping	Overview of Digital Prototyping and Introduction to Inventor	
Chapter 2: Getting Started	<ul style="list-style-type: none"> • Understanding the User Interface • Designing Parametric Parts • Using Project Files for Part Design 	
Chapter 3: Sketching, Constraining & Dimensioning	<ul style="list-style-type: none"> • Creating 2D Sketches • Constraining the Sketches • Adding Dimensioning to Sketches 	
Chapter 4: Creating and Editing Placed Features	<ul style="list-style-type: none"> • Creating and Editing Sketched Features • Intermediate Sketching • Editing Parametric Parts • Creating Work Features • Creating Basic Swept Shapes • Creating Chamfers and Fillets • Creating Holes and Threads • Patterning and Mirroring Features • Creating Thin-Walled Parts 	
Chapter 5: Using Dimensions and Constraints	<ul style="list-style-type: none"> • Working with Dimensions • Applying and Removing Constraints 	
Chapter 6: Creating and Editing Drawing Views	<ul style="list-style-type: none"> • Drawing Creation Environment • Creating Styles • Setting Drawing Standards • Drawing Sheet Preparation • Creating Title Blocks and Borders • Base and Projected Views • Section Views 	

		<ul style="list-style-type: none"> • Detail Views • Managing Views
	Chapter 7: Creating and Documenting Assemblies	<ul style="list-style-type: none"> • Designing Assemblies • Using Project Files for Assembly Design • Placing Existing Components in an Assembly • Constraining Components • Placing Standard Components Using the Content Center • Basic Part Design in an Assembly • Identifying Parts in an Assembly • Analysis and Motion Tools • Presenting Your Assembly • Bill of Materials • Creating and Customizing Parts Lists • Creating Balloons
	Chapter 8: Dimensions, Annotations, and Tables	<ul style="list-style-type: none"> • Automated Dimensioning Techniques • Manual Dimensioning Techniques • Annotating Holes and Threads • Creating Centerlines, Symbols, and Leaders • Creating Tables

Project & Viva

1. Project Work (20Hrs)
2. Project Assessment with a Viva and Project Evaluation

Global Autodesk Certification

For students to avail the Global Autodesk Certification for the Products that they have learnt, they have an option.

Please refer to following website for more information <http://www.autodesk.com/certification>

Suggested Materials

- Mastering Autodesk AutoCAD by Sybex
- Mastering Autodesk Inventor by Sybex

Course topics and duration may be modified by the instructor based upon the knowledge and skill level of the course participants.