

***NAMAL UNIVERSITY MIANWALI***

***DEPARTMENT OF ELECTRICAL ENGINEERING***

***ENGINEERING DRAWING***

***LAB # 03***

***REPORT***

***Title : Introduction to AutoCAD***

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***Introduction :***

AutoCAD Electrical is a specialized software program developed by Autodesk, a leading provider of computer-aided design (CAD) software solutions. It is designed specifically for electrical engineers and professionals involved in the design, drafting, and documentation of electrical control systems, such as industrial machinery, power distribution networks, and building automation systems. AutoCAD Electrical is a powerful tool that enables users to create and edit electrical schematics, panel layouts, and control circuit diagrams, as well as generate bills of materials and wire lists. It also includes a comprehensive library of electrical symbols and components, as well as features like automatic numbering, tagging, and cross-referencing, which can significantly improve productivity and accuracy in electrical design projects. With its intuitive interface and advanced functionality, AutoCAD Electrical is a valuable tool for anyone involved in the electrical engineering field.

***Concise Summary of AutoCAD :***

AutoCAD is a powerful computer-aided design (CAD) software program developed by Autodesk that allows users to create, edit, and view 2D and 3D designs and models. It is widely used in a variety of industries, including architecture, engineering, construction, and manufacturing. AutoCAD offers a range of tools and features that can help users to improve productivity and accuracy, such as drawing and editing tools, layer management, and annotation tools. It also supports collaboration and file sharing through cloud-based services, making it easier for teams to work together on design projects. Overall, AutoCAD is a versatile and comprehensive software program that can help users to create professional-level designs and models for a wide range of applications.

***Drawing Commands :***

| **AutoCAD Command** | **Description** | **Shortcut** |
| --- | --- | --- |
| LINE | Draws a straight line segment from one point to another | L |
| CIRCLE | Draws a circle with a specified center point and radius | C |
| ARC | Draws an arc based on specified start, center, and end points | A |
| RECTANGLE | Draws a rectangle using two points as diagonally opposite corners | REC |
| POLYGON | Draws a closed polygon with a specified number of sides | POL |
| ELLIPSE | Draws an ellipse or an elliptical arc | EL |
| SPLINE | Draws a smooth curve through specified points | SPL |
| HATCH | Fills an enclosed area or selected objects with a hatch pattern | H |
| MTEXT | Creates a single-line or multiline text object | MT |
| DIMLINEAR | Creates a linear dimension line | DI |
| DIMRADIUS | Creates a radius dimension | DR |
| DIMANGULAR | Creates an angular dimension | DA |
| LAYER | Controls properties of layers within a drawing | LA |
| BLOCK | Creates a block, which is a group of objects that can be used repeatedly in a drawing | B |
| INSERT | Inserts a block or drawing file into the current drawing | I |
| ERASE | Removes selected objects from a drawing | E |
| COPY | Copies selected objects to a new location | CO |
| MOVE | Moves selected objects to a new location | M |
| ROTATE | Rotates selected objects around a specified base point | RO |
| SCALE | Changes the size of selected objects uniformly or non-uniformly | SC |
| ARRAY | Creates multiple copies of selected objects in a rectangular or polar pattern | AR |
| TRIM | Removes parts of selected objects that extend beyond a specified cutting edge | TR |
| EXTEND | Extends selected objects to a specified boundary | EX |

***Conclusion :***

AutoCAD is a popular CAD software with a long history and numerous features. We have created a table of its drawing commands, including descriptions and shortcuts. While this lab offers a brief introduction, mastering AutoCAD requires practice and exploration.