



Lesson Plan No. 1	Course Name: Engineering Graphics Lab Topic : Engineering Curves and Signs in Engineering Drawing	Course No.: CE-212
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Objective	<ul style="list-style-type: none">To introduce students to conventional lines, signs, and symbols used in engineering drawing.
Teaching Aids (if any)	a. Chalk and talk b. ICT
Teaching Development	<p>1. Introduction (5 minutes)</p> <ul style="list-style-type: none">Explain the importance of clear communication through engineering drawings and the significance of using standard lines and symbols. <p>2. Development (30 minutes)</p> <ol style="list-style-type: none">Define conventional lines and their usage (visible, hidden, center, etc.).Introduce common signs and symbols used in engineering drawings.Discuss the importance of accurate dimensioning and tolerances.Explain the principles of printing and lettering in engineering drawings <p>3. Exercise – 5 minutes</p> <ul style="list-style-type: none">Provide students with a set of engineering drawings and ask them to identify and label the different types of lines, signs, and symbols.
Closure	<ul style="list-style-type: none">Summarize the key points of the lesson and emphasize the importance of standardized communication in engineering drawings. <p>Spend 5 minutes to wrap up and consolidate the learnings</p>
Evaluation	<ol style="list-style-type: none">Reflective Questions (What, Why, Who?). Allow students to answer and discuss. <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>



Lesson Plan No. 2	Course Name: Engineering Graphics Lab Topic : Curves in Engineering Practice: Cycloidals, Involutes, Spirals, and Helices	Course No.: CE-212
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Objective	<ul style="list-style-type: none">To introduce students to conventional lines, signs, and symbols used in engineering drawing.
Teaching Aids (if any)	<ol style="list-style-type: none">Chalk and talkICT
Teaching Development	<p>1. Introduction (5 minutes)</p> <ul style="list-style-type: none">Explain the importance of clear communication through engineering drawings and the significance of using standard lines and symbols. <p>2. Development (30 minutes)</p> <ol style="list-style-type: none">Define conventional lines and their usage (visible, hidden, center, etc.).Introduce common signs and symbols used in engineering drawings.Discuss the importance of accurate dimensioning and tolerances.Explain the principles of printing and lettering in engineering drawings <p>3. Exercise – 5 minutes</p> <ul style="list-style-type: none">Provide students with a set of engineering drawings and ask them to identify and label the different types of lines, signs, and symbols.
Closure	<ul style="list-style-type: none">Summarize the key points of the lesson and emphasize the importance of standardized communication in engineering drawings. <p>Spend 5 minutes to wrap up and consolidate the learnings</p>
Evaluation	<p>Reflective Questions (What, Why, Who?). Allow students to answer and discuss.</p> <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>



Lesson Plan No. 3	Course Name: Engineering Graphics Lab Topic : <i>Projections of a Plane in Simple and Inclined Positions</i>	Course No.: CE-212
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Objective	<ul style="list-style-type: none">To teach students how to project a plane with respect to the principal planes in simple and inclined positions.
Teaching Aids (if any)	<ol style="list-style-type: none">Chalk and talkICT
Teaching Development	<p>1. Introduction (5 minutes)</p> <ul style="list-style-type: none">Introduce the concept of projections and their significance in representing three-dimensional objects on a two-dimensional plane. <p>2. Development (30 minutes)</p> <ol style="list-style-type: none">Define principal planes and their orientations (HP, VP, PP).Explain the concept of projections and the importance of selecting the appropriate reference planes.Discuss the techniques for projecting a plane in simple and inclined positions. <p>3. Exercise – 5 minutes</p> <ul style="list-style-type: none">Provide different planes and ask students to draw their projections on the principal planes.
Closure	<ul style="list-style-type: none">Summarize the key points of the lesson and emphasize the importance of accurate projection techniques in engineering drawing. <p>Spend 5 minutes to wrap up and consolidate the learnings</p>
Evaluation	<p>Reflective Questions (What, Why, Who?). Allow students to answer and discuss.</p> <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>



Lesson Plan No. 4	Course Name: Engineering Graphics Lab Topic : Space Relation of a Plane and Locating Points on a Plane	Course No.: CE-212
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Objective	<ul style="list-style-type: none"> To teach students how to determine the space relation of a plane and locate a point on a plane given its projections.
Teaching Aids (if any)	<ol style="list-style-type: none"> Chalk and talk ICT
Teaching Development	<p>1. Introduction (5 minutes)</p> <ul style="list-style-type: none"> Explain the concept of space relations and the significance of accurately determining the orientation of planes. <p>2. Development (30 minutes)</p> <ol style="list-style-type: none"> Introduce the different space relations of planes (parallel, perpendicular, oblique). Discuss how to determine the space relation of a plane based on its projections. Explain how to locate a point on a plane given its projections on different reference planes. <p>3. Exercise – 5 minutes</p> <ul style="list-style-type: none"> Provide examples of planes in different space relations and ask students to determine their orientations based on projections.
Closure	<ul style="list-style-type: none"> Summarize the concepts of space relation and point location, emphasizing the precision required in engineering drawings. <p>Spend 5 minutes to wrap up and consolidate the learnings</p>
Evaluation	<p>Reflective Questions (What, Why, Who?). Allow students to answer and discuss.</p> <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>



Lesson Plan No. 5	Course Name: Engineering Graphics Lab Topic : Projection of Planes Inclined to Different Principal Planes	Course No.: CE-212
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Objective	<ul style="list-style-type: none">To teach students how to project planes inclined to different principal planes.
Teaching Aids (if any)	<ol style="list-style-type: none">Chalk and talkICT
Teaching Development	<p>1. Introduction (5 minutes)</p> <ul style="list-style-type: none">Explain the challenges and techniques involved in projecting planes that are inclined to different reference planes <p>2. Development (30 minutes)</p> <ol style="list-style-type: none">Define inclined planes and their orientations with respect to the principal planes.Discuss the methods for projecting planes inclined to the horizontal or vertical plane.Explain how to project planes inclined to both the horizontal and vertical planes. <p>3. Exercise – 5 minutes</p> <ul style="list-style-type: none">Provide examples of planes inclined to different principal planes and ask students to draw their projections.
Closure	<ul style="list-style-type: none">Summarize the methods for projecting inclined planes and their importance in engineering drawing. <p>Spend 5 minutes to wrap up and consolidate the learnings</p>
Evaluation	<p>Reflective Questions (What, Why, Who?). Allow students to answer and discuss.</p> <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>



Lesson Plan No. 6	Course Name: Engineering Graphics Lab Topic : <i>Projection of Solids Inclined to Both Reference Planes (Rotation Method)</i>	Course No.: CE-212
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Objective	<ul style="list-style-type: none">To teach students how to project solids inclined to both reference planes using the rotation method.
Teaching Aids (if any)	<ol style="list-style-type: none">Chalk and talkICT
Teaching Development	<p>1. Introduction (5 minutes)</p> <ul style="list-style-type: none">Explain the concept of projecting solids in inclined positions and the rotation method. <p>2. Development (30 minutes)</p> <ol style="list-style-type: none">Define solids and their orientation with respect to the reference planes.Introduce the rotation method for projecting solids inclined to both reference planes.Explain the steps involved in the rotation method and its application <p>3. Exercise – 5 minutes</p> <ul style="list-style-type: none">Provide examples of solids inclined to both reference planes and ask students to project them using the rotation method
Closure	<ul style="list-style-type: none">Summarize the key steps of the rotation method for projecting inclined solids. <p>Spend 5 minutes to wrap up and consolidate the learnings</p>
Evaluation	<p>Reflective Questions (What, Why, Who?). Allow students to answer and discuss.</p> <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>



Lesson Plan No. 7	Course Name: Engineering Graphics Lab Topic : <i>Projection of Solids Inclined to Both Reference Planes (Auxiliary Plane Method)</i>	Course No.: CE-212
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Objective	<ul style="list-style-type: none">To teach students how to project solids inclined to both reference planes using the auxiliary plane method.
Teaching Aids (if any)	<ol style="list-style-type: none">Chalk and talkICT
Teaching Development	<p>1. Introduction (5 minutes)</p> <ul style="list-style-type: none">Introduce the auxiliary plane method as an alternative technique for projecting inclined solids. <p>2. Development (30 minutes)</p> <ol style="list-style-type: none">Review the concept of solids and their orientation with respect to the reference planes.Introduce the auxiliary plane method and its advantages.Explain the steps involved in projecting inclined solids using the auxiliary plane method. <p>3. Exercise – 5 minutes</p> <ul style="list-style-type: none">Provide examples of inclined solids and ask students to project them using the auxiliary plane method.
Closure	<ul style="list-style-type: none">Discuss the benefits of using the auxiliary plane method for projecting inclined solids. <p>Spend 5 minutes to wrap up and consolidate the learnings</p>
Evaluation	<p>Reflective Questions (What, Why, Who?). Allow students to answer and discuss.</p> <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>



Lesson Plan No. 8	Course Name: Engineering Graphics Lab Topic : Projection of Solids in Combination (Co-Axial) Positions	Course No.: CE-212
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Objective	<ul style="list-style-type: none">To teach students how to project solids in co-axial positions, both in simple and inclined conditions.
Teaching Aids (if any)	<ol style="list-style-type: none">Chalk and talkICT
Teaching Development	<p>1. Introduction (5 minutes)</p> <ul style="list-style-type: none">Explain the concept of co-axial solids and the challenges in projecting them accurately. <p>2. Development (30 minutes)</p> <ol style="list-style-type: none">Define co-axial solids and their orientations with respect to the reference planes.Discuss the techniques for projecting co-axial solids in simple and inclined positions. <p>3. Exercise – 5 minutes</p> <ul style="list-style-type: none">Provide examples of co-axial solids and ask students to project them in both simple and inclined positions.
Closure	<ul style="list-style-type: none">Summarize the methods for projecting co-axial solids and emphasize the importance of precision. <p>Spend 5 minutes to wrap up and consolidate the learnings</p>
Evaluation	<p>Reflective Questions (What, Why, Who?). Allow students to answer and discuss.</p> <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>



Lesson Plan No.9	Course Name: Engineering Graphics Lab Topic : Object of Sectioning and Types of Cutting Planes	Course No.: CE-212
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Objective	<ul style="list-style-type: none">To teach students the purpose of sectioning, the types of cutting planes, and the true shape of sections.
Teaching Aids (if any)	<ol style="list-style-type: none">Chalk and talkICT
Teaching Development	<p>1. Introduction (5 minutes)</p> <ul style="list-style-type: none">Explain the importance of sectioning in engineering drawing and its role in communicating internal details <p>2. Development (30 minutes)</p> <ol style="list-style-type: none">Define sectioning and its significance in engineering design.Introduce different types of cutting planes (full section, half section, offset section).Discuss the principles of true shape and how sections are represented. <p>3. Exercise – 5 minutes</p> <ul style="list-style-type: none">Provide examples of objects and ask students to create different types of sections, considering true shape principles.
Closure	<ul style="list-style-type: none">Summarize the objectives and principles of sectioning and its role in conveying detailed information. <p>Spend 5 minutes to wrap up and consolidate the learnings</p>
Evaluation	<p>Reflective Questions (What, Why, Who?). Allow students to answer and discuss.</p> <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>



Lesson Plan No.10	Course Name: Engineering Graphics Lab Topic : Auxiliary Views of Sections of Co-Axial Solids	Course No.: CE-212
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Objective	<ul style="list-style-type: none">To teach students how to create auxiliary views of sections of multiple co-axial solids in simple and titled conditions.
Teaching Aids (if any)	<ol style="list-style-type: none">Chalk and talkICT
Teaching Development	<p>1. Introduction (5 minutes)</p> <ul style="list-style-type: none">Explain the concept of auxiliary views and their role in providing additional information about sections. <p>2. Development (30 minutes)</p> <ol style="list-style-type: none">Define auxiliary views and their significance in engineering drawing.Introduce the creation of auxiliary views of sections of co-axial solids.Discuss the steps involved in creating auxiliary views for different orientations. <p>3. Exercise – 5 minutes</p> <ul style="list-style-type: none">Provide examples of sections of co-axial solids and ask students to create auxiliary views to show hidden details
Closure	<ul style="list-style-type: none">Summarize the process of creating auxiliary views and their importance in engineering drawings. <p>Spend 5 minutes to wrap up and consolidate the learnings</p>
Evaluation	<p>Reflective Questions (What, Why, Who?). Allow students to answer and discuss.</p> <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>



Lesson Plan No.11	Course Name: Engineering Graphics Lab Topic : Intersection of Geometrical Solids and Hollow Sections	Course No.: CE-212
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Objective	<ul style="list-style-type: none"> To teach students how to determine the intersection of geometrical solids and trace lines of intersection by the line method.
Teaching Aids (if any)	<ol style="list-style-type: none"> Chalk and talk ICT
Teaching Development	<p>1. Introduction (5 minutes)</p> <ul style="list-style-type: none"> Explain the concept of intersection of solids and its relevance in engineering design. <p>2. Development (30 minutes)</p> <ol style="list-style-type: none"> Define the intersection of solids and its applications. Introduce the line method for tracing lines of intersection. Discuss the steps involved in determining the intersection of geometrical solids. <p>3. Exercise – 5 minutes</p> <ul style="list-style-type: none"> Provide examples of intersecting solids and ask students to determine the lines of intersection using the line method.
Closure	<ul style="list-style-type: none"> Summarize the concept of intersecting solids and the techniques used to determine lines of intersection. <p>Spend 5 minutes to wrap up and consolidate the learnings</p>
Evaluation	<p>Reflective Questions (What, Why, Who?). Allow students to answer and discuss.</p> <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>



Lesson Plan No.12	Course Name: Engineering Graphics Lab Topic : Introduction to Computer-Aided Drafting (AutoCAD) and Coordinate System	Course No.: CE-212
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Objective	<ul style="list-style-type: none">To introduce students to computer-aided drafting using AutoCAD and familiarize them with the coordinate system.
Teaching Aids (if any)	<ol style="list-style-type: none">Chalk and talkICT
Teaching Development	<ol style="list-style-type: none">Introduction (5 minutes)<ul style="list-style-type: none">Explain the significance of computer-aided drafting in modern engineering design and the basics of AutoCADDevelopment (30 minutes)<ol style="list-style-type: none">Introduce AutoCAD as a powerful drafting tool for engineering design.Explain the Cartesian coordinate system used in AutoCAD.Discuss the different coordinate formats and their applications.Exercise – 5 minutes<ul style="list-style-type: none">Provide a basic AutoCAD exercise where students create simple geometrical shapes using the coordinate system.
Closure	<ul style="list-style-type: none">Summarize the importance of AutoCAD in engineering design and the use of coordinates for precision <p>Spend 5 minutes to wrap up and consolidate the learnings</p>
Evaluation	<p>Reflective Questions (What, Why, Who?). Allow students to answer and discuss.</p> <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>



Lesson Plan No.13	Course Name: Engineering Graphics Lab Topic : AutoCAD Applications in Surveying	Course No.: CE-212
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Objective	<ul style="list-style-type: none">To demonstrate the applications of AutoCAD in surveying.
Teaching Aids (if any)	a. Chalk and talk b. ICT
Teaching Development	<p>1. Introduction (5 minutes)</p> <ul style="list-style-type: none">Explain the importance of accurate surveying and the role of AutoCAD in handling survey data. <p>2. Development (30 minutes)</p> <ol style="list-style-type: none">Discuss how AutoCAD can be used for digitizing survey maps and data.Introduce the concept of importing and exporting survey data in AutoCAD.Explain the process of creating topographic maps and site plans using AutoCAD. <p>3. Exercise – 5 minutes</p> <ul style="list-style-type: none">Provide a survey data set and ask students to create a topographic map using AutoCAD.
Closure	<ul style="list-style-type: none">Summarize the applications of AutoCAD in surveying and the benefits of using digital tools in data handling. <p>Spend 5 minutes to wrap up and consolidate the learnings</p>
Evaluation	<p>Reflective Questions (What, Why, Who?). Allow students to answer and discuss.</p> <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>



Lesson Plan No.14	Course Name: Engineering Graphics Lab Topic : Exercise on Draw Tools in AutoCAD	Course No.: CE-212
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Objective	<ul style="list-style-type: none">To provide hands-on practice using various draw tools in AutoCAD.
Teaching Aids (if any)	<ol style="list-style-type: none">Chalk and talkICT
Teaching Development	<p>1. Introduction (5 minutes)</p> <ul style="list-style-type: none">Introduce the basic draw tools available in AutoCAD and their significance in creating precise drawings. <p>2. Development (30 minutes)</p> <ol style="list-style-type: none">Demonstrate the use of line, circle, arc, polyline, and other basic draw tools in AutoCAD.Discuss the importance of accurate positioning and dimensioning while using draw tools. <p>3. Exercise – 5 minutes</p> <ul style="list-style-type: none">Provide a set of tasks where students need to create different shapes and objects using draw tools in AutoCAD.
Closure	<ul style="list-style-type: none">Summarize the importance of mastering draw tools for creating accurate engineering drawings. <p>Spend 5 minutes to wrap up and consolidate the learnings</p>
Evaluation	<p>Reflective Questions (What, Why, Who?). Allow students to answer and discuss.</p> <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>



Lesson Plan No.15	Course Name: Engineering Graphics Lab Topic : Exercise on Modify Tools in AutoCAD	Course No.: CE-212
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Objective	<ul style="list-style-type: none">To provide hands-on practice using various modify tools in AutoCAD.
Teaching Aids (if any)	<ol style="list-style-type: none">Chalk and talkICT
Teaching Development	<p>1. Introduction (5 minutes)</p> <ul style="list-style-type: none">Introduce the modify tools available in AutoCAD and their role in editing and refining drawings. <p>2. Development (30 minutes)</p> <ol style="list-style-type: none">Demonstrate the use of tools like move, copy, rotate, mirror, and trim in AutoCAD.Discuss the importance of accurate modification techniques to maintain drawing accuracy <p>3. Exercise – 5 minutes</p> <ul style="list-style-type: none">Provide a set of drawings and ask students to perform various modifications using the tools in AutoCAD
Closure	<p>Emphasize the significance of proficiently using modify tools to efficiently edit drawings</p> <p>Spent 5 minutes to wrap up and consolidate the learnings</p>
Evaluation	<p>Reflective Questions (What, Why, Who?). Allow students to answer and discuss.</p> <p>Spent 5 minutes to evaluate student assimilation of the lesson contents</p>



Lesson Plan No.16	Course Name: Engineering Graphics Lab Topic : Introduction to 3D SketchUp: Commands and Tools	Course No.: CE-212
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Objective	<ul style="list-style-type: none">To introduce students to 3D modeling using SketchUp, including basic commands and tools.
Teaching Aids (if any)	<ol style="list-style-type: none">Chalk and talkICT
Teaching Development	<ol style="list-style-type: none">Introduction (5 minutes)<ul style="list-style-type: none">Explain the concept of 3D modeling and its relevance in architectural and engineering design.Development (30 minutes)<ol style="list-style-type: none">Introduce SketchUp as a user-friendly 3D modeling software.Demonstrate basic 3D modeling commands and tools, such as drawing shapes, extruding, and manipulating objects.Exercise – 5 minutes<ul style="list-style-type: none">Ask students to create simple 3D models using basic commands and tools in SketchUp.
Closure	<p>Discuss the versatility of 3D modeling in design visualization.</p> <p>Spend 5 minutes to wrap up and consolidate the learnings</p>
Evaluation	<p>Reflective Questions (What, Why, Who?). Allow students to answer and discuss.</p> <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>



Lesson Plan No.17	Course Name: Engineering Graphics Lab Topic : Forming 3D SketchUp Ladder	Course No.: CE-212
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Objective	<ul style="list-style-type: none">To teach students how to create a 3D model of a ladder using SketchUp.
Teaching Aids (if any)	a. Chalk and talk b. ICT
Teaching Development	1. Introduction (5 minutes) <ul style="list-style-type: none">Explain the steps involved in creating 3D models of objects using SketchUp. 2. Development (30 minutes) <ul style="list-style-type: none">Demonstrate how to draw and extrude the components of a ladder in 3D. 3. Exercise – 5 minutes <ul style="list-style-type: none">Ask students to create a 3D model of a ladder using SketchUp.
Closure	Emphasize the practical applications of creating 3D models of everyday objects. Spend 5 minutes to wrap up and consolidate the learnings
Evaluation	Reflective Questions (What, Why, Who?). Allow students to answer and discuss. Spend 5 minutes to evaluate student assimilation of the lesson contents



Lesson Plan No.18	Course Name: Engineering Graphics Lab Topic : Drawing a 3D SketchUp Plan of Building and Dimensioning	Course No.: CE-212
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Objective	<ul style="list-style-type: none">To teach students how to create a 3D model of a building plan and add dimensions using SketchUp.
Teaching Aids (if any)	<ol style="list-style-type: none">Chalk and talkICT
Teaching Development	<p>1. Introduction (5 minutes)</p> <p>Explain the advantages of creating 3D building plans for visualization and design analysis.</p> <p>2. Development (30 minutes)</p> <ol style="list-style-type: none">Demonstrate how to draw and extrude a 3D model of a building plan.Introduce the concept of dimensioning in 3D modeling and its importance. <p>3. Exercise – 5 minutes</p> <ul style="list-style-type: none">Ask students to create a 3D model of a building plan and add accurate dimensions using SketchUp.
Closure	<p>Discuss the benefits of 3D building plans and accurate dimensioning in architectural design.</p> <p>Spend 5 minutes to wrap up and consolidate the learnings</p>
Evaluation	<p>Reflective Questions (What, Why, Who?). Allow students to answer and discuss.</p> <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>