

Building Technology - National Diploma (ND)

Drawing Courses

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Technical Drawing

| Course: Building Technology ND | | Course Code: BLD 107 | Contact Hours: 1-0-3 |
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| Course Technical Drawing Course Specification: Theoretical Content | | | |
| General Objective 1.0: Know the use and care of the different drawing instruments, equipments and materials. | | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 1 | 1.1 Identify the different types of drawing instruments, equipments and materials. 1.2 Outline the various instruments, equipments and materials. 1.3 State the precautions necessary to preserve the items in 1.1 above. 1.4 Use each of the item in 1.1 above 1.5 Maintain the various instrument and equipment. | <ul style="list-style-type: none"> • Demonstrate the uses of various drawing instruments, equipment and materials. • *Show how they should be maintained. | <ul style="list-style-type: none"> • Drawing instruments, equipments and materials such as Ruler, setsquares, T- squares, pencils drawing paper etc. • Chalk board. |
| General Objective 2.0: Understand the essentials in graphical communication | | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 2 | 2.1 Explain graphics and the different types of graphical presentations. 2.2 Illustrate the various conventional representations in graphical production of construction lines, finished lines, hidden and overhead details, projects, center lines, break lines, dimensioning of plans, elevations and sections of objects. | <ul style="list-style-type: none"> • Show representation on the chalkboard. | <ul style="list-style-type: none"> • Chalk board. |
| 3 - 5 | 2.3 Layout drawing sheets with the following. <ul style="list-style-type: none"> a. Margin b. Title block etc. 2.4 State the various standards of drawing sheets. 2.5 Print letters and figures of various forms and characters. 2.6 Illustrate conventional signs and symbols. 2.7 Layout a given set of drawings on a given sheet using the conventional signs, symbols and appropriate lettering characters. | <ul style="list-style-type: none"> • Illustrate on the chalk board <p style="text-align: center;">-do-</p> <p style="text-align: center;">-do-</p> <p style="text-align: center;">-do-</p> | <ul style="list-style-type: none"> • Chalkboard • Drawing sheets of various standards. <p style="text-align: center;">-do-</p> <p style="text-align: center;">-do-</p> <p style="text-align: center;">-do-</p> |

| Course: Building Technology ND | | Course Code: BLD 107 | Contact Hours: 1-0-3 |
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| Course Technical Drawing Course Specification: Theoretical Content | | | |
| General Objective 3.0: Know the Construction of simple geometric figures and shapes. | | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 6 | <p>3.1 Explain the purpose of geometrical construction in drawing.</p> <p>3.2 Construct parallel and perpendicular lines.</p> <p>3.3 Construct and bisect lines, angles and areas.</p> <p>3.4 Divide a straight line into given number of equal parts.</p> | <ul style="list-style-type: none"> Show students how to construct simple geometrical figures and shapes. | -do- |
| 7 | <p>3.5 Identify polygons (regular or irregular).</p> <p>3.6 Construct regular polygons with:</p> <ol style="list-style-type: none"> N sides in a given circle. A given side length and of N side on a straight line. | <ul style="list-style-type: none"> Show students how to construct polygons. | -do- |
| 8 | <p>3.7 Define a circle.</p> <p>3.8 Explain the properties of a circle, e.g. radius, diameter, normal tangent, circumference etc.</p> <p>3.9 Carry out simple geometrical constructions on circles e.g.</p> <ol style="list-style-type: none"> the diameter of a circle given the circumference the circumference of a circle of a given diameter a circle to pass through 3 points a circle to pass through 2 points and touch a given line a circle to touch a given smaller circle and a given line Tangents to circles at various points. An arc of know radius, tangent to two lines at an angle of less than and more than 90° An arc externally tangent to two circles Inscribing and exscribing circles | <ul style="list-style-type: none"> Show the different geometrical constructions on circles. | -do- |

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| Course Technical Drawing Course Specification: Theoretical Content | | | |
| General Objective 3.0: Know the Construction of simple geometric figures and shapes. | | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 9 | 3.10 Define an ellipse. 3.11 Construct an ellipse by using: a) Trammel method. b) Concentric circle method. | • Construct and ellipse using the methods listed. | • Chalk board • Trammel. |
| General Objective 4.0: Know the Construction of isometric and obliques drawings and projections. | | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 11-12 | 4.1 Explain isometric and obliques projections 4.2 Draw a square in isometric and oblique forms 4.3 Draw a circle in isometric and oblique forms 4.4 Draw an ellipse in isometric and oblique forms 4.5 Draw a polygon with a minimum of eight sides in isometric and oblique forms. 4.6 Dimension holes, circles, arcs and angles correctly in isometric and obliques drawings 4.7 Use appropriate conventional symbols and abbreviations | -do- | -do- |
| General Objective 5.0: Understand the Principles of orthographic projections | | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 13 | 5.1 Explain the principles of orthographic projections 5.2 Illustrate the principle planes of projection: a. vertical plane b. horizontal plane | -do- | -do- |
| 14 | 5.3 Explain why the first and third angle are used and the second and fourth angle are not used. 5.4 Project views of three-dimensional objects on to the basic planes of projection in both first and third angle to obtain: a. the front view or elevation b. the top view or plan | | |

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| Course Technical Drawing Course Specification: Theoretical Content | | | |
| General Objective 6.0: Understand the Intersections of regular solids. | | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 15 | <p>6.1 Explain interpenetration or intersections of solids</p> <p>6.2 Draw the lines of intersections of the following regular solids and planes in both first and third angles:</p> <ul style="list-style-type: none"> a. Two dissimilar square prisons meeting at right angles. b. Two dissimilar square prisons meeting at an angle. c. a hexagonal prison meeting square prison at right angles. d. Two dissimilar cylinders meeting at right angles. e. Two dissimilar cylinders meeting at an angle. f. Two dissimilar cylinders meeting at right angle, their centers not being in the same vertical plane. | - do - | - do - |
| <p>Assessment: Coursework: 20% Course test: 20% Practical: 20% Examination: 40%</p> <p>Competency: The students should be conversant with the fundamentals of technical drawing and their applications in engineering and technology.</p> <p>Reference:</p> <ol style="list-style-type: none"> 1. M. G. Swah etal "Building Drawing" 2. Ceck Handisyee "Everyday Details" | | | |

| Course: Building Technology ND | | Course Code: BLD 107 | Contact Hours: 1-0-3 |
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| Course Technical Drawing Course Specification: Practical Content | | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 1-5 | a. Layout drawing sheets with the following. b. Margin c. Title block etc. d. Print letters and figures of various forms and characters. e. Layout a given set of drawings on a given sheet using the conventional signs, symbols and appropriate lettering characters. | <ul style="list-style-type: none"> • Illustrate on the chalk board • Demonstrate using examples. <p style="text-align: center;">-do-</p> | <ul style="list-style-type: none"> • Chalkboard • Drawing sheets of various standards. • Chalkboard. <p style="text-align: center;">- do -</p> |
| 6 | a. Construct parallel and perpendicular lines. b. Construct and bisect lines, angles and areas. c. Divide a straight line into given number of equal parts. | <ul style="list-style-type: none"> • Show students how to construct simple geometrical figures and shapes. | - do - |
| 7 | Construct regular polygons with: N sides in a given circle. A given side length and of N side on a straight line. | <ul style="list-style-type: none"> • Show students how to construct polygons. | -do- |
| 8 | a. Carry out simple geometrical constructions on circles e.g. b. the diameter of a circle given the circumference. c. the circumference of a circle of a given diameter. d. a circle to pass through 3 points. e. a circle compass through 2 points and touch a given line f. a circle to touch a given smaller circle and a given line g. Tangents to circles at various points. h. An arc of know radius, tangent to two lines at an angle of less than and more than 90oi. An arc externally tangent to two circles. j. Inscribing and exscribing circles. | <ul style="list-style-type: none"> • Show the different geometrical constructions on circles. | -do- |

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| Course Technical Drawing Course Specification: Practical Content | | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 9 11 | a. Construct an ellipse by using: b. Trammel method. c. Concentric circle method. d. Construct plane scales, diagonal scales and scale cut using appropriate instruments. | <ul style="list-style-type: none"> • Construct and ellipse using the methods listed. • Demonstrate with examples. | <ul style="list-style-type: none"> • Chalk board • Trammel. • Drawing instruments chalkboard. |
| 12 | a. Draw a square in isometric and oblique forms b. Draw a circle in isometric and oblique forms c. Draw an ellipse in isometric and oblique forms d. Draw a polygon with a minimum of eight sides in isometric and oblique forms. e. Dimension holes, circles, arcs and angles correctly in isometric and oblique drawings. | -do- | -do- |
| 14 | a. Project views of three-dimensional objects on to the basic planes of projection in both first and third angle to obtain: b. the front view or elevation c. the top view or plan | -do- | -do- |
| 15 | a. Draw the lines of intersections of the following regular solids and planes in both first and third angles: b. Two dissimilar square prisms meeting at right angles. c. Two dissimilar square prisms meeting at an angle. | -do- | -do- |
| | a. a hexagonal prism meeting square prism at right angles. b. Two dissimilar cylinders meeting at right angles. c. Two dissimilar cylinders meeting at an angle. d. Two dissimilar cylinders meeting at right angle, their centers not being in the same vertical plane. | | |
| Assessment: Coursework: 10% Course test: 10% Practical: 40% Examination: 40% | | | |

Basic Principles of ARCH Design and Drawing

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| Course: Basic Principles of ARCH Design and Drawing ND | | Course Code: BLD 110 | Contact Hours: 1-0-2 |
| Course Specification: Theoretical Content | | | |
| General Objective 1.0: Know how to code and reproduce Drawing. | | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 1 - 2 | 1.1 Explain the various systems of coding drawings 1.2 Illustrate how to layout drawings and present them 1.3 Enumerate the various equipment used in graphical reproduction e.g. printing machine, scanning machine, photocopying machine, computer, plotter. 1.4 Use the equipment in 1.3 above. 1.5 Maintain the equipment in 1.3 above. | <ul style="list-style-type: none"> • Demonstrate and present layout drawings. • Show the students graphical reproduction equipment. • Demonstrate use of the above equipment • Demonstrate maintenance vis-à-vis maintenance workshop and technical sales shops | <ul style="list-style-type: none"> • Chalk Board, Design studio, • Printing machines, Scanning machines, Photocopying machine, Computer machine, Plotter etc. • Chalk Board, Design studio |
| General Objective 2.0: Understand the general elements of design with Respect to space requirements of different functions In residential building. | | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 3 - 6 | 2.1 Enumerate the various equipment used in graphical drawing 2.2 Derive the human scale. 2.3 Work out the scale needed for human movement. 2.4 Explain the relationship between form and function in the internal arrangement for a living space, 2.5 Derive the space requirement for domestic furniture, fixture, corridor etc. 2.6 Arrange furniture, fixture, equipment of common usage in a residential building. 2.7 Design kitchen, toilet, living room etc. as a unit. 2.8 Apply proportion as an element of design. 2.9 Select overall dimensions. | <ul style="list-style-type: none"> • Mention and highlight relevant Information and Computer Technology (ICT) equipment. • Demonstrate typical drawing examples and models. • Show approved working drawings. | <ul style="list-style-type: none"> • Chalk board, Design studio, Printing machine, Scanning machine, Photocopying machine, Computer machine, Approved working drawings, Architect's data |

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| Course: Basic Principles of ARCH Design and Drawing ND | | Course Code: BLD 110 | Contact Hours: 1-0-2 |
| Course Specification: Theoretical Content | | | |
| General Objective 3.0: Understand draughting and produce working Drawing of a simple residential building | | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 7-10 | <p>3.1 Choose size of drawing sheets</p> <p>3.2 Choose the appropriate scales for drawing</p> <p>3.3 Draught the plan of a given building design using a given set of drawings as a guide.</p> <p>3.4 Project the elevations and sections</p> <p>3.5 Draught the doors and windows schedules, finishing Drawings, sanitary drawings and site plan etc</p> <p>3.6 Trace in ink the drawings draughted in 2.3, 2.4 and 2.5 above.</p> <p>3.7 Stencil with annotation the traced drawing</p> <p>3.8 Code the finished drawings in the conventional order.</p> <p>3.9 Apply Information and Computer Technology equipment for designs.</p> | <ul style="list-style-type: none"> • Demonstrate with existing approved working drawing. • Supervise students' drawings on card board sheets • Supervise students' drawings on traced sheets. • Demonstrate use of Computer to produce working drawing | <p>Chalk board, Design studio, Computer machine, Printer plotter and plan printing machine, Chalk board, Design studio.</p> |
| General Objective 4.0: Know the basic materials and tools used for artistic Production and undertake simple pencil sketching | | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 11 - 15 | <p>4.1 Explain the role of art in communication</p> <p>4.2 Enumerate the basic tools used in graphic art and their function.</p> <p>4.3 List the various materials used in graphic art.</p> <p>4.4 Illustrate how the materials in 3.3 above are used for graphical production.</p> <p>4.5 Maintain the tools enumerated in 3.2 above.</p> | <ul style="list-style-type: none"> • Demonstrate application of graphic art tools. • Demonstrate maintenance processes • Apply the various grades of pencils. • Show how to make shadow cast • Engage students to produce drawings. | <ul style="list-style-type: none"> • Chalk board, • Design Studio. |

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| Course Specification: Theoretical Content | | |
| 11 - 15 | <p>4.6 State the various grades of pencils and factors affecting their choice for sketching.</p> <p>4.7 Sketch various planner shapes and three dimensional shapes</p> <p>4.8 Explain the principles of shadow casting.</p> <p>4.9 Use the cross-hatching techniques to produce the objects in 3.7</p> | <ul style="list-style-type: none"> • Demonstrate application of graphic art tools. • Demonstrate maintenance processes • Apply the various grades of pencils. • Show how to make shadow cast • Engage students to produce drawings. <ul style="list-style-type: none"> • Chalk board, • Design Studio. |
| <p>Assessment: Coursework: 20% Course test: 20% Practical: 20% Examination: 40%</p> <p>Competency: The students should be able to produce working drawings of residential building manually and using computer.</p> <p>Reference:</p> <ol style="list-style-type: none"> 1. Praser Reckie "Draughtmanship" 2. Robert C. MC Hige" Working Drawing Hand book" | | |

| Course: Basic Principles of ARCH Design and Drawing ND | | Course Code: BLD 110 | Contact Hours: 1-0-2 |
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| Course Specification: Practical Content | | | |
| Week | Specific Learning Outcome | Teachers Activities | Resources |
| 1 - 2 | 1. Use graphical reproduction equipment. 2. Maintain the equipment. | • Demonstrate use of equipment. | • Chalk Board, Design studio, • Printing machines, Scanning machines, Photocopying machine, Computer machine, Plotter etc. • Chalk Board, Design studio. |
| 3 - 6 | 3. Design kitchen, toilet, living room etc. as a unit. | • Guide Students in their drawings works. | • Chalk Board, Design studio • Printing machine, Scanning machine, Photocopying machine, Computer machine, Approved working drawings, Architect's data. |
| 7 - 10 | 4. Draught the plan of a given building design using a given set of drawings as a guide using appropriate scales. 5. Draught the doors and windows schedules, finishing 6. Drawings, sanitary drawings and site plan etc 7. Trace in ink the drawings draughted in 2.3, 2.4 and 2.5 above. 8. Sketch various planner shapes and three dimensional shapes. 9. Use the cross-hatching techniques to produce the objects in 3.7. | • Supervise students' drawings on card board sheets. • Demonstrate application of graphic art tools. | • Chalk board, Design studio, Computer machine, • Printer plotter and plan printing machine, • Chalk board, Design studio. |