

ENGINEERING MATHEMATICS

UNIT CODE: CON/CU/PL/CC/01/4/A

Relationship to Occupational Standards

This unit addresses the unit of competency: Apply engineering mathematics

Duration of Unit: 30 hours

Unit Description

This unit describes the competencies required to apply Engineering Mathematics. It involves applying algebra and co-ordinate geometry, carrying out mensuration, applying matrices and statistics and plotting simple graphs.

Summary of Learning Outcomes

1. Apply Algebra
2. Apply Coordinate Geometry
3. Carry out Mensuration
4. Apply Matrix
5. Apply basic statistics
6. Plot simple graphs

Learning Outcomes, Content and Suggested Assessment Methods

| Building Technology Curriculum | | |
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| Learning Outcome | Content | Suggested Assessment Methods |
| 1. Apply Algebra | <ul style="list-style-type: none">• Base and Index• Law of indices• Laws of logarithm• Conversion of bases• Use of calculator | <ul style="list-style-type: none">• Written tests• Oral questioning• Assignments• Supervised exercises |

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| | <ul style="list-style-type: none"> • Algebraic expressions and equations • Reduction of algebraic equations • Solutions of simultaneous linear equations in two unknowns • Solution of quadratic equation | |
| 2. Apply Coordinate Geometry | <ul style="list-style-type: none"> • Polar equations • Cartesian equation • Graphs of polar equations • Normal and tangents | <ul style="list-style-type: none"> • Written tests • Oral questioning • Assignments • Supervised exercises |
| 3. Carry out Mensuration | <ul style="list-style-type: none"> • Units of measurements • Perimeter and areas of regular figures • Volume of regular solids • Surface area of regular solids • Area and volume of irregular figures • Areas and volumes using Pappus theorem | <ul style="list-style-type: none"> • Written tests • Oral questioning • Assignments • Supervised exercises |
| 4. Apply Matrix | <ul style="list-style-type: none"> • Matrix operation • Determinant of 2x2 matrix • Inverse of 2x2 matrix • Solution of linear simultaneous equations in 2 unknowns • Application of matrices | <ul style="list-style-type: none"> • Assignments • Oral questioning • Supervised exercises • Written tests |

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| 5. Apply basic statistics | <ul style="list-style-type: none"> • Terms and concepts • Data collection • Data organization • Measures of central tendencies of grouped and ungrouped data • Data presentation • Interpretation of data from given charts | <ul style="list-style-type: none"> • Written tests • Oral questioning • Assignments • Supervised exercises |
| 6. Plot simple graphs | <ul style="list-style-type: none"> • Types of graphs <ul style="list-style-type: none"> • linear graphs • bar graphs • pie chart • pictograph • Plotting graphs for given set of data • Interpreting graphs | <ul style="list-style-type: none"> • Written tests • Oral questioning • Assignments • Supervised exercises |

Suggested Instruction Methods

- Group discussions
- Demonstration
- Exercises by trainee

Recommended Resources

- Scientific Calculators
- Rulers, pencils, erasers
- Charts with presentations of data
- Graph books
- Dice
- Computers with internet connection