

FLUID MECHANICS PRINCIPLES

UNIT CODE:ENG/CU/TEX/CC/04/6/A

Relationship to Occupational Standards

This unit addresses the Unit of Competency: Apply Fluid Mechanics Principles

Duration of Unit: 90 hours

Unit Description

This unit describes the competencies required by a Plant technician in order to apply a wide range of fluid mechanics principles in their work. It includes understanding flow of fluids, demonstrating knowledge in viscous flow, performing dimensional analysis and operating fluid pumps.

Summary of Learning Outcomes

1. Understand flow of fluids
2. Demonstrate knowledge in viscous flow
3. Perform dimensional analysis
4. Operate fluid pumps

Learning Outcomes, Content and Suggested Assessment Methods

| Learning Outcome | Content | Suggested Assessment Methods |
|--|---|---|
| 1. Understand flow of fluids | <ul style="list-style-type: none">• Flow rate in pipes• Losses in pipes• Causes of losses in pipes• Application of flow loss equations | <ul style="list-style-type: none">• Written tests• Oral questioning• Assignments• Supervised exercises |
| 2. Demonstrate knowledge in viscous flow | <ul style="list-style-type: none">• Viscous flow between parallel surfaces• Viscous flow equations• Application of viscous flow equations | <ul style="list-style-type: none">• Written tests• Oral questioning• Assignments• Supervised exercises• |
| 3. Perform dimensional analysis | <ul style="list-style-type: none">• Dimensional analysis definition• Principle of dimensional homogeneity | <ul style="list-style-type: none">• Assignments• Oral questioning |

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|------------------------|---|--|
| | <ul style="list-style-type: none"> • Fundamental dimensions and units • Physical quantities • Application of dimensional analysis | <ul style="list-style-type: none"> • Supervised exercises • Written tests |
| 4. Operate fluid pumps | <ul style="list-style-type: none"> • Principle of operation of pumps • Reciprocating pump equation • Centrifugal pump equation • Application of pump equations in problem solving | <ul style="list-style-type: none"> • Assignments • Oral questioning • Practical tests • Observation • Supervised exercises • Written tests |

Suggested Methods of Instruction

- Group discussions
- Demonstration by trainer
- Online video clips
- Power point presentation
- Exercises by trainee

Recommended Resources

- Scientific Calculators
- Relevant reference materials
- Stationeries
- Relevant practical materials
- Dice
- Computers with internet connection