

# FLUID MECHANICS PRINCIPLES

**UNIT CODE:**ENG/CU/TXP/CC/05/5/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 Textile Processing craft person 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"><li>• Flow rate in pipes</li><li>• Losses in pipes</li><li>• Causes of losses in pipes</li><li>• Application of flow loss equations</li></ul>	<ul style="list-style-type: none"><li>• Written tests</li><li>• Oral questioning</li><li>• Assignments</li><li>• Supervised exercises</li></ul>
2. Demonstrate knowledge in viscous flow	<ul style="list-style-type: none"><li>• Viscous flow between parallel surfaces</li><li>• Viscous flow equations</li><li>• Application of viscous flow equations</li></ul>	<ul style="list-style-type: none"><li>• Written tests</li><li>• Oral questioning</li><li>• Assignments</li><li>• Supervised exercises</li></ul>
3. Perform dimensional analysis	<ul style="list-style-type: none"><li>• Dimensional analysis definition</li><li>• Principle of dimensional homogeneity</li><li>• Fundamental dimensions and units</li><li>• Physical quantities</li><li>• Application of dimensional analysis</li></ul>	<ul style="list-style-type: none"><li>• Assignments</li><li>• Oral questioning</li><li>• Supervised exercises</li><li>• Written tests</li></ul>

4. Operate fluid pumps	<ul style="list-style-type: none"> <li>• Principle of operation of pumps</li> <li>• Reciprocating pump equation</li> <li>• Centrifugal pump equation</li> <li>• Application of pump equations in problem solving</li> </ul>	<ul style="list-style-type: none"> <li>• Assignments</li> <li>• Oral questioning</li> <li>• Practical tests</li> <li>• Observation</li> <li>• Supervised exercises</li> <li>• Written tests</li> </ul>
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#### **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

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