

**1. Module details****Module name****Insulating Oil - Testing and Decontamination****Module duration**

It is expected that students with the appropriate entry knowledge and skills will successfully complete this module in 18 – 20 hours.

**Module code**

NUE202

**Discipline code**

07031

**2. Module purpose**

This module aims to provide the student with knowledge and skills involved in testing insulating oil and conducting oil decontamination procedures in the electricity supply industry. These skills are focused on retrieving oil samples, oil handling, oil testing, record keeping and oil decontamination by operation of a filtration plant. All these activities are to be conducted to OH&S, enterprise and manufacturers specifications and procedures using available testing and filtration equipment.

**3. Prerequisites**

NUE207 Powerline Safety Practices.

**4. Relationship to competency standards**

This module addresses Unit 2.4 of the E.S.I. National Competency Standards for Overhead Line Work and Cable Jointing.

**5. Content****Coolants/insulators**

containment within transformer, switchgear and oil filled cable  
 insulating oil properties  
 effects of contaminants  
 moisture  
 acidity  
 sludge

**Oil handling and sampling**

methods  
 personal hygiene  
 sampling  
 on site testing  
 oil sample transportation  
 frequency of testing  
 record keeping

**Testing**

types of tests: electric strength; water content; dielectric dissipation; resistivity; acidity; test equipment

	<p><b>Filtering equipment and its use</b>  safety issues  equipment cleaning and decontamination  use of equipment</p>
<b>6. Assessment strategy</b>	
<b>Assessment methods</b>	<p>Short answer questions (written, oral or graphic or computer based).  Suitable practical exercises and field observation which assess the skills required of the module purpose.</p>
<b>Conditions of assessment</b>	<p>Theory room for written tests and suitable locations and equipment for practical field observation.</p>
<b>7. Learning outcome details</b>	
<b>Learning outcome 1</b>	<p>Describe the properties of insulating oil and the effect of oil contaminants.</p>
<b>Assessment criteria</b>	<p>1.1 Identify electrical supply equipment that contains insulating oil.  1.2 Name the two main reasons for using oil in electrical supply equipment.  1.3 List the properties of insulating oil.  1.4 Name and describe the effects and causes of oil contamination.</p>
<b>Learning outcome 2</b>	<p><b>Explain the procedure for oil sampling and handling to industry and OH&amp;S requirements.</b></p>
<b>Assessment criteria</b>	<p>2.1 Describe the procedure for taking an oil sample from electrical supply equipment.  2.2 List the hazards and safety requirements for handling insulating oil and associated cleaners.  2.3 Describe the procedure for handling and labeling an oil sample.</p>
<b>Learning outcome 3</b>	<p><b>Explain, identify and demonstrate the electrical tests conducted on insulating oil.</b></p>
<b>Assessment criteria</b>	<p>3.1 List and explain the purpose of the tests conducted on insulating oil.</p>

	<p>3.2 Describe the testing procedure for one nominated oil test.</p> <p>3.3 Perform the nominated oil test using available testing equipment, recording the final test result.</p>
<b>Learning outcome 4</b>	<b>Outline and demonstrate the procedure and operation of an oil filtration plant.</b>
<b>Assessment criteria</b>	<p>4.1 Explain the different stages of an available filtration plant.</p> <p>4.2 Explain the procedure for filtering oil according to manufacturers and OH&amp;S requirements.</p> <p>4.3 Demonstrate the use of an available filtration plant.</p>
<b>8. Delivery of the module</b>	
<b>Delivery strategy</b>	<p>Delivery strategies must be suitable for both theoretical and/or practical learning and module purpose.</p> <p>It is recommended that learning and assessment be facilitated in a holistic manner which may require a learning sequence other than indicated in the body of this module descriptor.</p>
<b>Resource requirements</b>	<p>Access to suitable equipment, filtering and testing apparatus is essential.</p> <p>Enterprise construction manuals.</p> <p>Relevant Australian standards.</p> <p>Enterprise work manuals and standing instructions.</p> <p>Relevant manufacturers' equipment manuals.</p> <p>Computing facilities.</p>
<b>Occupational health and safety requirements</b>	<p>Students should be made aware of Occupational Health and Safety issues in all situations and be expected to demonstrate safe working practices at all times. Awareness of the dangers of the electrical environment is essential. Electricity safety must be emphasised.</p>