

1. Title	Apply the knowledge of centrifugal water pumps and fans
2. Code	EMACDE302A
3. Range	Apply the knowledge of centrifugal water pumps and fans at design studios or air-conditioning and refrigeration system machine rooms in tasks of designing, installing, commissioning, operating, repairing and maintaining air-conditioning and refrigeration systems.
4. Level	3
5. Credit	6
6. Competency	<p style="text-align: center;"><u>Performance Requirements</u></p> <p>6.1 Knowledge of centrifugal water pumps and fans</p> <ul style="list-style-type: none"> ◆ Understand the working principles and construction of centrifugal water pumps, including: <ul style="list-style-type: none"> • Working principles of centrifugal water pumps • Construction of single-stage horizontal centrifugal water pumps • Construction of multi-stages centrifugal water pumps ◆ Understand the working characteristics of centrifugal water pumps, including: <ul style="list-style-type: none"> • Definition of flow, lift, power, efficiency, rotational speed and allowable suction height • Select suitable centrifugal water pumps with reference to the performance curves of pumps • Determine the operating point and adjusted operating point of centrifugal water pumps with reference to the pump performance curves and piping performance curves • Calculate the installation height for centrifugal water pumps ◆ Understand the working principles and construction of centrifugal fans, including: <ul style="list-style-type: none"> • Working principles of centrifugal fans • Working construction of centrifugal fans ◆ Understand the working characteristics of centrifugal fans, including: <ul style="list-style-type: none"> • Air flow, pressure head, power and efficiency • Select suitable centrifugal fans with reference to the fan performance curves ◆ Understand the working principles and construction of axial flow centrifugal fans, including: <ul style="list-style-type: none"> • Working principles of axial flow fans • Construction of axial flow fans ◆ Understand the working characteristics of axial flow fans, including: <ul style="list-style-type: none"> • Select suitable axial flow fans with reference to the fan performance curves

	<p>6.2 Application of knowledge of centrifugal water pumps and fans</p> <ul style="list-style-type: none"> ◆ Apply the knowledge of centrifugal water pumps and fans, including: <ul style="list-style-type: none"> • Select required centrifugal fans according to the nature of liquid, working condition, discharge flow and lift • Select required centrifugal fans according to the working condition, air flow and pressure • Install, commission, operate, repair and maintain centrifugal water pumps • Install, commission, operate, repair and maintain centrifugal fans and axial flow fans
<p>7. Assessment Criteria</p>	<p>The integrated outcome requirement of this unit of competency is:</p> <p>(i) Capable to apply the knowledge of centrifugal water pumps and fans to solve problems involving in designing, installing, commissioning, operating, repairing and maintaining air-conditioning and refrigeration system; communicate with the sector and clients.</p>
<p>8. Remarks</p>	<p>This unit of competency is applicable to practitioners engaged in designing, installing, commissioning, operating, repairing and maintaining air-conditioning and refrigeration systems.</p>