

Diploma in M&E Engineering (Building)

Key items	Course			
Course Title:	Diploma in M&E Engineering (Building)			
Course Unit Code:	DME			
Course Overview:	<p>The 'Diploma in Mechanical & Electrical (M&E) Engineering' specialises in Building and Building service engineering. M&E is vital and essential in maintaining smooth operation of business regardless of the type of sector building. The aim of this course is to introduce the services, equipment, and principles of M&E in buildings.</p> <p>Current building structures require engineers to handle advanced M&E services that are energy efficient, which is a business requirement. There is a constant demand for M&E engineers to manage the M&E services in order to minimize the building operational cost and maintenance of services such as intelligent systems, ACMV, Lighting, and Distribution of electricity.</p> <p>The programme covers a range of topics such as designing and building M&E system, techniques for M&E systems, M&E Machines, Thermodynamics and strength of materials, Electrical power system to the buildings, Building electrical design and ACMV. This study is suitable for those wish embark on a career as an M&E assistant engineer, Site engineer, M&E coordinator, Technical Officer, or other M&E trade works.</p>			
Course Structure:	No	Module Code	Module Title	Contact Hours (Inclusive of 3 hrs examination)
	1	AME	<p>Analytical Methods for Engineers</p> <p><u>Aim & Objectives</u> This module will enhance the analytical understanding and techniques which helps in solving varied engineering tasks and forms the base for other engineering modules</p> <p><u>Learning Outcomes</u></p> <ul style="list-style-type: none"> • Analyse and model engineering situations and solve problems using algebraic methods • Analyse and model engineering situations and solve problems using trigonometric methods • Analyse and model engineering situations and solve problems using calculus 	30

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			<ul style="list-style-type: none"> Analyse and model engineering situations and solve problems using statistics and probability <p><u>Topics</u></p> <ol style="list-style-type: none"> Algebra Trigonometry Hyperbolic functions AP and GP Calculus – integration and differentiation Statistics Probability
	2	EPME	<p>Engineering principles (M&E)</p> <p><u>Aim & Objectives</u> Engineering Science provides students with the basic understanding of the fundamental principles involved in Mechanical and Electrical engineering which forms the base for many engineering design and operation.</p> <p><u>Learning Outcomes</u></p> <ul style="list-style-type: none"> Determine the behavioural characteristics of elements of static engineering systems Determine the behavioural characteristics of elements of dynamic engineering system Apply DC theory to solve electrical and electronic engineering problems Apply single phase AC theory to solve electrical and electronic engineering problems Determine the behavioural characteristics of materials subjected to complex loading systems Determine the behavioural characteristics of loaded beams and cylinders Determine the dynamic parameters of power transmission system elements

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			<ul style="list-style-type: none"> Determine the dynamic parameters of rotating systems <p><u>Topics</u></p> <ol style="list-style-type: none"> Beams, Columns and Shaft AC Circuits DC Circuits RLC Circuits Transformers Stress and Strain Shear Force Relation Between bending moment, slope and deflection
	3	MEMM	<p>M&E Maintenance Management</p> <p><u>Aim & Objectives</u></p> <ul style="list-style-type: none"> Aims and objectives of the Maintenance management process Maintenance Management planning, control and organisation Evaluate user requirements for and appreciate the constraints and problems of adapting and maintaining buildings Maintenance projects, organisation & planning Planning, monitoring & controlling the maintenance programme <p><u>Learning Outcomes</u></p> <ul style="list-style-type: none"> Describe the importance, types and role of building maintenance for clients' asset management requirements. Understand and deal with the problems and constraints affecting the maintenance and renewal of buildings. Determine a buildings overall condition and maintenance implications. Plan for the effective maintenance of equipment and facilities

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			<ul style="list-style-type: none"> Understand the operational issues in management of equipment and facilities Understand the intelligent building and energy management Understand electrical and mechanical services involved in the management of equipment and facilities <p><u>Topics</u></p> <ol style="list-style-type: none"> Introduction to asset maintenance management Structure and Organization of Maintenance Function Policies, Practices & Strategies Executing a maintenance policy Indoor Air Quality Operational Services Intelligent Building and Energy Management Mechanical & Electrical Services Planning, monitoring & controlling the Maintenance Programme 	
	4	EM	<p>Electrical Machines</p> <p><u>Aim & Objectives</u> To expose the students to the basic principles of Electro mechanical Energy Conversion in Electrical Apparatus and the operation of Transformers and DC Machines.</p> <ul style="list-style-type: none"> To familiarize the constructional details, the principle of operation, prediction of performance, the methods of testing the transformers and three phase transformer connections. To introduce the principles of electromechanical energy conversion in singly and multiply excited systems. To study the working principles of electrical 	30

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			<p>machines using the concepts of electromechanical energy conversion principles and derive expressions for generated voltage and torque developed in all Electrical Machines.</p> <ul style="list-style-type: none"> • To study the working principles of DC machines as Generator and Motor, types, determination of their no-load/load characteristics, starting and methods of speed control of motors. • To estimate the various losses taking place in D.C. machines and to study the different testing methods to arrive at their performance. <p><u>Learning Outcomes</u></p> <ul style="list-style-type: none"> • Demonstrate knowledge of electrical supply equipment and be able to make selections from theoretical considerations. • Analyse and describe aspects of the construction, principle of operation, applications, methods of speed control, and methods of direction reversal of d.c. machines • Analyse and describe aspects of the construction, principle of operation, applications, methods of speed control, and methods of direction reversal of a.c. machines • Describe the construction, application and operation of single phase and three phase transformers <p><u>Topics</u></p> <ol style="list-style-type: none"> 1. Introduction 2. Transformer 3. Electromechanical Energy Conversion 4. Basic Concept in Rotating Machines 5. DC Machines

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	5	MS	<p>Mechatronics systems</p> <p><u>Aim/Objective</u> This unit will develop learners' understanding of a range of mechatronic systems that are used in industrial and domestic environments and enable them to produce specifications for mechatronic products.</p> <p><u>Learning Outcomes</u></p> <ul style="list-style-type: none"> • Understand the applications of a range of mechatronic systems and products • Understand electro-mechanical models and components in mechatronic systems and products • Produce a specification for a mechatronic system or mechatronic product • Apply mechatronic design philosophies to carry out a design analysis. <p><u>Topics</u></p> <ol style="list-style-type: none"> 1. Robotics: Introduction 2. Robotics : Kinematics of Manipulators 3. Programmable Logic Introduction 4. Programmable Logic Controllers 5. PLC programming 6. Applications of PLC <p>Power Electronics</p>	30
	6	SRM	<p>Safety and Risk Management</p> <p><u>Aim/Objective</u> This Module aims to provide learners with an understanding of health and safety planning, implementation and legislation within an engineering environment. This unit has been designed to develop the learner's awareness of the principles, planning and implementation of health and safety practice within an industrial</p>	30

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		<p>environment such as those to be found in engineering production, manufacture, services and maintenance and those in the chemical, transport and telecommunication engineering industries.</p> <p>In particular, the selection, application and evaluation of safe working procedures, for operations appropriate to particular industrial activities, are first considered. Then current health and safety legislation, safety audits and current codes of practice are covered. Next, risk is assessed and evaluated by identifying, rating and assessing the severity of hazards and recording all evidence and actions taken for future monitoring of these hazards.</p> <p>Finally, risk management activities are considered including the methods used for gathering evidence, disseminating information, complying with current regulations and implementing policy to minimise risk to life and property, for activities within a general engineering environment</p> <p><u>Learning Outcomes</u> On successful completion of this unit a learner will:</p> <ul style="list-style-type: none"> • Be able to select and apply safe working procedures to engineering operations • Understand the nature and use of current health and safety legislation • Be able to analyse engineering activities for the assessment of risk • Be able to manage and minimise risk to life, property and engineering activities within an industrial environment.

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		<p><u>Topic</u></p> <ol style="list-style-type: none"> 1. Safe working procedures 2. Permit-to-work 3. Isolations 4. Monitoring equipment 5. Protective clothing and equipment: 6. Current regulations 7. Safety audits 8. Codes of practice 9. Hazard 10. Risk rating 11. Frequency 12. Severity 13. Record 14. WSH in Singapore Risk Management 														
Course Duration:	<ol style="list-style-type: none"> 1. Full-time: 7 months Total Contact hours: 180 (No breaks between exams and modules) Week Schedule: 5 days per week (3 hrs per day) 2. Part-time: 7 months Total Contact hours: 180 (No breaks between exams and modules) Weekend: 1 Sunday (8 hrs class) Week Schedule: 1 day per week (8 hrs per day) 															
Course Fees:	\$2400 +9% GST (inclusive of non-refundable \$150 application fee)															
Skillsfuture Credit	Applicable for Singapore Citizens over 25 years old															
Mode of Instruction:	Classroom-facilitated learning															
Mode of Delivery:	Part-Time															
Mode of Assessment:	100% Written Examination															
Attendance Requirement:	A 75% minimum attendance is required for student.															
Passing Criteria:	A 50% passing rate all for assessment components is required for the student.															
Grading:	<table border="1" data-bbox="528 1704 833 1928"> <tbody> <tr> <td>A+</td> <td>100%</td> </tr> <tr> <td>A</td> <td>90% to 99%</td> </tr> <tr> <td>B</td> <td>80% to 89%</td> </tr> <tr> <td>C</td> <td>70% to 79%</td> </tr> <tr> <td>D</td> <td>60% to 69%</td> </tr> <tr> <td>E</td> <td>50% to 59%</td> </tr> <tr> <td>F</td> <td>Below 49%</td> </tr> </tbody> </table>		A+	100%	A	90% to 99%	B	80% to 89%	C	70% to 79%	D	60% to 69%	E	50% to 59%	F	Below 49%
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Qualification:	Having duly completed the approved course of study and passed the															

Key items	Course
	prescribed examinations, students will be awarded 'Diploma in M&E Engineering (Building)' issued by Avanta Academy.
Entry Qualification:	<ul style="list-style-type: none"> • Minimum Grade E in any 3 GCE 'A' Level, including English and 2 Science subjects or equivalent; or • Minimum C6 in any 3 GCE 'O' Level, including English and 2 Science subjects (Grade C6 and above) with 3 years' working experience in the engineering field; or • Working Experience: Matured candidate with other relevant certificate qualification with 5 years' relevant work experience.
Average Teacher to Student Ratio:	1:30