Pre Engineering

Month Example Sept/Jan	Content Sub-Category or Strand	National Common Core Standards Code & Language	Michigan Standards High School Content Expectations (HSCEs) Code & Language	Essential Skills	Examples of Formative Assessments	Vocabulary
						
1st Quarter September	Fluid Power		EMITEMT.1.A.1.1	Describe the function of a hydraulic quick disconnect fitting and give its schematic symbol	Module tests Works as a team member observation	Hydraulic disconnect Schematic Symbol
			EMITEMT.1.A.1.2	Describe the function of a tee and give its schematic symbol	Module tests Works as a team member observation	Tee function
			EMITEMT.1.A.1.3	Describe the operation of pressure gage and give its schematic symbol	Module tests Works as a team member observation	Pressure gage
			EMITEMT.1.A.1.4	Describe the function of a hydraulic schematic	Module tests Works as a team member observation	Hydraulic schematic
			EMITEMT.1.A.1.5	Describe the function of a hydraulic quick disconnect fitting and give its schematic symbol	Module tests Works as a team member observation	Disconnect fitting
			EMITEMT.1.A.1.6	Describe the function of a tee and give its schematic symbol	Module tests Works as a team member observation	Tee function

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			EMITEMT.1.A.1.7	Describe the operation of pressure gage and give its schematic symbol	Module tests Works as a team member observation	operation of pressure gage
			EMITEMT.1.A.1.8	Describe the function of a hydraulic cylinder and give an application	Module tests Works as a team member observation	Hydraulic cylinder
			EMITEMT.1.A.1.9	Describe the operation of a double-acting hydraulic cylinder and give its schematic symbol	Module tests Works as a team member observation	Double acting
			EMITEMT.1.A.1.10	Describe the function of a hydraulic schematic	Module tests Works as a team member observation	Function
1st Quarter October	**Electrical**		EMITEMT.1.B.1.1	Describe the two types of electrical current and give an application of each	Module tests Works as a team member observation	Electrical current
			EMITEMT.1.B.1.2	Describe the function and operation of a circuit tester	Module tests Works as a team member observation	Circuit tester

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			EMITEMT.1.B.1.3	Describe the function of the four basic components of an electric circuit	Module tests Works as a team member observation	Basic component
			EMITEMT.1.B.1.4	Describe the operation of two types of power supplies and give their schematic symbols	Module tests Works as a team member observation	Power supplies
			EMITEMT.1.B.1.5	Describe the function of an electrical schematic	Module tests Works as a team member observation	Electrical schematic
			EMITEMT.1.B.1.6	Describe the function of a manual switch	Module tests Works as a team member observation	Manual Switch
			EMITEMT.1.B.1.7	Describe the operation of N.O. and N.C. contacts and give their schematic symbols	Module tests Works as a team member observation	N.O. contacts
			EMITEMT.1.B.1.8	Describe the function and operation of thee types of manual switch operators and give an application and the schematic symbol of each	Module tests Works as a team member observation	Switch operators

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			EMITEMT.1.B.1.9	Describe the function and operation of five types of electrical output devices and give an application the schematic symbols for each	Module tests Works as a team member observation	Electrical output
2nd Quarter November	**Robotics**		EMITEMT.1.C.1.1	Define a robot and gave an application	Module tests Works as a team member observation	Robot
			EMITEMT.1.C.1.2	Describe three advantages of robots	Module tests Works as a team member observation	Advantages
			EMITEMT.1.C.1.3	Describe the functions of five basic robot components	Module tests Works as a team member observation	Basic robot
			EMITEMT.1.C.1.4	Describe the eight rules of robot safety	Module tests Works as a team member observation	Safety
			EMITEMT.1.C.1.5	Describe the function of the six axes of a robot manipulator	Module tests Works as a team member observation	Six axes

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			EMITEMT.1.C.1.6	Describe three types of job applications	Module tests Works as a team member observation	Job applications
			EMITEMT.1.C.1.7	Describe the functions of the four components of a servo robot axis	Module tests Works as a team member observation	Servo Robot
			EMITEMT.1.C.1.8	Describe the function of the homing procedure	Module tests Works as a team member observation	Homing procedure
			EMITEMT.1.C.1.9	Describe the functions of two types of end effectors	Module tests Works as a team member observation	Effectors
			EMITEMT.1.C.1.10	Describe the operation of five types of robot safety devices	Module tests Works as a team member observation	Safety devices
2nd Quarter December	**Quality**		EMITEMT.1.E.1.1	Describe the purpose of a back plot	Module tests Works as a team member observation	Back plot

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			EMITEMT.1.E.1.2	Describe two types of CNC programming languages: G & M codes, conversational	Module tests Works as a team member observation	CNC programming
			EMITEMT.1.E.1.3	Define dimensional measurement and explain its importance	Module tests Works as a team member observation	Dimensional measurement
			EMITEMT.1.E.1.4	Describe two systems of dimensional measurement used in manufacturing: U.S. Customary and S.I.	Module tests Works as a team member observation	U.S. Customary
			EMITEMT.1.E.1.5	Describe the function and construction of a machinist rule	Module tests Works as a team member observation	Machinist rule
			EMITEMT.1.E.1.6	Describe how to use a metric machinists rule	Module tests Works as a team member observation	Metric
			EMITEMT.1.E.1.7	Define measurement accuracy and explain its importance	Module tests Works as a team member observation	Measurement accuracy

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			EMITEMT.1.E.1.8	Define resolution and explained its effect on accuracy	Module tests Works as a team member observation	Resolution
			EMITEMT.1.E.1.9	Describe how to use a decimal inch rule	Module tests Works as a team member observation	Decimal inch rule
			EMITEMT.1.E.1.10	Describe how to use a rule with a common fraction inch scale	Module tests Works as a team member observation	Common fraction
			EMITEMT.1.E.1.11	Describe the function and construction of a tape measure	Module tests Works as a team member observation	Tape measure
			EMITEMT.1.E.1.12	Describe four sources of measurement error	Module tests Works as a team member observation	Measurement error
			EMITEMT.1.E.1.13	Describe how to convert measurements made in common inch fractions to decimal fractions	Module tests Works as a team member observation	Conversion of numbers

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			EMITEMT.1.E.1.14	Describe how to convert between the U.S. Customary system and the SI Metric System	Module tests Works as a team member observation	Customary system
2nd Quarter January	**Mechanical**		EMITEMT.1.G.1.1	Describe the function of a mechanical power transmission and give an advantage	Module tests Works as a team member observation	Power transmission
			EMITEMT.1.G.1.2	Describe 5 methods of rotary mechanical power transmission and give an application of each	Module tests Works as a team member observation	Mechanical power
			EMITEMT.1.G.1.3	Describe 5 rules of safe dress for working with power transmission equipment	Module tests Works as a team member observation	Transmission equipment
			EMITEMT.1.G.1.4	Describe 8 mechanical transmission safety rules	Module tests Works as a team member observation	Safety rules
			EMITEMT.1.G.1.5	Describe the operation of the lockout/tag out system	Module tests Works as a team member observation	Lockout/tag out

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			EMITEMT.1.G.1.6	Describe the function of a foundation and give three types	Module tests Works as a team member observation	Foundation
			EMITEMT.1.G.1.7	Describe the function and construction of a bedplate	Module tests Works as a team member observation	Bedplate
			EMITEMT.1.G.1.8	Describe the function of a spirit level and give an application	Module tests Works as a team member observation	Spirit level
			EMITEMT.1.G.1.9	Describe the operation of a spirit level	Module tests Works as a team member observation	Operation
			EMITEMT.1.G.1.10	Describe three (3) types of motor mounts and give an application of each	Module tests Works as a team member observation	Motor mounts
			EMITEMT.1.G.1.11	Describe how fasteners are used to attach a motor mount to a bedplate	Module tests Works as a team member observation	Fasteners

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			EMITEMT.1.G.1.12	Describe how to select fastener size and type for a motor mount	Module tests Works as a team member observation	Size and type
			EMITEMT.1.G.1.13	Describe how to mount and level an electric motor	Module tests Works as a team member observation	Electric motor
			EMITEMT.1.G.1.14	Describe two (2) methods of measuring motor shaft speed and give an application	Module tests Works as a team member observation	Motor shaft