

MODULE MEC1010: MODES & MECHANISMS**Level:** Introductory**Theme:** Vehicle Design and Ownership**Prerequisite:** None**Module Description:** Students research, design, build and test a model of a transportation vehicle, using a simple power source, common materials and tools.**Module Parameters:** Access to basic hand tools.**Curriculum and Assessment Standards**

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> demonstrate safe use of tools, and follow established lab procedures 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> observed performance related to: <ul style="list-style-type: none"> following established shop/lab routines maintaining a safe and tidy workplace selecting and safely using tools managing time and resources. <p><i>Assessment Tool</i> <i>Task Assessment Checklist: Laboratory Practice, Part 1, MEC1010-1</i></p> <p><i>Standard</i> <i>Performance rating of 1 or more on each criteria</i></p>	10
<ul style="list-style-type: none"> list and describe operating systems and structures common to all modes of transportation 	<ul style="list-style-type: none"> identification and description of operating systems and structures common to all modes of transportation. <p><i>Assessment Tool</i> <i>Task Assessment Checklist: Laboratory Practice, Part 2, MEC1010-1</i></p> <p><i>Standard</i> <i>Performance rating of 1 or more on each criteria</i></p>	20
<ul style="list-style-type: none"> research, design, build and test a concept vehicle 	<ul style="list-style-type: none"> observed performance related to: <ul style="list-style-type: none"> research skills designed product built product testing procedures. <p><i>Assessment Tool</i> <i>Task Assessment Checklist: Laboratory Practice, Part 3, MEC1010-1</i></p> <p><i>Standard</i> <i>Performance rating of 1 or more on each criteria</i></p>	70

MODULE MEC1010: MODES & MECHANISMS (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> • demonstrate basic competencies. 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> • observations of individual effort and interpersonal exploration during the learning process. <p><i>Assessment Tool</i> <i>Basic Competencies Reference Guide and assessment tools noted above</i></p>	<p>Integrated throughout</p>

Concept	Specific Learner Expectations	Notes
<p>Health/Safety Hazards</p>	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • demonstrate knowledge of and follow safety rules and guidelines related to the use of basic hand and power tools • identify the hazards associated with the use of: <ul style="list-style-type: none"> – compressed gases – liquids under pressure – flammable materials – components under tension. 	<p>Discuss personal property and environmental concerns.</p>
<p>Identification/Function</p>	<ul style="list-style-type: none"> • identify a transportation mode that can be used to move passengers or goods in the following environments: <ul style="list-style-type: none"> – terrestrial – marine – atmospheric – space • describe, in a given environment, what forces must be overcome to start and keep a vehicle/craft in motion • list and describe the function of the following systems: <ul style="list-style-type: none"> – propulsion – guidance – control – suspension – structural – solar and wind 	

MODULE MEC1010: MODES & MECHANISMS (continued)

Concept	Specific Learner Expectations	Notes
<p>Identification/ Function (continued)</p>	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • describe and demonstrate how energy is used to produce motion using: <ul style="list-style-type: none"> – gravity – elastic or spring materials under tension – compressed gases – liquids under pressure – electromagnets – combustion • identify and compare the guidance and control mechanisms that are used in connection with a: <ul style="list-style-type: none"> – land vehicle – marine craft – aircraft – spacecraft • identify and compare the means by which a vehicle or craft is supported: <ul style="list-style-type: none"> – on land – in air, water or space • identify the types of structures and materials that are used to support vehicular systems to provide maximum safety and performance. 	
<p>Application</p>	<ul style="list-style-type: none"> • research, design and construct a vehicle or craft for a predetermined use. 	<p>Follow design process.</p> <p>Projects depend on the selection of transportation mode and propulsion system.</p> <p>Project examples are:</p> <ul style="list-style-type: none"> • CO₂ powered craft/vehicle • solar powered • rubber band powered • battery powered • bottle sockets.

MODULE MEC1010: MODES & MECHANISMS (continued)

Concept	Specific Learner Expectations	Notes
Testing/Evaluating	<p><i>The student should:</i></p> <ul style="list-style-type: none">• identify an appropriate measurement technique used to assess factors such as:<ul style="list-style-type: none">– speed– pulling power– payload– efficiency• describe operation and construction of the transportation vehicle.	Suggest self-evaluation.
Portfolio Development	<ul style="list-style-type: none">• show notes, sketches, working drawings, pictures and performance records in a portfolio.	