MECHANICS COURSE SUMMARIES

INTRODUCTORY

MEC1010: MODES & MECHANISMS
Students research, design, build and test a model of a transportation vehicle, using a simple power source, common materials and tools.
Prerequisite: *None*

MEC1015: MECHANICS TOOLS & MATERIALS
Students develop knowledge, skills and attitudes in the safe use of specialty hand tools, measuring tools and fasteners.
Prerequisite: *None*

MEC1020: VEHICLE SERVICE & CARE
Students develop the knowledge, skills and attitudes to care for and service a motor vehicle.
Prerequisite: *None*

MEC1040: ENGINE FUNDAMENTALS
Students investigate and describe operating principles, construction and applications of engines.
Prerequisite: *None*

MEC1090: ELECTRICAL FUNDAMENTALS
Students identify and describe the operating principles and applications of electricity.
Prerequisite: *None*

MEC1110: PNEUMATICS & HYDRAULICS
Students identify and describe the operating principles and applications of pneumatic and hydraulic systems.
Prerequisite: *None*

MEC1130: MECHANICAL SYSTEMS
Students identify and describe the operating principles and applications of mechanisms used to transmit and control mechanical energy.
Prerequisite: *None*

MEC1150: RIDE & CONTROL SYSTEMS
Students develop a basic knowledge of ride and control systems associated with vehicles.
Prerequisite: *None*

MEC1160: STRUCTURES & MATERIALS
Students identify the types of materials and components used in vehicle construction.
Prerequisite: *None*

MEC1165: MECHANICS WELDING FUNDAMENTALS
Students perform metal heating and cutting operations safely using oxyacetylene equipment, and perform non-structural welding using Gas Metal Arc Welding (GMAW) equipment.
Prerequisite: *MEC1015: Mechanics Tools & Materials*

MEC1170: METAL FORMING & FINISHING
Students repair and re-form damaged metal panels.
Prerequisite: *MEC1160: Structures & Materials*

MEC1190: SURFACE PREPARATION 1
Students assess the state of a painted surface and use appropriate restoration procedures.
Prerequisite: *None*

MEC1910: MEC PROJECT A
Students develop project design and management skills to extend and enhance competencies and skills in other CTS courses through contexts that are personally relevant
Prerequisite: *None*

INTERMEDIATE

MEC2010: VEHICLE DETAILING
Students develop the skills required to restore and enhance the exterior finishes of a vehicle.
Prerequisite: *None*

MEC2020: VEHICLE MAINTENANCE
Students perform the basic service requirements necessary to ensure adequate maintenance of a motor vehicle.
Prerequisite: *MEC1020: Vehicle Service & Care*

MEC2030: LUBRICATION & COOLING
Students diagnose, maintain and service the lubrication and cooling systems of a typical four-cycle gasoline engine.
Prerequisite: *MEC1040: Engine Fundamentals*

MEC2040: FUEL & EXHAUST SYSTEMS
Students diagnose, maintain and service the fuel and exhaust system of a typical four-cycle gasoline engine.
Prerequisite: *MEC1040: Engine Fundamentals*

MEC2050: ALTERNATIVE FUEL ENGINES
Students determine alternative fuels used to power motor vehicles.
Prerequisite: *None*

MEC2060: IGNITION SYSTEMS
Students identify the basic components and parts of ignition systems used on internal combustion engines, and service and repair an ignition system.
Prerequisite: *None*

MEC2070: EMISSION CONTROLS
Students describe the importance of controlling emissions and the technology applied to vehicles to meet prescribed standards.
Prerequisite: *None*

MEC2090: ELECTRICAL COMPONENTS
Students identify and describe the basic use and testing of the electrical components of a typical motor vehicle.
Prerequisite: *MEC1090: Electrical Fundamentals*

MEC2100: POWER ASSIST ACCESSORIES
Students identify and explain the function of components and parts of power assist accessories.
Prerequisite: *MEC1110: Pneumatics & Hydraulics*

MEC2110: BRAKING SYSTEMS
Students develop the necessary knowledge, skills and attitudes to diagnose, service and maintain a braking system according to accepted trade practices.
Prerequisite: *MEC1110: Pneumatics & Hydraulics*

MEC2120: HYDRAULIC ACCESSORIES
Students develop a basic knowledge of hydraulic components, applications and servicing techniques.
Prerequisite: *MEC1110: Pneumatics & Hydraulics*

MEC2130: DRIVE LINE
Students identify the purpose, describe the operation and perform the servicing of a vehicle drive line.
Prerequisite: *MEC1130: Mechanical Systems*

MEC2140: TRANSMISSIONS/TRANSAXLES
Students perform inspection service and repair procedures on manual transmissions, transaxles and clutch assemblies.
Prerequisite: *MEC2130: Drive Line*

MEC2150: SUSPENSION SYSTEMS
Students develop the knowledge, skills and attitudes necessary to service and maintain vehicle suspension systems.
Prerequisite: *MEC1150: Ride & Control Systems*

MEC2160: STEERING SYSTEMS
Students develop the knowledge, skills and attitudes necessary to maintain a steering system.
Prerequisite: *MEC1150: Ride & Control Systems*

MEC2170: METAL REPAIR & FINISHING
Students analyze and repair metal damage.
Prerequisite: *MEC1170: Metal Forming & Finishing*

MEC2180: TRIM REPLACEMENT
Students demonstrate the removal and repair of trim parts, with an emphasis on removal and installation without damage.
Prerequisite: *None*

MEC2190: SURFACE PREPARATION 2
Students perform advanced surface preparations.
Prerequisite: *MEC1190: Surface Preparation 1*

MEC2200: REFINISHING 1
Students demonstrate metal surface refinishing procedures.
Prerequisite: *MEC2190: Surface Preparation 2*

MEC2210: TOUCH-UP & FINISHING
Students determine and use the appropriate materials, tools and processes for minor surface repairs.
Prerequisite: *MEC2200: Refinishing 1*

MEC2220: INTERIOR REPAIRS
Students search for and use the appropriate products and techniques to maintain vehicle interior surface materials.
Prerequisite: *MEC1160: Structures & Materials*

MEC2910: MEC PROJECT B
Students develop project design and management skills to extend and enhance competencies and skills in other CTS courses through contexts that are personally relevant.
Prerequisite: *None*

MEC2920: MEC PROJECT C
Students develop project design and management skills to extend and enhance competencies and skills in other CTS courses through contexts that are personally relevant.
Prerequisite: *None*

MEC2950: MEC INTERMEDIATE PRACTICUM
Students apply prior learning and demonstrate the attitudes, skills and knowledge required by an external organization to achieve a credential/credentials or an articulation.
Prerequisite: *None*

ADVANCED

MEC3010: BUYING & SELLING VEHICLES
Students develop the skills required to make an informed purchase or sale of a vehicle.
Prerequisite: *None*

MEC3020: VEHICLE VALUE APPRAISAL
Students demonstrate the procedures used by the vehicle repair industry to estimate the cost of a repair and the market value of a vehicle.
Prerequisite: *MEC2020: Vehicle Maintenance*

MEC3030: ENGINE DIAGNOSIS
Students learn to diagnose the condition of an engine for worn or damaged parts and/or improper adjustments.
Prerequisite: *MEC1040: Engine Fundamentals*

MEC3040: ENGINE TUNE-UP
Students diagnose, service and repair engine, fuel, ignition, charging and starting systems.
Prerequisite: *MEC3030: Engine Diagnosis*

MEC3050: ENGINE REPLACEMENT
Students remove and install an engine in a chassis.
Prerequisite: *MEC1040: Engine Fundamentals*

MEC3060: ENGINE RECONDITIONING – HEAD
Students determine the need for service and perform the required service on the cylinder head and related components of an engine.
Prerequisite: *MEC1040: Engine Fundamentals*

MEC3070: ENGINE RECONDITIONING – BLOCK
Students determine the need for service and perform service on a cylinder block assembly and related components of an engine.
Prerequisite: *MEC1040: Engine Fundamentals*

MEC3080: ALTERNATIVE ENERGY SYSTEMS
Students describe why vehicle manufacturers continue to build the crank-piston internal combustion gasoline engine. Students also identify and describe future engine designs.
Prerequisite: *MEC2050: Alternative Fuel Engines*

MEC3090: COMPUTER SYSTEMS
Students provide an overview of the applications of computer management systems used in modern vehicles.
Prerequisite: *MEC2070: Emission Controls*

MEC3100: SAFETY SYSTEMS
Students describe how safety systems can be tested, diagnosed, replaced or repaired.
Prerequisite: *MEC2100: Power Assist Accessories*

MEC3110: CLIMATE CONTROL
Students expand their knowledge of the purpose, operation and servicing of standard heating and air conditioning systems.
Prerequisite: *MEC2030: Lubrication & Cooling*

MEC3120: POWER ASSISTING
Students further develop their knowledge of the purpose, operation, service and repair of pneumatic, hydraulic and electric power assist devices.
Prerequisite: *MEC2100: Power Assist Accessories*

MEC3130: AUTOMATIC TRANSMISSIONS
Students develop knowledge of automatic transmissions and transaxles and skills in diagnosing and executing minor automatic transmission and transaxle repair requirements.
Prerequisite: *MEC1110: Pneumatics & Hydraulics*

MEC3140: DRIVE TRAIN REPAIR
Students perform overhauls on clutch, transmission and differential assemblies.
Prerequisite: *MEC2130: Drive Line*

MEC3150: WHEEL ALIGNMENT
Students develop the knowledge, skills and attitudes necessary for repairing and aligning various vehicle steering systems.
Prerequisite: *MEC2150: Suspension Systems*

MEC3160: BODY REPAIR ESTIMATION
Students apply knowledge in estimating, including paying close attention to detail in determining the cost of a repair.
Prerequisite: *MEC1160: Structures & Materials*

MEC3170: DAMAGE ANALYSIS
Students identify and examine physical damage caused by collisions and learn cost estimating procedures.
Prerequisite: *MEC2170: Metal Repair & Finishing*

MEC3180: DAMAGE REPAIR 1
Students examine the methods used to complete a repair involving removing, replacing and aligning body parts.
Prerequisite: *MEC2170: Metal Repair & Finishing*

MEC3190: DAMAGE REPAIR 2
Students examine methods used to complete a collision repair involving unibody parts replacement and frame correction
Prerequisite: *MEC3180: Damage Repair 1*

MEC3200: REFINISHING 2
Students demonstrate finishing skills and techniques related to the preparation and application of metallic paints.
Prerequisite: *MEC2200: Refinishing 1*

MEC3210: PLASTIC & FIBREGLASS
Students determine the types of plastic and fibreglass materials required for repairs and perform appropriate repair procedures.
Prerequisite: *MEC1160: Structures & Materials*

MEC3220: GLASS REPLACEMENT
Students demonstrate knowledge, skills and practice related to vehicle glass installation and adjustment.
Prerequisite: *MEC2180: Trim Replacement*

MEC3230: REFINISHING 3
Students demonstrate knowledge and skills of advanced finishing techniques, including custom painting, mixing, tinting, colour and texture matching.
Prerequisite: *MEC3200: Refinishing 2*

MEC3910: MEC PROJECT D
Students develop project design and management skills to extend and enhance competencies and skills in other CTS courses through contexts that are personally relevant.
Prerequisite: *None*

MEC3920: MEC PROJECT E
Students develop project design and management skills to extend and enhance competencies and skills in other CTS courses through contexts that are personally relevant.
Prerequisite: *None*

MEC3950: MEC ADVANCED PRACTICUM
Students apply prior learning and demonstrate the attitudes, skills and knowledge required by an external organization to achieve a credential/credentials or an articulation.
Prerequisite: *None*