



COURSE OUTLINE

MPF120

Prepared: Stephen Kent Approved: Corey Meunier

Course Code: Title	MPF120: AUTOMOTIVE SUSPENSION
Program Number: Name	4041: AUTOMOTIVE REPAIR
Department:	MOTIVE POWER
Semester/Term:	18W
Course Description:	<p>COURSE DESCRIPTION: This course deals with the study and interrelationship of essential basic fundamentals, composition, construction and operating principles of automotive tires, suspension and steering linkage systems. You will inspect and test suspension and steering linkage assemblies using manufactures maintenance procedures. The student will also perform tire repair and rim inspections following Ministry Standards, along with performance of wheel balance and the reading of tire wear patterns.</p> <p>Students will be required to follow proper safety procedures when performing the above tasks according to both Sault College Motive Power Department Standards and Vehicle Manufacturers safety regulations and specifications.</p>
Total Credits:	2
Hours/Week:	4
Total Hours:	32
Prerequisites:	MPF103
This course is a pre-requisite for:	MPT235
<p>Vocational Learning Outcomes (VLO's):</p> <p>Please refer to program web page for a complete listing of program outcomes where applicable.</p>	<p>4041 - AUTOMOTIVE REPAIR</p> <p>#1. Identify basic motive power system problems by using critical thinking skills and strategies and by applying fundamental knowledge of motor vehicle operation, components, and their interrelationships.</p> <p>#5. Identify, inspect, and test basic suspension, steering, and brake components and systems in compliance with manufacturers recommendations.</p> <p>#6. Disassemble and assemble components to required specifications by applying workshop skills and knowledge of basic shop practices.</p> <p>#7. Use a variety of test equipment to assess basic electronic circuits, vehicle systems, and subsystems.</p>

	<p>#9. Communicate information effectively, credibly, and accurately by producing supporting documentation to appropriate standards.</p> <p>#11. Prepare logs, records, and documentation to appropriate standards.</p> <p>#12. Apply business practices and communication skills to improve customer service.</p>
Essential Employability Skills (EES):	<p>#1. Communicate clearly, concisely and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience.</p> <p>#2. Respond to written, spoken, or visual messages in a manner that ensures effective communication.</p> <p>#3. Execute mathematical operations accurately.</p> <p>#4. Apply a systematic approach to solve problems.</p> <p>#5. Use a variety of thinking skills to anticipate and solve problems.</p> <p>#6. Locate, select, organize, and document information using appropriate technology and information systems.</p> <p>#7. Analyze, evaluate, and apply relevant information from a variety of sources.</p> <p>#8. Show respect for the diverse opinions, values, belief systems, and contributions of others.</p> <p>#9. Interact with others in groups or teams that contribute to effective working relationships and the achievement of goals.</p> <p>#10. Manage the use of time and other resources to complete projects.</p> <p>#11. Take responsibility for ones own actions, decisions, and consequences.</p>
Course Evaluation:	Passing Grade: 50%, D
Other Course Evaluation & Assessment Requirements:	<p>EVALUATION PROCESS/GRADING SYSTEM: The final grade for this course will be based on the results of classroom, assignments and shop evaluations weighed as indicated: Classroom 35% of the final grade is comprised of term tests Assignments 10% of the final grade is comprised of a number of technical reports Shop 45% of the final grade is comprised of attendance, punctuality, preparedness, student ability, work organization and general attitude Employability Skills 10% of final grade is comprised of attendance, class participation, show ability to follow direction and being a team player.</p> <p>(Student will be given notice of test and assignment dates in advance)</p> <p>NOTE: All assignments will be in typed format. NO hand written assignments will be accepted.</p> <p>The following semester grades will be assigned to students:</p> <p>Grade Definition Grade Point Equivalent A+ 90 100% 4.00 A 80 89% B 70 - 79% 3.00 C 60 - 69% 2.00 D 50 59% 1.00 F (Fail) 49% and below 0.00</p> <p>CR (Credit) Credit for diploma requirements has been awarded. S Satisfactory achievement in field /clinical placement or non-graded subject area. U Unsatisfactory achievement in field/clinical placement or non-graded subject area. X A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course. NR Grade not reported to Registrar's office. W Student has withdrawn from the course without academic penalty.</p>

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Assignments	10%
Employability Skills	10%
shop	45%
Theory Tests	35%

Books and Required Resources:

Automotive Technology: A Systems Approach by Erjavec
Publisher: Thomson Nelson Learning Canada Edition: 3rd Canadian

Course Outcomes and Learning Objectives:**Course Outcome 1.**

Define the purpose and fundamentals of suspension systems.

Learning Objectives 1.

Potential Elements of the Performance:

Explain and describe the following:

- centrifugal force
- inertia
- co-efficient
- sliding & rolling friction
- characteristics and applications of suspension materials
- spring steel
- tempered steel
- synthetic rubber
- fiber composites
- pneumatics
- hydraulics
- dangers of heating suspension / steering components

Course Outcome 2.

Explain the construction and operating principles of solid and independent suspension system components.

Learning Objectives 2.

Potential Elements of the Performance:

- Identify independent suspension systems, short-long arm, twin I beam, McPherson strut and modified strut.
- Compare gas shocks vs. hydraulic.
- Identify load and non-load-carrying ball joints.
- State four types of automotive springs.
- Identify radius and strut rods.
- Define camber, caster and toe.

Course Outcome 3.

Inspect and test suspension system components.

Learning Objectives 3.

Potential Elements of the Performance:

- â€¢ Inspect control arm bushings.
- â€¢ Measure vehicle ride height.
- â€¢ Test shock absorbers.
- â€¢ Clean, repack and adjust wheel bearings.
- â€¢ Inspect springs

Course Outcome 4.

Explain the construction, operating principles, and servicing of steering linkage.

Learning Objectives 4.

Potential Elements of the Performance:

- â€¢ Identify steering linkage components
- â€¢ Outline Ackermanâ€™s principal
- â€¢ Dry park steering linkage.
- â€¢ Lubricate steering components following manufacturersâ€™ recommendations.

Course Outcome 5.

Outline the construction, testing and servicing of tires and rims.

Learning Objectives 5.

Potential Elements of the Performance:

- â€¢ Define hydro-planing.
- â€¢ Explain static and dynamic wheel balance.
- â€¢ Describe the construction of radial tires.
- â€¢ Identify factors that offset tire wear.
- â€¢ Rotate tires following manufacturersâ€™ maintenance procedures.
- â€¢ Repair tires using prescribed tools and supplies.
- â€¢ Perform dynamic wheel balance using computer assisted balancer.
- â€¢ Identify, reset, calibrate and reprogram tire pressure monitor systems.

Date:

Tuesday, January 9, 2018

Please refer to the course outline addendum on the Learning Management System for further information.