

Basic Automotive

2024-25 Academic Year

Program Title	Ministry Title	Major	Year	Semester
STA-Trades Fundamentals	--	TRDE	1	1

Course Code: TFBA 1302	Course Equiv. Code(s): N/A
Course Hours: 42	Course GPA Weighting: 3
Prerequisite: N/A	
Corequisite: N/A	
Laptop Course: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Delivery Mode(s): In class <input checked="" type="checkbox"/> Online <input type="checkbox"/> Hybrid <input type="checkbox"/> Flexible <input type="checkbox"/> HyFlex <input type="checkbox"/>	
Remote proctoring required Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Authorized by (Dean or Director): Rebecca Milburn	Date: October 2024

Prepared by		
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Course Description:

Students working in the Automotive Basics course will participate in both a theory and shop based learning environment. They will be introduced to a wide cross section of the automotive trade requirements ranging from basic safety and tool usage to vehicle identification and lifting, electrical fundamentals and braking systems.

Campus Closure Notice

In the event of a campus closure during which time classes cannot be conducted or attended in person, course delivery will be conducted remotely where possible. Should teaching and learning resume on campus, students may be organized into smaller groups for classroom delivery, in accordance with directions from public health authorities. In either situation, the learning plan sequence and/or evaluation methods may be adjusted to address topics requiring hands-on, practical learning activities.

Subject Eligibility for Prior Learning Assessment & Recognition (PLAR):

Prior Learning Assessment and Recognition (PLAR) is a process a student can use to gain college credit(s) for learning and skills acquired through previous life and work experiences. Candidates who successfully meet the course learning outcomes of a specific course may be granted credit based on the successful assessment of their prior learning. The type of assessment method (s) used will be determined by subject matter experts. Grades received for the PLAR challenge will be included in the calculation of a student's grade point average.

The PLAR application process is outlined in <http://www.durhamcollege.ca/plar>. Full-time and part-time students must adhere to all deadline dates. Please email: PLAR@durhamcollege.ca for details.

PLAR Eligibility

Yes No

PLAR Assessment (if eligible):

- Assignment
- Exam
- Portfolio
- Other

Course Learning Outcomes

Course Learning Outcomes contribute to the achievement of Program Learning Outcomes for courses that lead to a credential (e.g. diploma). A complete list of Vocational/Program Learning Outcomes and Essential Employability Skill Outcomes are located in each Program Guide.

Course Specific Learning Outcomes (CLO)

Student receiving a credit for this course will have reliably demonstrated their ability to:

- CLO1 Identify basic automotive components and functions for all vehicles.
- CLO2 Explain the operating principles of selected automotive systems using proper automotive terms.
- CLO3 Identify educational pathways and career opportunities within the automotive trades including both post-secondary, apprenticeship models, and various job opportunities within the profession.
- CLO4 Complete basic automotive projects using service information and appropriate tools, techniques, equipment, and supplies.
- CLO5 Recognize the importance of ethical behaviour in an automotive professional setting.
- CLO6 Apply proper safety procedures and processes while completing automotive projects.

Essential Employability Skill Outcomes (ESSO)

This course will contribute to the achievement of the following Essential Employability Skills:

- EES 1. Communicate clearly, concisely and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience.
- EES 2. Respond to written, spoken, or visual messages in a manner that ensures effective communication.
- EES 3. Execute mathematical operations accurately.
- EES 4. Apply a systematic approach to solve problems.
- EES 5. Use a variety of thinking skills to anticipate and solve problems.
- EES 6. Locate, select, organize, and document information using appropriate technology and information systems.
- EES 7. Analyze, evaluate, and apply relevant information from a variety of sources.
- EES 8. Show respect for the diverse opinions, values, belief systems, and contribution of others.
- EES 9. Interact with others in groups or teams in ways that contribute to effective working relationships and the achievement of goals.
- EES 10. Manage the use of time and other resources to complete projects.
- EES 11. Take responsibility for one's own actions, decisions, and consequences.

Evaluation Criteria:

The Course Learning Outcomes and Essential Employability Skills Outcomes are evaluated by the following evaluation criterion.

Evaluation Description	Course Learning Outcomes	EESOs	Weighting
Assignment: Assignment	CLO4, CLO5, CLO6	EES2, EES4, EES5, EES6, EES10, EES11	15
Lab Activity: Shop Sheet activities	CLO1, CLO2, CLO4, CLO5, CLO6	EES2, EES4, EES6, EES10, EES11	40
Quiz: Quiz	CLO1, CLO2	EES2, EES10, EES11	15
In Process: In class activities	CLO1, CLO2, CLO3, CLO5, CLO6	EES2, EES5, EES10, EES11	10
Test: Final Test	CLO1, CLO2, CLO3, CLO5, CLO6	EES2, EES4, EES10, EES11	20
Total			100%

Notes:

1. In-process activities occur in class and will only be given once. They cannot be made up or supplemented. Any missed in-class activities will be assigned a mark of "0" (zero).
2. Due to shop space and timing concerns, shop assignments must be completed by the due date specified by the instructor.
3. CSA-approved safety boots and safety glasses with side shields are required. Long pants and other appropriate clothing must be worn in the shop at all times. Students who are not wearing the appropriate clothing will be asked to leave the shop area and will receive a zero on the assigned project for that day.

Required Text(s) and Supplies:

1. Course materials will be provided by the faculty member.

Recommended Resources (purchase is optional):

N/A

Policies and Expectations for the Learning Environment:

General Policies and Expectations:

General College policies related to	General policies related to
<ul style="list-style-type: none"> + Acceptable Use of Information Technology + Academic Policies + Academic Integrity + Standards for Student Conduct for all Learning Environments can be found at https://durhamcollege.ca/wp-content/uploads/Standards-of-Student-Conduct-for-all-Learning-Environments.pdf + Information about academic policies and procedures can be found on-line at https://durhamcollege.ca/about/governance/policies 	<ul style="list-style-type: none"> + attendance + absence related to tests or assignment due dates + excused absences + writing tests and assignments + classroom management can be found in the Program Guide (full time programs only) in MyDC https://durhamcollege.ca/mydc/

All students at Durham College have the responsibility to familiarize themselves with and abide by the college's Academic Integrity Policy. Students are expected to complete and submit their own work in an honest manner, in accordance with the policy. Durham College has zero tolerance for breaches of academic integrity. All suspected breaches of academic integrity will be investigated and documented following procedures outlined in the policy, and should a breach be confirmed, appropriate penalties will be levied. Breaches of academic integrity refer to a variety of practices including, but not limited to:

- copying another person's work;
- using unauthorized materials or resources during an evaluation;
- obtaining unauthorized copies of evaluations in advance;
- collaborating without permission;
- colluding or providing unauthorized assistance;
- falsifying academic documents or records;
- misrepresenting academic credentials;
- buying, selling, stealing, soliciting, exchanging or transacting materials or information for the purpose of academic gain;
- bribing or attempting to bribe personnel;
- impersonation;
- submitting the same work in more than one course without authorization;
- improper use of computer technology and the internet;
- depriving others of academic resources;
- misrepresenting reasons for special consideration of academic work;
- plagiarizing or failing to acknowledge ideas, data, graphics or other content without proper and full acknowledgement;
- any unauthorized use of generative or other artificial intelligence.

If you have questions or concerns about what constitutes appropriate academic conduct or research and citation methods, and what your responsibilities are towards academic integrity, please visit the Academic Integrity website on MyDC, reach out to Student Academic Learning Services (SALS), or speak with your professor or Student Advisor.

Course Specific Policies and Expectations:

Course Specific Policies and Expectations:

- Safety glasses, safety footwear, full length pants and/or coveralls must be worn in the shop at all times.

Please refer to the Student Program Guide for the following:

- Student Success Strategies.
- Conduct and behaviour in the classroom and or shop.
- Cell phones, pagers, cameras and similar devices are not to be used or operated in the shop or classroom unless approved by the instructor.
- Attendance requirements.
- Academic Alerts.
- Assignments due.
- Lab work/shop work/ projects and homework.

General Course Outline Notes:

1. Students should use the course outline as a learning tool to guide their achievement of the learning outcomes for this course. Specific questions should be directed to their individual professor.
2. The college considers the electronic communication methods (i.e. DC Mail or DC Connect) as the primary channel of communication. Students should check the sources regularly for current course information.
3. Professors are responsible for following this outline and facilitating the learning as detailed in this outline.
4. Course outlines should be retained for future needs (i.e. university credits, transfer of credits etc.)
5. A full description of the Academic Appeals Process can be found at <https://durhamcollege.ca/about/governance/policies/academic-policies> .
6. Faculty are committed to ensuring accessible learning for all students. Students who would like assistance with academic access and accommodations in accordance with the Ontario Human Rights Code should register with the Access and Support Centre (ASC). ASC is located in room SW116, Oshawa Campus and in room 180 at the Whitby Campus. Contact ASC at 905-721-3123 for more information.
7. Durham College is committed to the fundamental values of preserving academic integrity. Durham College and faculty members reserve the right to use electronic means to detect and help prevent plagiarism. Students agree that by taking this course all assignments could be subject to submission either by themselves or by the faculty member for a review of textual similarity to Turnitin.com. Further information about Turnitin can be found on the Turnitin.com Web site.
8. In compliance with the Directive on the Costs of Educational Material under the Ministry of Training, Colleges and Universities Act (MTCU Act), please visit this link to determine textbook costs: <https://durham.bookware3000.ca/course-materials/textbook-search>. Please speak with your professor to determine if prior versions of a textbook are acceptable.

Learning Plan

The Learning Plan is a planning guideline. Actual delivery of content may vary with circumstances.

Students will be notified in writing of changes that involve the addition or deletion of learning outcomes or evaluations, prior to changes being implemented, as specified in the Course Outline Policy and Procedure at Durham College.

Week/ Module	Hours:	1	Delivery:	In Class
1	Course Learning Outcomes			
	CLO5, CLO6			
	Essential Employability Skills			
	Taught:	EES2, EES10, EES11	Practiced:	EES2, EES10, EES11
	Intended Learning Objectives/Topics			
	Course introduction and overview - Discuss course outline, evaluation method and assignments - Review course expectations and student conduct policies - Review resources to be used in the course - Introduction to the automotive industry Shop Safety - Review general safety, procedures, and other safety protocols in an automotive shop environment. - Review Personal Protective Equipment requirements - Discuss WHMIS, SDS and the proper handling of hazardous materials including aerosol, brake cleaner, fluids, oil, coolant, washer-fluid, and transmission-fluid.			
	Intended Learning Activities			
	Lecture Discussion			
	Resources and References			
	Course Outline Power Point			
	Evaluation			

Week/ Module	Hours:	2	Delivery:	Shop
1	Course Learning Outcomes			
	CLO5, CLO6			
	Essential Employability Skills			
	Taught:	EES2, EES4, EES6, EES10, EES11	Practiced:	EES2, EES10, EES11
	Intended Learning Objectives/Topics			
	Shop Lab Orientation: - Tour of the Automotive Shop Lab.			
	Intended Learning Activities			
Discussion Lab Activity: Shop Orientation/ Safety sheet				
Resources and References				
Shop sheets and handouts provided by instructor				
Evaluation			Weighting	5
Week/ Module	Hours:	1	Delivery:	In Class
2	Course Learning Outcomes			
	CLO4, CLO5, CLO6			
	Essential Employability Skills			
	Taught:	EES2, EES6, EES10, EES11	Practiced:	EES2, EES6, EES10, EES11
	Intended Learning Objectives/Topics			
	Basic Tool Identification and Maintenance - Introduction to tools and equipment used in the automotive industry - Discuss basic hand tools, power tools, and explain how they are used. - Discuss automotive equipment and explain how they are used. - Discuss general tools and equipment safety.			
	Intended Learning Activities			
Lecture Discussion				
Resources and References				
Power Point				
Evaluation				

Week/ Module	Hours:	2	Delivery:	Shop
2	Course Learning Outcomes			
	CLO4, CLO5, CLO6			
	Essential Employability Skills			
	Taught:	EES2, EES4, EES6, EES10, EES11	Practiced:	EES2, EES4, EES6, EES10, EES11
	Intended Learning Objectives/Topics			
	Basic Tool Identification and Maintenance - Locate toolbox and review procedures for lab use - Identify and discuss proper use of hand tools, and power tools including wrenches, ratchets, sockets, screwdrivers, pliers, air tools, saws, grinders, and drills - Identify and discuss proper use of automotive equipment and proper maintenance procedures - Discuss air and cordless tools used - Demonstrate air tool oiling procedures. - Apply general tool and equipment safety			
	Intended Learning Activities			
Discussion Lab Activity: Complete Tool Sheet				
Resources and References				
Shop sheets and handouts provided by instructor				
Evaluation			Weighting	
Lab Activity: Shop Sheet activities			5	
Week/ Module	Hours:	1	Delivery:	In Class
3	Course Learning Outcomes			
	CLO1, CLO2, CLO6			
	Essential Employability Skills			
	Taught:	EES2, EES4, EES5, EES10, EES11	Practiced:	EES2, EES4, EES5, EES10, EES11
	Intended Learning Objectives/Topics			
	Hardware, Fasteners, Drills and Thread Repair - Introduce measuring tools, precision measuring tools and their use in the trade - Explain the characteristics of fasteners and the reason for fastener failure - Explain how drill bits, taps and threads, dies are used - Discuss how fasteners are repaired			
	Intended Learning Activities			
Lecture Discussion Shop Safety Quiz 1				
Resources and References				
Power Point				
Evaluation			Weighting	
Quiz: Quiz			5	

Week/ Module	Hours:	2	Delivery:	Shop
3	Course Learning Outcomes			
	CLO1, CLO2, CLO6			
	Essential Employability Skills			
	Taught:	EES2, EES4, EES5, EES6, EES10, EES11	Practiced:	EES2, EES4, EES5, EES6, EES10, EES11
	Intended Learning Objectives/Topics			
	Aluminum block project -Demonstrate safe use of saws,drill/drill press, taps, dies, and measuring tools			
	Intended Learning Activities			
Discussion Lab Activity:Complete Aluminum block project using provided drawing				
Resources and References				
Shop sheets and handouts provided by instructor				
Evaluation			Weighting	
			5	
Week/ Module	Hours:	1	Delivery:	In Class
4	Course Learning Outcomes			
	CLO1, CLO2, CLO4, CLO5, CLO6			
	Essential Employability Skills			
	Taught:	EES2, EES4, EES5, EES6, EES10, EES11	Practiced:	EES2, EES4, EES5, EES6, EES10, EES11
	Intended Learning Objectives/Topics			
	Service Information and Manuals - Review components of a service manual - Differentiate between appropriate and inappropriate forms of automotive service resources. - Discuss/ demonstrate the resources available for estimating and repair procedures (Alldata,Shopkey, etc.) -Discuss VIN and other labeling			
	Intended Learning Activities			
Lecture Discussion Research Assignment (Due Date TBA)				
Resources and References				
Power Point				
Evaluation			Weighting	
Assignment: Assignment			15	

Week/ Module	Hours:	2	Delivery:	Shop
4	Course Learning Outcomes			
	CLO1, CLO2, CLO4, CLO5, CLO6			
	Essential Employability Skills			
	Taught:	EES2, EES5, EES6, EES10, EES11	Practiced:	EES2, EES5, EES6, EES10, EES11
	Intended Learning Objectives/Topics			
	Lifting Equipment - Introduce and navigate Shop Key 5, AllData ,and Identifix service manual - Demonstrate proper vehicle lifting techniques using drive on, 2 post, floor jacks and stands - Locate designated lifting points to ensure proper lifting techniques.			
Intended Learning Activities				
Discussion Lab Activity: Complete Unibody/Full frame comparison shop sheet - Complete Navigation Activity - Apply vehicle lifting techniques				
Resources and References				
Shop sheets and handouts provided by instructor Shop Key 5				
Evaluation				
Lab Activity: Shop Sheet activities				
Week/ Module	Hours:	1	Delivery:	In Class
5	Course Learning Outcomes			
	CLO2, CLO4, CLO6			
	Essential Employability Skills			
	Taught:	EES2, EES4, EES5, EES6, EES11	Practiced:	EES2, EES4, EES5, EES6, EES11
	Intended Learning Objectives/Topics			
	Electrical Fundamentals - Introduce basic electrical theory including electron flow, conductors, insulators, control, and protection devices - Explain voltage, current and resistance - Explain types of circuits (Series, Parallel, and Series Parallel) - Explain the difference between AC and DC			
Intended Learning Activities				
Lecture Discussion				
Resources and References				
Power Point				
Evaluation			Weighting	
In Process: In class activities			5	

Week/ Module	Hours:	2	Delivery:	Shop
5	Course Learning Outcomes			
	CLO2, CLO4, CLO6			
	Essential Employability Skills			
	Taught:	EES2, EES4, EES5, EES10, EES11	Practiced:	EES2, EES4, EES5, EES10, EES11
	Intended Learning Objectives/Topics			
	Electrical Fundamentals - Explain how a multimeter is used - Using a circuit board, measure current, voltage, and resistance in a circuit using Ohm's Law (apply the rules in ohm's law) - Use a multi-meter to measure the conventional-flow -Discuss fuses and circuit protection devices			
	Intended Learning Activities			
Discussion Lab Activity:Complete Shop Sheet - Circuit board (series, parallel and series parallel)				
Resources and References				
Shop sheets and handouts provided by instructor				
Evaluation			Weighting	
Lab Activity: Shop Sheet activities			5	
Week/ Module	Hours:	1	Delivery:	In Class
6	Course Learning Outcomes			
	CLO2, CLO4, CLO6			
	Essential Employability Skills			
	Taught:	EES2, EES5, EES10, EES11	Practiced:	EES2, EES5, EES10, EES11
	Intended Learning Objectives/Topics			
	Battery Fundamental -Introduce battery types (deep-cycle, low maintenance, maintenance-free/low water loss, AGM, Gel) - Discuss reasons for battery failure -Discuss battery maintenance - Discuss non-battery related no starts -Discuss basic starting/charging circuits			
	Intended Learning Activities			
Lecture Discussion				
Resources and References				
Power Point				
Evaluation				

Week/ Module	Hours: 2	Delivery: Shop
6	Course Learning Outcomes CLO2, CLO4, CLO6	
	Essential Employability Skills	
	Taught: EES2, EES4, EES10, EES11	Practiced: EES2, EES4, EES10, EES11
	Intended Learning Objectives/Topics Battery Fundamentals - Demonstrate battery testing - Demonstrate how to boost a battery Electrical Wiring and Insulation - Explain the importance of wires and insulation - Discuss the different types of connectors - Discuss the different types of solder	
	Intended Learning Activities Discussion Lab Activity: Complete Battery Shop Sheet, Create/repair wiring connections using solder and butt connectors	
	Resources and References Shop sheets and handouts provided by instructor	
	Evaluation Lab Activity: Shop Sheet activities	Weighting 5

Week/ Module	Hours:	1	Delivery:	In Class
7	Course Learning Outcomes CLO2, CLO4, CLO6			
	Essential Employability Skills			
	Taught:	EES2, EES4, EES10, EES11	Practiced:	EES2, EES4, EES10, EES11
	Intended Learning Objectives/Topics Engine Fundamentals - Discuss engine classifications and types - Explain basic engine operation including the four-stroke cycle - Identify engine components - Explain why engine lubrication is necessary for proper engine performance - Discuss how emission controls effect engine design			
	Intended Learning Activities Lecture Discussion Electrical Quiz 2			
	Resources and References Power Point			
	Evaluation Quiz: Quiz			Weighting 5
Week/ Module	Hours:	2	Delivery:	Shop
7	Course Learning Outcomes CLO2, CLO4, CLO6			
	Essential Employability Skills			
	Taught:	EES2, EES4, EES5, EES6, EES10, EES11	Practiced:	EES2, EES4, EES5, EES6, EES10, EES11
	Intended Learning Objectives/Topics Engine Fundamentals - Explain the steps to engine disassembly and/or reassembly and the necessary measuring tools required - Disassemble engine, measure parts, components and prepare for reassemble			
	Intended Learning Activities Discussion Lab Activity: Complete Shop Sheet - Begin Engine Disassembly and Measurement			
	Resources and References Shop sheets and handouts provided by instructor			
	Evaluation Lab Activity: Shop Sheet activities			

Week/ Module	Hours:	1	Delivery:	In Class	
8	Course Learning Outcomes				
	CLO2, CLO4, CLO6				
	Essential Employability Skills				
	Taught:		EES2, EES11	Practiced: EES2, EES11	
	Intended Learning Objectives/Topics				
	Engine Fundamentals - Discuss engine lubricants and filters used for engine operation - Discuss Cooling system, belts, and hoses - Discuss automotive exhaust systems: converters etc.				
	Intended Learning Activities				
Lecture Discussion					
Resources and References					
Power Point					
Evaluation					
Week/ Module	Hours:	2	Delivery:	Shop	
8	Course Learning Outcomes				
	CLO2, CLO4, CLO6				
	Essential Employability Skills				
	Taught:		EES2, EES4, EES5, EES6, EES10, EES11	Practiced: EES2, EES4, EES5, EES6, EES10, EES11	
	Intended Learning Objectives/Topics				
	Engine Fundamentals - Continue engine reassembly according to manufacturer procedures -Discuss/demonstrate torque wrenches				
	Intended Learning Activities				
Discussion Lab Activity: Complete Shop Sheet - Complete Engine Reassembly					
Resources and References					
Shop sheets and handouts provided by instructor					
Evaluation					
Lab Activity: Shop Sheet activities			Weighting 5		

Week/ Module	Hours:	1	Delivery:	In Class
9	Course Learning Outcomes			
	CLO2, CLO4, CLO6			
	Essential Employability Skills			
	Taught:	EES4, EES5, EES11		Practiced: EES4, EES5, EES11
	Intended Learning Objectives/Topics			
	Transmission and Clutch Fundamentals - Explain the purpose of a clutch and operation - Explain power flow through a manual transmission - Explain the basics of the automatic transmission			
	Intended Learning Activities			
Lecture Discussion				
Resources and References				
Power Point				
Evaluation			Weighting	
In Process: In class activities			5	
Week/ Module	Hours:	2	Delivery:	Shop
9	Course Learning Outcomes			
	CLO2, CLO4, CLO6			
	Essential Employability Skills			
	Taught:	EES2, EES4, EES5, EES6, EES10, EES11		Practiced: EES2, EES4, EES5, EES6, EES10, EES11
	Intended Learning Objectives/Topics			
	Transmission and Clutch Fundamentals- - Identify components of a clutch - Disassemble manual transmission			
	Intended Learning Activities			
Discussion Lab Activity: Complete Shop Sheet - Begin Manual Transmission Disassembly and calculate gear ratios				
Resources and References				
Shop sheets and handouts provided by instructor Subaru Transmission Manual				
Evaluation				

Week/ Module	Hours:	1	Delivery:	In Class
10	Course Learning Outcomes			
	CLO2, CLO4, CLO6			
	Essential Employability Skills			
	Taught:	EES2, EES4, EES5, EES11	Practiced:	EES2, EES4, EES5, EES11
	Intended Learning Objectives/Topics			
	Transmission and Clutch fundamentals -discuss overdrive fundamentals -discuss the differential, using the Subaru as an example -discuss driveline, driveshafts, CV joints, mounting			
	Intended Learning Activities			
Lecture Discussion				
Resources and References				
Power Point				
Evaluation				
Week/ Module	Hours:	2	Delivery:	Shop
10	Course Learning Outcomes			
	CLO2, CLO4, CLO6			
	Essential Employability Skills			
	Taught:	EES2, EES4, EES5, EES6, EES10, EES11	Practiced:	EES2, EES4, EES5, EES6, EES10, EES11
	Intended Learning Objectives/Topics			
	Manual Transmission and Clutch Fundamentals - Identify internal components such as synchronizers, shifting forks and rods, input shaft, output/counter shaft and gears - Calculate gear ratios - Trace the power flow through a manual transmission - Reassemble manual transmission			
	Intended Learning Activities			
Discussion Lab Activity: Complete Shop Sheet - Reassemble Manual Transmission				
Resources and References				
Shop sheets and handouts provided by instructor Subaru Transmission Manual				
Evaluation				
Lab Activity: Shop Sheet activities			Weighting	5

Week/ Module	Hours: 1	Delivery: In Class
11	Course Learning Outcomes CLO2, CLO4, CLO6	
	Essential Employability Skills	
	Taught: EES2, EES4, EES5, EES11	Practiced: EES2, EES4, EES5, EES11
	Intended Learning Objectives/Topics Steering, Suspension, and Brake Fundamentals <ul style="list-style-type: none"> - Explain the purpose of tires - Explain tire construction (tubeless tires, tread and tread material, tire cord, tire ply design, sidewall markings, load rating, tire life and age) - Discuss the different types of tires - Explain the importance of tire maintenance and the benefits of proper tire rotation - Discuss wheels, lug studs, lug nuts, lug bolt patterns and valve stems - Discuss tire pressure monitoring systems - Explain why different types of suspensions exist (short and long arm, McPherson strut, and leaf springs) - Understand the basic suspension system in selected models -Discuss Basic alignment angles and their effect on tire wear 	
	Intended Learning Activities Lecture Discussion	
	Resources and References Power Point	
Evaluation		

Week/ Module	Hours:	2	Delivery:	Shop
11	Course Learning Outcomes			
	CLO2, CLO4, CLO6			
	Essential Employability Skills			
	Taught:	EES2, EES4, EES6, EES10, EES11	Practiced:	EES2, EES4, EES6, EES10, EES11
	Intended Learning Objectives/Topics			
	Steering, Suspension, and Brake Fundamentals <ul style="list-style-type: none"> - Demonstrate tire dismount and balancing - Demonstrate tire repair - Demonstrate tire installation - Rotate tires using the proper rotating process and identify tire labels using company stamps and manufacture manuals - Identify suspension components - Identify steering components 			
	Intended Learning Activities			
Discussion Lab Activity: Complete Shop Sheet Tire Inspection, Service and Repair				
Resources and References				
Shop sheets and handouts provided by instructor Shop Key 5				
Evaluation				
Lab Activity: Shop Sheet activities				
Week/ Module	Hours:	1	Delivery:	In Class
12	Course Learning Outcomes			
	CLO2, CLO4, CLO6			
	Essential Employability Skills			
	Taught:	EES2, EES4, EES11	Practiced:	EES2, EES4, EES11
	Intended Learning Objectives/Topics			
	Steering, Suspension and Brake Fundamentals <ul style="list-style-type: none"> - Explain the purpose of a braking systems - Identify brake components and discuss heat tolerance and friction materials - Discuss hydraulic brake operation - Understand the relationship between suspension, steering and brake systems 			
	Intended Learning Activities			
Lecture Discussion Manual Transmissio Quiz 3				
Resources and References				
Power Point				
Evaluation				
Quiz: Quiz			Weighting	5

Week/ Module	Hours:	2	Delivery:	Shop
12	Course Learning Outcomes			
	CLO2, CLO4, CLO6			
	Essential Employability Skills			
	Taught:	EES2, EES4, EES5, EES10, EES11	Practiced:	EES2, EES4, EES5, EES10, EES11
	Intended Learning Objectives/Topics			
	Steering, Suspension and Brake Fundamentals - Demonstrate braking operation using Consulab Trainer -Brake Pad replacement using trainer - Fabricate a brake line using proper tools -Discuss brake bleeding techniques			
	Intended Learning Activities			
Discussion Lab Activity:Complete Shop Sheet Pad replacement Complete brake flare on brake line				
Resources and References				
Shop sheets and handouts provided by instructor				
Evaluation			Weighting	
			5	
Week/ Module	Hours:	1	Delivery:	In Class
13	Course Learning Outcomes			
	CLO1, CLO3, CLO5			
	Essential Employability Skills			
	Taught:	EES2, EES4, EES5, EES11	Practiced:	EES2, EES4, EES5, EES11
	Intended Learning Objectives/Topics			
	Future Career Opportunities in the Automotive Trade -Review the benefits of a future career in the automotive trade -Understand the automotive apprenticeship process -Explain other sectors in the automotive industry			
	Intended Learning Activities			
Lecture Discussion				
Resources and References				
Power Point				
Evaluation				

Week/ Module	Hours:	2	Delivery:	Shop
13	Course Learning Outcomes CLO1, CLO4, CLO5			
	Essential Employability Skills			
	Taught:	EES2, EES4, EES5, EES10, EES11	Practiced:	EES2, EES4, EES5, EES10, EES11
	Intended Learning Objectives/Topics Overall Maintenance of the Vehicle -Understand what to look for on selected models -Check all fluids on selected car models -Change oil on selected car models -Check tire pressure on selected car models -Check and change filters on selected car models			
	Intended Learning Activities Discussion Lab Activity: Complete Shop Sheet			
	Resources and References Shop sheets and handouts provided by instructor			
	Evaluation Lab Activity: Shop Sheet activities			
Week/ Module	Hours:	1	Delivery:	In Class
14	Course Learning Outcomes CLO1, CLO2, CLO3, CLO4, CLO5, CLO6			
	Essential Employability Skills			
	Taught:	EES2, EES5, EES10, EES11	Practiced:	EES2, EES5, EES10, EES11
	Intended Learning Objectives/Topics Discuss next moves for chosen trade Final test review			
	Intended Learning Activities Final Test			
	Resources and References N/A			
	Evaluation Test: Final Test			Weighting 20

Week/ Module	Hours: 2 Delivery: Shop
14	Course Learning Outcomes CLO1, CLO2, CLO3, CLO4, CLO5, CLO6
	Essential Employability Skills
	Taught: EES2, EES4, EES10, EES11 Practiced: EES2, EES4, EES10, EES11
	Intended Learning Objectives/Topics Shop Sheet Completion
	Intended Learning Activities Completion of shop sheets
	Resources and References N/A
	Evaluation