

### **Basic Automotive**

### 2021-22 Academic Year

Program	Year	Semester
START-Trades Fundamentals	1	1

Course Code:	TFBA 1302Course Equiv. Code(s):N/A
Course Hours:	42 Course GPA Weighting: 3
Prerequisite:	N/A
Corequisite:	N/A
Laptop Course:	Yes No X
Delivery Mode(s	): In class Online Hybrid X Correspondence

Pandemic remote teaching delivery mode	Fully asynchronous X Combined asynchronous a synchronous	nd
Remote proctoring required Yes	No X	
Authorized by (Dean or Director): Rebecca Mi	ilburn Date: June 2021	

Prepared by			
First Name	Last Name	Email	
Ethel	Dalogo	ethel.dalogo@durhamcollege.ca	

## **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	X

#### 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 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:

- X 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.
- X EES 2. Respond to written, spoken, or visual messages in a manner that ensures effective communication.
- X EES 3. Execute mathematical operations accurately.
- X 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.
- X 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.
- X EES 9. Interact with others in groups or teams in ways that contribute to effective working relationships and the achievement of goals.
- X 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	EES1, EES2, EES10	15
Lab Activity: Shop Sheet activities	CLO1, CLO2, CLO4, CLO5, CLO6	EES1, EES2, EES3, EES4, EES7, EES9, EES10	40
Quiz: Quiz	CLO1, CLO2	EES1, EES2, EES3	15
In Process: In class activities	CLO1, CLO2, CLO3, CLO5, CLO6	EES2, EES3, EES7, EES10	10
Test: Final Test	CLO1, CLO2, CLO3, CLO5, CLO6	EES1, EES2, EES3, EES4, EES10	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.
- 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 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
+ Acceptable Use of Information Technology	+ attendance
+ Academic Policies	<ul> <li>absence related to tests or assignment due dates</li> </ul>
+ Academic Honesty	+ excused absences
+ Student Code of Conduct	+ writing tests and assignments
+ Students' Rights and Responsibilities can be found on-line at http://www.durhamcollege.ca/academicpolicies	<ul> <li>classroom management can be found in the Program Guide (full time programs only) in MyCampus http://www.durhamcollege.ca/mycampus/</li> </ul>

#### **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 .
- 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.

### 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.

Wk.	Hours: 1 Delivery: In Class				
1	Course Learning Outcomes CLO5, CLO6				
	Essential Employability Skills				
	Taught: Practiced:				
	Intended Learning Objectives				
	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				
	<ul> <li>Shop Safety</li> <li>Review general safety, procedures, and other safety protocols in an automotive shop environment.</li> <li>Review Personal Protective Equipment requirements</li> <li>Discuss WHMIS, SDS and the proper handling of hazardous materials including aerosol, brake cleaner, fluids, oil, coolant, washer-fluid, and transmission-fluid.</li> </ul>				
	Intended Learning Activities				
	Lecture Discussion				
	Resources and References				
	Course Outline Power Point				
	Evaluation				

Wk.	Hours: 2 Delivery: Shop					
1	Course Learning Outcomes CLO5, CLO6					
	Essential Employability Skills					
	Taught: Practiced:					
	Intended Learning Objectives					
	Shop Lab Orientation: - Tour of the Automotive Shop Lab.					
	Intended Learning Activities					
	Discussion Lab Activity:Begin Shop Sheet Orientation					
	Resources and References					
	Shop sheets and handouts provided by instructor					
	Evaluation					
Wk.	Hours: 1 Delivery: In Class					
2	Course Learning Outcomes					
	CLO4, CLO5, CLO6					
	Essential Employability Skills					
	Taught: Practiced:					
	Intended Learning Objectives					
	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					

Wk.	Hours: 2	Delivery:	Shop				
2	Course Learnin	Course Learning Outcomes					
2	CLO4, CLO5, CLO6						
	Essential Empl	Essential Employability Skills					
	Taught: Practiced:						
	Intended Learning Objectives						
		entification and Main					
	- Identify and o	discuss proper use	e of hand tools, and power tools including wrenches, ratchets, sockets ws, grinders, and drills	s,			
	- Identify and d	discuss proper use	e of automotive equipment and proper maintenance procedures				
		al tool and equipme					
	Intended Learn	ning Activities					
	Discussion						
		omplete Shop Shee	eet Orientation				
	Resources and						
	Shop sheets a	and handouts provid	ided by instructor				
	Evaluation		Weighting				
	Lab Activity: S	shop Sheet activitie					
Wk.	Hours: 1	Delivery:	In Class				
	Hours: 1 Course Learnir		In Class				
<b>Wk.</b>		ng Outcomes	In Class				
	Course Learnin CLO1, CLO2,	ng Outcomes CLO6	In Class				
	Course Learnin CLO1, CLO2, Essential Empl	ng Outcomes					
	Course Learnin CLO1, CLO2, Essential Empl Taught:	ng Outcomes CLO6 Ioyability Skills	In Class Practiced:				
	Course Learnin CLO1, CLO2, Essential Empl Taught: Intended Learn	ng Outcomes CLO6 Ioyability Skills	Practiced:				
	Course Learnin CLO1, CLO2, Essential Empl Taught: Intended Learn Hardware, Fas - Introduce me	ng Outcomes CLO6 Ioyability Skills hing Objectives steners, Drills and <sup>-</sup> easuring tools, prec	Practiced: Thread Repair cision measuring tools and explain the metric system.				
	Course Learnin CLO1, CLO2, Essential Empl Taught: Intended Learn Hardware, Fas - Introduce me - Explain the c	ng Outcomes CLO6 Ioyability Skills hing Objectives steners, Drills and <sup>-</sup> easuring tools, prec	Practiced: Thread Repair cision measuring tools and explain the metric system. asteners and the reason for fastener failure				
	Course Learnin CLO1, CLO2, Essential Empl Taught: Intended Learn Hardware, Fas - Introduce me - Explain the c - Explain how	ng Outcomes CLO6 Ioyability Skills hing Objectives steners, Drills and <sup>-</sup> easuring tools, prec	Practiced: Thread Repair cision measuring tools and explain the metric system. asteners and the reason for fastener failure threads, dies are used				
	Course Learnin CLO1, CLO2, Essential Empl Taught: Intended Learn Hardware, Fas - Introduce me - Explain the c - Explain how	ng Outcomes CLO6 Ioyability Skills hing Objectives steners, Drills and easuring tools, prec characteristics of fast drill bits, taps and to fasteners are repa	Practiced: Thread Repair cision measuring tools and explain the metric system. asteners and the reason for fastener failure threads, dies are used				
	Course Learnin CLO1, CLO2, Essential Empl Taught: Intended Learn Hardware, Fas - Introduce me - Explain the c - Explain how - Discuss how Intended Learn Lecture	ng Outcomes CLO6 Ioyability Skills hing Objectives steners, Drills and easuring tools, prec characteristics of fast drill bits, taps and to fasteners are repa	Practiced: Thread Repair cision measuring tools and explain the metric system. asteners and the reason for fastener failure threads, dies are used				
	Course Learnin CLO1, CLO2, Essential Empl Taught: Intended Learn Hardware, Fas - Introduce me - Explain the c - Explain how - Discuss how	ng Outcomes CLO6 Ioyability Skills hing Objectives steners, Drills and easuring tools, prec characteristics of fast drill bits, taps and t fasteners are repa hing Activities	Practiced: Thread Repair cision measuring tools and explain the metric system. asteners and the reason for fastener failure threads, dies are used				
	Course Learnin CLO1, CLO2, Essential Empl Taught: Intended Learn Hardware, Fas - Introduce me - Explain the c - Explain the c - Explain how - Discuss how Intended Learn Lecture Discussion	ng Outcomes CLO6 Ioyability Skills hing Objectives steners, Drills and easuring tools, prec characteristics of fast drill bits, taps and t fasteners are repa hing Activities	Practiced: Thread Repair cision measuring tools and explain the metric system. asteners and the reason for fastener failure threads, dies are used				
	Course Learnin CLO1, CLO2, Essential Empl Taught: Intended Learn Hardware, Fas - Introduce me - Explain the c - Explain how - Discuss how Intended Learn Lecture Discussion Shop Safety C	ng Outcomes CLO6 Ioyability Skills hing Objectives steners, Drills and easuring tools, prec characteristics of fast drill bits, taps and t fasteners are repa hing Activities	Practiced: Thread Repair cision measuring tools and explain the metric system. asteners and the reason for fastener failure threads, dies are used				
	Course Learnin CLO1, CLO2, Essential Empl Taught: Intended Learn Hardware, Fas - Introduce me - Explain the c - Explain the c - Explain how - Discuss how Intended Learn Lecture Discussion Shop Safety C Resources and Power Point	ng Outcomes CLO6 Ioyability Skills hing Objectives steners, Drills and easuring tools, prec characteristics of fast drill bits, taps and t fasteners are repa hing Activities	Practiced: Thread Repair cision measuring tools and explain the metric system. asteners and the reason for fastener failure threads, dies are used aired				
	Course Learnin CLO1, CLO2, Essential Empl Taught: Intended Learn Hardware, Fas - Introduce me - Explain the c - Explain how - Discuss how Intended Learn Lecture Discussion Shop Safety C	ng Outcomes CLO6 Ioyability Skills hing Objectives steners, Drills and easuring tools, prec characteristics of fast drill bits, taps and t fasteners are repa hing Activities	Practiced: Thread Repair cision measuring tools and explain the metric system. asteners and the reason for fastener failure threads, dies are used				

Wk.	Hours:	2	Delivery:	Shop		
3	Course Le	earning Ou	tcomes			
3	CLO1, C	CLO1, CLO2, CLO6				
	Essential Employability Skills					
	Taught: Practiced:					
	Intended Learning Objectives					
	Hardware, Fasteners, Drills and Thread Repair - Demonstrate how to use precision measuring tools - Demonstrate how to use a drill press, hacksaw, file, tap and dye. - Demonstrate how to use automotive equipment					
	<ul> <li>Identify</li> <li>Locate</li> </ul>	vehicle sys vehicle ider		mber, emission labels, tire labels, belt	t routing diagram, vacuum lines	
	Intended	Learning A	ctivities			
	Discussio Lab Activ		te Shop Shee	et Tool and Equipment Identification		
	Resource	s and Refe	rences			
	Shop she	eets and ha	ndouts provid	ded by instructor		
	Evaluatio	n				
Wk.	Hours:	1	Delivery:	In Class		
4	Course Le	earning Ou	tcomes			
4	CLO1, C	LO2, CLO4	, CLO5, CLC	06		
	Essential	Employabi	litv Skills			
	Taught:	p.oj	,	Practiced:		
	raugiit.					
		Learning O	-			
	- Review - Differer	component	and Manuals ts of a servic en appropria repercussior		otive service resources. omotive service resources.	
	Intended Learning Activities					
	Lecture Discussio Researcl		nt (Due Date	∋ TBA)		
	Resource	s and Refe	rences			
	Power P	oint				
	<b>_</b>					
	Evaluatio	n			Weighting	

Wk.	Hours:	2	Delivery:	Shop					
4	Course Learning Outcomes								
-	CLO1, CLO2, CLO4, CLO5, CLO6								
	Essential Employability Skills								
	Taught	:		Practiced:					
	Intended Learning Objectives								
	Lifting Equipment and Air Compressors - Introduce and navigate Shop Key 5 and AllData service manual - Demonstrate proper vehicle lifting techniques using floor jacks and jack stands - Locate designated lifting points to ensure proper lifting techniques.								
	Intended	Learning A	Activities						
	Lab Act - Comp	Discussion Lab Activity: Complete Shop Sheet Tool and Equipment Identification - Complete Navigation Activity - Apply vehicle lifting techniques							
	Resourc	es and Refe	erences						
	Shop sl Shop K		andouts provi	ded by instructor					
	Evaluati	on		Weighting					
	Lab Act	tivity: Shop S	Sheet activitie	s 5%					
Wk.	Hours:	Hours: 1 Delivery: In Class							
	Course I	Learning Ou	Itcomes						
5		CLO4, CLO6							
	Essentia	l Employab	ility Skills						
	Taught	:		Practiced:					
	Intended	Intended Learning Objectives							
	- Introd devices - Explai - Explai	n voltage, cu n types of ci	ectrical theory	, Parallel, and Series Parallel)					
	Intended	Learning A	ctivities						
	Lecture Discuss Ohms L		eet						
	Resourc	es and Refe	erences						
	Power I	Point							
	Evaluation	on ess: In class	activities	Weighting 5%					

Wk.	Hours:	2	Delivery:	Shop
5		earning Ou CLO4, CLO6		
	Essential	Employabi	lity Skills	
	Taught:			Practiced:
	Intended	Learning O	bjectives	
	- Explair - Using a rules in o	a circuit boaı ohm's law)	imeter is use d, measure	ed current, voltage, and resistance in a circuit using Ohm's Law (apply the he conventional-flow
	Intended	Learning A	ctivities	
	Discussi Lab Acti		e Shop She	et - Circuit board (series, parallel and series parallel)
	Resource	es and Refe	rences	
	Shop sh	eets and ha	ndouts provi	ded by instructor
	<b>Evaluatio</b> Lab Acti		heet activitie	Weighting 5%
Wk.	Hours:	1	Delivery:	In Class
6	Course L	earning Ou	tcomes	
	CLO2, C	CLO4, CLO6		
	Essential	Employabi	lity Skills	
	Taught:			Practiced:
	Battery F -Introduc - Explair - Identify	the purposition the purposition the purposition of	l pes (deep-cy e of a battery	in its operation
	Intended	Learning A	ctivities	
	Lecture Discussi	ion		
	Resource	es and Refe	rences	
	Power P	Point		
	Evaluatio	n		

Wk.	Hours:	2	Delivery:	Shop
6	Course L	earning	Outcomes	
	CLO2, (	CLO4, CL	.06	
	Essentia	Employ	ability Skills	
	Taught:			Practiced:
	Intended	Learning	g Objectives	
	- Demor - Demor - Explain Electrica - Explain - Discus	nstrate ho n the prop al Wiring n the imp s the diffe	attery testing ow to boost a ba	e and care of a battery s and insulation onnectors
	Intended	Learnin	g Activities	
	Discuss Lab Acti		plete Shop She	et Soldering Wires
	Resource	es and R	eferences	
	Shop sh	eets and	handouts provi	ded by instructor
	Evaluatio Lab Acti		p Sheet activitie	Weighting 5%

Wk.	Hours: 1 Delivery: In Class
7	Course Learning Outcomes
<i>'</i>	CLO2, CLO4, CLO6
	Essential Employability Skills
	Taught: Practiced:
	Intended Learning Objectives
	Engine Fundamentals <ul> <li>Discuss engine classifications and types</li> <li>Explain basic engine operation including the four-stroke cycle</li> <li>Identify engine components</li> <li>Explain why engine lubrication is necessary for proper engine performance</li> <li>Differentiate between the types of lubricating systems and engine designs (inline, V6, opposed)</li> </ul>
	Intended Learning Activities
	Lecture Discussion Electrical Quiz 2
	Resources and References
	Power Point
	EvaluationWeightingQuiz: Quiz5%
Wk.	Hours: 2 Delivery: Shop
7	Course Learning Outcomes
	CLO2, CLO4, CLO6
	Essential Employability Skills
	Taught: Practiced:
	Intended Learning Objectives
	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

Wk.	Hours: 1	Delivery:	In Class					
8	Course Learning Outcomes CLO2, CLO4, CLO6							
	Essential Employabi	ility Skills						
	Taught:		Practiced:					
	Intended Learning O	bjectives						
	Engine Fundamenta - Discuss engine lub - Discuss Cooling sy - Discuss automotive	vricants and f vstem, belts,	ilters used for engine operation and hoses ubing and pipes)					
	Intended Learning A	ctivities						
	Lecture Discussion							
	Resources and Refe	rences						
	Power Point							
	Evaluation							
Wk.	Hours: 2	Delivery:	Shop					
8	Course Learning Ou	tcomes						
	CLO2, CLO4, CLO6							
	Essential Employabi	ility Skills						
	Taught:		Practiced:					
	Intended Learning O	bjectives						
	Engine Fundamenta - Continue engine re	lls assembly ac	cording to manufacturer procedures					
	Intended Learning A	ctivities						
	Discussion Lab Activity: Comple	ete Shop She	et - Begin Engine Reassembly					
	Resources and Refe	rences						
	Shop sheets and ha	ndouts provi	ded by instructor					
	Evaluation Lab Activity: Shop S	heet activitie	S	Weighting 5%				

Wk.	Hours:	1	Delivery:	In Class
9		earning Ou LO4, CLO6		
	Essential	Employabi	lity Skills	
	Taught:			Practiced:
	Intended I	Learning O	bjectives	
	- Explain - Identify	the purpos clutch parts	e of a clutch	n Fundamentals ng clutch release methods and hydraulic clutch operation
	Intended I	Learning A	ctivities	
	Lecture Discussio Complete		o Worksheet	t
	Resource	s and Refe	rences	
	Power Po	oint		
	Evaluation In Proces	n ss: In class	activities	Weighting 5%
Wk.	Hours:	2	Delivery:	Shop
		2 earning Ou	-	Shop
<b>Wk.</b> 9	Course Le		tcomes	Shop
	Course Le	earning Ou	tcomes	Shop
	Course Le	arning Ou LO4, CLO6	tcomes	Shop Practiced:
	Course Le CLO2, C Essential Taught:	arning Ou LO4, CLO6	tcomes lity Skills	
	Course Le CLO2, C Essential Taught: Intended I Manual T - Identify - Discuss - Demons	Employabi	tcomes lity Skills bjectives n and Clutch is of a clutch r clutch failu	Practiced:
	Course Le CLO2, C Essential Taught: Intended I Manual T - Identify - Discuss - Demons - Disasse	Employabi	tcomes lity Skills bjectives n and Clutch is of a clutch is of a clutch in operation ial transmiss	Practiced:
	Course Le CLO2, C Essential Taught: Intended I Manual T - Identify - Discuss - Demons - Disasse Intended I Discussio	Earning Ou LO4, CLO6 Employabi Learning O Transmissio component reasons fo strate clutch emble manu Learning A	tcomes lity Skills bjectives n and Clutch is of a clutch is of a clutch r clutch failun operation ial transmiss ctivities	Practiced:
	Course Le CLO2, C Essential Taught: Intended I Manual T - Identify - Discuss - Demons - Disasse Intended I Discussio Lab Activ	Earning Ou LO4, CLO6 Employabi Learning O Transmissio component reasons fo strate clutch emble manu Learning A	tcomes lity Skills bjectives n and Clutch is of a clutch is of a clutch is of a clutch is of a clutch is operation is oper	Practiced: n Fundamentals- Identify components of a clutch re
	Course Le CLO2, C Essential Taught: Intended I Manual T - Identify - Discuss - Demons - Disasse Intended I Discussio Lab Activ Resources Shop she	earning Ou LO4, CLO6 Employabi Learning O Transmissio component s reasons fo strate clutch emble manu Learning A on vity:Complet s and Refe	tcomes lity Skills bjectives n and Clutch rs of a clutch r clutch failun operation ral transmiss ctivities te Shop Shee rences ndouts provid	Practiced: n Fundamentals- Identify components of a clutch re sion
	Course Le CLO2, C Essential Taught: Intended I Manual T - Identify - Discuss - Demons - Disasse Intended I Discussio Lab Activ Resources Shop she	earning Ou LO4, CLO6 Employabi Employabi Learning O Transmissio component reasons for strate clutch emble manu Learning A on rity:Complet s and Refe	tcomes lity Skills bjectives n and Clutch rs of a clutch r clutch failun operation ral transmiss ctivities te Shop Shee rences ndouts provid	Practiced: n Fundamentals- Identify components of a clutch re sion et - Begin Manual Transmission Disassembly and calculate gear ratios

Wk.	Hours:	1	Delivery:	In Class
10		earning Ou LO4, CLO6		
	Essential	Employabi	lity Skills	
	Taught:			Practiced:
	Intended	Learning O	bjectives	
	- Explain - Describ - Unders	the purpos the relation tand the base		gears
	Intended	Learning A	ctivities	
	Lecture Discussi	on		
	Resource	s and Refe	rences	
	Power P	oint		
	Evaluatio	n		
Wk.	Hours:	2	Delivery:	Shop
10	Course L	earning Ou	tcomes	
	CLO2, C	LO4, CLO6		
	Essential	Employabi	lity Skills	
	Taught:			Practiced:
	Intended	Learning O	bjectives	
	- Identify shaft and - Calcula - Trace t	internal con d gears ite gear ration he power flo	mponents su	n Fundamentals ch as synchronizers, shifting forks and rods, input shaft, output/counter manual transmission ion
	Intended	Learning A	ctivities	
	Discussi Lab Activ		te Shop Shee	et - Reassemble Manual Transmission
	Resource	s and Refe	rences	
	Shop sho Subaru ⊺	eets and ha Fransmissio	ndouts provie n Manual	ded by instructor
	Evaluatio Lab Activ		heet activitie	Weighting 5%

Wk.	Hours: 1 Delivery: In Class	
11	Course Learning Outcomes	
	CLO2, CLO4, CLO6	
	Essential Employability Skills	
	Taught: Practiced:	
	Intended Learning Objectives	
	<ul> <li>Steering, Suspension, and Brake Fundamentals <ul> <li>Explain the purpose of tires</li> <li>Explain tire construction (tubeless tires, tread and tread material, tire cord, tire ply design, sidewa markings, load rating, tire life and age)</li> <li>Discuss the different types of tires</li> <li>Explain the importance of tire maintenance and the benefits of proper tire rotation</li> <li>Discuss wheels, lug studs, lug nuts, lug bolt patterns and valve stems</li> <li>Discuss tire pressure monitoring systems</li> </ul> </li> <li>Explain why different types of suspensions exist (short and long arm, McPherson strut, and leaf s <ul> <li>Understand the basic suspension system in selected models</li> </ul> </li> </ul>	
	Intended Learning Activities	
	Lecture Discussion	
	Resources and References	
	Power Point	
	Evaluation	

Wk.	Hours:	2	Delivery:	Shop
11	Course L	earning C	outcomes	
	CLO2, 0	CLO4, CLO	06	
	Essentia	l Employa	bility Skills	
	Taught:			Practiced:
	Intended	Learning	Objectives	
	- Demor - Demor - Demor - Rotate manufad	nstrate tire nstrate tire tires using cture manu y suspensi	dismount and repair installation g the proper rot	tating process and identify tire labels using company stamps and
	Intended	Learning	Activities	
	Discuss Lab Acti		lete Shop Shee	et Tire Inspection, Service and Repair
	Resource	es and Re	ferences	
	Shop sh Shop Ke		andouts provid	ded by instructor
	Evaluatio Lab Acti		Sheet activitie	Weighting s 5%

Wk.	Hours: 1 Delivery: In Class
10	Course Learning Outcomes
12	CLO2, CLO4, CLO6
	Essential Employability Skills
	Taught: Practiced:
	Intended Learning Objectives
	Steering, Suspension and Brake Fundamentals - 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
	EvaluationWeightingQuiz: Quiz5%
Wk.	Hours: 2 Delivery: Shop
12	Course Learning Outcomes
	CLO2, CLO4, CLO6
	Essential Employability Skills
	Taught: Practiced:
	Intended Learning Objectives
	Steering, Suspension and Brake Fundamentals - Demonstrate braking operation using Consulab Trainer - Fabricate a brake line using proper tools
	Intended Learning Activities
	Discussion Lab Activity:Complete Shop Sheet - Begin Brake Flare
	Resources and References
	Shop sheets and handouts provided by instructor
	Evaluation

Wk.	Hours:	1	Delivery:	In Class
13		<b>earning Ou</b> CLO3, CLO5		
	Essential	Employabi	ility Skills	
	Taught:			Practiced:
	Intended	Learning O	bjectives	
	-Review -Underst	the benefits tand the aut	of a future contractive appr	ne Automotive Trade/ Final Exam Review career in the automotive trade renticeship process omotive industry
	Intended	Learning A	ctivities	
	Lecture Discussi	on		
	Resource	es and Refe	rences	
	Power P	oint		
	Evaluatio	'n		
Wk.	Hours:	2	Delivery:	Shop
13	Course L	earning Ou	tcomes	
	CLO1, C	CLO4, CLO5		
	Essential	Employabi	ility Skills	
	Taught:			Practiced:
	Intended	Learning O	bjectives	
	-Undersi -Check a -Change -Chack t	tand what to all fluids on s oil on selec ire pressure	selected car cted car mode on selected	selected models models lels
	Intended	Learning A	ctivities	
	Discussi Lab Acti		ete Shop She	eet - Finish Brake Flare
	Resource	es and Refe	rences	
	Shop sh	eets and ha	ndouts provid	ded by instructor
	Evaluatio Lab Acti		heet activitie	Weighting 5%

Wk.	Hours: 1 Delivery:	In Class						
14	Course Learning Outcomes							
	CLO1, CLO2, CLO3, CLO4, CLO5, CLO6							
	Essential Employability Skills							
	Taught:	Practiced:						
	Intended Learning Objectives							
	Final Test							
	Intended Learning Activities							
	Final Test							
	Resources and References	Resources and References						
	N/A							
	Evaluation	Weighting						
	Test: Final Test	20%						
Wk.	Hours: 2 Delivery:	Shop						
<b>Wk.</b>	Course Learning Outcomes							
	-							
	Course Learning Outcomes							
	Course Learning Outcomes CLO1, CLO2, CLO3, CLO4, CLO							
	Course Learning Outcomes CLO1, CLO2, CLO3, CLO4, CLO Essential Employability Skills	O5, CLO6						
	Course Learning Outcomes CLO1, CLO2, CLO3, CLO4, CLO Essential Employability Skills Taught:	O5, CLO6						
	Course Learning Outcomes CLO1, CLO2, CLO3, CLO4, CLO Essential Employability Skills Taught: Intended Learning Objectives	O5, CLO6						
	Course Learning Outcomes CLO1, CLO2, CLO3, CLO4, CLO Essential Employability Skills Taught: Intended Learning Objectives Shop Sheet Completion	O5, CLO6						
	Course Learning Outcomes CLO1, CLO2, CLO3, CLO4, CLO Essential Employability Skills Taught: Intended Learning Objectives Shop Sheet Completion Intended Learning Activities	O5, CLO6						
	Course Learning Outcomes CLO1, CLO2, CLO3, CLO4, CLO Essential Employability Skills Taught: Intended Learning Objectives Shop Sheet Completion Intended Learning Activities Completion of shop sheets	O5, CLO6						
	Course Learning Outcomes CLO1, CLO2, CLO3, CLO4, CLO Essential Employability Skills Taught: Intended Learning Objectives Shop Sheet Completion Intended Learning Activities Completion of shop sheets Resources and References	D5, CLO6						