Basic Engine Performance

TEDT - 1220 101

Course Description

Theory and practical experience in troubleshooting and repair of both 2 and 4-cycle diesel engines. This course will also cover: component nomenclature, hydro-mechanical fuel injection systems design/operation and engine maintenance.

Semester(s) taught: All

Course Student Learning Outcomes

- Demonstrate proficiency in Automotive Service Excellence-Education Foundation (ASE-T1 & T2) Diesel Engines Systems Master Medium/Heavy Truck Technician Tasks in accordance with industry standards.
- General: Check Engine Operation and Troubleshoot Faults.
- Engine Block, Cylinder Head and Valve Train Inspection.
- Lubrication & Cooling Systems Inspection & Servicing.
- Air Induction, Exhaust & Fuel Inspection.

Course Prerequisites

none

Transfer/Certification/Licensure/Employment Information

none

Engagement Plan

Example language:

- I will respond to email within 24 hours. I will offer feedback on major assignments within 24 hours. The best way to contact me is via the Canvas Inbox, as I will prioritize this email over other modes of communication.
- In this course I will be posting interactive announcements which will offer specific opportunities for class questions and extra credit every other week.
- Additionally, I will be participating in the discussion forums with you to share my perspective within the discipline and to offer some nuances of interpretation that may not be present in your textbook.
- Lastly, we'll be holding small group Q & A sessions, where we can learn from our peers (and faculty) on some of the more difficult units within the course.

Required Text or Materials

Title: Fundamentals of Medium/Heavy Duty Diesel Engines and 2 Year Access to Medium/Heavy Vehicle Online
ISBN: 9781284274073 Two books & two years/Two books one year 9781284274059/ two years online 9781284275018
Authors: CDX
Publisher: Jones & Bartlett Publishers
Publication Date: 2021-09-14
Edition: Second

For more information on textbook accessibility, contact Accessibility & Disability Services at ads@slcc.edu.

Additional Materials

Title: Three ring binder, paper and pencils. Standard tool kit, End wrenches, ratchet and socket set. Snap ring pliers, screw drivers, hammers, small pry bars, and measuring tape

Title: Workbook, (will be provided by instructor) Subtitle: Service manuals that pertain to the various lab and class projects the students may be working on will be kept on file in the lab for students use. Handouts covering important areas not covered elsewhere will be provided by the instructor

Brief Description of Assignments/Exams

1. Introduction: This course will provide the student with the opportunity to develop the necessary skills and knowledge required to seek and keep employment in the Field of Heavy-Duty Trucking and Heavy-Duty equipment. Students will receive training in the following areas:
2. Students will be using text, service manuals and handouts in the study of practical application of theory principals for the assessment, disassembly, evaluation, assembly and diagnostic testing of various components problems to enable the student to develop basic skills, critical thinking, judgment, teamwork, leadership and written and oral communication skills.
3. Emphasis will be placed on safety and maintenance of all systems and components. Proper use of specialized tools and equipment will be stressed along with safety aspects involved in operating and using these special implements.
4. Organization:
    1. Course Content and time allotment:
    2. A lecture will be held one hours per day, five days a week. (Monday - Friday)
    3. Lab will be held 4 hours per day, five days a week. (Monday -Friday)
5. Training Format:
    1. A number of classroom sessions will involve presentations of related information on the materials and process of preventive maintenance and servicing. This will be done through the media of lectures, discussion of assignments, and audio-visual aids.
    2. A number of demonstrations will be given to clarify operation and maintenance difficulty concerning certain components and assemblies.
    3. All technical bulletins will be provided as necessary. Handouts on specific assignments will be provided by the instructor.
6. Evaluation: Theory class assessments are based on:

1. Unit quiz scores (max 100 points each)
2. Final exam (max 100 points)
3. Daily attendance (25 days @ 4 pts per day = 100 points on time.
   Note, 2 pts for class 2 pts for Lab
   See DISCIPLINE for DEDUCTIONS
4. Active participation in Lab and assignments (max 100 points)
5. Completion of theory Assignments (max 100 pts.)

Assignment Schedule

Due Date	Assignment Name	Assignment Type	Points
	10-1 Quiz	Quiz	5
	10-2 Quiz	Quiz	5
	10-3 Quiz	Quiz	5
	10-4 Quiz	Quiz	5
	10-5 Quiz	Quiz	5
	10-6 Quiz	Quiz	5
	10-7 Quiz	Quiz	5
	10-8 Quiz	Quiz	5
	10-9 Quiz	Quiz	5
	11-1 Quiz	Quiz	5
	11-2 Quiz	Quiz	5
	11-3 Quiz	Quiz	5
	11-4 Quiz	Quiz	5
	11-5 Quiz	Quiz	5

Due Date	Assignment Name	Assignment Type	Points
	11-6 Quiz	Quiz	5
	11-7 Quiz	Quiz	5
	11-8 Quiz	Quiz	5
	11-9 Quiz	Quiz	5
	12-1 Quiz	Quiz	5
	12-2 Quiz	Quiz	5
	12-3 Quiz	Quiz	5
	12-4 Quiz	Quiz	5
	12-5 Quiz	Quiz	5
	12-6 Quiz	Quiz	5
	12-7 Quiz	Quiz	5
	14-1 Quiz	Quiz	5
	14-2 Quiz	Quiz	5
	14-3 Quiz	Quiz	5
	14-4 Quiz	Quiz	5
	14-5 Quiz	Quiz	5
	14-6 Quiz	Quiz	5
	14-7 Quiz	Quiz	5
	14-8 Quiz	Quiz	0
	14-9 Quiz	Quiz	5
	15-1 Quiz	Quiz	5
	15-10 Quiz	Quiz	5

Due Date	Assignment Name	Assignment Type	Points
	15-11 Quiz	Quiz	5
	15-12 Quiz	Quiz	0
	15-2 Quiz	Quiz	5
	15-3 Quiz	Quiz	5
	15-4 Quiz	Quiz	5
	15-5 Quiz	Quiz	5
	15-6 Quiz	Quiz	5
	15-7 Quiz	Quiz	5
	15-8 Quiz	Quiz	5
	15-9 Quiz	Quiz	5
	27-1 Quiz	Quiz	5
	27-10 Quiz	Quiz	5
	27-11 Quiz	Quiz	5
	27-12 Quiz	Quiz	5
	27-2 Quiz	Quiz	5
	27-3 Quiz	Quiz	5
	27-4 Quiz	Quiz	5
	27-5 Quiz	Quiz	5
	27-6 Quiz	Quiz	5
	27-7 Quiz	Quiz	5
	27-8 Quiz	Quiz	5
	27-9 Quiz	Quiz	5

Due Date	Assignment Name	Assignment Type	Points
	28-1 Quiz	Quiz	5
	28-2 Quiz	Quiz	5
	28-3 Quiz	Quiz	5
	28-4 Quiz	Quiz	5
	28-5 Quiz	Quiz	5
	28-6 Quiz	Quiz	5
	28-7 Quiz	Quiz	5
	28-8 Quiz	Quiz	5
	Chapter 10 Pretest	Quiz	0
	Chapter 10 Test	Quiz	25
	Chapter 11 Pretest	Quiz	0
	Chapter 11 Test	Quiz	25
	Chapter 12 Pretest	Quiz	0
	Chapter 12 Test	Quiz	25
	Chapter 14 Pretest	Quiz	0
	Chapter 14 Test	Quiz	25
	Chapter 15 Pretest	Quiz	0
	Chapter 15 Test	Quiz	25
	Chapter 27 Pretest	Quiz	0
	Chapter 27 Test	Quiz	25
	Chapter 28 Pretest	Quiz	0
	Chapter 28 Test	Quiz	25

Due Date	Assignment Name	Assignment Type	Points
	Final Exam	Quiz	44
	Introduce Yourself	Discussion	0
	Introduce Yourself	Discussion	0
	Introduce Yourself	Discussion	0
	MHT1D003 - Determine proper lubricant; perform oil and filter service.	Assignment	10
	MHT1D004 - Inspect, clean, and test oil cooler and components; determine needed action.	Assignment	10
	MHT1E001 - Check engine coolant type, level, and condition; test coolant for freeze protection and additive package concentration.	Assignment	10
	MHT1E002 - Test coolant temperature; test operation of temperature and level sensors, gauge, and/or sending unit; determine needed action.	Assignment	10

Due Date	Assignment Name	Assignment Type	Points
	MHT1E005 - Inspect coolant conditioner/filter assembly for leaks; inspect valves, lines, and fittings; replace as needed.	Assignment	10
	MHT1E006 - Inspect water pump, hoses, and clamps; determine needed action.	Assignment	10
	MHT1E007 - Inspect and pressure test cooling system(s); pressure test cap, tank(s), and recovery systems; inspect radiator and mountings; determine needed action.	Assignment	10
	MHT1E010 - Diagnose engine coolant consumption; determine needed action.	Assignment	10
	MHT1F001 - Inspect turbocharger(s), wastegate(s), and piping systems; determine needed action.	Assignment	10

Due Date	Assignment Name	Assignment Type	Points
	MHT1F008 - Perform intake manifold pressure (boost) test; determine needed action.	Assignment	10
	MHT1G001 - Check fuel level and condition; determine needed action.	Assignment	10
	MHT1G003 - Inspect low pressure fuel system components; determine needed action.	Assignment	10
	MHT1G006 - Demonstrate knowledge and understanding of the different types of fuel systems.	Assignment	10
	Module 2: Shop Activity 1	Assignment	10
	Module 2: Shop Exam 1	Assignment	20
	Module 3: Shop Activity 2	Assignment	10
	Module 3: Shop Activity 3	Assignment	10
	Module 3: Shop Exam 2	Assignment	20

Due Date	Assignment Name	Assignment Type	Points
	Module 4: Shop Activity 4	Assignment	10
	Module 4: Shop Activity 5	Assignment	10
	Module 4: Shop Exam 3	Assignment	20
	Module 5: Shop Activity 6	Assignment	10
	Module 5: Shop Activity 7	Assignment	10
	Module 5: Shop Exam 4	Assignment	20
	Module 6: Shop Activity 8	Assignment	10
	Module 6: Shop Activity 9	Assignment	10
	Module 6: Shop Exam 5	Assignment	20
	Module 7: Shop Activity 10	Assignment	10
	Module 7: Shop Activity 11	Assignment	10
	Module 7: Shop Exam 6	Assignment	20
	Module 8: Shop Activity 12	Assignment	10

Grading Scale

Everyone meeting all the required criteria can receive an "A" grade for this class.

A. (100%-85%)

B (84%-70%)

E. (below 70%)

UW. (Unofficial withdrawal)

How to Navigate to Canvas

Institutional Policies

As members of our academic community, we would like to invite you to review the Institutional Syllabus which covers important policies and procedures. This document contains important links for students on the code of student rights and responsibilities, academic integrity, and grading policies, Title IX and other important acknowledgements. By familiarizing yourself with this information, you can help us create a safe and respectful environment for everyone.

For more information, navigate to the Institutional Policies tab on the Institutional Syllabus page.

Learning Support and Tutoring Services

We are pleased to offer a range of tutoring and learning support services to help you achieve your academic goals. Whether you need assistance with a specific subject or want to improve your study skills, you have many options for tutoring or other support.

To learn more about the services we offer and how to access them, visit the Institutional Syllabus page under the Tutoring and Learning Support tab. We encourage you to take

advantage of these resources to help you succeed in your studies. If you have any questions or would like to schedule a tutoring session, please don't hesitate to reach out to us. We are here to support you in any way we can.

Advising and Counseling Support Services

At our institution, we are committed to supporting your academic and personal growth. That's why we offer a range of advising and counseling services to help you navigate the challenges of college life. To learn more about the resources available to you and how to access them, visit the Institutional Syllabus page under the Advising and Counseling Support Services tab. Our advising team and the support centers across campus are here to support you in achieving your goals and overcoming any obstacles you may face.

Student Academic Calendar

As students you should be aware of all important dates in the semester, such as the day that courses begin and end, as well as the drop date and the last day to withdraw. To learn more about those dates, navigate to the Student Academic Calendar below:

SLCC Student Academic Calendar