

**CUYAMACA COLLEGE
 FORD ASSET PROGRAM
 COURSE SYLLABUS
 Auto - 193 Section 8962, Summer 2016
 Engine Diagnosis and Repair 32S09T0**

Instructor: Brad McCombs
 Office: K118
 Phone: (619) 660-4267
 Email: brad.mcombs@gcccd.edu

Office Hours: I am also available for web conferences using [CCC Confer](#) Teach and Confer. This allows you to use your computer or device from home and go over web based training course questions, or resolve other challenges you may be having. Students use this resource to attend meetings every Wednesday night. You must create a user ID login prior to making an appointment. Please call in using your cell phone or home phone, because your computer microphone may cause distortion. We will share information by looking at computer screens and talking by phone. Students may also contact me until during normal business hours or until 11:00 p.m. using my cell phone for voice messages or text messages (619) 701-1226

Monday Office and Online	10:00 a.m. to 12:00 p.m. by appointment
Tuesday Office and Online	10:00 a.m. to 12:00 p.m. by appointment
Wednesday Online Only	08:30 p.m. to 10:00 p.m. by CCC Teach and Confer
Thursday Office and Online	10:00 a.m. to 12:00 p.m. by appointment
Friday Office and Online	10:00 a.m. to 12:00 p.m. by appointment
CCC Confer Web Based Office Hours	7:00 p.m. to 10:00 p.m. Every day by Appt. Except Wednesdays. I am also available on weekends.



Figure 1 CCC Confer login page

Prerequisites:

A successful [application and enrollment](#) to the Cuyamaca College Ford ASSET program, and sponsorship by a Ford dealership in order to complete the work experience requirements is mandatory. The dealership will require a clean driving record. If you are not sure about your driving record please contact the California Department of Motor Vehicles (DMV) and request a driving record report. The dealership will also [require drug testing](#). Please also refer to [Cuyamaca College Student Code of Conduct](#). Students must possess legal work status and be able to legally work in the United States.

- You must arrange cooperative work experience with a Ford Dealership.
- Safety Glasses
- Basic Hand Tools
- Dress Code is business professional (A Ford Uniform, or Accepted Ford Name Tag). Exposed tattoos are not allowed. No short pants. Shirts must have a collar. Shirts must be tucked in, and pants worn with a belt, unless the Ford uniform is designed to have the shirt untucked.

Course Description:

This Ford ASSET course includes diagnosis of engine failures, engine removal and disassembly techniques, engine cleaning and measuring practices, machining principles, assembly procedures and in-car repairs. Engine design theory will be discussed. ASSET 193 will also prepare students to service diesel systems and engine repair. This course prepares students for ASE Certifications and required Ford Certification. This course is complemented by required work experience in the dealership.

Ford Course Numbers and Certifications:

32S09T0 Engine Repair and Diagnosis and 51S15T0 Diesel Engine Performance

Student Learning Outcomes:

Upon successful completion of this course, students will be able to:

- 1) Demonstrate standardized safety and hazardous waste handling procedures.
- 2) Utilize manufacturer's repair data and specifications for accurate diagnosis and repair using assigned lab sheets and hands-on testing.
- 3) Perform intrusive and non-intrusive engine tests, interpret results, and prescribe appropriate repair using assigned lab sheets and hands-on testing.

Exit Skills:

Students having successfully completed this course exit with the following skills, competencies and/or knowledge:

- 1) Understand nomenclature and operational theory of automotive engines.
- 2) Diagnose engine noise and mechanical problems.
- 3) Remove and install engine.
- 4) Correctly disassemble and reassemble an automotive engine.
- 5) Measure all critical engine components for size and wear.
- 6) Diagnose and repair cylinder head and valve train components.
- 7) Diagnose, inspect and repair lubrication system components.
- 8) Understand process and procedure for performing various engine machining operations.

Textbooks:

Various Ford Motor Co. texts will be used. You will be required to purchase the Ford Manuals, which will also be included in Blackboard as a Pdf. File. Students may also print the Student Workbooks from their student Blackboard account and print the book using their own paper and printer. The required books and lab sheets can be purchased from the tool room for about \$10 - \$15.

Halderman Automotive Technology, Principles, Diagnosis, and Service

ISBN 978-0-13-399461-2

This book can be purchased in the [College Bookstore](#) or you may find it online. This is the only textbook we will use in our program for all of the Ford ASSET classes. Supplemental reading assignments and tests will be given from this textbook.

Evaluation:

A uniform grading system will be applied to all students in this class. Students must pass the Final performance test and written test with a score of 80% or higher in order to receive Ford Certification. Students who receive a score between 70% and 80% will receive college credit.

Notebook: Students are required to take notes during lectures and labs. The notebook will be part of student class participation grading.

Class Participation and Notebook		25%
Homework Quizzes		25%
Laboratory Assignments		25%
Midterm and Final Exam		25%

A Plus/Minus grading system will be used for final grades. Example:

70-73% = C 74-76% = C 77-79% = C+ College credit towards Associate of Science Degree, No

Ford Certification:

0%-69% No College Credit, No Ford Certification

80%-100% College Credit and Ford Certification

Note: Students who become certified in a content area are able to perform that warranty service at a Ford dealer while they are still in training during their cooperative work experience.

Class Participation and Group Assignments: Students who participate in class discussions will do better. An attendance point system will be developed by the instructor and posted daily on your student

Blackboard account. Students who come to class on time and finish the total classroom lab hours will receive a total of 10 points per day. Students who are late or leave early without permission will have points deducted. Students will volunteer and be elected by their student peers, instructor, and be assigned to serve as group leaders.

Class Participation Rubric:

BELOW AVERAGE	AVERAGE	ABOVE AVERAGE	Points Possible
Student misses class or leaves class early or shows up to class late. (0 Points)	Student comes to class late or leaves class early, but asks permission or provides an excuse (5-7 Points)	Student is always on time. Student only leaves class with permission after completing assignments. (8-10 Points)	All students start with 10 possible points each day. The points are documented in the grade center at the beginning of class.
Student does not participate in assigned tasks. (0 Points)	Student Participates in assigned tasks but does not take an active role or leadership role. The student tends to watch others work. (5-7 Points)	Student takes a leadership role in all assigned tasks. Student is willing to help others. (8-10 Points)	Points are finalized at the end of class. At the end of class points will either remain at 10 or be lowered.
Student Violates Safety Rules. (0 Points)	Student Does not violate safety rules but needs to be asked what he or she is doing? Student does not clean work area or needs to be told to clean up. Student does not wear uniform (5-7 Points)	Student is safe and encourages others to be safe. Student cleans the shop area and encourages others to clean up. Student wears uniform. (8-10 Points)	There are 10 points possible per class session for this grading rubric under class participation, and will account for 25% of the total grade points.

Lab Assignments:

Each individual or group lab assignment will be posted on Blackboard for the weeks assignments. The lab may have a due date and a unique name so students may identify the lab assignment in the grade center.

Midterm and Final Exam: There will be a midterm and final exam. The midterm will consist of a written exam. The final will consist of a written exam and a “hands on” exam. The hands on exam will allow the

student and instructor to spend a scheduled time examining the student's ability to apply the laboratory assignments learned throughout the semester. Students who fail the objective written tests, or hands on tests will have a second chance to take the test. The student will not be given the same written test or hands on test.

Class Policies:

Please identify yourself by first and last name, and the course you are taking, for all communications. (For example: Brad McCombs AT196). Your name should be included in all communication.

Please use proper English when communicating. Courtesy and patience are mandatory when "replying" to other student "posts". Do not use abbreviations. ("btw" is spelled by the way.)

Communication technical requirements:

You must have access to a computer and a high-speed Internet connection. It is preferred the computer you use have a microphone and camera for recording "chat messages" in discussion boards. You may use campus resources for a personal computer if you do not have your own.

Email: My preferred method of contact is by email through your Blackboard student email account. I will answer all emails within 24 hours. If you do not receive a reply from me within 24 hours, please assume I did not receive your email and resend it.

Please include a topic heading for all emails.

Brad.mcombs@gcccd.edu

Telephone: My telephone number is (619)-660-4267. I will return phone calls during business hours or answer immediately. If for some reason I don't answer my phone, leave a detailed message on my voicemail and I will call you back the same business day. My mobile phone should be used for emergencies or issues you feel need my immediate attention (619) 701-1226. You may send me a text message.

Drop Policies: Students may be dropped from this course if more than 4 classes or Laboratory Assignments are missed without an excused absence. Student's course grade may be dropped 1 grade letter if more than 4 classes are missed.

Late Work: if you do not complete an assignment within the week allowed for that assignment, you may appeal, and your maximum score will be adjusted to 70% regardless of your actual score. This policy only applies to emergency appeals for access to content.

Students with Special Needs or Requiring Additional Help: [You Tube Resources for Students](#)

Please contact me directly if you are having trouble or require additional assistance or resources. We are here to help you succeed. There are also additional services at the following web link:

[Disabled Students Programs and Services](#)

We will be using a computer based learning system called Blackboard. Students requiring extra help with Blackboard can use the following resource:

[Cuyamaca College Computer Lab](#)

Homework and Quizzes: It is important students read the textbook chapters assigned for the classroom “Weeks” assignments before attending class. There will also be video assignments and other supplemental material found on your student Blackboard account. You be allowed to take formative quizzes as many times as necessary to attain the highest possible score during the time allotted for that quiz. Once a quiz is closed students will no longer have access to that quiz. Classroom written quizzes will be based on the reading assignments and the content posted on Blackboard.

Secure Web Logon

WARNING!
THIS IS A FORD MOTOR COMPANY PRIVATE COMPUTER SYSTEM. USAGE MAY BE MONITORED. UNAUTHORIZED ACCESS OR USE MAY RESULT IN CRIMINAL OR CIVIL PROSECUTION, DISCIPLINE UP TO AND INCLUDING TERMINATION OF EMPLOYMENT, TERMINATION OF ASSIGNMENT, OR LOSS OF ACCESS.

By signing on to the system I agree that, where consistent with applicable law: 1) I do not have any expectation of privacy in my use of the system. 2) My name and business contact information may be collected, processed, and stored by Ford in databases located in the U.S.A., and transferred among Ford and Ford's global affiliates (including the affiliates identified in Ford's most recent annual report on SEC Form 10-K available at the Ford corporate website) and their service providers for the purposes of my business relationship or arrangement with Ford, and 3) Ford actively monitors its information, systems, and data to identify and respond to security threats and losses, and any information or data identified through this monitoring may be shared among Ford and Ford's global affiliates and service providers, and provided to government authorities (including law enforcement).

Ford recognizes that in certain jurisdictions there are specific laws, regulations, and labor agreements that may apply, and Ford will comply with such requirements. [Click here for additional important terms and conditions.](#)

Enter your userid and password to login

Salaried Employees can login using their CDS ID and Password

USERID:

PASSWORD:

NOTE: PLEASE DO NOT SHARE YOUR USER ID OR PASSWORD WITH ANYONE

Dealers: To reset your password using your Q&A Profile, [click here.](#)

Figure 2 Ford secure login warnings

Electronic Use Policies: [My Video Reflections of Acceptable Use](#)

We must recognize the differences and expectations of using electronic information for online learning. Technology has made information more accessible increasing the need of acceptable use policies, which are facilitated through Federal, State, and local laws and GCCCD college district.

Federal and State laws offer protections for copyright holders to make copies or facilitate the copying of the work they have created. Fair use provides for limited use of copyright material. These limitations are found in sections of [copyright law](#).

The purpose and character of the use, including whether such use is of commercial nature or is for nonprofit educational purposes

The nature of the copyrighted work

The amount and substantiality of the portion used in relation to the copyrighted work as a whole

The effect of the use upon the potential market for, or value of, the copyrighted work (1)

The law protects the creativity and innovations of copyright holders by limiting the unauthorized use of their work. This promotes creativity by awarding protections for intellectual property development, which benefits society by stimulating innovative ideas and artwork. Students should not share their Ford credentials with anyone. Failure to comply with Ford copyright agreement will result in loss of your credentials and violation of the College student code of conduct.

[Cuyamaca College Student Conduct and Discipline Procedures](#)

It is important to maintain a collegial conduct on campus, and this conduct extends to the online classroom. Privacy cannot be guaranteed when using campus computer systems or linking to Internet through campus resources. Treat all communication with values portraying higher learning.

The following quote was copied from the Cuyamaca College website:

“Your instructors are eager to help you succeed in your studies at Cuyamaca College. But success means more than just receiving a passing grade in a course. Success means that you have mastered the course content so that you may use the knowledge in the future, either to be successful on a job or to continue with your education” (Cuyamaca College Catalog, 2011-2012, p. 28). Therefore, dishonesty will not be tolerated in this course. This includes, but is not limited to, cheating, plagiarizing, facilitating acts of academic dishonesty by others, having unauthorized possession of examinations, submitting work of another person or work previously used without informing the instructor, or tampering with the

academic work of other students. Students who are found to be dishonest will receive academic sanctions, such as an “F” grade on the assignment or exam and will also be reported to the Associate Dean of Student Affairs for possible further disciplinary action. Sample 4 “Academic honesty is required of all students. Plagiarism--to take and pass off as one’s own work the work or ideas of another--is a form of academic dishonesty. Penalties may be assigned for any form of academic dishonesty”(Cuyamaca College Catalog, 2011-2012, p. 28). Sanctions for breaches in academic integrity may include receiving a grade of an “F” on a test or assignment. In addition, the Associate Dean of Student Affairs may impose further administrative actions.”

Blackboard Tools offers Safe Assignment, which is an electronic [plagiarism](#) checker.

GCCCD Social Media Guidelines:

Although online conversations on social media sites are often casual, they must remain professional and respectful. Comments on the colleges’ official pages are monitored to ensure compliance with the social networking guidelines. Inappropriate posts will be removed.

Content that will be deleted includes:

- An advertisement for a commercial business
- Libelous, slanderous or defamatory comments
- Vulgar, racist or sexist slurs
- Obscenities
- Comments pertaining to violence
- Incorrect information
- Information that violates student privacy under FERPA
- Comments that are not respectful
- Comments that are not relevant to the topic
- A commenter who is misrepresenting himself/herself
- A single person who is dominating the conversation
- We welcome photos, videos, and comments posted to the Cuyamaca College Facebook wall. Please review the GCCCD Social Media Guidelines if you are unsure the content you want to post is appropriate. We appreciate your cooperation.

Online Assignment, Ford Web Based Training, and Student Blackboard Accounts:

Students will be expected to complete a series of online learning modules called, “Ford Web Based Training” as homework. These modules are an excellent training resource, and require students to have access to a personal computer, not a MAC, and a high speed internet connection using internet explorer.

Students will also use a learning management system called Blackboard. All classroom content including the syllabus and weekly assignments are found on Blackboard. We will also use “discussion boards” to access your knowledge about subject matter and writing skills that will be found on the “Student Work Bench” in the left column block on your student Blackboard account. This class requires students to use online learning tools. Below are links to assess student readiness to use distance learning tools:

[Is online learning right for me?](#)

[Support for online learning.](#)

[Cuyamaca College Computer Lab](#)

E-Learning Modules:

Online Web-Based Training Classes: The following online classes must be completed to be certified to perform steering, brakes, and suspension diagnosis and repairs at a Ford dealership, and be certified to perform warranty service in these content areas at a Ford dealership. Each module takes one to three hours to complete.

Course Title	Course Number	Due Date	Points
Engine Operation Diagnosis and Repair 1	32S06W0	June 19th at 11:50 p.m.	10
Engine Operation Diagnosis and Repair 2	32S07W0	June 19th at 11:50 p.m.	10
Diesel Engine Theory and Operation	51S03W2	June 26th at 11:50 p.m.	10
Diesel Engine Repair	52S01W0	June 26th at 11:50 p.m.	10
Diesel Engine Repair Update	52S-UPDATE	June 26th at 11:50 p.m.	10
Introduction to Engine Performance	31S20W0	July 3rd at 11:50 p.m.	10
Fuel and Air Theory and Operation	31S21W0	July 3rd at 11:50 p.m.	10
Ignition Theory and Operation	31S22W0	July 10th at 11:50 p.m.	10
Exhaust Emissions Theory and Operation	31S23W0	July 10th at 11:50 p.m.	10
EP System Relationships and OBD II Monitors	31S24W0	July 17th at 11:50 p.m.	10
EP Diagnostic Processes and Routines 1	31S25W0	July 17th at 11:50 p.m.	10

The table below contains a tentative classroom schedule of assignments. This schedule is subject to change. Formative quizzes will be added that are not announced or contained in this schedule. The learning modules highlighted in red are not due until the Sunday evening after they are assigned. All other homework should be completed before the class lecture and labs.

Class Schedule:

1st 6-Week Session	June 13- July 21
Late Registration & Program Change	June 13 - 16
Last Day to Drop Classes without "W"	June 16
Last Day to Apply for Refund	June 16
Last Day to Apply for P/NP	June 16
Last Day to Drop Classes	July 7
Instructor Grade Deadline	July 27

Assignments schedule to complete learning objectives and outcomes – tentative:

Date and lecture topic: by day and week	Assignments Labs 5 Points Each	Home Work or Deliverable, Reading Assignments	Tests and Quizzes, E Learning Assigned	Learning Objective/ NATEF Task Correlation
Main Assignment Discussion	Each group will be assigned to one engine and mount it to a stand.			
Week 1 -				
Week 1 June 13 class begins. Review syllabus. Review and adjust student work groups. Purchase student work books and work sheets. Power Point Presentation 1	Work Stations 1 – 6 WS11 Multiple oil leaks with engine noise concern 2014 Ford Escape GTDI WS12 Cam Phaser replacement with timing cover installed 4.6L	Read the review the prerequisite review and prepare to answer questions during power point presentation. Read chapters: 8 Fasteners and Thread Repairs 12 Measuring Tools	32S06W0 32S07W0 Due June 19th at 11:50 p.m.	32S06W0
June 14	Work Stations	Read Chapter:		1,2,3

Use of hole gauge, telescoping gauge and micrometers	1 – 6 WS13 Smoke machine diagnose problem	18 Gasoline Engine Operation		
June 15 Demonstrate leak test, compression tests, vacuum tests, and bore scope	Work Stations 1 – 6 WS14 Bench measurements: Engine Block, Cylinder Head, Piston, Camshaft, Crankshaft, Valves.	Read Chapter: 19 Diesel Engine Operation		1,2,3
June 16 Demonstrate smoke test by properly blocking intake air inlet	Work Stations WS15 Smoke Test catalytic converter	Read Chapter: 20 Coolant		1,2,3
Demonstrate measuring exhaust back pressure	Work Stations WS16 Measure exhaust back pressure and use bore scope	Read Chapter: 21 Cooling System Operation and Diagnosis		1,2,3
Week 2 June 20 Power Point Lesson 2 review lesson 1 workstations 1 - 6	Work Stations Lesson 2, 1 -6 WS21 Runs rough lacks power GTDI and other car to be determined	Read Chapter: 22 Engine Oil	51S03W2 52S01W0 52SUPDATE Due June 26th at 11:50 p.m.	1,2,3
June 21	WS22 CMT Engine overheat and misfire	Read Chapter: 23 Lubrication System Operation and Diagnosis		1,2,3
June 22	WS23 VCT Diagnosis F350	Read Chapter: 24 Intake and Exhaust Systems		1,2,3
June 23	WS24 CMT Engine noise	Read Chapter: 25 Turbo Charging and Super Charging		1,2,3
Demonstrate IDS relative compression tests. Mode 6 misfire data,	WS25 Cooling system pressure tests	Read Chapter: 26 Engine Condition Diagnosis		1,2,3

Week 3 June 27	WS26 Cooling system block test	Read Chapter: 27 In Vehicle Engine Service	31S20W0 31S21W0 Due July 3rd at 11:50 p.m.	1,2,3
June 28 Power point lesson 3 review workstations lesson 2, 1-6	Work Stations Lesson 3 and 4 1 – 6	Read Chapter: 28 Engine Removal and Disassembly		1,2,3
June 29 Demonstrate crack detection		Read Chapter: 29 Engine Cleaning and Crack Detection		1,2,3
June 30 Demonstrate straight edge measurements of block and cylinder heads. Bore gauge measurements Piston measurements Rod measurements Crankshaft measurements		Read Chapter: 30 Cylinder Head and Valve Guide Service Read Chapter: 31 Valve and Seat Service Read Chapter: 32 Camshafts and Valve Trains Read Chapter: 33 Pistons, Rings, and Connecting Rods		1,2,3
Valve, seat, and valve guide measurements	Engines should be measured, reassembled and turn over		Midterm Exam	1,2,3
Week 4 July 5 51S15T0 Diesel Engine Performance Power Point	Lesson 1 Workstation 1 - 4 L1W1 2015 F350 Diesel No Start Condition L1W2 Turbo On Bench	Read the Student Work Book and answer the pre test questions.	31S22W0 31S23W0 Due July 10th at 11:50 p.m.	1,2,3
July 6	L1W3 IDS Recordings L1W4 CMI Recordings			1,2,3
July 7	L2W1	Read Chapter: 34 Engine Blocks		1,2,3

	6.7 Liter EGR Cooler Test Bench L2W2 Injector Service on various Diesel Engines			
Crankshaft measurements		Read Chapter: 35 Crankshafts, Balance Shafts, and Bearings		1,2,3
Week 5 July 11 Power Point Diesel	WS23 IDS Recordings CMI WS24 IDS Recordings CMI		31S24W0 31S25W0 Due July 17th at 11:50 p.m.	1,2,3
July 12	WS31 Crank no Start 2015 F350	Read Chapter: 37 Engine Assembly and Dynamometer Testing		1,2,3
July 13	WS32 ? 6 Liter Diesel on stand is designed to diagnose various leaks on the high pressure oil system	Read Chapter: 38 Engine Installation and Break-in		1,2,3
July 14 Power Point Diesel	WS33 IDS Recordings			1,2,3
				1,2,3
Week 6 July 18	WS34 IDS Recordings			1,2,3
July 19	WS41 SCR dosing test procedure 2015 F350			1,2,3
July 20 Power Point Diesel	WS42 Bench Identify Fluids in Jars for contamination using a refractometer			1,2,3
July 21	Performance Testing			1,2,3

	Performance Testing			1,2,3
Week 7 July 25	Performance Testing			1,2,3
July 26	Written Exam		Final Exam Diesel Engine Performance	1,2,3
July 27	Shop clean up and party			