SAN JUAN COLLEGE

DISL 131 Drivability and Emissions Section Name Section Credit Hours Credits
Syllabus

Course Information

Meeting times and location: section meeting_times section location

Catalog description: On and off-highway electronic management and emissions systems. Will incorporate the use of electronic service tools, software programs, on-board diagnostics, multiplexing, and diesel emission after treatment. Safety will be strictly enforced. A grade of "C" or better must be earned to receive credit for this course.

Prerequisites: Take AUTE-113, DIME-115 or DISL-115.

Terms offered: Spring Only

Section-specific Course Description:

Course Level Objectives

Upon successful completion of the course, the student will be able to…

1. Explain the operating principles of basic electronic components.
2. Describe the operating principles of electronic engine control system including the role of inputs, control, and outputs.
3. Describe the basic operation of engine control computers including A/D converters, ROM, RAM, PROM, EPROM, EEPROM, and FEPROM memory, interfaces and clock chips.
4. Explain how on-board engine computers communicate with other control modules, personal computers, and service tools.
5. Define what a software program is, what it does, give an example of program used by service technicians, and fleet managers.
6. Describe the basic steps used when troubleshooting engines equipped with electronic controls.

7. Compile step by step sequential troubleshooting practices.
8. Given a list of common electronic engine system malfunctions, match them to the most common causes.
9. Given an engine, choose the right electronic service tool and diagnose an electronic fault code.
10. Identify the compounds and gases found in exhausted engine end gases and contrast those that are classified as noxious.
11. Summarize the EPA and CARB emission tests required for diesel engine certification.
12. Explain the operating principles of oxidation, catalytic converters, reduction catalytic converters, and diesel particulate filters.
13. Describe the effects that fuel injection timing can have on a diesel engine and exhaust emissions.
14. Discriminate between the operating principles of passive regeneration and active regeneration in diesel emission systems.
15. Analyze vehicle/equipment emission components using OEM engine service tools.
16. Outline troubleshooting and replacement procedures for diesel particulate filters and diesel oxidation catalysts.
17. Given a truck with multiple networked electronic systems, access a message identifier on its chassis data bus.
18. Given an electronically controlled component, demonstrate the procedure required to access a failure mode identifier (FMI) using electronic service tools.
19. Describe the principles of operation of thermistors, variable capacitance sensors, hall-effect sensors, potentiometers, induction pulse generators, and piezoresistive sensors.
20. Break down the stages of a computer processing cycle.
21. Describe how an ECM processes inputs and uses programmed data to generate outputs.
22. Differentiate current electronic engine management systems by manufacturer.
23. Distinguish between customer and proprietary parameters.
24. Carry out the processes used to reprogram an electronic engine ECM with proprietary data.

Required Texts and/or Materials

Access Code: Truck & Equipment Bundle: Mobile Heavy Equipment, Commercial, Med/H
9781284196382
CDX
CDX Learning

Required Technology and Software

- Canvas
- Chrome, Safari, or Firefox

Course Requirements

Students will do a combination of coursework that includes reading assignments, ASE and multiple-choice questions, essays, service reports, and lab reports. Students are expected to stay current on homework as well as be active in both lectures and shop activities. Depending on how the class is scheduled students should expect one to two textbook based homework assignments, one to three shop-based assignments, and one to two tests/quizzes per week. Regular and on time attendance and staying up to date on homework assignments is critical to success in this class.

Specific course requirements are published in Canvas for the section.

Other Classroom Policies and Expectations

Students must read and understand the Diesel Equipment Technology Department Student Handbook and will be held accountable to the information it contains. The Diesel Department Student Handbook is published as the Course Guide in every Diesel Equipment Technology Course. Students should also have or have access to the following:

-Computer, laptop, or tablet (Windows based preferred as some course software does not run on IOS or Chrome)

-Access to the internet

Grading

The final grade in this course is calculated by the weighted grades in seven categories. They include:

1. Homework
2. Shop and Classroom Participation
3. Test and Quizzes: Includes all chapter tests and various quizzes given during the semester.
4. Portfolio: Included all work done during the course of the semester including workbook assignments and lab sheets.

5. Safety and JSAs: Completely filled out JSA forms handed in at the end of each week for every class and conducting shop activities safely and with industry standard PPE.
6. Final Practical Test: The points earned on a final hands on test.
7. Final Written Test: The points earned in the final exam.

Category	Weight
Homework	15%
Shop and Classroom Participation	15%
Tests and Quizzes	15%
Portfolio	10%
Safety and JSAs	10%
Final Practical Test	20%
Final Written Test	15%

During the course of a normal semester the grading weight will not change. However, if the semester is interrupted for any reason and cannot continue as scheduled (e.g. the Spring 2020 COVID-19 shutdowns), any grading area that cannot be completed due to the extenuating circumstances will be removed and the weights of the remaining categories will be adjusted accordingly. Students will be notified if the need arises.

Please note that in order to receive credit towards a degree you must receive a letter grade of at least C or better. The point scale used in all DIME courses is below.

Percentage	Grade
90% to 100%	A
80% to 89.9%	B
70% to 79.9%	C
60% to 69.9%	D
0% to 59.9%	F

Course percentages will not be rounded while calculating the letter grade.

Course Time Commitment

Students should expect to spend their time during class focused on their learning. There is a great deal of content delivered in a relatively short amount of time so limiting distractions and attendance to each

scheduled classroom day is critical. It should be expected to spend on average 1.5 to 2 hours on homework for every hour spent in the classroom or shop.

Canvas Participation and Expectations

This is a face-to-face class however the department uses Canvas to support classroom activities. Students are expected to check their Canvas course at least once a day for any assignments or announcements. Classes may also use Canvas as the sole way to submit homework and shop assignments as well as taking tests and quizzes.

Participation and Attendance Policy

Attendance:

San Juan College has the responsibility to the community to graduate qualified, dependable students. The State of New Mexico and San Juan County provide funds to assist the college in meeting this responsibility; therefore, it is reasonable to expect prompt, regular attendance on the part of each student. Moreover, excessive absenteeism is never tolerated by an employer and is grounds for dismissal from the job.

Most businesses cannot afford to pay employees if they are not working, so it is good to get in the habit of regular attendance. Therefore, students are expected to attend 100% of the contact time in Diesel courses and be on time for every course meeting. Students total point percentage will be lowered one percentage point for every 1% of total contact time missed. Any student whose attendance drops below 80% of the total contact time or has missed 10% of the total contact time of the course consecutively will automatically receive a X grade (failing) as that student will be considered a no-show/non-attending student.

1. Being absent results in a loss of that day's contact hours towards the total percentage of the course attended.
2. Being late or leaving early will result in a loss at minimum of one-hour contact time towards the total percentage of the course attended.
3. Being late or leaving early by more than 5% of the daily class time but less than 25% daily class time will result in a loss of half the days contact hours towards the total percentage of the course attended.
4. Being late or leaving early by more than 25% the daily class time will result in complete loss of that day's contact hours towards the total percentage of the course attended.

Shop and Classroom Participation:

Participation is an important part of learning and involves taking an active role in your education both in the classroom and out in the shop. Because of this importance there will be 25 participation points available every class day. The points awarded will reflect the student's attendance, interactions with students and instructors, being prepared for class, showing satisfactory work in the shop, and completing job sheets where required. Below is the grading rubric for calculating participation. Remember an absence equals zero participation.

Area Assessed		100%	75%	50%	25%	0%
Attendance 6.25 points/day		Is on time to class and prepared for any classroom or shop activities.	Is on time to class but is not prepared and has borrow materials for the class activities.	Is on time to class but is not prepared and has to leave class to retrieve materials for the class activities.	Is on time for class but is not prepared and makes no effort to correct.	Is late for class or leaves class early.
Safety 6.25 points/day		Has all necessary safety equipment on and always uses shop equipment in a safe manner.	Has all necessary safety equipment but had to be reminded to put them at the beginning of a shop project.	Has all necessary safety equipment but has to be told to use it or is not using shop equipment in a safe manner.	Has all necessary safety equipment but has to be told to use it and is not using shop equipment in a safe manner.	Does not attend class with necessary safety equipment.
Involvement 12.5 points/day	Class	Pays attention in class during lectures and is not distracted. Participates in discussions and interacts to make the classroom a better learning environment for everyone.	Pays attention in class but is not involved in discussions. Adds very little to make the classroom a better learning environment for everyone.	Is mostly paying attention in class but adds nothing to the learning environment. Is not a distraction to the learning of others.	Is not adding to the learning environment. Does not actively participate in class discussions and is starting to become a distraction to other students.	Is not paying any attention and/or constantly using electronics during lectures. Is not an active participant in learning and becomes a distraction or

						detriment to the learning of others.
	Shop	Actively participates in assigned shop activity. Follows directions without having to be retold. Shows gaining mastery of the skills being performed.	Participates in assigned shop activity. Follows directions adequately. Shows improving levels of gaining mastery of skills being performed.	Is a passive member of a group on a shop project but is paying attention to the activities. Needs some help following directions. Is able to show minimal levels of gaining mastery of the skills being performed.	Is a passive member of a group on a shop project. Will not or cannot follow directions given. Shows almost no levels of gaining mastery of the skills being performed.	Has to be constantly redirected to stay on task. Is a passive member of a group on a shop project and/or disappears during class time. Does not show any gaining mastery of skills being performed.

Any students that receive less than 50% participation based on the above rubric will be considered a non-participating student. Students that are considered non-participating by any Diesel Department Policy will also have their total contact time in the course reduced by half of the contact time for each day they are considered non-participating.

Instructor Response Times & Regular Interaction Expectations

Instructors strive to respond within 24 hours during the week (or the nest school day after a weekend) to all questions and emails. Most homework assignments are graded within two days of submitting.

Keep in contact with the instructor if circumstances lead to missing classes.

Key Dates to Remember

Full Academic Calendar

Course Schedule

Given the fluid nature of a project-based learning course and the ever-changing nature of the industry learning activities may change with each time the course is presented. Each week however students are expected to do:

- Complete a daily Job Safety Analysis to ensure a safe environment.
- Complete all chapter reading assignments every week.
- 1 to 3 written homework assignments per week.
- 1 to 2 tests per week.
- Perform hands on activities in the shop that duplicate or simulate procedures and repairs.
- Write understandable and complete service reports on activities done in the shop.

Program Handbook

A sample Program Handbook is available on request. The Program Handbook is also published in every Canvas course within the department.

Technical Support

Technical support is available through the San Juan College Help Desk 24/7/365. The help desk can be reached at 505-566-3266 or by creating a ticket at San Juan College Help Desk.

For password reset and and Canvas support, visit the Student Technology Guide website.

Accessibility/Privacy Policies for all Technology Tools Used

Accessibility/Privacy Policies for all Technology Tools Used

Student Support

At San Juan College, we are committed to supporting your academic success and overall well-being. We recognize that college life can be challenging and stressful, impacting both learning and personal

health. We are here to help you succeed.

Academic Support and Resources

We provide a range of academic support services to help you stay on track on your educational journey. Free resources include tutoring, computer loans, life skills workshops, and so much more. Visit the Academic Support and Resources webpage to learn more about support and resources available through Academic Advising, the Tutoring Center, the Student Resource Center (formerly Student Achievement Center) and the Testing Center.

Student Support and Resources

If you or someone you know could benefit from counseling, accessibility services, career exploration, veteran transitional assistance, or any of our other support services, visit the Student Support and Resources webpage where you'll find detailed information about various resources available to you as an SJC student.

We encourage you to take advantage of these free resources to enhance your college experience and ensure your success.

College Policies and Resources for Current Students

The Student Handbook provides information on student support, student organizations, and student conduct policies at San Juan College.

The San Juan College catalog outlines the Academic Policies students need to know.

Healthy and Safe Practices for Being on Campus

We want a healthy and safe campus for students, faculty, staff, and guests.

Contagious diseases and your responsibility:

If you have COVID-19 symptoms, fever, flu or even the common cold, you should stay home. Do not come to campus if you are feeling sick. Contact your instructor about missing class (and review your instructor's policies on missed or late work). Being sick does not necessarily excuse you from completing your work on time.

Safety on campus and your responsibility:

If you are on campus and experience or witness an emergency, call 9-1-1 first and then the Department of Public Safety at 505-566-3333 (or just 3333 if calling from a campus phone).

When you are on campus, be aware of your surroundings. If you need an escort to your vehicle, call 505-566-4444 (DPS non-emergency line) or 505-215-3091 (officer on duty line).

The College will send information for campus emergencies through SJC AlertAware, email and the webpage. Stay informed and stay safe.

Inclement Weather Information

Students will receive notification of class delays and cancellations due to inclement weather via the SJC AlertAware and SJC student email. Face-to-face classes will not meet in person; however, students are advised to check with instructors about alternative meeting options, as some may choose to meet via zoom. Hybrid classes will meet as scheduled via zoom. For questions regarding your class delay or cancelation, please contact your instructor.

Online Course Fee

Online Courses - San Juan College requires all online courses to include some form of assessment to demonstrate the mastery of course objectives. This could include exams, capstone projects, e-portfolios, presentations, final papers or other appropriate assessments. The use of a proctoring platform, plagiarism detection software or other method to ensure that assessments are completed by the enrolled student is required.

A course fee of $5.00 is assessed for all online courses at San Juan College to cover the cost of the above services. Students who are required to take a proctored exam and choose to use a physical testing center outside the SJC Testing Center or SJC Disability Services will be responsible for the cost of using that center.