

Submit original with signatures + 1 copy + electronic copy to Faculty Senate (Box 7500). See <http://www.uaf.edu/uafgov/faculty-senate/curriculum/course-degree-procedures/> for a complete description of the rules governing curriculum & course changes.

**TRIAL COURSE OR NEW COURSE PROPOSAL**

**SUBMITTED BY:**

<b>Department</b>	<b>Diesel Technology</b>	<b>College/School</b>	<b>UAF/CTC</b>
<b>Prepared by</b>	<b>Julie Wegner</b>	<b>Phone</b>	<b>455-2902</b>
<b>Email Contact</b>	<b><a href="mailto:jmwegner@alaska.edu">jmwegner@alaska.edu</a></b>	<b>Faculty Contact</b>	<b>Brian Rencher 455-2843</b>

<b>1. ACTION DESIRED</b> (CHECK ONE):	Trial Course	<input type="checkbox"/>	New Course	<input type="checkbox"/>	XXX
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<b>2. COURSE IDENTIFICATION:</b>	Dept	<b>DSL</b>	Course #	<b>F11</b>	No. of Credits	<b>2.0</b>
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Justify upper/lower division status & number of credits:	<b>To be completed at the Certificate level</b>
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<b>3. PROPOSED COURSE TITLE:</b>	<b>Diesel Emissions</b>
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<b>4. To be CROSS LISTED?</b> YES/NO	<b>NO</b>	If yes, Dept:	<input type="text"/>	Course #	<input type="text"/>
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(Requires approval of both departments and deans involved. Add lines at end of form for such signatures.)

<b>5. To be STACKED?</b> YES/NO	<b>NO</b>	If yes, Dept.	<input type="text"/>	Course #	<input type="text"/>
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<b>6. FREQUENCY OF OFFERING:</b>	<b>Spring semester every year</b>
Fall, Spring, Summer (Every, or Even-numbered Years, or Odd-numbered Years) – or As Demand Warrants	

<b>7. SEMESTER &amp; YEAR OF FIRST OFFERING</b> (AY2011-12 if approved by 3/1/2012; otherwise AY2012-13)	<b>AY2013-14</b>
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**8. COURSE FORMAT:**

NOTE: Course hours may not be compressed into fewer than three days per credit. Any course compressed into fewer than six weeks must be approved by the college or school's curriculum council. Furthermore, any core course compressed to less than six weeks must be approved by the core review committee.

<b>COURSE FORMAT:</b> (check all that apply)	<input type="checkbox"/>	1	<input checked="" type="checkbox"/>	2	<input type="checkbox"/>	3	<input type="checkbox"/>	4	<input type="checkbox"/>	5	<input type="checkbox"/>	6 weeks to full semester
<b>OTHER FORMAT</b> (specify)	<b>5 hours a day for 10 days (1 + 2)</b>											
<b>Mode of delivery</b> (specify lecture, field trips, labs, etc)	<b>Lecture and Lab</b>											

<b>9. CONTACT HOURS PER WEEK:</b>	<b>1</b>	LECTURE hours/weeks	<b>2</b>	LAB hours /week	<input type="text"/>	PRACTICUM hours /week
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Note: # of credits are based on contact hours. 800 minutes of lecture=1 credit. 2400 minutes of lab in a science course=1 credit. 1600 minutes in non-science lab=1 credit. 2400-4800 minutes of practicum=1 credit. 2400-8000 minutes of internship=1 credit. This must match with the syllabus. See <http://www.uaf.edu/uafgov/faculty-senate/curriculum/course-degree-procedures-/guidelines-for-computing-/> for more information on number of credits.

<b>OTHER HOURS</b> (specify type)	<input type="text"/>
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10. **COMPLETE CATALOG DESCRIPTION** including dept., number, title, credits, credit distribution, cross-listings and/or stacking (50 words or less if possible):

DSLT F111 Diesel Emissions  
2 Credits – Offered Spring Semester

Students will learn the concepts of diesel engine emissions and how diesel emissions significantly contribute to air pollution. Knowledge of how to create cleaner running diesel engines, promote pollution-control technology, prevent unnecessary idling, and ultimately, make that puff of smoke that can come from these engines an image of the past. We will study and practice the actions taken to reduce diesel emissions using measuring devices, learn the terms and technologies of catalytic converters, particulate filters, the use of diesel exhaust fluid, and be able to troubleshoot emission components. (1+ 2)

11. **COURSE CLASSIFICATIONS:** Undergraduate courses only. Consult with CLA Curriculum Council to apply S or H classification appropriately; otherwise leave fields blank.

H = Humanities  S = Social Sciences

Will this course be used to fulfill a requirement for the baccalaureate core? **If YES, attach form.** YES:  NO:

IF YES, check which core requirements it could be used to fulfill:

O = Oral Intensive, Format 6  W = Writing Intensive, Format 7  Natural Science, Format 8

12. **COURSE REPEATABILITY:**

Is this course repeatable for credit? YES  NO

Justification: Indicate why the course can be repeated (for example, the course follows a different theme each time).

How many times may the course be repeated for credit?  **TIMES**  
 If the course can be repeated for credit, what is the maximum number of credit hours that may be earned for this course?  **CREDITS**  
 If the course can be repeated with variable credit, what is the maximum number of credit hours that may be earned for this course?  **CREDITS**

13. **GRADING SYSTEM:** Specify only one. Note: Later changing the grading system for a course constitutes a Major Course Change.

LETTER:  PASS/FAIL:

**RESTRICTIONS ON ENROLLMENT (if any)**

14. **PREREQUISITES**  None

These will be required before the student is allowed to enroll in the course.

15. **SPECIAL RESTRICTIONS, CONDITIONS**  Departmental/Instructor Approval

16. **PROPOSED COURSE FEES**  \$0

Has a memo been submitted through your dean to the Provost for fee approval?   
Yes/No

17. **PREVIOUS HISTORY**

Has the course been offered as special topics or trial course previously?  NO  
Yes/No

If yes, give semester, year, course #, etc.:

**18. ESTIMATED IMPACT**

WHAT IMPACT, IF ANY, WILL THIS HAVE ON BUDGET, FACILITIES/SPACE, FACULTY, ETC.

None

**19. LIBRARY COLLECTIONS**

Have you contacted the library collection development officer (kljensen@alaska.edu, 474-6695) with regard to the adequacy of library/media collections, equipment, and services available for the proposed course? If so, give date of contact and resolution. If not, explain why not.

No  X Yes  Continuation of book already used for other courses

**20. IMPACTS ON PROGRAMS/DEPTS**

What programs/departments will be affected by this proposed action? Include information on the Programs/Departments contacted (e.g., email, memo)

**Will not have an impact on other programs or departments.  
Brian Rencher is the program coordinator and has requested the change based on advice from the advisory committee.  
bkrencher@alaska.edu**

**21. POSITIVE AND NEGATIVE IMPACTS**

Please specify **positive and negative** impacts on other courses, programs and departments resulting from the proposed action.

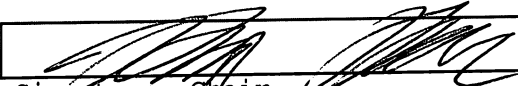
**This course will increase diesels credits, which will help keep students in program specific areas of diesel technology. It will enhance their overall knowledge of diesel/heavy equipment repairs and further their educational goals in the field. Students will have a wider depth of knowledge to enter the workforce. Emissions technology will support a positive impact on our students and the community by having the ability to recognize and perform repairs on equipment that will promote a cleaner safer environment for us all.**

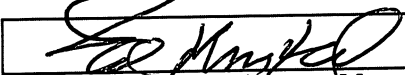
**JUSTIFICATION FOR ACTION REQUESTED**

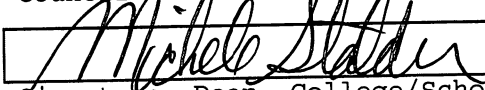
The purpose of the department and campus-wide curriculum committees is to scrutinize course change and new course applications to make sure that the quality of UAF education is not lowered as a result of the proposed change. Please address this in your response. This section needs to be self-explanatory. Use as much space as needed to fully justify the proposed course.

**Emission controls/issues are all around us. This course will add a greatly needed area to the diesel technology classes. Learning to work on diesel emissions and increasing overall knowledge within this area is a must to for the industry. It is a worldwide issue. This course will teach federal regulations regarding diesel emissions technology and help students improve the performance of vehicles our students will be servicing. Diesel Emissions is a large issue in the winter for the Fairbanks community. We will be able to strengthen our student's knowledge and abilities in this area, which has UAF/CTC's Diesel Technology program doing its part of adding to the overall health of the community and to anywhere else our students may relocate to in the future. With the economy at a low point, vehicles are being kept and maintained for a much longer period. This makes it even more important to know how to service the vehicles to operate with cleaner emissions levels and helps keep a cleaner/safer air quality. This course has been recommended by the advisory committee.**

**APPROVALS:** Add additional signature lines as needed.

 Date 10-9-12  
Signature, Chair,  
Program/Department of: \_\_\_\_\_

 Date 11-6-12  
Signature, Chair, College/School Curriculum  
Council for: \_\_\_\_\_ CTC

 Date \_\_\_\_\_  
Signature, Dean, College/School  
of: \_\_\_\_\_ CTC

\_\_\_\_\_  
Date \_\_\_\_\_

Signature of Provost (if applicable)

Offerings above the level of approved programs must be approved in advance by the Provost.

**ALL SIGNATURES MUST BE OBTAINED PRIOR TO SUBMISSION TO THE GOVERNANCE OFFICE**

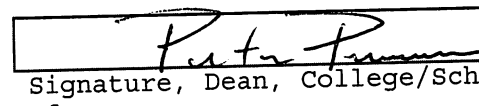
\_\_\_\_\_  
Date \_\_\_\_\_

Signature, Chair  
Faculty Senate Review Committee: \_\_\_ Curriculum Review \_\_\_ GAAC  
\_\_\_ Core Review \_\_\_ SADAC

**ADDITIONAL SIGNATURES:** (As needed for cross-listing and/or stacking)

\_\_\_\_\_  
Date \_\_\_\_\_  
Signature, Chair,  
Program/Department of: \_\_\_\_\_

\_\_\_\_\_  
Date \_\_\_\_\_  
Signature, Chair, College/School Curriculum  
Council for: \_\_\_\_\_

 Date 12/3/12  
Signature, Dean, College/School  
of: \_\_\_\_\_ CTC

**ATTACH COMPLETE SYLLABUS (as part of this application).** Note: The guidelines are online: <http://www.uaf.edu/uafgov/faculty-senate/curriculum/course-degree-procedures-/uaf-syllabus-requirements/>

The Faculty Senate curriculum committees will review the syllabus to ensure that each of the items listed below are included. If items are missing or unclear, the proposed course (or changes to it) may be denied.

**SYLLABUS CHECKLIST FOR ALL UAF COURSES**

During the first week of class, instructors will distribute a course syllabus. Although modifications may be made throughout the semester, this document will contain the following information (as applicable to the discipline):

**1. Course information:**

Title,  number,  credits,  prerequisites,  location,  meeting time (make sure that contact hours are in line with credits).

**2. Instructor (and if applicable, Teaching Assistant) information:**

Name,  office location,  office hours,  telephone,  email address.

**3. Course readings/materials:**

Course textbook title,  author,  edition/publisher.  
 Supplementary readings (indicate whether  required or  recommended) and  any supplies required.

**4. Course description:**

Content of the course and how it fits into the broader curriculum;  
 Expected proficiencies required to undertake the course, if applicable.  
 Inclusion of catalog description is *strongly* recommended, and  
 Description in syllabus must be consistent with catalog course description.

**5.  Course Goals (general), and (see #6)**

**6.  Student Learning Outcomes (more specific)**

**7. Instructional methods:**

Describe the teaching techniques (eg: lecture, case study, small group discussion, private instruction, studio instruction, values clarification, games, journal writing, use of Blackboard, audio/video conferencing, etc.).

**8. Course calendar:**

A schedule of class topics and assignments must be included. Be specific so that it is clear that the instructor has thought this through and will not be making it up on the fly (e.g. it is not adequate to say "lab". Instead, give each lab a title that describes its content). You may call the outline Tentative or Work in Progress to allow for modifications during the semester.

**9. Course policies:**

Specify course rules, including your policies on attendance, tardiness, class participation, make-up exams, and plagiarism/academic integrity.

**10. Evaluation:**

Specify how students will be evaluated,  what factors will be included,  their relative value, and  how they will be tabulated into grades (on a curve, absolute scores, etc.)  Publicize UAF regulations with regard to the grades of "C" and below as applicable to this course. (Not required in the syllabus, but may be a convenient way to publicize this.) Faculty Senate Meeting #171:

<http://www.uaf.edu/uafgov/faculty-senate/meetings/2010-2011-meetings/#171>

**11. Support Services:**

Describe the student support services such as tutoring (local and/or regional) appropriate for the course.

**12. Disabilities Services:**

The Office of Disability Services implements the Americans with Disabilities Act (ADA), and insures that UAF students have equal access to the campus and course materials.

State that you will work with the Office of Disabilities Services (208 WHITAKER BLDG, 474-5655) to provide reasonable accommodation to students with disabilities.

# DSLTF111 – DIESEL EMISSIONS

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**Instructor:** Brian Rencher

**Class Dates:**

**Room:** 147 Hutch

**Office Hours:** 2:00pm – 9:00pm

**Office Phone:** 907-455-2843

**Cell Phone:** 907-460-6332

**E-mail:** [bkrencher@alaska.edu](mailto:bkrencher@alaska.edu)

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**Hours:** Monday – Friday

Theory 3:00pm – 5:00pm

Dinner 5:00pm – 5:30pm

Shop/Lab 5:30pm – 8:30pm

## **Supplies required:**

Reading material: Medium and Heavy Duty Truck Engines  
Fuel and Computerized Management Systems

Misc hand tools: Per handout

Protective clothing: Coveralls with sleeves

Protective footwear: Above ankle boots

Eye protection: Safety glasses

Misc materials: Paper pad and pen (for instructions)

## **Course goals:**

Students will learn the concepts of diesel engine emissions and how diesel emissions significantly contribute to air pollution. Knowledge of how to create cleaner running diesel engines, promote pollution-control technology, prevent unnecessary idling, and ultimately, make that puff of smoke that can come from these engines an image of the past. We will study and practice the actions taken to reduce diesel emissions using measuring devices, learn the terms and technologies of catalytic converters, particulate filters, the use of diesel exhaust fluid, and be able to troubleshoot emission components.

## **Course objectives:**

Upon completion of this course, the student should have the following:

1. Learn about emission federal standards and it affects
2. Health and environmental effects of emissions
3. What the different exhaust smoke colors indicate
4. Measuring emissions/ambient diesel aerosols
5. How other components contribute to bad emissions
6. Emissions effect on engine faults and service
7. Servicing and replacing vehicle emission components

## **Course policies:**

- Cell phones are not permitted during class hours (theory or shop/lab).
- A fifteen minute break will be given between theory and shop/lab at 5:00pm. This thirty minute break for lunch is the only allowable breaks without instructor's permission.
- No smoking inside the building or on school property at any time (per CTC/Hutchison Policy)

- All students are governed by the UAF Student Code of Conduct as it is applicable.
- Safety glasses are to be worn at all times in the shop area.
- Textbook, paper pads and pen are to be brought to class every day.
- During a fire alarm, students will gather in the CTC parking area with others from the class and will stay there until authorized by the instructor.
- Students are required to use a time clock when starting the day, going to lunch, returning from lunch and ending the day. Students are also required to keep a daily log of shop/lab projects. This will be discussed on a weekly basis between student and instructor as well as the previous week's grading point.
- Each student is responsible for documenting requirements on procedures in the shop/lab. (Example: When given instruction on a project, it is the student's responsibility to write down the given tasks.)
- All CTC shop tools are to be signed out by the daily assigned Forman of the shop and are to be returned at the end of each day to the instructor/Forman.
- Students are required to be working the entire time while in shop/lab. If your task is complete, you are expected to clean the shop, study text book or service manual, or ask the instructor for a task to fill in time.
- Each student is responsible for cleaning their own work area on a daily basis and keeping it clean and orderly throughout the day. No students are to remove coveralls or leave for the day until the entire shop is clean and authorized by the instructor/Forman.
- When lifting any item over an estimated 40 lbs, ask instructor for approval.
- When using the overhead hoist, cranes, roll around picking hoist or forklift for lifting, you **MUST** get instructors approval of the rigging before lifting.
- Any student that is injured during class is required to inform the instructor immediately, no matter how minor the injury.
- No earphones or personal music devices are allowed during class theory or shop/lab.
- Students that do not follow the above outlined regulations can be withdrawn from the diesel program by the instructor.

**The following is the grading scale for this class:**

Attendance	25%			
Instructor Evaluation/Hands on Performance	25%			
Exams	50%			
<b>GRADE POINTS</b>				
A > 90%	B = 85% - 89%	C = 80% - 84%	D = 70% - 79%	F < 69%

**Grading policies:**

- 80% Attendance is required.
- 25% of your grade will be based on attendance, participation and completed engine performance based on the instructor's evaluation.
- 25% of your grade per week is determined by a once-a-week exam quiz, either written or verbal.
- Grading safety is an important part of this course and this industry, therefore any safety violations will result in a loss of 50% of daily points.
- A student, who is unable to attend class, should call and inform the instructor before class starts or make previous arrangements. This will allow students two points for the missed day. Otherwise zero points will be given for the missed day. Students can call office at 455-2843 if the instructor is not able to be reached.

- If a student is absent, it is their responsibility to get the information that was covered during their absence. The student is expected to take the weekly test/exam at the same time as all the other students in the class regardless of absenteeism.
- Exams/quizzes will be given once a week. Any make-ups will be dealt with on an individual basis.
- Tardiness is defined as up to one hour from class start time and will result in a loss of two points for the day.

This system cannot be altered after the first class meeting.

## **NOTICE TO STUDENTS**

### **Support Services**

The following services are available to all students: The Writing Center (8<sup>th</sup> floor, Gruening, 474-5314) and the Math Lab (305 Chapman), both of which provide excellent advice, tutoring and assistance; and/or Office of Student Support Services (508 Gruening, 474-6844). Also available is the Student Assistance Center at CTC which offers many services such as: academic advising, placement testing, career assessment, career counseling, computer support, math labs, tutors/tutoring, and a writing center. The center is located at 604 Barnette St. and is open M-F from 8am-5pm. For more info contact the center at 455-2899.

### **Disabilities Services**

The office of Disability Services, 204 WHIT, 474-7043, implements the Americans with Disabilities Act (ADA), and insures that UAF Students have Equal Access to the campus and course materials. The CTC Office of Student Assistance can also help you if you have any of these concerns. Contact them at 455-2899 if you need help.

### **UAF Disability Services for Distance Students**

UAF has a Disability Services office that operates in conjunction with the Community and Technical College. Disability Services, a part of UAF's Center for Health and Counseling, provides academic accommodations to enrolled students who are identified as being eligible for these services.

Any student who feels discouraged or disappointed with instruction, curriculum or other, please notify the Diesel Coordinator, Brian Rencher at 907-455-2843 or the Student Assistant Coordinator, Michelle Stalder at 907-455-2849.

### **EMERGENCY PROCEDURES**

1. Evacuation procedures – see instructions posted in the classroom.
2. First aid kit – located in Equipment Shop 147.
3. Emergency ambulance – from any available telephone, phone “9” to get an outside line, then “911.”  
Campus Police – phone 474-7721 In an “Emergency” dial “911”

### **COURSE OUTLINE:**

Day 1: Go over Syllabus

Theory: Need for emissions; EPA; EPA standards; diesel fuels; emission control devices

Day 2: Review chapter 47

Video

Lab: Find and identify emission control devices and components on truck and heavy equipment in the shop



Day 3: Review chapter 47

Questions at end of chapter as class discussion

Theory: 'DPF' Diesel particulate filter; catalytic converters; regeneration cycles

Lab: Remove and inspect catalytic converters, and DPF, then reinstall and test

Day 4: Theory: Electronic control and monitoring of emission devices

Lab: Demonstration by instructor of using diagnostic tools to access and evaluate emission devices on trucks and equipment in the shop

Day 5: Review electronic monitoring systems and using electronic diagnostic equipment

Lab: Students will use electronic diagnostic equipment to monitor devices on truck and equipment in the shop while vehicles are running

**Test:** Emission devices, their need and use, and location on vehicles

Day 6: Theory: on use of diesel exhaust fluid and its uses

Lab: students monitor how a system using DEF works and the location of components of this system as well as checking and filling this fluid

Day 7: Theory: Smoke; identifying different types of exhaust smoke and understanding what the color and amount relate to in engine components and emission control devices

Lab: Students monitor trucks and equipment while instructor makes changes to alter the smoke color and amount

Day 8: Review exhaust smoke and all other subjects covered in the past 7 days

NO Lab

Day 9: All Lab: Exercise of identification of emission control items and their function

Using electronic diagnostics in testing engine and emission devices

Exercise changing fuel setting and seeing the effects in the exhaust smoke

Day10: **Test:** Written and hands on

I \_\_\_\_\_ have received a copy of the  
DSLTT F111 “Diesel Emissions” class syllabus and have read  
and understand the class rules and testing procedures.

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Date

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Instructor's signature

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Date

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Student's signature