



**Tech Prep Articulation Agreement
Between
University of Alaska Southeast (UAS)
and
Chatham School District (CSD)**

**Power Technology
School Year 2015-2016**

Purpose:

In addition to the general Tech Prep Agreement, the purpose of this articulation agreement is to outline the mutual understanding as we have agreed to the following process and criteria with respect to the program of Power Technology.

Course:

The school district program will follow a curriculum coordinated with the administration and faculty of UAS pertaining to the following course:


Automotive - Introduction to Automotive

AUTO S102 Introduction to all components on an automobile. Includes career information for the automotive industry, shop safety, hand tools, fasteners, and basic automotive service. **3 Credits (2+2) No prerequisite.**

Although teaching methods may differ, this course will be subject to the instructional objectives and outcomes of the attached UAS syllabus.

Administration:

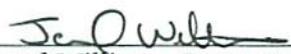
1. Students must have an overall 2.0 GPA to register for university credit.
2. It is recommended that course work be completed at a level of 3.0 GPA.
3. Students must successfully complete UAS – Introduction to Automotive with a minimum course 3.0 GPA prior to registering for university credit in UAS – AUTO 121 – Auto Electrical I.
4. Students must pass a written safety test with 100% which will remain on file with the school district.
5. UAS program chairs shall review and approve all course syllabi and related curriculum documents to ensure they replicate the UAS course. This includes standardized course syllabi, course objectives, textbooks, tools, equipment, and methods for evaluation.
6. To receive concurrent credit, the student will register for the Tech Prep course at the beginning of the term in which the competencies will be completed. Registration for yearlong courses will take place during the fall semester.
7. The UAS grade posted will be the UAS grade earned for the course and submitted by the district instructor.
8. Student grades will be submitted by 5:00 p.m. of the final day of the district semester at uaonline.alaska.edu.
9. Any change in instructor requires suspension of this addendum.



 Tom Dolan, Program Head
 Power Technology
 University of Alaska Southeast

5/15/15

 Date



 Jared Williams, Instructor
 Power Technology
 Chatham School District

4/27/15


 Date



 Pete Traxler, Dean
 School of Career Education
 University of Alaska Southeast

5-12-15

 Date



 Bernie Grieve
 Superintendent
 Chatham School District

4/27/15

 Date

AUTO 102 – Introduction to Automotive Technology

Spring 2014 - Section J01

3 credits

Instructor: Dan Hildebrand
Phone: (907) 209-9425
Email: dehildebrand@uas.alaska.edu

Program Home Page: <http://www.uas.alaska.edu/automotive>

Course dates: Mondays, January 13 – April 28, 2014
Times: 6:00 PM – 10:00 PM
Location: Technology Education Center, Room 216

Course Homepage: <https://www.uas.alaska.edu/online>

Course Description: Introduction to all components on an automobile. Includes career information for the automotive industry, shop safety, hand tools, fasteners, and basic automotive service.

Grading Method: Letter

Prerequisites: None

Course Objectives: Upon successful completion of this course, the student will be able to:

- Demonstrate knowledge of the job description and expectations for a modern automotive technician
- Demonstrate knowledge of general shop safety
- Demonstrate knowledge of fastener technology in the automotive trade
- Demonstrate ability to use service manuals and electronic service information.
- Demonstrate ability to identify and safely use basic hand and power tools used in the automotive trade
- Demonstrate ability to safely use an automotive lift (2-post and 4-post)
- Demonstrate ability to use a scan tool to retrieve diagnostic trouble codes and other essential vehicle data

- Demonstrate knowledge of the fundamental theory and operation of the following automotive systems:
 1. Electrical and electronic systems
 2. Engines
 3. Lubrication systems
 4. Cooling systems
 5. Fuel injection systems
 6. Ignition systems
 7. Drivetrains: transmissions, transaxles, differentials, clutches
 8. Suspension and steering systems
 9. Braking systems

- Demonstrate ability to perform the following tasks as specified by NATEF (National Automobile Technicians Education Foundation);
 1. Locate and interpret vehicle and major component identification numbers.
 2. Perform cooling system pressure tests; check coolant condition, inspect and test radiator, pressure cap, coolant recovery tank, and hoses; perform necessary action.
 3. Inspect engine cooling and heater system hoses and belts; perform necessary action.
 4. Perform oil and filter change.
 5. Perform battery state-of-charge test; determine necessary action.
 6. Inspect, clean, fill and/or replace battery, battery cables, connectors, clamps, and hold-downs.
 7. Start a vehicle using jumper cables or an auxiliary power supply.
 8. Perform starter current draw tests; determine necessary action.
 9. Perform charging system output test; determine necessary action.
 10. Inspect and test ignition primary and secondary circuit wiring and solid- state components; test ignition coils; perform necessary action.
 11. Diagnose fluid loss, level, and condition concerns (in powertrain components); determine necessary action.
 12. Inspect tire condition; identify tire wear patterns; check and adjust air pressure; determine necessary action.
 13. Rotate tires according to manufacturer's recommendations.
 14. Re-install wheel, torque lug nuts.
 15. Inspect brake lines, flexible hoses, and fittings for leaks, dents, kinks, rust, cracks, bulging or wear; tighten loose fittings and supports; determine necessary action

Textbook: *Modern Automotive Technology (7th edition)* by James E. Duffy. This textbook is available for purchase at the college bookstore located on Glacier Highway across from Auke Bay harbor.

Materials needed for class:

- Safety glasses (required) – **safety glasses will be worn at all times in the Automotive Lab.** Be sure to note that there are two types available; regular and ones made to go over eyeglasses.
- Coveralls (optional – how dirty do you want to get?)
- Personal padlock (optional) – personal lockers are available to you, but locks must come off and the locker emptied at the end of the semester.

Note: You will NOT be required to purchase hand tools to participate in this class. All tools will be provided for you. It is important to note, however, that you are expected to treat the program's hand tools with respect, being sure to return them as you found them. This means wiping them clean and making sure they go back in their proper place.

Personal Electronics Policy:

- Students are required to turn their cell phones **off** during class, lecture sessions, and examinations.
- Laptop computers are welcome, if you are using them to do course-related research.
- Random Internet browsing is not permitted during class lecture sessions.
- Car stereos and laptop-based music will be turned off during lab sessions

Grading: Every student needs to know exactly how he or she will be graded during the course. There are four areas that make up your grade in AUTO 102:

1. 10% of your grade is determined by attendance in lab and classroom sessions. I will assign four points per session. A student will receive two point if they are on time for class, and two more will be assigned if they stay until the end of class. **IMPORTANT NOTE: Violations of the Personal Electronics Policy will result in the forfeiture of that day's attendance credit.**
2. 35% of your grade is determined by completion of lab assignments. Specific skills are taught during the lab sessions of the class and you will receive credit for these by completing the lab worksheets.
3. 55% of your grade is based on your performance on quizzes and the midterm and final exams.

Grades will be assigned based on the following percentages:

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| A | 93-100% |
| A- | 90-92% |
| B+ | 86-89% |
| B | 83-85% |
| B- | 80-82% |
| C+ | 76-79% |
| C | 73-75% |
| C- | 70-72% |
| D+ | 66-69% |
| D | 63-65% |
| D- | 60-62% |
| F | 60% and below |

The bottom line is, you cannot do well unless you come to class consistently. Coming late or not at all is the quickest way to put yourself in the hole.

Online Grade book: Student grades are maintained in a secure online environment. You can access your current grade and the scores of all assignments by logging in (using your University username and password) to the course home page on UAS Online.

Homework: You are assigned homework for every class meeting. For instance, if the content of meeting three was covered during one session, it is expected that you will do the homework for that meeting and have it ready for class the following week.

While no credit is extended for completion of the homework, your performance on quizzes and exams will be in proportion to your effort in completing the homework assignments!

Lab assignments: During the lab period, you will be gathering data as you inspect and service vehicles in the shop. There are questions in the lab assignments that will require interpretation of the data you gather, so I recommend that you take the assignment home and complete the questions there. **All lab assignments are due the following class period.** Late submissions will be accepted but with a 20% late penalty. Missed lab assignments can be made up with the same late penalty applied. Be absolutely sure to do a thorough job on all sections of the lab. **Don't leave any questions or data tables blank!** There will be a score out of 10 given for each lab, and this will be based on how thorough

you have been in gathering data and answering the questions. **Incomplete labs will automatically receive a grade of 6/10.**

Conduct in the lab: The Automotive lab is an industrial environment and **safety is the number one priority.** Having said that, horseplay is strictly forbidden in the lab. Students are expected to conduct themselves in a professional, courteous manner at all times. Many of the resources must be shared and everyone is expected to cooperate with others as best they can.

Class evaluations: You will be given the opportunity to write your own evaluation of this class during the last three weeks that we meet. This is a big favor you are doing for me, as it helps me determine how to make the class better. If you don't like something that is being done, please say so, but also make a suggestion for how to make it better. Course evaluations are done via the Internet using UAS Online.

Course drop/withdrawals: The last day to drop this class is January 28. The last day to withdraw from this class is April 11.

Please stay in touch and let me know if you cannot make it to a particular class. If I haven't seen or heard from you in three class meetings, I will check to see if you have dropped. If you haven't, I will initiate a withdrawal to prevent my having to assign you an "F" grade.

Course Schedule:

| Meeting | Lecture Topic | Lab/Demonstration | Homework |
|----------------------|---|---|--|
| Meeting 1 Jan. 13 | Course overview. The automobile. Automotive careers and certification. Basic hand tools. Power tools and equipment. | Hand and power tool identification lab. | Textbook chapters 1-4. Complete review and ASE-type questions for each chapter (do this for all homework assignments). |
| Meeting 2 Jan. 27 | The auto shop and safety. Using service information. | Service information lab. | Textbook chapters 5 & 7. |

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| Meeting 3 Feb. 3 | Basic electricity and electronics. Safety Quiz. Electron Flow Test | Multimeter use lab. | Textbook chapter 8. Prepare for quiz #1. |
| Meeting 4 Feb. 10 | Quiz #1 (Weeks 1-3). | Fastener identification lab. | Textbook chapters 9 & 10. |

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| | Fasteners, gaskets, seals and sealants. Vehicle maintenance, fluid service and recycling. | VIN code/engine ID lab. <i>NATEF Task 1</i> | |
| Meeting 5 Feb. 17 | Engine and Cooling system fundamentals. | Engine cooling system service lab. <i>NATEF Tasks 2 & 3</i> | Textbook chapters 11 & 39. |
| Meeting 6 Feb. 24 | Engine fundamentals. Lubrication system fundamentals. | Oil and filter change lab. <i>NATEF Task 4</i> | Textbook chapters 12 & 41. Prepare for midterm exam. |
| Meeting 7 March 3 | Midterm exam (Weeks 1-6). Computer system fundamentals. Gasoline injection fundamentals. | Scan tool introduction lab. | Textbook chapters 18 & 22. |
| Meeting 8 March 10 | Automotive batteries. Battery testing and service. | Battery diagnosis and service lab. <i>NATEF Tasks 5-7</i> | Textbook chapters 28 & 29. |
| Meeting 9 March 24 | Starting system fundamentals. Charging system fundamentals. | Starting and charging system test lab. <i>NATEF Tasks 8-9</i> | Textbook chapters 30 & 32. |
| Meeting 10 March 31 | Ignition system fundamentals. | Ignition secondary inspection & testing lab. <i>NATEF Task 10</i> | Textbook chapter 34. Prepare for Quiz #2. |
| Meeting 11 April 7 | Quiz #2 (Weeks 7-10). Clutch fundamentals. Manual transmission fundamentals. | Transmission & drivetrain inspection lab. <i>NATEF Task 11</i> | Textbook chapters 53 & 55. |
| Meeting 12 April 14 | Tires, wheels and wheel bearing fundamentals. Suspension system fundamentals. | Tire inspection and service lab. <i>NATEF Tasks 12-14</i> | Textbook chapter 65 & 67. |

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| Meeting 13 April 21 | Brake system fundamentals. | Brake system inspection lab. <i>NATEF Task 15</i> | Textbook chapter 71. Prepare for final exam. |
| Meeting 14 April 28 | Final exam (comprehensive). | Cleanup lab and personal belongings. | |