COWLEY COLLEGE
& Area Vocational Technical School

COURSE PROCEDURE FOR

ENGINE PERFORMANCE I
AMS3128 3 Credit Hours

Student Level:
This course is open to students on the college level in either the freshman or sophomore year and to area high school vocational students.

Catalog Description:

AMS 3128 - ENGINE PERFORMANCE I (3 hrs)
Upon successful completion of this course, the student will be able to analyze engine mechanical integrity, analyze fuel system concerns, analyze ignition system concerns, analyze induction system concerns, and analyze exhaust system concerns. Next the students will begin the process of diagnosing and repairing the effected system.

Prerequisites:
None

Controlling Purpose:
This course is designed to help the student increase their knowledge concerning entry-level skills contained in the sequenced competencies, for success, after graduation from the Automotive Technology Program.

Learner Outcomes:
Upon completion of this course, the student will be able to identify, inspect, and analyze the principles and procedures of engine performance systems.

The learning outcomes and competencies detailed in this course outline or syllabus meet or exceed the learning outcomes and competencies specified by the Kansas Core Outcomes Groups project for this course as approved by the Kansas Board of Regents.

Units Outcomes and Criterion Based Evaluation Key for Core Content:
The following defines the minimum core content not including the final examination period. Instructors may add other content as time allows.

Evaluation Key:
A = All major and minor goals have been achieved and the achievement level is considerably above the minimum required for doing more advanced work in the same field.

B = All major goals have been achieved, but the student has failed to achieve some of the less important goals. However, the student has progressed to the point where the goals of work at the next level can be easily achieved.

C = All major goals have been achieved, but many of the minor goals have not been achieved. In this grade range, the minimum level of proficiency represents a person who has achieved the major goals to the minimum amount of preparation necessary for taking more advanced work in the same field, but without any major handicap of inadequacy in his background.

D = A few of the major goals have been achieved, but the student's achievement is so limited that he is not well prepared to work at a more advanced level in the same field.

F = Failing, will be computed in GPA and hours attempted.

N = No instruction or training in this area.

UNIT 1: Engine Performance I

Outcomes: Upon completion of this area the student will be able to identify principles and procedures needed for general engine diagnosis.

A	B	C	D	F	N	Specific Competencies Demonstrate the ability to:
						Interpret and verify concern; determine necessary action.
						Inspect engine assembly for fuel, oil, coolant, and other leaks; determine necessary action.
						Diagnose unusual engine noise or vibration concerns; determine necessary action.
						Diagnose unusual exhaust color, odor, and sound; determine necessary action.
						Perform engine absolute (vacuum/boost) manifold pressure test; determine necessary action.
						Perform cylinder power balance test; determine necessary action.
						Perform cylinder compression test; determine necessary action.
						Diagnose engine mechanical, electrical, electronic, fuel, and ignition concerns with an oscilloscope and engine diagnostic equipment; determine necessary action.
						Prepare 4 or 5 gas analyzer; inspect and prepare vehicle for test, and obtain exhaust readings; interpret readings, and determine necessary action.
						Retrieve and record stored OBD I diagnostic trouble codes; clear codes.
						Retrieve and record stored OBD II diagnostic trouble codes; clear codes.
						Diagnose the causes of emissions or drive ability concerns resulting from failure of computerized engine controls with stored diagnostic trouble codes.
						Diagnose emissions or drive ability concerns resulting from failure of computerized engine controls with no stored diagnostic trouble codes; determine necessary action.

						Inspect and test computerized engine control system sensors, powertrain control module (PCM), actuators, and circuits; perform necessary action.
						Obtain and interpret digital multimeter (DMM) readings.
						Access and use electronic service information (ESI).
						Locate and interpret vehicle and major component identification numbers (VIN, vehicle certification labels, and calibration decals).
						Inspect and test power and ground circuits and connections; service or replace as needed.
						Practice recommended precautions when handling static sensitive devices.
						Diagnose drive ability and emissions problems resulting from failures of interrelated systems (cruise control, security alarms, suspension controls, traction controls, A/C, automatic transmissions, non-OEM-installed accessories, and similar systems); determine necessary action.
						Diagnose no-starting, drive ability, and emissions concerns of vehicles with electronic ignition (EI/DIS) (distributor less) systems; determine necessary action.
						Diagnose no-starting, drive ability, and emissions concerns on vehicles with distributor ignition (DI) systems; determine necessary action.
						Inspect and test ignition primary circuit wiring and components; perform necessary action.
						Inspect and test distributor; perform necessary action.
						Inspect and test ignition system secondary circuit wiring and components; perform necessary action
						Check and adjust (where applicable) ignition system timing and timing advance/retard.
						Inspect and test ignition system pick-up sensor or triggering devices; perform necessary action.
						Inspect and test ignition control module; perform necessary action.

Projects Required:
As assigned

Textbook:
Contact Bookstore for current textbook.

Materials/Equipment Required:
Students are required to furnish their own Personal Protection Equipment i.e. Safety Glasses.

Attendance Policy:
Students should adhere to the attendance policy outlined by the instructor in the course syllabus.

Grading Policy:
The grading policy will be outlined by the instructor in the course syllabus.

Maximum class size:
Based on classroom occupancy

Course Time Frame:
The U.S. Department of Education, Higher Learning Commission, and the Kansas Board of Regents define credit hour and have specific regulations that the college must follow when developing, teaching, and assessing the educational aspects of the college. A credit hour is an amount of work represented in intended learning outcomes and verified by evidence of student achievement that is an institutionally-established equivalency that reasonably approximates not less than one hour of classroom or direct faculty instruction and a minimum of two hours of out-of-class student work for approximately fifteen weeks for one semester hour of credit or an equivalent amount of work over a different amount of time. The number of semester hours of credit allowed for each distance education or blended hybrid courses shall be assigned by the college based on the amount of time needed to achieve the same course outcomes in a purely face-to-face format.

Refer to the following policies:
402.00 Academic Code of Conduct
263.00 Student Appeal of Course Grades
403.00 Student Code of Conduct

Disability Services Program:
Cowley College, in recognition of state and federal laws, will accommodate a student with a documented disability. If a student has a disability, which may impact work in this class which requires accommodations, contact the Disability Services Coordinator.