



**COWLEY COLLEGE
& Area Vocational Technical School**

COURSE PROCEDURE FOR

**ENGINE PERFORMANCE II
AMS3129 6 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 3129 - ENGINE PERFORMANCE II (6 hrs)

Upon successful completion of this course, students will be able to service fuel system concerns, repair fuel system concerns, service and repair ignition system concerns, service and repair induction systems, service and repair exhaust system concerns.

Prerequisites:

Students must have enrolled and successfully passed AMS 3128 Engine Performance I or instructor approval.

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 diagnose and repair complex 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 II						
Outcomes: Upon completion of this area the student will be able to identify the following principles and procedures needed for general engine diagnosis.						
A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Diagnose hot or cold no-starting, hard starting, poor drive ability, incorrect idle speed, poor idle, flooding, hesitation, surging, engine misfire, power loss, stalling, poor mileage, dieseling, and emissions problems on vehicles with carburetor-type fuel systems; determine necessary action.
						Inspect fuel tank and fuel cap, fuel lines, fittings, and hoses; perform necessary action.
						Diagnose hot or cold no-starting, hard starting, poor drive ability, incorrect idle speed, poor idle, flooding, hesitation, surging, engine misfire, power loss, stalling, poor mileage, dieseling, and emissions problems on vehicles with injection-type fuel systems; determine necessary action.
						Check for contaminants and quality; determine necessary action.
						Inspect and test mechanical and electrical fuel pumps and pump control systems; perform necessary action. Replace fuel filters.
						Inspect and test fuel pressure regulation system and components of injection-type fuel systems; perform necessary action.
						Remove, service, and install throttle body; adjust related linkages.
						Inspect, test, and clean fuel injectors.
						Inspect throttle body mounting plates, air induction and filtration system, intake manifold, and gaskets; perform necessary action.
						Check idle speed and fuel mixture.
						Remove, inspect, and test vacuum and electrical circuits, components and connections of fuel system; perform necessary action. Inspect exhaust manifold, exhaust pipes, muffler(s), catalytic converter(s), resonator(s), tail pipe(s), and heat shield(s); perform necessary action.

						Perform exhaust system back-pressure test; determine necessary action.
						Test the operation of turbocharger/supercharger systems; determine necessary action.
						Diagnose oil leaks, emissions, and drive ability problems resulting from failure of the positive crankcase ventilation (PCV) system; determine necessary action.
						Inspect and test positive crankcase ventilation (PCV) filter/breather cap, valve, tubes, orifices, and hoses; perform necessary action.
						Diagnose emissions and drive ability problems caused by failure of the exhaust gas recirculation (ERG) system; determine necessary action.
						Inspect and test valve, valve manifold, and exhaust passages of exhaust gas recirculation (EGR) systems; perform necessary action.
						Inspect and test vacuum/pressure controls, filters and hoses of exhaust gas recirculation (EGR) systems; perform necessary action.
						Inspect and test electrical sensors, controls, and wiring of exhaust gas recirculation (EGR) systems; perform necessary action.
						Diagnose emissions and drive ability problems resulting from failure of early fuel evaporation control system; determine necessary action.
						Diagnose emissions and drive ability problems resulting from failure of evaporative emissions control system; determine necessary action.
						Inspect and test components and hoses of evaporative emissions control system; perform necessary action.
						Adjust valves on engines with mechanical or hydraulic lifters.
						Verify correct camshaft timing; determine necessary action.
						Verify engine operating temperature; determine necessary action.
						Perform cooling system pressure tests; check coolant condition; inspect and test radiator, pressure cap, coolant recovery tank, and hoses; perform necessary action.
						Inspect and test thermostat, by-pass, and housing; perform necessary action.
						Inspect and test mechanical/electrical fans, fan clutch, fan shroud/ducting, air dams, and fan control devices; 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.