INSTRUCTOR: MR. OGAWA
OFFICE: AT 6, Phone: 638-3641 Ext. 3251
OFFICE HRS: MON.-WED. 1:30-2:30 pm, THURS. 1:30-2:30 pm
LECTURE: TUESDAY, THURSDAY, & FRIDAY
COURSE: ENGINE PERFORMANCE AND EMISSIONS

a. **Engine Performance**
   (1) **Theory**
   (2) **Fuel Systems**
   (3) **Ignition Systems**
   (4) **Diagnostics\Performance (Tune-up)**
b. **Emissions**
   (1) **Clean Air Car Course (BAR)**

DATE: SPRING
TEXTS:

1. FUEL SYSTEMS AND EMISSION CONTROLS (Class) 2nd Ed. . . . . CHEK-CHART
2. FUEL SYSTEMS AND EMISSION CONTROLS (Lab) 2nd Ed. . . . . CHEK-CHART
3. CLEAN AIR CAR EMISSIONS MANUAL . . . . . .BAR
4. GUIDE TO AUTO CERT. EXAMINATION 3rd Ed.. .HUGHES

GRADING: Straight percentage system (70% passing)

1. Quizzes. 1/3
   a. Homework
   b. **Notebook**
2. Lab. 1/3
   a. Technical Reports (Lab and task sheet)
   b. Hands-on Evaluation
3. Final Exams. 1/3
   a. Specific Areas TOTAL GRADE_____
      1. **Engine Performance**
      2. **Clean Air Car Course**
         a. Will be given a CAC completion form if exams, emissions modules, and lab assignments are successfully completed with a score of 70% or better and successful completion of Automotive 10 and experience or training requirements are met.

4. ATTENDANCE will play a factor if you are to successfully pass this course.
   a. Three absences allowed per semester for all Instructors.
   b. Three tardies equal one absence. Please be on time.
5. The drop date without credit deadline is the ninth week of instruction (March 10). The student will be evaluated by quizzes, exams, and attendance (not exceeding three absences).

attendance
Final exam

ASSIGNMENTS:

1. Reading assignments will be assigned after each lecture period or the student will follow assignment schedule.
2. Tests and quizzes can be given at any time.
3. Make-up of tests and quizzes
   a. It is the students responsibility to contact Instructor.
   b. Test or quiz cannot be made-up if:
      1. Reviewed in class.
      2. Excuse for absence unacceptable.
      3. Student is limited to <u>two make-ups</u> per semester.
   c. Make-up quizzes will be arranged by instructor.
4. All homework, special assignments, and technical (lab) reports, will be handed-in on the assigned date. <u>All late assignments will be penalized a minimum of one grade and one grade for each day late</u>.
5. Electronic duplication from other students or sources is prohibited if not approved by instructor.

LAB:

1. Time in lab per group.
   a. Approximately 25 days: Driveability and Emissions.
      (1) Safety\Equipment
      (2) Fuel Systems
      (3) Tune-up
      (4) Diagnostics
      (5) Emissions Inspection

CLASS LECTURE AND READING SCHEDULE

TEXTS: (1) <u>Fuel Systems and Emissions Control</u> (Class)
(2) <u>Fuel Systems and Emissions Control</u> <u>(Lab)</u>
(3) <u>CAC Emissions Manual</u>

Week 1-2. . . . . .Theory (Engine-Emissions)
Week 3-5. . . . . .Fuel Systems (Carburetion, Distribution, Air Cleaners)
Week 6-8. . . . . .Basic Ignition and Electronic Engine Management (Fuel injection, Turbos, Superchargers)
Week 9-14 . . . . . .Emission Controls (CAC course materials: Rules/Regs, TAS, Inspection procedures)

Week 1-2: Theory (Engine-Emissions)

1. Chapters . . . . .Fuel Systems and Emissions Control (Class)
   - 1 . . . . .Introduction To Fuel Systems and Emission Controls
   - 2 . . . . .Engine Operating Principles
   - 1-2 . . . . .(Lab) Text

2. Chapters . . . . .CAC Training Manual
   - 2 . . . . .Smog: Cause and Effect
   - 3 . . . . .Engine Theory and Testing

Week 3-5: Fuel Systems

1. Chapters . . . . .Fuel Systems and Emissions Control (Class)
   - 3 . . . . .Engine Air-Fuel Requirements
   - 8 . . . . .Basic Carburetion
   - 5-6 . . . . .(Lab) Text
   - 5 . . . . .Fuel Pumps and Filters
   - 4 . . . . .(Lab) Text
   - 7 . . . . .Intake and Exhaust Manifolds
   - 6 . . . . .Air Cleaners and Filters

2. Chapters . . . . .CAC Training Manual
   - 6 . . . . .Carburetors

Week 6-8: Basic Ignition Systems and Electronic Engine Management

1. Chapters . . . . .Fuel Systems and Emissions Control (Class)
   - 13 . . . . .Electronic Fuel Metering Control
   - 11 . . . . .(Lab) Text
   - 14 . . . . .Electronic Engine Control Systems
   - 15 . . . . .Gasoline Fuel Injection Systems
   - 12 . . . . .(Lab) Text
   - 16 . . . . .Supercharging and Turbocharging
   - 13 . . . . .(Lab) Text

2. Chapters . . . . .CAC Training Manual
   - 4 . . . . .Basic Ignition Systems
   - 10 . . . . .Computerized Engine Control Systems
   - 7 . . . . .Fuel Injection
   - 8 . . . . .Turbochargers and Superchargers
   - 9 . . . . .Diagnostics

Week 9-14: Emission Controls

1. Chapters . . . . .Fuel Systems and Emission Controls (Class)
   - 17 . . . . .Positive Crankcase Ventilation (PCV)
   - 14 . . . . .(Lab) Text
   - 18 . . . . .Air Injection
   - 15 . . . . .(Lab) Text
   - 19 . . . . .Spark Timing Control Systems
   - 16 . . . . .(Lab) Text
   - 20 . . . . .Exhaust Gas Recirculation (EGR)
   - 21 . . . . .Cataylic Converters
   - 17 . . . . .EGR and Cataylic Converter Testing and Service
2. Chapters . . . . .CAC Training Manual
   - 9 . . . . .Emission Control Systems
3. CAC Course Material:
   - a. Rules and Regulations
   - b. TAS Operation
   - c. Inspection Procedures

COURSE DESCRIPTION AND GOAL:

To aid the student in comprehending and critically evaluating the operation of the automotive fuel, ignition, and emission systems. The combination of lecture and lab will enable the student to successfully inspect, trouble-shoot, disassemble, and to reassemble--to specifications--all the components utilized in the systems listed above. The student will also demonstrate the correct choice and use of diagnostic equipment and will demonstrate how to correctly perform an emissions inspection utilizing the Test Analyzer System (TAS) as outlined by the Clean Air Car Course curriculum. The student will be evaluated through technical and oral reports, assessment of hands-on efficiency, quizzes and exams. A score of 70% must be obtained to successfully pass the course. Additionally, this school is certified as a Clean Air Car (CAC) Course training institution which is regulated by the Bureau of Automotive Repair (BAR). Those students who meet the requirements and pass the CAC Course will be certified in a step towards obtaining their Smog Check Technician's license.

GLAD TO HAVE YOU THIS SPRING!