

**SOUTHEAST COMMUNITY COLLEGE
TRANSPORTATION OCCUPATIONS
POWERSPORTS TECHNOLOGY
COURSE SYLLABUS
November 24, 2020**

I. CATALOG DESCRIPTION

Course Number: MSTT2034
Course Title: Engine Performance II
Prerequisite(s): MSTT1034

Catalog Description: Proper procedures for diagnosis and troubleshooting of engine performance problems. Procedures for enhancement of chassis, ignition systems, valve trains and fuel delivery systems. Advanced fuel and ignition diagnostics systems. Specialty dyno and performance tuning. Scan tool, lab scope, Ignition Mate usage and other advanced performance procedures.

Credit Hours: 5.0
Class Hours: 30
Lab Hours: 135
Total Contact Hours: 165

II. COURSE OBJECTIVES: *Course will:*

- A. Cover systems performance diagnosis.
- B. Cover advanced compression/leak down engine diagnostics testing.
- C. Cover advanced ignition systems diagnostics.
- D. Cover ignition Mate, peak voltage/lab scope diagnostics.
- E. Cover advanced fuel management tuning systems.
- F. Cover advanced Dyno tuning.
- G. Cover super chargers and turbo chargers.
- H. Cover advanced emissions performance systems.
- I. Cover advanced ignition tuning systems.
- J. Cover cam degreeing procedures for engine blueprinting.

III. STUDENT LEARNING OUTCOMES AND GENERAL EDUCATION LEARNING OUTCOMES

A. STUDENT LEARNING OUTCOMES: *Student will be able to:*

- 1. Perform a performance diagnosis using a dynamometer and other specialty tools.
- 2. Diagnosis/troubleshoot engine mechanical condition using compression gauges and cylinder leak-down testing gauges.
- 3. Analyze advanced ignition scan tool systems; perform needed action.

4. Properly diagnose ignition systems using peak voltage readings from the Ignition Mate.
5. Analyze fuel and ignition systems lab scope patterns.
6. Analyze advanced fuel injection scan tool system; perform needed action.
7. Complete inspection and diagnosis of super charging and turbo charging systems according to manufacturer's procedures and specifications.
8. Complete a vehicle advanced emissions performance inspection.
9. Perform a vehicle inspection and adjustment of performance ignition system.
10. Perform a cam degreeing procedure, compare to manufacture's specifications.
11. Safely test ride the vehicle with special attention to tune-up and ride ability.

B. GENERAL EDUCATION LEARNING OUTCOMES

GELO 3: Critical Thinking & Problem Solving

Outcome:

1. Collect, identify, interpret and analyze data.

IV. CONTENT/TOPICAL OUTLINE

- A. Performance diagnosis
- B. Compression/leak down
- C. Ignition system analyze
- D. Ignition Mate
- E. Lab scope
- F. Fuel injection system scope patterns
- G. Scan tools
- H. Emissions performance
- I. Turbo chargers
- J. Super chargers
- K. Advanced Dyno
- L. Cam degreeing/blueprinting
- M. Engine appearance
- N. Test ride safety

V. INSTRUCTIONAL MATERIALS

Required Text(s): Modern Motorcycle Technology with workbook, Edward Abdo

VI. METHODS OF PRESENTATION

A. Methods of presentation typically include a combination of the following:

1. Lecture
2. Small and large group discussions
3. Video presentation
4. Power point slides
5. Demonstrations
6. Observation
7. Handouts
8. Guest speakers

VII. METHODS OF EVALUATION

A. Methods of evaluation typically include a combination of the following:

1. Average test scores
2. Skill exhibit
3. Class/lab attitude and participation

VIII. SPECIFIC COURSE REQUIREMENTS

- A. Accumulative grade point average of 1.0 (D) or higher.**
- B. Average of accumulative test scores must be a minimum of 60%.**
- C. Student will complete all lab assignments.**