Washtenaw Community College Comprehensive Report

MST 210 Performance Engine Technology
Effective Term: Fall 2025

Course Cover

College: Advanced Technologies and Public Service Careers
Division: Advanced Technologies and Public Service Careers
Department: Transportation Technologies
Discipline: Motorcycle Service Technology (new)
Course Number: 210
Org Number: 14100
Full Course Title: Performance Engine Technology
Transcript Title: Performance Engine Technology
Is Consultation with other department(s) required: No
Publish in the Following: College Catalog , Time Schedule , Web Page
Reason for Submission: Inactivation
Change Information:
Consultation with all departments affected by this course is required.
Rationale: This course has been phased-out.
Proposed Start Semester: Fall 2025
Course Description: In this class, students will explore performance powertrain theory and the skills to develop and build reliable engines. Topics such as selection of complementary engine components, precision measuring tools, performance engine testing simulators and engine component machining tools will be covered. Students will also learn the advantages and disadvantages of raising the performance levels of an engine. Upon successful completion of the course, students will be able to identify, design, install and test engine enhancing components.

Course Credit Hours

Variable hours: No
Credits: 4
Lecture Hours: Instructor: 45 **Student:** 45
Lab: Instructor: 60 **Student:** 60
Clinical: Instructor: 0 **Student:** 0

Total Contact Hours: Instructor: 105 **Student:** 105
Repeatable for Credit: NO
Grading Methods: Letter Grades
Audit
Are lectures, labs, or clinicals offered as separate sections?: NO (same sections)

College-Level Reading and Writing

College-level Reading & Writing

College-Level Math

No Level Required

Requisites

Prerequisite
Academic Reading and Writing Levels of 6; MST 140 minimum grade "C"

and

Prerequisite

ATT 225 minimum grade "C"

General Education

Request Course Transfer

Proposed For:

Student Learning Outcomes

1. Identify mechanical components used to develop performance internal combustion engines.
   Assessment 1
   Assessment Tool: Outcome-related module exam questions
   Assessment Date: Winter 2021
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All sections
   Number students to be assessed: All students
   How the assessment will be scored: Answer key
   Standard of success to be used for this assessment: 75% percent of the students will score 75% or higher.
   Who will score and analyze the data: Departmental faculty

2. Evaluate internal combustion engine component selection using measurements and calculations.
   Assessment 1
   Assessment Tool: Skills checklist
   Assessment Date: Winter 2021
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All sections
   Number students to be assessed: All students
   How the assessment will be scored: Rubric
   Standard of success to be used for this assessment: 75% percent of the students will score 75% or higher.
   Who will score and analyze the data: Departmental faculty
   Assessment 2
   Assessment Tool: Outcome-related module exam questions
   Assessment Date: Winter 2021
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All sections
   Number students to be assessed: All students
   How the assessment will be scored: Answer key
   Standard of success to be used for this assessment: 75% percent of the students will score 75% or higher.
   Who will score and analyze the data: Department faculty

3. Develop performance engine components using precision measuring tools and machining techniques.
   Assessment 1
   Assessment Tool: Student project
   Assessment Date: Winter 2021
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All sections
   Number students to be assessed: All students
   How the assessment will be scored: Departmentally-developed rubric

Standard of success to be used for this assessment: 75% percent of the students will score 75% or higher.
Who will score and analyze the data: Departmental faculty

Course Objectives

1. Differentiate between stock and performance engine camshafts.
2. Differentiate between stock and performance engine cylinder heads.
3. Differentiate between stock and performance engine connecting rods.
4. Differentiate between stock and performance engine crankshafts.
5. Differentiate between stock and performance engine pistons.
6. Differentiate between stock and performance engine cylinders.
7. Differentiate between stock and performance engine exhaust systems.
8. Measure cylinder head combustion chambers.
9. Measure swept volumes of pistons.
10. Measure piston dome displacements.
11. Measure camshaft lobes.
12. Measure flow rates of cylinder ports.
13. Simulate engine designs with stock components.
14. Machine engine cylinders.
15. Machine cylinder heads.
16. Machine valvetrain components.
17. Simulate engine designs with performance components.
18. Develop reliable powertrain component packages.

New Resources for Course

Course Textbooks/Resources

Textbooks
Manuals
Periodicals
Software

Equipment/Facilities

Level III classroom
Other: Dynamometer

Reviewer	Action	Date
Faculty Preparer:		
Rocky Roberts	*Faculty Preparer*	*Jan 06, 2025*
Department Chair/Area Director:		
Rocky Roberts	*Recommend Approval*	*Jan 06, 2025*
Dean:		
Eva Samulski	*Recommend Approval*	*Jan 08, 2025*
Curriculum Committee Chair:		
Randy Van Wagnen	*Reviewed*	*Apr 15, 2025*
Assessment Committee Chair:		
Vice President for Instruction:		
Brandon Tucker	*Approve*	*Apr 15, 2025*

Washtenaw Community College Comprehensive Report

MST 210 Performance Engine Technology
Effective Term: Fall 2020

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Department: Transportation Technologies
Discipline: Motorcycle Service Technology (new)
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Org Number: 14100
Full Course Title: Performance Engine Technology
Transcript Title: Performance Engine Technology
Is Consultation with other department(s) required: No
Publish in the Following: College Catalog , Time Schedule , Web Page
Reason for Submission: Course Change
Change Information:
Consultation with all departments affected by this course is required.
Pre-requisite, co-requisite, or enrollment restrictions
Outcomes/Assessment
Objectives/Evaluation
Rationale: Conditionally approved Fall 2009 course seeking full approval. Add necessary prerequisite.
Proposed Start Semester: Winter 2021
Course Description: In this class, students will explore performance powertrain theory and the skills to develop and build reliable engines. Topics such as selection of complementary engine components, precision measuring tools, performance engine testing simulators and engine component machining tools will be covered. Students will also learn the advantages and disadvantages of raising the performance levels of an engine. Upon successful completion of the course, students will be able to identify, design, install and test engine enhancing components.

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Prerequisite
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Request Course Transfer

Proposed For:

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   Assessment Date: Winter 2021
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Other: Dynamometer

Reviewer	Action	Date
Faculty Preparer:		
Shawn Deron	*Faculty Preparer*	*Dec 17, 2019*
Department Chair/Area Director:		
Justin Morningstar	*Recommend Approval*	*Dec 17, 2019*
Dean:		
Brandon Tucker	*Recommend Approval*	*Dec 17, 2019*
Curriculum Committee Chair:		
Lisa Veasey	*Recommend Approval*	*Feb 19, 2020*
Assessment Committee Chair:		
Shawn Deron	*Recommend Approval*	*Feb 24, 2020*
Vice President for Instruction:		
Kimberly Hurns	*Approve*	*Feb 25, 2020*