SYLLABUS

DATE OF LAST REVIEW: 02/11/2013

CIP CODE: 47.0604

SEMESTER: Departmental Syllabus

COURSE TITLE: Advanced Engine Repair

COURSE NUMBER: AUTT0214

CREDIT HOURS: 3

INSTRUCTOR: Departmental Syllabus

OFFICE LOCATION: Departmental Syllabus

OFFICE HOURS: Departmental Syllabus

TELEPHONE: Departmental Syllabus

EMAIL: KCKCC issued email accounts are the official means for electronically communicating with our students.

PREREQUISITE(S): AUTT0102, or approval by instructor.

REQUIRED TEXT AND MATERIALS: Please see bookstore for current textbook(s) and other required material.

COURSE DESCRIPTION: This course contains competencies that will allow the student to become disciplined in the skill necessary to rebuild automotive engines and understand advanced level engine repair techniques.

METHOD OF INSTRUCTION: A variety of instructional methods may be used depending on content area. These include but are not limited to: lecture, multimedia, cooperative/collaborative learning, labs and demonstrations, projects and presentations, speeches, debates, and panels, conferencing, performances, and learning experiences outside the classroom. Methodology will be selected to best meet student needs.

COURSE OUTLINE:
All students must comply with personal and environmental safety practices associated with clothing; eye protection; hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of chemicals/materials in accordance with local, state, and federal safety and environmental regulations.

Advanced Engine Repair

**EXPECTED LEARNER OUTCOMES:**

A. The student will be able to identify engine specifications
B. The student will be able to explain engine disassemble and cleaning
C. The student will be able to explain how to properly clean the engine
D. The student will be able to describe how to measure engine block and components
E. The student will be able to describe how to measure camshaft related components
F. The student will be able to describe how to measure cylinder head components
G. The student will be able to describe how to measure timing components
H. The student will be able to explain if components should be reused or replaced or rebuilt
I. The student will be able to review the process for listing and ordering parts
J. The student will be able to explain the process of rebuilding the cylinder head
K. The student will be able to explain the process of reassembly of the cylinder head
L. The student will be able to explain the process of reassembly of the cylinder block
M. The student will be able to explain the installation of timing components
N. The student will be able to describe final assembly of all components
O. The student will be able to explain how to pre-lubricate and start the engine

**COURSE COMPETENCIES:**

Advanced Engine Repair

*The student will be able to identify engine specifications*

1. Record general specifications
2. Record Block and Crankshaft specs
3. Record cylinder head specs
4. Record torque specifications
5. Record loosening and tightening bolt torque sequence
6. Record manifold loosening and tightening sequence

*The student will be able to explain engine disassemble and cleaning*

7. Disassemble the engine sub-assemblies
8. Disassemble the front of the engine
9. Disassemble the engine block
10. Disassemble the cylinder head
11. Remove plugs
12. Remove ridge

*The student will be able to explain how to properly clean the engine*

13. Demonstrate use of abrasive blasting
14. Demonstrate use of scraping
15. Clean oil valleys
16. Demonstrate use of chemical cleaning
17. Discuss other methods of cleaning
   The student will be able to describe how to measure engine block and components
18. Measure the piston and rings and groves
19. Measure the cylinder bore
20. Measure the cylinder taper and out of round
21. Measure the crankshaft journals
22. Measure crankshaft endplay
23. Measure deck and saddle war page
24. Measure connecting rod dimensions
   The student will be able to describe how to measure camshaft related components
25. Measure camshaft journals and lobes
26. Measure lifters and bores
27. Measure rocker arms
   The student will be able to describe how to measure cylinder head components
28. Measure valve spring dimensions and pressure
29. Measure valve and seat wear
30. Measure valve stem wear and guide clearance
31. Measure cylinder war page
32. Measure valve stem height
33. Measure valve stem assembled height
34. Measure seat wear
   The student will be able to describe how to measure timing components
35. Measure timing chain/belt deflection
36. Measure timing gear wear
   The student will be able to explain if components should be reused or replaced or rebuilt
37. Determine which components need to be replaced
38. Determine which components need to be repaired
39. Determine which components need to be reused
   The student will be able to review the process for listing and ordering parts
40. List the parts and components needed to complete the engine
41. Determine the best type of kit would best serve the project and its cost
   The student will be able to explain the process of rebuilding the cylinder head
42. Repair or replace valve
43. Repair or replace valve seat
44. Repair or replace valve guide
   The student will be able to explain the process of reassembly of the cylinder head
45. Install completed valve assembly
46. Install proper valve spring shims
47. Install camshaft in head
48. Test valve sealing
   *The student will be able to explain the process of reassembly of the cylinder block*
49. Install core and oil plugs
50. Prepare and install camshaft and bearings.
51. Install crankshaft and bearings
52. Prepare and install piston assembly
53. Prepare and install camshaft and bearings
   *The student will be able to explain the installation of timing components*
54. Install and time a timing chain
55. Install and time a timing belt
   *The student will be able to describe final assembly of all components*
56. Install cylinder head and torque to specifications
57. Install covers and pans
58. Install accessories
59. Install and time distributor
   *The student will explain how to pre-lubricate and start the engine*
60. Pre-lubricate lubrication system
61. Install engine accessories
62. Explain start-up and break in procedures

**ASSESSMENT OF LEARNER OUTCOMES:**
Assessment methods may include, but are not limited to, the following: Homework, Assignments, Quizzes, Class Participation, Chapter Tests, and Final Exam. The grading scale and the process for calculating the course grades are to be determined by the individual instructors. This information will be included in each instructor’s syllabus.

**SPECIAL NOTES:**
This syllabus is subject to change at the discretion of the instructor. Material included is intended to provide an outline of the course and rules that the instructor will adhere to in evaluating the student’s progress. However, this syllabus is not intended to be a legal contract. Questions regarding the syllabus are welcome any time.

Kansas City Kansas Community College is committed to an appreciation of diversity with respect for the differences among the diverse groups comprising our students, faculty, and staff that is free of bigotry and discrimination. Kansas City Kansas Community College is committed to providing a multicultural education and environment that reflects and respects diversity and that seeks to increase understanding.

Kansas City Kansas Community College offers equal educational opportunity to all students as well as serving as an equal opportunity employer for all personnel. Various laws, including Title IX of the Educational Amendments of 1972, require the college’s policy on non-discrimination be administered without regard to race, color, age, sex,
religion, national origin, physical handicap, or veteran status and that such policy be made known.

Kansas City Kansas Community College complies with the Americans with Disabilities Act. If you need accommodations due to a documented disability, please contact the Director of the Academic Resource Center in Room 3354 or call (913) 288-7670 V/TDD.