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| Discipline: Agriculture  | Sub-discipline: Mechanized Agriculture |
| General Course Title: <b>Small Power Equipment</b>   | Min. Units: <b>2 Semester</b>          |
| Proposed Suffix:   |  |
| <p>Course Description:<br/> Study in the basic principles of modern small equipment and engines; Explores the design, operation and proper maintenance of equipment and current compact engines approved by the California Air Resources Board (CARB). Topics include: application of compact engine systems to various machines, power transmission systems, attachments, related engine systems, equipment operation, problem-solving, component failures will be covered. Laboratory required.</p>  |  |
| Required Prerequisites or Co-Requisites <sup>1</sup>   |  |
| Advisories/Recommended Preparation <sup>2</sup>  |  |
| <p>Course Objectives: <i>At the conclusion of this course, the student should be able to:</i></p> <ul style="list-style-type: none"> <li>• Describe engines, engine fuels and fuel systems used on small power equipment</li> <li>• Recall basic diesel engine principles used on compression ignition engines</li> <li>• Analyze failure of compact engines and related components</li> <li>• Demonstrate trouble-shooting techniques on equipment and attachments</li> <li>• Perform test procedures necessary to maintain emission standards</li> <li>• Power transmission system adjustment set up and maintenance</li> <li>• Demonstrate safety procedures used with fuels and batteries</li> <li>• Operate small power equipment following standard safety practices</li> <li>• Perform diagnostic system tests using current technology instruments</li> <li>• Complete shop work orders, job sheets, technical reports and bulletins</li> <li>• Demonstrate ability to communicate and work cooperatively with others</li> </ul> |  |
| <p>Course Content:</p> <ol style="list-style-type: none"> <li>1. Introduction to engine service <ol style="list-style-type: none"> <li>a. Introduction to compact engines</li> <li>b. Power equipment safety</li> </ol> </li> <li>2. Engine maintenance <ol style="list-style-type: none"> <li>a. Emission system standards</li> <li>b. Lubrication system</li> <li>c. Air filtration system</li> <li>d. Cooling system</li> <li>e. Fuel system</li> </ol> </li> <li>3. Electrical system diagnosis and repair <ol style="list-style-type: none"> <li>a. Basic electrical components and operator presents systems</li> <li>b. Starter diagnosis and repair</li> <li>c. Alternator and dynamo diagnosis and repair</li> <li>d. Electrical system diagnosis</li> <li>e. Battery safety and service</li> </ol> </li> </ol> <p><b>Small Power Equipment<br/>(Content Continued)</b></p> <ol style="list-style-type: none"> <li>4. Compact engine diagnosis</li> </ol>   |  |

<sup>1</sup> Prerequisite or co-requisite course need to be validated at the CCC level in accordance with Title 5 regulations; co-requisites for CCCs are the linked courses that must be taken at the same time as the primary or target course.

<sup>2</sup> Advisories or recommended preparation will not require validation but are recommendations to be considered by the student prior to enrolling.

- a. Emission system studies
  - b. Lubrication system
  - c. Air filtration systems
  - d. Cooling system
  - e. Fuel system
  - f. Ignition system
  - g. Compression
5. Power transmission systems
- a. PTO
  - b. Belts
  - c. Hydraulics
  - d. Transmissions and linkages
6. Equipment attachments
- a. Mower decks
  - b. Snow blowers
  - c. Trenchers
  - d. Others

Laboratory Activities: Individual Laboratory Activities are designed to support course objectives.

Methods of Evaluation: Lecture  
 Comprehensive Quizzes and Exams  
 Written Critical Thinking Scenarios  
 Problem Analysis and Solution  
 Research and Term Papers

Methods of Evaluation: Laboratory  
 Laboratory Skill Validation by Observation  
 Laboratory Reports  
 Diagnostics and Problem Solving  
 Laboratory Skill Practicum  
 Certification Exams

Typical Textbooks, Manuals, or Other Support Materials  
 Compact Equipment, John Deere

**Statewide Articulation: Transfers as lower division elective**

FDRG Lead Signature: \_\_\_\_\_ Date: \_\_\_\_\_

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| [For Office Use Only] | <b>Internal Tracking Number</b> |
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