Syllabus

For

Small Engine Maintenance

With

Mr. Behrends

Small Engine Maintenance is a course designed to give students a working knowledge of how small engines turn fuel, air, and electricity into motion used to power all kinds of equipment! Students will begin the course in the classroom covering the theory of operation of both four and two cycle small gasoline engines. Occasionally other engine types may be referenced to expand the scope of the class.

Students will then learn how to safely and competently use the tools and equipment necessary to repair and maintain small engines. Even very simple tools can be used incorrectly and in doing so, the user may either hurt himself or herself, or damage the tool. Safety tests, as well as competency tests in using measuring equipment will be required of all students before they will be allowed to work in the shop.

Once the student has proven himself or herself to be able to work safely and competently in the shop, they will be assigned a small 4-cycle engine, a workbench, and a set of basic mechanics tools. These items will be the responsibility of the student for the remainder of the semester. Once in the shop, the student will disassemble the engine, inspecting and measuring parts along the way to determine if they are usable. After the disassembly and inspection of parts, the student will reassemble the engine. If the student determines the engine is operational, they must be able to start the engine. If they determine the engine is not operational due to damaged or missing parts, they must provide written evidence of exactly why the engine will not run and will be exempted from operating the engine.

Throughout the disassembly, inspection and reassembly process, students will follow a checklist and information packet and will be required to make records in it. They will also be required to have the instructor sign off at various points in the checklist before moving on. The rationale behind this system is to allow students to work at their own pace, giving more time to those students less familiar with the concepts in the class, and a way for students with more of a background the ability to explore more in the area of small engines and related equipment.

Upon completing the reassembly and the packet associated with it, students will chose a small engine project to take on. Many businesses and individuals have been very generous in donating used equipment to the Bruce Agriculture program to be restored and sold to benefit the program. Each student will restore at least one piece of donated equipment, or they may take on another independent project with instructor approval.

Unit Outline

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| Unit | Description | Due Date |
| Unit 1: Intro to small engines | Basic structure of what to expect in this class. |  |
| Unit 2: Engine theory and mechanics | How things work, and what they are called. |  |
| Unit 3: Shop Competencies | How to properly use tools to accomplish the task at hand. |  |
| Unit 4: Safety | How to work in a shop setting without injuring yourself or others. |  |
| Unit 5: Engine Disassembly and reassembly | Taking apart an engine, understanding what each part does, determining if each part is good, and putting it all back together. |  |
| Unit 6: Independent Application projects | Repairing a piece of power equipment that has been donated to the school for resale. If successfully completed, this unit may be repeated with another project, or modified for personal equipment or other projects for the rest of the semester. |  |