

AGRICULTURAL EDUCATION
COURSE BLUEPRINT for 6833 AGRICULTURAL MECHANICS II – SMALL ENGINES
(Recommended Hours of Instruction: 135 – 180)

Comp# Obj #	Unit Titles/Competency and Objective Statements (The Student will be able to:)	Time/ Hours	Course Weight		Type Behavior	Integrated Skill Area	Core Supp.
			Cognitive	Performance			
1	2	3	4	5	6	7	8
			100%				
	Total Course Weight		69%	31%			
A.	LEADERSHIP DEVELOPMENT		6%	3%			
SE01.00	Demonstrate the major components of leadership involved in successful employment.		2%	1%	C3	C	Core
<i>SE01.01</i>	<i>Identify leadership qualities desired by the small engines industry.</i>		2%		C1	C	Core
<i>SE01.02</i>	<i>Develop leadership qualities through participation in the small engines instructional program.</i>			1%	C3P	C	Core
SE02.00	Apply <u>Robert's Rules of Order</u> to conduct business meetings needed by agricultural organizations.		2%	1%	C3P	C/SS	Core
<i>SE02.01</i>	<i>Analyze the role that <u>Robert's Rules of Order</u> plays in the orderly conduct of business.</i>		2%		C3	C/SS	Core
<i>SE02.02</i>	<i>Conduct the transaction of business using <u>Robert's Rules of Order</u>.</i>			1%	C3P	C/SS	Core
SE03.00	Adapt public speaking techniques to the audience and to the purpose of the communication taking place.		2%	1%	C3P	C	Core
<i>SE03.01</i>	<i>Discuss the major types of speeches and the variables to be considered when presenting the speeches.</i>		2%		C2	C	Core
<i>SE03.02</i>	<i>Deliver a speech to a small engines industry organization.</i>			1%	C3P	C	Core
<i>SE03.03</i>	<i>Identify various components of the techniques involved in agricultural sales.</i>				C1	C	Supp
<i>SE03.04</i>	<i>Demonstrate sales techniques with a 7-minute sales presentation on small engines products or services.</i>				C3P	C	Supp

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B	SUPERVISED AGRICULTURAL EXPERIENCE PROGRAM		4%	3%			
SE04.00	Design an individual written school-to-work employment plan based upon career objectives.		2%	1%	C3P	C	Core
<i>SE04.01</i>	<i>Describe the procedures to follow in planning and implementing a school-to-work employment plan.</i>		<i>2%</i>		<i>C1</i>	<i>C</i>	<i>Core</i>
<i>SE04.02</i>	<i>Create an individual written school-to-work employment plan based upon career objectives.</i>			<i>1%</i>	<i>C3P</i>	<i>C/M</i>	<i>Core</i>
SE05.00	Develop a financial record system for use in the small engines industry.		2%	2%	C3P	C/M	Core
<i>SE05.01</i>	<i>Describe the elements in a financial statement.</i>		<i>2%</i>		<i>C1</i>	<i>C/M</i>	<i>Core</i>
<i>SE05.02</i>	<i>Compose a financial statement.</i>			<i>2%</i>	<i>C3P</i>	<i>C/M</i>	<i>Core</i>
C.	WORKPLACE SAFETY		4%	1%			
SE06.00	Interpret shop management safety factors.		2%		C2	C/H	Core
<i>SE06.01</i>	<i>Discuss potential shop hazards.</i>		<i>1%</i>		<i>C2</i>	<i>C/H</i>	<i>Core</i>
<i>SE06.02</i>	<i>Explain how to react to shop emergencies.</i>		<i>1%</i>		<i>C2</i>	<i>C/H</i>	<i>Core</i>
SE07.00	Practice proper personal procedures.		2%	1%	C3P	C/H	Core
<i>SE07.01</i>	<i>Explain the importance of shop safety.</i>		<i>2%</i>		<i>C2</i>	<i>C/H</i>	<i>Core</i>
<i>SE07.02</i>	<i>Use tools and equipment safely.</i>			<i>1%</i>	<i>C3P</i>	<i>C/H</i>	<i>Core</i>
D.	SMALL ENGINE TOOLS AND MATERIALS		5%	1%			
SE08.00	Demonstrate the use of small engine tools.				C3P	C/H/SC	Core
<i>SE08.01</i>	<i>Describe small engine hand tools and measuring instruments.</i>		<i>1%</i>		<i>C1</i>	<i>C/H/SC</i>	<i>Core</i>
<i>SE08.02</i>	<i>Demonstrate the use of small engine hand tools and measuring instruments.</i>			<i>1%</i>	<i>C3P</i>	<i>C/H/SC</i>	<i>Core</i>
SE09.00	Describe the use of common small engine fasteners, adhesives and gaskets		4%		C1	C/M/SC	Core
<i>SE09.01</i>	<i>Identify common small engine fasteners, adhesives and gaskets.</i>		<i>1%</i>		<i>C1</i>	<i>C</i>	<i>Core</i>
<i>SE09.02</i>	<i>Describe the uses of common small engine fasteners, adhesives, sealants, and gaskets.</i>		<i>2%</i>		<i>C1</i>	<i>C/M/SC</i>	<i>Core</i>
<i>SE09.03</i>	<i>Describe important concepts of thread types and threading as it relates to small engines.</i>		<i>1%</i>		<i>C1</i>	<i>C/M</i>	<i>Core</i>

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E.	SMALL ENGINE CONSTRUCTION, PRINCIPLES, AND THEORIES		9%				
SE10.00	Explain basic small engine operating principles.		4%		C2	C/SC	Core
<i>SE10.01</i>	<i>Discuss the purposes of the major components of a small engine.</i>		<i>2%</i>		<i>C2</i>	<i>SC</i>	<i>Core</i>
<i>SE10.02</i>	<i>Explain the principles of fuel combustion in relation to small engine operation.</i>		<i>2%</i>		<i>C2</i>	<i>C/SC</i>	<i>Core</i>
SE11.00	Explain the theories of small engine operation.		5%		C2	C/SC	Core
<i>SE11.01</i>	<i>Define terms related to small engine theory, performance, and operation.</i>		<i>2%</i>		<i>C1</i>	<i>C/M/SC</i>	<i>Core</i>
<i>SE11.02</i>	<i>Explain what takes place during each stroke of four-stroke and two-stroke engines.</i>		<i>2%</i>		<i>C2</i>	<i>C/SC</i>	<i>Core</i>
<i>SE11.03</i>	<i>Discuss how horsepower is determined.</i>		<i>1%</i>		<i>C2</i>	<i>C/M/SC</i>	<i>Core</i>
F.	SMALL ENGINE FUEL EMISSION CONTROL AND CARBURATION		9%				
SE12.00	Discuss common engine fuel systems and their uses.		4%		C2	C/SC	Core
<i>SE12.01</i>	<i>Summarize types and applications of fuels and mixtures.</i>		<i>1%</i>		<i>C2</i>	<i>C/SC</i>	<i>Core</i>
<i>SE12.02</i>	<i>Describe the types, operation, and maintenance of common fuel delivery systems.</i>		<i>3%</i>		<i>C1</i>	<i>C/SC</i>	<i>Core</i>
<i>SE12.03</i>	<i>Discuss emission control related agencies and regulations.</i>				<i>C2</i>	<i>C/H/SC/SS</i>	<i>Supp</i>
SE13.00	Demonstrate knowledge of carburetors and their operation.		5%		C3P	C/SC	Core
<i>SE13.01</i>	<i>Explain the principles and operation of carburetors.</i>		<i>2%</i>		<i>C2</i>	<i>C/SC</i>	<i>Core</i>
<i>SE13.02</i>	<i>Summarize common carburetor systems and their parts.</i>		<i>3%</i>		<i>C2</i>	<i>C</i>	<i>Core</i>

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G.	SMALL ENGINE IGNITION SYSTEMS		14%	1%			
SE14.00	Explain the concepts of small engine ignition systems.		5%		C2	C/M/SC	Core
<i>SE14.01</i>	<i>Describe the operation of a basic ignition system.</i>		<i>1%</i>		<i>C1</i>	<i>C/SC</i>	<i>Core</i>
<i>SE14.02</i>	<i>Explain the fundamental electrical principles and measurement.</i>		<i>2%</i>		<i>C2</i>	<i>C/SC</i>	<i>Core</i>
<i>SE14.03</i>	<i>Discuss spark plugs and their uses.</i>		<i>2%</i>		<i>C2</i>	<i>C/M/SC</i>	<i>Core</i>
SE15.00	Analyze the operation of small engine magneto ignition systems.		5%	1%	C3P	C/SC	Core
<i>SE15.01</i>	<i>Explain the principles and operation of magneto systems.</i>		<i>5%</i>		<i>C2</i>	<i>C/SC</i>	<i>Core</i>
<i>SE15.02</i>	<i>Compare the three magneto ignition systems.</i>			<i>1%</i>	<i>C3P</i>	<i>C/SC</i>	<i>Core</i>
SE16.00	Analyze the operation of battery ignition systems.		4%		C3	C/SC	Core
<i>SE16.01</i>	<i>Explain the principles and functions of battery ignition systems.</i>		<i>3%</i>		<i>C2</i>	<i>C/SC</i>	<i>Core</i>
<i>SE16.02</i>	<i>Compare magneto ignition systems and battery ignition systems.</i>		<i>1%</i>		<i>C3</i>	<i>C/SC</i>	<i>Core</i>
H.	SMALL ENGINES LUBRICATION SYSTEMS		6%	2%			
SE17.00	Describe general concepts of oils and lubrication in small engines.		3%		C1	C/SC	Core
<i>SE17.01</i>	<i>Recognize the purposes, properties, and importance of oil to small engines.</i>		<i>2%</i>		<i>C1</i>	<i>C/SC</i>	<i>Core</i>
<i>SE17.02</i>	<i>Define oil viscosity information and terms.</i>		<i>1%</i>		<i>C1</i>	<i>C</i>	<i>Core</i>
SE18.00	Demonstrate the general concepts of small engine lubrication.		3%	2%	C3P	C/M/S	Core
<i>SE18.01</i>	<i>Explain the importance of a proper gas:oil mixture in 2-cycle engines.</i>		<i>1%</i>		<i>C2</i>	<i>C/SC</i>	<i>Core</i>
<i>SE18.02</i>	<i>Describe the common lubrication systems for a 4-cycle small engine.</i>		<i>2%</i>		<i>C1</i>	<i>C/SC</i>	<i>Core</i>
<i>SE18.03</i>	<i>Mix an appropriate gas:oil mixture for a given 2-cycle engine.</i>			<i>2%</i>	<i>C3P</i>	<i>C/M/SC</i>	<i>Core</i>
I.	SMALL ENGINE COOLING SYSTEMS		5%				
SE19.00	Demonstrate an understanding of small engine cooling concepts.		2%		C3	C/SC	Core
<i>SE19.01</i>	<i>Explain the importance of properly cooling a small engine.</i>		<i>1%</i>		<i>C3</i>	<i>C/SC</i>	<i>Core</i>
<i>SE19.02</i>	<i>Compare the various methods of cooling small engines.</i>		<i>1%</i>		<i>C3</i>	<i>C/SC</i>	<i>Core</i>

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SE20.00	Explain the operation of cooling system components.		3%		C2	C/SC	Core
<i>SE20.01</i>	<i>Describe the types of water pumps found in small engines.</i>		<i>1%</i>		<i>C1</i>	<i>C/SC</i>	<i>Core</i>
<i>SE20.02</i>	<i>Explain the operation of a thermostat.</i>		<i>1%</i>		<i>C2</i>	<i>C/SC</i>	<i>Core</i>
<i>SE20.03</i>	<i>Describe a radiator and its operation.</i>		<i>1%</i>		<i>C1</i>	<i>C/SC</i>	<i>Core</i>
J.	SMALL ENGINE PREVENTIVE MAINTENANCE AND TROUBLESHOOTING		3%	8%			
SE21.00	Perform general preventative maintenance on a small engine.			5%	C3P	C/SC	Core
<i>SE21.01</i>	<i>Service air-cooled small engines..</i>			<i>4%</i>	<i>C3P</i>	<i>C</i>	<i>Core</i>
<i>SE21.02</i>	<i>Service a water-cooled small engine cooling system.</i>			<i>1%</i>	<i>C3P</i>	<i>C</i>	<i>Core</i>
SE22.00	Troubleshoot a small engine.		3%	3%	C3P	C/M/SC	Core
<i>SE22.01</i>	<i>Explain the terms and rationale behind small engine troubleshooting.</i>		<i>3%</i>		<i>C2</i>	<i>C/M/SC</i>	<i>Core</i>
<i>SE22.02</i>	<i>Demonstrate small engine troubleshooting techniques according to service manuals.</i>			<i>3%</i>	<i>C3P</i>	<i>C/M/SC</i>	<i>Core</i>
K.	SERVICING SMALL ENGINE SYSTEMS		2%	12%			
SE23.00	Service a small engine fuel system.			3%	C3P	C/SC	Core
<i>SE23.01</i>	<i>Troubleshoot a small engine fuel system.</i>			<i>1%</i>	<i>C3P</i>	<i>C/SC</i>	<i>Core</i>
<i>SE23.02</i>	<i>Repair the components of a small engine fuel system</i>			<i>2%</i>	<i>C3P</i>	<i>C/SC</i>	<i>Core</i>
SE24.00	Service a small engine ignition system.			4%	C3P	C/SC	Core
<i>SE24.01</i>	<i>Test a small engine ignition system.</i>			<i>2%</i>	<i>C3P</i>	<i>C/M/SC</i>	<i>Core</i>
<i>SE24.02</i>	<i>Maintain a small engine ignition system.</i>			<i>2%</i>	<i>C3P</i>	<i>C/SC</i>	<i>Core</i>
<i>SE24.03</i>	<i>Test and service batteries.</i>				<i>C3P</i>	<i>C/SC</i>	<i>Supp</i>
SE25.00	Service a small engine block assembly.		2%	5%	C3P	M/SC	Core
<i>SE25.01</i>	<i>Explain small engine block assembly terms.</i>		<i>2%</i>		<i>C2</i>	<i>M/SC</i>	<i>Core</i>
<i>SE25.02</i>	<i>Inspect a block assembly and related components.</i>			<i>3%</i>	<i>C3P</i>	<i>M/SC</i>	<i>Core</i>
<i>SE25.03</i>	<i>Service a block assembly and related components.</i>			<i>2%</i>	<i>C3P</i>	<i>M/SC</i>	<i>Core</i>

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SE26.00	Service a small engine electrical system.				C3P	SC	Supp
SE26.01	Check dc starter/generator circuits.				C3P	SC	Supp
SE26.02	Maintain alternator charging system and related parts.				C3P	SC	Supp
SE26.03	Troubleshoot an alternator charging system.				C3P	SC	Supp
L.	SERVICING SMALL ENGINE POWERED EQUIPMENT		2%				
SE27.00	Demonstrate safe work habits and procedures when working with power equipment.		2%		C3P	C/H	Core/ Supp
SE27.01	Describe basic safe work procedures specific to power equipment.		2%		C1	C/H	Core
SE27.02	Demonstrate basic safe work procedures specific to power equipment.				C3P	C/H	Supp
SE28.00	Perform basic operation and maintenance on a lawn mower				C3P	C	Supp
SE28.01	Identify parts of commonly used lawn mowers.				C1	C	Supp
SE28.02	Suggest a mower and accessories for a given situation.				C3P	C	Supp
SE28.03	Demonstrate proper use of common lawn mower starting systems.				C3P	C	Supp
SE28.04	Sharpen a lawn mower blade.				C3P	C	Supp
SE28.05	Discuss storage procedures for a lawn mower.				C2	C	Supp
SE28.06	Demonstrate safe handling of a lawn mower.				C3P	C	Supp
SE29.00	Perform basic operations and maintenance on a chain saw.				C3P	C/H	Supp
SE29.01	Discuss purchasing considerations for a chain saw.				C1	C	Supp
SE29.02	Demonstrate safe handling of a chain saw.				C3P	C/H	Supp
SE29.03	Demonstrate chain saw troubleshooting.				C3P	C	Supp
SE29.04	Demonstrate chain saw maintenance.				C3P	C	Supp
SE30.00	Perform basic operations and maintenance on a string trimmer				C3P	C	Supp
SE30.01	Discuss purchasing considerations for a string trimmer.				C1	C	Supp
SE30.02	Demonstrate safe handling of a string trimmer.				C3P	C	Supp
SE30.03	Demonstrate string trimmer maintenance.				C3P	C	Supp