

Student Name: _____

Name: _____

PROGRAM COMPETENCY PROFILE FOR CAREER TECHNICAL EDUCATION
Career Cluster: Agriculture, Food and Natural Resources

Program Name: Agricultural Mechanization, General CIP: 010201

Effective 9/2015

National Standard: National Career Clusters

Competencies (statement that provides the overview and defines the instructional area) Student will:	Knowledge, Content and Skills (what a student needs to know and be able to do and upon which they will be assessed) http://www.education.nh.gov/career/career/aaoi.htm http://www.careertech.org/career-ready-practices	<u>NH Common Core State Standards</u> – Aligned English/Language Arts/Literacy: E Mathematics: M	Rating Scale -Sample Performance Assessments (Performance tasks the student needs to demonstrate in order to be rated proficient in meeting the competency) Student will:				
Understand physical science principles as they relate to engineering applications with mechanical equipment, structures, biological systems, land treatment, power utilization, and technology in order to make environmentally sound decisions.	1. Identify petroleum sources (e.g., gasoline, diesel).	ELA: 2, 4,6,7,8,9 M: 1,2, 6, 16, 17,19	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td> </tr> </table> For Example: You are farm manager. You are faced with increasing energy costs and regulations. The property you manage has a stream and pond on the property, located on hilly terrain. You must research and develop an energy plan for the property that will be cost efficient and be environmentally responsible. You must present your findings to the owners of the farm. <i>Include #1- 5</i>	1	2	3	4
1	2	3	4				
	2. Identify alternative sources (e.g., ethanol, biodiesel, air, and wood, geothermal, solar).	ELA: 2, 4,6,7,8,9 M: 1,2, 6, 16, 17,19	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td> </tr> </table> For Example:	1	2	3	4
1	2	3	4				
	3. Compare environmental impact of energy sources. CRP: Consider the environmental, social and economic impacts of decisions	ELA: 2, 4,6,7,8,9 M: 1,2, 6, 16, 17,19	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td> </tr> </table> For Example:	1	2	3	4
1	2	3	4				
	4. Compare efficiency of energy source. CRP: Employ valid and reliable research strategies.	ELA: 2, 4,6,7,8,9 M: 1,2, 6, 16, 17,19	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td> </tr> </table> For Example:	1	2	3	4
1	2	3	4				
	5. Compare characteristics of energy source.	ELA: 2, 4,6,7,8,9 M: 1,2, 6, 16, 17,19	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td> </tr> </table> For Example:	1	2	3	4
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All Aspects of Industry (AAI) | Career Ready Practices (CRP)

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	6. Classify lubricants and determine applications.	ELA: 2, 3,4, 6, 8 ,9 M: 2, 16	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td> </tr> </table> For Example: You are a salesperson for a John Deere dealership. In order to increase your sales, you arrange to visit agricultural businesses in your sales area. Your purpose is to sell your products. You must produce a brochure or chart that describes, compares, and contrasts the lubricants of all the major companies, convincing the owners your product is the best. <i>Include #6-8</i>	1	2	3	4
1	2	3	4				
	7. Identify viscosity and strengths of lubricants.	ELA: 2, 3,4, 6, 8 ,9 M: 2, 16	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td> </tr> </table> For Example:	1	2	3	4
1	2	3	4				
	8. Describe properties of lubricants.	ELA: 2, 3,4, 6, 8 ,9 M: 2, 16	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td> </tr> </table> For Example:	1	2	3	4
1	2	3	4				
Understand principles of operation and maintenance to mechanical equipment, structures, biological systems, land treatment, power utilization and technology that are critical to safe operation and maintenance.	9. Lubricate machinery and equipment.	ELA: 7, 8	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td> </tr> </table> For Example: You are employed by an equipment dealership as a mechanic. One of your duties is to service a tractor. As part of your evaluation for consideration for a raise, you must perform a complete service in front of the service manager. <i>Include # 9-15.</i>	1	2	3	4
1	2	3	4				
	10. Ensure presence and function of safety systems and hardware. AAI 8. Health, Safety, and Environment	ELA: 7, 8	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td> </tr> </table> For Example:	1	2	3	4
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	11. Service electrical systems. AAI 4. Technical and Production Skills	ELA: 7, 8	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td> </tr> </table> For Example:	1	2	3	4
1	2	3	4				
	12. Perform machine adjustments (e.g., belts, drive chains). CRP: Apply appropriate academic and technical skills	ELA: 7, 8	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td> </tr> </table> For Example:	1	2	3	4
1	2	3	4				
	13. Service filtration systems and maintain fluid levels.	ELA: 7, 8	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td> </tr> </table> For Example:	1	2	3	4
1	2	3	4				
	14. Maintain vehicle, machinery and equipment cleanliness and appearance.	ELA: 7, 8	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td> </tr> </table> For Example:	1	2	3	4
1	2	3	4				
	15. Maintain fluid conveyance components (e.g., hoses, lines, valves, nozzles).	ELA: 7, 8	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td> </tr> </table> For Example:	1	2	3	4
1	2	3	4				
	16. Describe function of machine controls and instrumentation.	ELA: 2, 3,6,7,8	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td> </tr> </table> For Example: You are salesperson at a Caterpillar equipment dealer. A farmer comes in and wants to buy a tractor. It is your job to: 1) sell him the equipment that he needs; 2) provide all the information he needs to operate the tractor safely; 3) explain to him what the engine system encompasses; and 4) explain how to start the equipment in a safe and efficient manner. <i>Include #16-22, 24</i>	1	2	3	4
1	2	3	4				

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	17. Perform pre-operation inspection. CRP: Utilize critical thinking to make sense of problems and persevere in solving them.	ELA: 2, 3,6,7,8	<table border="1"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td> </tr> </table> For Example:	1	2	3	4
1	2	3	4				
	18. Perform appropriate startup procedures.	ELA: 2, 3,6,7,8	<table border="1"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td> </tr> </table> For Example:	1	2	3	4
1	2	3	4				
	19. Select proper machinery for specific tasks.	ELA: 2, 3,6,7,8	<table border="1"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td> </tr> </table> For Example:	1	2	3	4
1	2	3	4				
	20. Safely operate equipment.	ELA: 2, 3,6,7,8	<table border="1"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td> </tr> </table> For Example:	1	2	3	4
1	2	3	4				
	21. Describe principles of operation.	ELA: 2, 3,6,7,8	<table border="1"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td> </tr> </table> For Example:	1	2	3	4
1	2	3	4				
	22. Identify engine systems and components.	ELA: 2, 3,6,7,8	<table border="1"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td> </tr> </table> For Example:	1	2	3	4
1	2	3	4				
	23. Analyze and troubleshoot engine. AAI 4. Technical and Production Skills	ELA: 2,4, 6, 8, 9	<table border="1"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td> </tr> </table> For Example: You are a technician at a lawn and garden dealership. A client brings in a lawnmower that does not run. You must analyze and troubleshoot the engine and electrical system to diagnose the problem and repair as needed. You will have to explain the problem and the repair to the owner. <i>Include #23-25</i>	1	2	3	4
1	2	3	4				
	24. Describe features and applications of electrical systems. CRP: Communicate clearly, effectively and with reason	ELA: 2,4, 6, 8, 9	<table border="1"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td> </tr> </table> For Example:	1	2	3	4
1	2	3	4				
	25. Interpret symbols and wiring diagrams.	ELA: 2,4, 6, 8, 9	<table border="1"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td> </tr> </table> For Example:	1	2	3	4
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Understand the concepts and basic skills in blueprints/design and the use of hand and power tools in fabrication/construction in order to use blueprints in fabrication and construction successfully.	26. Use current technology to develop simple plans and sketches. AAI 5. Underlying Principles of Technology	ELA: 2, 4, 6, 7, 8,9 M: 2, 4, 12,13	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td> </tr> </table> For Example: A client comes to you seeking a custom part for a piece of equipment. You are to design the part using computer technology. You have to provide the client with a plan, complete with appropriate technical terminology. <i>Include #26-29</i>	1	2	3	4
1	2	3	4				
	27. Identify symbols and drawing techniques used to develop simple plans and sketches.	ELA: 2, 4, 6, 7, 8,9 M: 2, 4, 12,13	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td> </tr> </table> For Example:	1	2	3	4
1	2	3	4				
	28. Identify parts of plan or blueprint.	ELA: 2, 4, 6, 7, 8,9 M: 2, 4, 12,13	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td> </tr> </table> For Example:	1	2	3	4
1	2	3	4				
	29. Identify criteria for different views of a plan or blueprint.	ELA: 2, 4, 6, 7, 8,9 M: 2, 4, 12,13	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td> </tr> </table> For Example:	1	2	3	4
1	2	3	4				
	30. Demonstrate proper use of measurements and layout.	ELA: 7, 8, 9 M: 2, 4, 12,13	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td> </tr> </table> For Example: Your plan has been approved (#26), and your team has been subcontracted to produce the part. The foreperson of the construction team is overseeing this project. You will be required to demonstrate proper use of measurements and layout tools, the safe use of hand and power tools, and the ability to complete the construction of the part according to plans. <i>Include #30-33</i>	1	2	3	4
1	2	3	4				

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	31. Apply proper use of measurement and layout tools in construction/fabrication or an actual project. CRP: Use technology to enhance productivity	ELA: 7, 8, 9 M: 2, 4, 12,13	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td> </tr> </table> For Example:	1	2	3	4
1	2	3	4				
	32. Identify and demonstrate safe and proper techniques in using hand and power tools in construction/fabrication.	ELA: 7, 8, 9 M: 2, 4, 12,13	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td> </tr> </table> For Example:	1	2	3	4
1	2	3	4				
	33. Demonstrate hand and power tool use to construct/fabricate an actual project according to blueprints or plans.	ELA: 7, 8, 9 M: 2, 4, 12,13	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td> </tr> </table> For Example:	1	2	3	4
1	2	3	4				
Understand the fundamental concepts of entrepreneurship and how entrepreneurship influences the economy.	34. Discuss business possibilities and identify the steps in planning a business. AAI 6. Labor Issues AAI 7. Community Issues CRP: Act as responsible and contributing citizen and employee CRP: Attend to personal health and financial well-being. CRP: Model integrity, ethical leadership and effective management	ELA: 2, 4, 6, 7, 8,9	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td> </tr> </table> For Example: You are about to graduate. You are young and ambitious and would prefer to own your own business rather than work for someone else. You have been referred to an online inventory to determine if you have the appropriate characteristics to run your own small business. You go over the results with your high school mentor and he/she refers you to SCORE to help you create your business plan. You share this plan with your mentor, and identify the starting steps. http://www.forbes.com/sites/tompost/2012/06/04/are-you-an-entrepreneur-startup/ Include #34-35	1	2	3	4
1	2	3	4				

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	35. Identify the resources needed for business startup and operation. AAI 1. Planning AAI 2. Management AAI 3. Finance CRP: Demonstrate creativity and innovation.	ELA: 2, 4, 6, 7, 8,9	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td></tr> </table> For Example:	1	2	3	4
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Understand the necessary career readiness and employability skills in order to achieve success in today’s workplace	36. Discuss and research career options and postsecondary programs within this industry to assist in developing a career plan CRP: Plan education and career paths aligned to personal goals.	ELA: 2,3,4,6,7,8,9	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td></tr> </table> For Example: It’s the end of your Junior year and you need to create your post-high school career plan. You have a meeting with a job coach to discuss your career path. He/she expects you to come prepared, having done the research on careers you are interested in. You need to enter the meeting with an informal, yet prepared statement from which to start off the discussion.	1	2	3	4
	1	2	3	4			
37. Demonstrate personal growth, community leadership, democratic principles and social responsibility by participating in activities/events offered through FFA or other professional organizations. AAI 9. Personal Work Habits CRP: Work productively in teams while using cultural global awareness.	ELA: 3, 7, 8	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td></tr> </table> For Example: You want to be the next FFA President, but there are three other people vying for the same position. In a speech, you will try to sway the membership to vote for you by promoting yourself. Your speech will need to include: your personal growth, your engagement in school activities, and list the evidence of your community involvement.	1	2	3	4	
1	2	3	4				

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