Name: _____Biotechnology: Applications in Agriculture

Directions:
Evaluate the student by checking the appropriate number or letter to indicate the degree of competency. The rating for each task should reflect **employability readiness** rather than the grades given in class.

Rating Scale:
- **3** **Mastered** – can work independently with no supervision
- **2** **Requires Supervision** – can perform job completely with limited supervision
- **1** **Not Mastered** – requires instruction and close supervision
- **N** **No Exposure** – no experience or knowledge in this area

3	2	1	N	A. Introduction to Biotechnology	Notes:
				1. Summarize the importance of biotechnology to agriculture	
				Unit: Demonstrate an understanding of the foundations of biotechnology by developing a pamphlet or poster and oral presentation describing the history, the use, and the benefits or detriments of a specific genetically manipulated food product.	
				Other:	

3	2	1	N	B. Issues in Biotechnology	Notes:
				1. Explain the major issues associated with agricultural biotechnology	
				2. Identify government agencies involved in biotechnology	
				3. Identify procedures involved in obtaining a patent for a biotechnology product	
				Unit: Demonstrate an understanding of the concerns regarding biotechnology by conducting debates on issues in the field.	
				Other:	

3	2	1	N	C. Basic Laboratory Skills	Notes:
				1. Describe the steps in the scientific method	
				2. Demonstrate the proper use of laboratory equipment and techniques	
				3. Explain why safety practices should be followed in the laboratory	
				Unit: Demonstrate a working understanding of the skills and considerations required to conduct laboratory experiments by creating a proposal for an experiment.	
				Other:	

3	2	1	N	D. Foundations of Genetic Engineering	Notes:
				1. Identify the parts of a cell, including DNA, and their functions	
				2. Explain how cells reproduce	
				3. Describe the processes of genetic modification	
				Unit: Demonstrate an understanding of an aspect of genetic engineering by extracting DNA from a plant	

				or animal source and analyzing the results in a written report.	
				Other:	

3	2	1	N	E. Animal Technologies	Notes:
				1. Describe the process of artificial insemination	
				2. Describe the process of embryo transfer	
				3. Identify other applications of biotechnology in animals	
				4. Summarize the impact of biotechnology on animal agriculture	
				Unit: Demonstrate an understanding of a biotechnology technique applied to livestock production by describing the process and benefits of bovine embryo transfer in a pamphlet, poster, or another format, as determined by the instructor.	
				Other:	

3	2	1	N	F. Plant Technologies	Notes:
				1. Describe traditional plant breeding processes	
				2. Explain the process of tissue culture	
				3. Describe current applications of biotechnology in plants	
				4. Identify emerging applications of biotechnology in plants	
				5. Summarize the impact of biotechnology on plant agriculture	
				Unit: Demonstrate an understanding of the purpose and process of electrophoresis by constructing and using an electrophoresis device and writing a summary of the results.	
				Other:	

3	2	1	N	G. Leadership and Personal Development for Advanced Students	Notes:
				1. Develop a resume and complete a job application	
				2. Develop a plan for finding a job	
				3. Describe how to apply and interview for a job	
				4. Describe the characteristics needed to develop desirable personal and social skills	
				5. Describe the importance and process of developing better human relationships	
				Unit: Explore a career area by investigating entry-level job opportunities at a local agricultural business and writing a résumé and letter of application for a position.	
				Other:	

3	2	1	N	D. Using the *Missouri Agricultural Record Book for Secondary Students*	Notes:
				1. Complete forms needed to open the Missouri Agricultural Record Book for Secondary Students	
				2. Complete a budget for the SAE program	

				3. Complete inventory and financial statement forms for the Missouri Agricultural Record Book for Secondary Students	
				4. Complete receipt and expenditure forms in the Missouri Agricultural Record Book for Secondary Students	
				5. Complete additional forms in the Missouri Agricultural Record Book for Secondary Students	
				Unit: Demonstrate the ability to use selected forms in the *Missouri Agricultural Record Book for Secondary Students* by using a list of sample entries to complete the applicable forms in the book.	
				Other:	