Appendix I

MANUFACTURING
YOUTH APPRENTICESHIP

COURSE OUTCOME SUMMARY:
OVERVIEW AND TABLE OF CONTENTS

Manufacturing Youth Apprenticeship
Course Outcome Summary

Course Information

Organization	Cooperative Educational Services Agency 6 (CESA6)
Developers	Robin Kroyer-Kubicek
Development Date	August 2012

Description
This curriculum describes the performance-based worksite Competencies, Performance Standards, and Learning Objectives for the Wisconsin Youth Apprenticeship (YA) Program in Manufacturing. The Wisconsin Manufacturing YA Program is designed to provide students with a working understanding of core manufacturing industry skills and occupationally specific skills that serve as the standard for occupations in the Manufacturing industry. This program provides the framework for educators and industry to work together to produce work-ready, entry-level employees that will compete favorably in a global market, as well as, provide for post-secondary educational advancement while integrating work-based learning in the school and worksite.

The Manufacturing YA program competencies are aligned with the National Association of State Directors of Career Technical Education Consortium (NASDCTEc) Career Cluster Skill Standards in Manufacturing, http://www.careertech.org/. Manufacturing YA students are required to perform all of the Core and Safety skills, as well as, the Manufacturing Fundamentals skills for EACH pathway they enroll in. **Level One (one year)** YA students are to choose additional competencies from a MINIMUM of ONE Manufacturing Unit in a specific pathway. **Level Two (two year)** YA students are to complete all of the Level One requirements plus an additional unit within their chose pathway.

Pathway choices:

Production Pathway
Production Operations Management Pathway
Maintenance, Installation, & Repair Pathway

EACH competency (worksite skill) is listed with its corresponding Performance Standards and Learning Objectives. The Performance Standards describe the behaviors, ***as applicable***, that employers should look for in order to evaluate the competency. The Learning Objectives suggest classroom learning content recommended for the required related technical instruction.

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Manufacturing Youth Apprenticeship

Table of Contents

REQUIRED SKILLS
APPENDIX J:

Unit 1: Core Skills

1. Apply academic knowledge
2. Apply career knowledge
3. Apply manufacturing knowledge
4. Communicate effectively
5. Act professionally
6. Cooperate with others in a team setting
7. Think critically
8. Exhibit regulatory and ethical responsibilities
9. Use resources wisely
10. Use basic technology

Unit 2: Safety

1. Follow personal safety requirements
2. Maintain a safe work environment
3. Demonstrate professional role in an emergency

Unit 3: Manufacturing Fundamentals

1. Focus on customer needs
2. Measure using various instruments
3. Operate tools and equipment safely
4. Practice quality assurance principles

APPENDIX K:

Unit 4: Production Pathway: Assembly & Packaging

1. Read technical drawings & work orders
2. Interpret assembly & packaging symbols & procedures
3. Identify set up for assembly
4. Select tools and materials
5. Perform safety checks
6. Perform assembly set up
7. Verify assembly set up
8. Perform assembly
9. Perform quality checks
10. Build packaging
11. Package product
12. Process packaging documents
13. Clean up
14. Monitor equipment for correct operation
15. Document equipment use &/or operational problems

APPENDIX L:

Unit 5: Production Pathway: Manufacturing Processes

1. Read technical drawings & work orders
2. Interpret symbols & procedures
3. Identify set up
4. Select tools & materials
5. Perform safety checks
6. Assist to perform set up
7. Verify set up
8. Perform start up
9. Operate equipment
10. Monitor product & process specifications
11. Process production documents
12. Shutdown process
13. Clean up
14. Monitor equipment for correct operation
15. Document equipment use &/or operational problems

APPENDIX M:

Unit 6: Production Pathway: Machining

1. Read machining technical drawings & work orders
2. Interpret machining symbols & procedures
3. Identify set up
4. Select tools and materials
5. Perform safety checks
6. Assist to perform set up
7. Verify set up
8. Perform start up
9. Operate machining equipment
10. Monitor machining product and process specifications
11. Process production documents
12. Shutdown machining process
13. Clean up
14. Use hand tools
15. Use CNC equipment (W/S)
16. Monitor equipment for correct operation
17. Document equipment use &/or operational problems

APPENDIX N:

Unit 7: Production Pathway: Welding

1. Read welding technical drawings & work orders
2. Interpret welding symbols & procedures
3. Layout & plan work
4. Perform safety checks
5. Prepare base metal
6. Set up to fabricate base metal
7. Fabricate base metal
8. Thermally/chemically cut metal
9. Tack work pieces
10. Weld metal
11. Monitor product & process
12. Assist to inspect, measure, &/or test completed metal pieces
13. Process production documents
14. Clean up
15. Monitor equipment for correct operation
16. Perform routine preventive maintenance (PM)
17. Document equipment use, PM, &/or operational problems

APPENDIX O:

Unit 8: Production Operations Management Pathway: Production Operations Management

Inventory

1. Assist to purchase materials & supplies
2. Receive inventory
3. Manage inventory levels
4. Distribute materials & products
5. Assist to develop inventory forecasts (W/S)
6. Maintain inventory records

Resources

7. Assist to develop a production plan for customer order (W/S)
8. Assist to record & summarize financial data
9. Assist to coordinate work schedules & duty assignments

Quality Management

10. Use quality tools
11. Calibrate tools & equipment (W/S)
12. Assist to analyze production process for productivity (W/S)
13. Monitor operations for product & process quality
14. Assist to investigate root causes of product &/or process failure
15. Take corrective action to restore or maintain quality
16. Participate in quality improvement processes

APPENDIX P:

Units 9-10: Maintenance, Installation, & Repair Pathway: Industrial Equipment

Basic Industrial Equipment Unit

1. Read technical drawings & work orders
2. Interpret equipment symbols & procedures
3. Maintain schedules, communication, & documentation
4. Monitor equipment for correct operation
5. Identify maintenance requirements
6. Layout & plan work
7. Perform safety checks
8. Use hand tools
9. Perform preventive maintenance (PM)
10. Perform lubrication procedures
11. Assist with basic equipment problem identification & diagnosis
12. Assist with basic equipment repair
13. Assist to re-qualify equipment

Advanced Industrial Equipment Unit

1. Calibrate tools and instruments (W/S)
2. Set up & fabricate metal
3. Mount a bearing
4. Install mechanical fasteners
5. Assist with electrical circuit problem identification & diagnosis
6. Assist with motor control problem identification & diagnosis
7. Assist with hydraulic &/or pneumatic problem identification & diagnosis
8. Maintain and repair mechanical drive system components
9. Maintain and repair electrical control system components
10. Maintain and repair hydraulic &/or pneumatic system components
11. Assist to install & qualify equipment