RESEARCH & CURRICULUM UNIT
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SEC –Metal Fabrication Blueprints

This document contains the blueprints for the concentration areas in secondary Metal Fabrication.

Course Code(s)	Test Code	Program Name	Supplemental Materials/Notes
993208, 993209, 993206	11340Y1-2015	Metal Fabrication	
993210, 993211, 993207	11340Y2-2015	Metal Fabrication	

	Perkins Assessment 2016-17		Teacher Evaluation Pilot 2016-17			
Curriculum	**Y1 Post-Test**	**Y2 Post-Test**	**Y1 Baseline**	**Y1 Post-Test**	**Y2 Baseline**	**Y2 Post-Test**
Metal Fabrication	MS-CPAS2*	MS-CPAS2*	NA*	NA*	NA*	NA*

* These assessments are subject to change based on funding and policy changes/updates.
Information for test coordinators will be disseminated on the ordering process for the national certification by the Research and Curriculum Unit at Mississippi State University.

MS-CPAS2 Blueprint Summary

Assessment: Metal Fabrication
Test Code: 11340Y1-2015
CIP Code: 480511
Course Codes: 993208, 993209, 993206
Type: CP

The MS-CPAS2 Blueprint Summary indicates the number of assessment questions related to each unit on the assessment and indicates the relative emphasis placed on each unit. All of the listed competencies will appear on the assessment, but because of the length of the assessment, not every competency will be equally represented in the assessment.

The MS-CPAS2 Blueprint Summary includes a variety of information, which is explained below:

Terms and Definitions	
Assessment:	This signifies the name of the assessment, which corresponds with the name of the pathway or program.
CIP Code:	Developed by the U.S. Department of Education's National Center for Education Statistics (NCES), CIP codes are a federal coding system utilized for assessment and reporting of fields of study and program completions activity tracking.
Test Code:	A unique code that serves to numerically identify a specific assessment
DOK Levels:	Based on Webb's Depth of Knowledge (DOK), this signifies the assessment item difficulty factor to be expected in each unit. The three levels are as follows: *1 = Recall and Reproduction, 2 = Skills and Concepts, 3 = Short-term Strategic Thinking* **Some postsecondary programs will not use DOK levels until the next revision.**
Instructional	The total number of hours assigned to a unit per the pathway's curriculum
Total Items:	The total number of items assigned to each unit on the assessment. It is calculated as follows: *(Unit Instructional Hours / Total Instructional Hours) * Total Active Items*
Active Items:	The number of items on the assessment that will be graded
Field-test Items:	The number of items that are being field-tested, or piloted, to determine their eligibility for inclusion as an Active Item on future assessments. These items are not graded and, thus, will not impact the student's final score.
Total Assessed Items:	The total number of items on the given assessment. It is calculated as follows: *Active Items + Field-test Items*

For more information regarding this MS-CPAS2 Blueprint Summary, please contact the Mississippi Assessment Center by phone at 1.866.901.7433 or by e-mail at helpdesk@rcu.msstate.edu.

Assessment: Metal Fabrication **Test Code:** 11340Y1-2015 **CIP Code:** 480511 **Total Hours:** 185	DOK Level(s)			Instructional Hours	Total Items
Unit 2: Basic Safety	1	2		24	10
1. Describe, define, and illustrate general safety rules for working in a shop/lab and how they relate to the manufacturing industry. 2. Identify and apply safety around welding operations. 3. Display appropriate safety precautions to take around common jobsite hazards. 4. Demonstrate the appropriate use and care of personal protective equipment (PPE). 5. Explain fall protection, ladder, stair, and scaffold procedures and requirements. 6. Explain the material safety data sheet (MSDS). 7. Display appropriate safety procedures related to fires. 8. Explain safety in and around electrical situations.					
Unit 3: Introduction to Construction Math	1	2		29	16
1. Apply the four basic math skills using whole numbers, fractions, decimals, and percentages, both with and without a calculator.					
Unit 4: Hand and Power Tools	1	2		24	10
1. Demonstrate the use and maintenance of hand and power tools.					
Unit 5: Introduction to Construction Drawings	1	2		24	10
1. Read, analyze, and understand basic components of a blueprint.					
Unit 6: Introduction to Materials Handling	1	2		24	10
1. Safely handle and store materials.					
Unit 7: Lathe Theory and Operation	1	2		60	24
1. Identify the parts, rules, and care of the metal lathe. 2. Perform procedures for a machining operation.					
Active Items					80
Field-Test Items					20
TOTAL ASSESSED ITEMS					100

MS-CPAS2 Blueprint Summary

Assessment: Metal Fabrication
Test Code: 11340Y2-2015
CIP Code: 480511
Course Codes: 993210, 993211, 993207
Type: CP

The MS-CPAS2 Blueprint Summary indicates the number of assessment questions related to each unit on the assessment and indicates the relative emphasis placed on each unit. All of the listed competencies will appear on the assessment, but because of the length of the assessment, not every competency will be equally represented in the assessment.

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Instructional Hours:	The total number of hours assigned to a unit per the pathway's curriculum
Total Items:	The total number of items assigned to each unit on the assessment. It is calculated as follows: *(Unit Instructional Hours / Total Instructional Hours) * Total Active Items*
Active Items:	The number of items on the assessment that will be graded
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Total Assessed Items:	The total number of items on the given assessment. It is calculated as follows: *Active Items + Field-test Items*

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Assessment: Metal Fabrication **Test Code:** 11340Y2-2015 **CIP Code:** 480511 **Total Hours:** 185	DOK Level(s)			Instructional Hours	Total Items
Unit 13: Advanced Lathe Operation	1	2		60	26
1. Describe safety precautions, methods for measuring thread pitch diameters, and calculation of dimensions using taper formulas. 2. Perform various operations according to specifications.					
Unit 14: Advanced Milling Operation	1	2		40	17
1. Explore vertical milling operations. 2. Adjust speed and feed rates; clean and lubricate; mount arbors and adjust arbor support bushing; mount a cutter; mill a key-way; and perform selected horizontal operations. 3. Mount and remove cutters and cutter holders, align a vise using a dial indicator, and perform selected vertical milling and boring operations.					
Unit 15: Introduction to Shielded Metal Arc Welding (SMAW)	1	2		20	9
1. Identify and explain safety, setup, weld cleanup, and maintenance of arc welding equipment. 2. Identify and use procedures for joint fit-up and alignment. 3. Identify and explain filler metal and selection of electrodes.					
Unit 16: Shielded Metal Arc Welding (SMAW)	1	2		30	13
1. Construct various welds using different positions and electrodes. 2. Identify quality welds, and make various advanced welds in different positions. 3. Weld various plates using various electrodes in different positions.					
Unit 17: Gas Metal Arc Welding (GMAW) and Flux Core Arc Welding (FCAW)	1	2		35	15
1. Demonstrate and discuss safety procedures, applications, and the advantages and limitations, and identify the machine controls for GMAW and FCAW. 2. Perform various welds according to specifications.					
Active Items					80
Field-Test Items					20
TOTAL ASSESSED ITEMS					100