



SEC – Engineering Blueprints

This document contains the blueprints for the concentration areas in secondary Engineering.

Course Code(s)	Test Code	Program Name	Supplemental Materials/Notes
994000, 994002, 994003	11553Y1-2014	Engineering	
994001, 994004, 994005	11553Y2-2014	Engineering	

Curriculum	Perkins Assessment 2016-17		Teacher Evaluation Pilot 2016-17			
	Y1 Post-Test	Y2 Post-Test	Y1 Baseline	Y1 Post-Test	Y2 Baseline	Y2 Post-Test
Engineering	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: Engineering
Test Code: 11553Y1-2014
CIP Code: 140101
Course Codes: 994000, 994002, 994003
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: <i>1 = Recall and Reproduction, 2 = Skills and Concepts, 3 = Short-term Strategic Thinking</i> 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: <i>(Unit Instructional Hours / Total Instructional Hours) * Total Active Items</i>
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: <i>Active Items + Field-test Items</i>

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: Engineering Test Code: 11553Y1-2014 CIP Code: 140101 Total Hours: 180	DOK Level(s)			Instructional Hours	Total Items
	1	2	3		
Unit 1: Orientation, Ethics, and Safety	1	2		5	2
1. Not on CPAS 2. Demonstrate proper use and care for laboratory equipment. 3. Recognize the importance of ethical teamwork in the field of engineering.					
Unit 2: Engineering Design Process, History, and Careers	1			10	6
1. Recognize the need for a design process.					
Unit 3: Not on CPAS					
Unit 4: Not on CPAS					
Unit 5: Sketching and Modeling	1	2	3	85	37
1. Create 2-D and 3-D models with CAD software. 2. Construct 3-D models with CAD software.					
Unit 6: Introduction to Robotics	1	2	3	80	35
1. Explore concepts associated with physical principles of engineering. 2. Explore mechanisms and simple machines to create working robots. 3. Explore concepts associated with computer programming as it relates to robotics. 4. Demonstrate advanced robotics programming.					
Unit 7: Not on CPAS					
Unit 8: Not on CPAS					
Unit 9: Not on CPAS					
Active Items					80
Field-Test Items					20
TOTAL ASSESSED ITEMS					100



MS-CPAS2 Blueprint Summary

Assessment:	Engineering
Test Code:	11553Y2-2014
CIP Code:	140101
Course Codes:	994001, 994004, 994005
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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Total Items:	The total number of items assigned to each unit on the assessment. It is calculated as follows: <i>(Unit Instructional Hours / Total Instructional Hours) * Total Active Items</i>
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Total Assessed Items:	The total number of items on the given assessment. It is calculated as follows: <i>Active Items + Field-test Items</i>

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Assessment: Engineering Test Code: 11553Y2-2014 CIP Code: 140101 Total Hours: 240	DOK Level(s)			Instructional Hours	Total Items
	1	2	3		
Unit 10: Electrical Systems	1	2		30	15
1. Examine electrical systems in engineering 2. Examine principles of magnetism, electric fields, and electricity.					
Unit 11: Fluid Systems	1	2		30	15
1. Examine fluid systems in engineering.					
Unit 12: Mechanical Systems	1	2		30	15
1. Examine mechanical systems in engineering. 2. Examine and classify levers.					
Unit 13: Thermal Systems	1	2		30	15
1. Investigate and summarize the principles of thermodynamics. 2. Examine thermal systems in engineering.					
Unit 14: Not on CPAS					
Unit 15: Advanced Robotics	1	2	3	120	20
1. Perform advanced robotic concepts associated with object manipulators. 2. Perform advanced robotic concepts associated with single stage lifts. 3. Perform advanced robotic concepts associated with accumulators. 4. Perform advanced robotic concepts associated with four bar mechanisms.					
Unit 16: Not on CPAS					
Active Items					80
Field-Test Items					20
TOTAL ASSESSED ITEMS					100