

MS-CPAS Blueprint Summary

Assessment:	Instrumentation Technology
Test Code:	21311Y1-2011
CIP Code:	150404
Course Codes:	
Type:	PS

The MS-CPAS 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-CPAS 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 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: <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>

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Assessment: Instrumentation Technology	DOK Level(s)			Instructional Hours	Total Items
Test Code: 21311Y1-2011					
CIP Code: 150404					
Total Hours: 26.0					
IET 1114: Fundamentals of Industrial Measurement I				4	6
<ol style="list-style-type: none"> 1. Calculate and convert pressure measurements (English and metric units). 2. Describe the principles of operation of pressure sensing devices. 3. Perform pressure measurements. 4. Identify instrument air systems. 5. Service filters, regulators and dryers in an instrument air supply system. 6. Troubleshoot and repair/replace pressure gauges/indicators. 7. Troubleshoot and repair/replace pressure transmitters. 8. Troubleshoot and repair/replace pressure transducers. 9. Calculate and convert level measurements (English and metric units). 10. Describe the principles of operations of level sensing devices. 11. Perform level measurements. 12. Troubleshoot and repair/replace level gauges/indicators. 13. Troubleshoot and repair/replace level transmitters. 14. Troubleshoot and repair/replace level transducers. 15. Utilize various types of calibration equipment. 					
IET 1124: Fundamentals of Industrial Measurement II				4	6
<ol style="list-style-type: none"> 1. Calculate and convert temperature measurements (English and metric units). 2. Describe operating principles of temperature sensing devices. 3. Utilize tools and materials needed for temperature measurement. 4. Troubleshoot and repair/replace temperature indicators, temperature transmitters, and transducers. 5. Calculate and convert flow measurements. (English and metric units). 6. Describe the principles of operation of flow sensing devices. 7. Perform flow measurements. 8. Troubleshoot and repair/replace flow indicators, transmitters and transducers. 					
IET 1314: Industrial Controls I				4	6
<ol style="list-style-type: none"> 1. Troubleshoot and repair/replace instrument indicators and recorders. 2. Troubleshoot and repair/replace pneumatic analog controllers. 3. Troubleshoot and repair/replace electronic analog controllers. 4. Troubleshoot, configure and repair digital controllers. 5. Study the concepts of manual and on/off control modes, annunciators and shutdown systems. 6. Study the concepts of proportional, integral and derivative control modes. 7. Troubleshoot and repair control loop accessories. 8. Troubleshoot, calibrate and repair simple proportional control loops. 9. Troubleshoot, calibrate and repair proportional plus reset control loops. 10. Troubleshoot, calibrate and repair proportional plus derivative control loops. 11. Select the appropriate type of controller for various process applications. 					

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Total Hours: 26.0					
EET 1114: DC Circuits				3	5
1. Demonstrate and practice general safety procedures in the school and work-site environments. 2. Demonstrate and apply an understanding of a basic electrical circuit. 3. Demonstrate an understanding of voltage, current, resistance, and power and how they relate. 4. Analyze and evaluate the parameters of a series circuit. 5. Analyze and evaluate the parameters of a parallel circuit. 6. Analyze and evaluate the parameters of a series-parallel circuit. 7. Apply network theorems to the analysis of complex circuits. 8. Explain capacitance, and demonstrate its application in DC and transient circuits. 9. Explain inductance, and demonstrate its application in DC and transient circuits.					
EET 1123: AC Circuits				3	5
1. Analyze a sine wave, and explain its characteristics and application to AC circuits. 2. Analyze inductive and capacitive reactance in series and parallel circuits. 3. Analyze transformer voltage, current, impedance transformations, and applications. 4. Explain RLC non-resonant and resonant circuits. 5. Explain and classify filters.					
EET 1214: Digital Electronics				4	6
1. Perform mathematical operations in digital number systems. 2. Classify logic gates, and explain their functions. 3. Analyze logic circuits. 4. Minimize logic circuits using Boolean algebra and Karnaugh mapping. 5. Analyze principles and operations of digital display devices. 6. Explain the operation of basic memory circuits.					
IET 2114: Final Control Elements				4	6
1. Describe the principles of variable speed and frequency drives. 2. Troubleshoot and repair control valves. 3. Troubleshoot and repair control valve bodies. 4. Troubleshoot and repair control valve actuators. 5. Troubleshoot and repair control valve positioners.					
Active Items					40
Field-Test Items					10
TOTAL ASSESSED ITEMS					50

MS-CPAS Blueprint Summary

Assessment:	Instrumentation Technology
Test Code:	21311Y2-2011
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Course Codes:	
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Test Code: 21311Y2-2011					
CIP Code: 150404					
Total Hours: 8.0					
IET 2414: Industrial Controls II				4	20
1. Troubleshoot and repair PID feedback process control systems. 2. Troubleshoot and repair a cascade loop. 3. Troubleshoot and configure a ratio control system. 4. Troubleshoot and repair/configure feed forward control schemes. 5. Troubleshoot and repair/configure an auto select/override control scheme. 6. Troubleshoot and perform loop tuning techniques to stabilize a process operation. 7. Calibrate process loop components. 8. Troubleshoot and repair smart transmitters and smart valve positioners. 9. Differentiate the use of field communication devices. 10. Demonstrate the process of loop documentation. 11. Demonstrate knowledge in the use of instrument drawings. 12. Demonstrate knowledge in the use of instrument specification sheets. 13. Demonstrate knowledge in the use of an engineering package. 14. Analyze engineering packages using instrumentation drawings and documentation. 15. Explain the basics of PLC and distributed control. 16. Review advanced topics in process control theory.					
EET 2334: Linear Integrated Circuits				4	20
1. Analyze and demonstrate the effects of frequency on amplifiers. 2. Describe the principles, operation, and characteristics of an operational amplifier. 3. Describe and demonstrate the function and operational characteristics of op-amps in linear and nonlinear applications. 4. Describe the function and operating characteristics of voltage regulators.					
Active Items					40
Field-Test Items					10
TOTAL ASSESSED ITEMS					50