



End of Course (EOC) Test Blueprints

Agriculture and Environmental Systems

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About Test Blueprints

Test blueprints are created to provide guidance to Subject Matter Experts (SMEs) during the item writing phase of test development. In addition, we believe that they can assist those instructors who did not participate in item writing (and administrators) to understand the broad content of the item bank. Items are formally allocated across a course outline in a three-step process*:

1. CETE psychometricians use a formula which assumes that all competencies within a course outline are *essential* and of equal importance to produce a suggested test blueprint for review by Ohio Department of Education program specialists and SMEs.
2. SMEs are formed into small groups during item writing and focus on writing a specific EOC test. Once in small groups, SMEs review the course outline and have the ability to make revisions/changes to the test blueprint with a persuasive rationale based on their experience and expertise. Competencies are selected by the instructors consistent with their assigned course outline and any changes.
3. The blueprints created during small group work must be approved by the larger/full panel of SMEs attending an item writing workshop, which is the last step and produces the final



Test blueprints can provide high-level guidance to instructors on preparing students for testing. It is important to keep in mind that the blueprint is a tool that is used when developing the test item bank during initial item writing and test creation. As with all tests, the End-of-Course test forms are a sample of the item bank.

Interpreting the Blueprints

Test blueprints display the total number of test items SMEs planned to write to a particular *outcome* (as designated in the course outline created by the Ohio Department of Education Office of Career-Technical Education or by a vendor). The blueprint describes the item bank which is the total pool of test items created. Final test forms of 40-items are created from the item bank.

*This process for producing test blueprints was implemented October 1, 2015. All tests created prior to this date were done so under a different blueprint process and therefore will not have these blueprint reports available.

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Agriculture and Industrial Power

ODE Subject Code: 010210

Outcome #	Outcome Name	% Items Approved by SMEs
Strand 1. Business Operations/21st Century Skills		
1.1	Employability Skills	2.1%
1.2	Leadership and Communications	8.3
1.3	Business Ethics and Law	3.1
1.4	Knowledge Management and Information Technology	1.0
1.6	Business Literacy	2.1
1.8	Operations Management	2.1
1.10	Sales and Marketing	2.1
1.12	Site and Personal Safety Procedures	5.2
Strand 4. Power Systems		
4.1	Tool, Stationary and Mobile Equipment Maintenance	9.4
4.2	Equipment Operations	3.1
4.3	Engines	9.4
4.4	Lubrication and Cooling Systems	5.2
4.5	Fuel, Air Induction and Exhaust System	5.2
4.6	Ignition System	2.1
4.7	Transmission of Power	4.2
4.8	Starting and Charging Systems	2.1
4.9	Steering, Suspension, and Traction	4.2
4.11	Hydraulic Systems	5.2
4.12	Brakes	2.1
4.13	Heating and Air Conditioning Systems	2.1
Strand 5. Structural Engineering		
5.1	Electrical Theory	3.1
5.9	Physics and Metallurgy of Welding	4.2
5.10	Joining and Cutting Metals with Heat	7.3
5.11	Fabricating with Cold Metals	5.2



Agronomic Systems

Subject Code: 010620

Outcome #	Outcome Name	% Items Approved by SMEs
Strand 1. Business Operations/21st Century Skills		
1.1	Employability Skills	2.1
1.2	Leadership and Communications	2.1
1.3	Business Ethics and Law	2.1
1.4	Knowledge Management and Information Technology	2.1
1.6	Business Literacy	2.1
1.8	Operations Management	4.2
1.9	Financial Management	2.1
1.12	Site and Personal Safety Procedures	4.2
Strand 3. Biotechnology		
3.8	Research and Experiments	2.1
Strand 4. Power Systems		
4.1	Tool, Stationary and Mobile Equipment Maintenance	4.2
4.2	Equipment Operations	2.1
Strand 5. Structural Engineering		
5.4	Surveying and Mapping	3.2
5.5	Geographic Information Systems (GIS)	2.1
Strand 6. Environmental Science		
6.1	Soils	7.4
6.2	Water Quality	4.2
6.3	Air Quality	2.1
6.7	Solid Waste and Renewable Resource Management	3.2
6.8	Contaminants and Pollution Control	2.1
6.9	Hazardous Materials and Waste Management	3.2
6.10	Ecosystems	7.4
6.11	Habitat Management and Restoration	2.1
Strand 7. Food Science		
7.1	The Science of Food	2.1
7.7	Biosecurity	2.1
Strand 8. Plant Science		
8.1	Plant Nutrition	8.4
8.2	Plant Reproduction	4.2
8.3	Pest Management	4.2
8.4	Growth and Management	4.2
8.5	Harvesting	6.3
8.6	Handling and Storage	2.1



Electronic and Electrical Systems

Subject Code: 010215

Outcome #	Outcome Name	% Items Approved by SMEs
Strand 1. Business Operations/21st Century Skills		
1.1	Employability Skills	3.2
1.2	Leadership and Communications	5.3
1.3	Business Ethics and Law	2.1
1.4	Knowledge Management and Information Technology	7.4
1.6	Business Literacy	2.1
1.8	Operations Management	3.2
1.10	Sales and Marketing	3.2
1.12	Site and Personal Safety Procedures	9.5
Strand 4. Power Systems		
4.1	Tool, Stationary and Mobile Equipment Maintenance	10.5
4.3	Engines	3.2
4.6	Ignition System	8.4
4.8	Starting and Charging Systems	8.4
Strand 5. Structural Engineering		
5.1	Electrical Theory	33.7



Engines and Fuel Systems

Subject Code: 010220

Outcome #	Outcome Name	% Items Approved by SMEs
Strand 1. Business Operations/21st Century Skills		
1.1	Employability Skills	2.1
1.2	Leadership and Communications	10.5
1.3	Business Ethics and Law	3.2
1.4	Knowledge Management and Information Technology	6.3
1.6	Business Literacy	1.1
1.8	Operations Management	1.1
1.10	Sales and Marketing	1.1
1.12	Site and Personal Safety Procedures	10.5
Strand 4. Power Systems		
4.1	Tool, Stationary and Mobile Equipment Maintenance	11.6
4.2	Equipment Operations	4.2
4.3	Engines	8.4
4.4	Lubrication and Cooling Systems	9.5
4.5	Fuel, Air Induction and Exhaust System	15.8
4.6	Ignition System	8.4
4.8	Starting and Charging Systems	6.3



Environmental Systems Management

Subject Code: 010725

Outcome #	Outcome Name	% Items Approved by SMEs
Strand 1. Business Operations/21st Century Skills		
1.1	Employability Skills	6.3
1.2	Leadership and Communications	6.3
1.3	Business Ethics and Law	1.1
1.4	Knowledge Management and Information Technology	2.1
1.12	Site and Personal Safety Procedures	7.4
Strand 3. Biotechnology		
3.8	Research and Experiments	7.4
Strand 4. Power Systems		
4.1	Tool, Stationary and Mobile Equipment Maintenance	3.2
4.2	Equipment Operations	4.2
Strand 5. Structural Engineering		
5.4	Surveying and Mapping	1.1
5.5	Geographic Information Systems (GIS)	3.2
Strand 6. Environmental Science		
6.1	Soils	6.3
6.2	Water Quality	4.2
6.3	Air Quality	4.2
6.4	Water Use and Management	6.3
6.5	Potable Water Treatment	3.2
6.6	Wastewater Operations	4.2
6.7	Solid Waste and Renewable Resource Management	5.3
6.8	Contaminants and Pollution Control	6.3
6.9	Hazardous Materials and Waste Management	6.3
6.10	Ecosystems	6.3
Strand 8. Plant Science		
8.3	Pest Management	5.3



Floral Design and Marketing

Subject Code: 010625

Outcome #	Outcome Name	% Items Approved by SMEs
Strand 1. Business Operations/21st Century Skills		
1.1	Employability Skills	8.4
1.2	Leadership and Communications	8.4
1.3	Business Ethics and Law	4.2
1.4	Knowledge Management and Information Technology	3.2
1.6	Business Literacy	7.4
1.8	Operations Management	5.3
1.10	Sales and Marketing	10.5
1.12	Site and Personal Safety Procedures	5.3
Strand 4. Power Systems		
4.2	Equipment Operations	3.2
Strand 5. Structural Engineering		
5.3	Design and Estimate	16.8
Strand 6. Environmental Science		
6.9	Hazardous Materials and Waste Management	3.2
Strand 8. Plant Science		
8.3	Pest Management	4.2
8.4	Growth and Management	5.3
8.5	Harvesting	6.3
8.6	Handling and Storage	8.4



Greenhouse and Nursery Management

Subject Code: 010610

Outcome #	Outcome Name	% Items Approved by SMEs
Strand 1. Business Operations/21st Century Skills		
1.1	Employability Skills	4.2
1.2	Leadership and Communications	4.2
1.3	Business Ethics and Law	3.2
1.4	Knowledge Management and Information Technology	3.2
1.6	Business Literacy	3.2
1.8	Operations Management	3.2
1.9	Financial Management	3.2
1.10	Sales and Marketing	6.3
1.12	Site and Personal Safety Procedures	5.3
Strand 3. Biotechnology		
3.8	Research and Experiment	3.2
Strand 5. Structural Engineering		
5.1	Electrical Theory	3.2
5.2	Structural Electrical Circuits	2.1
Strand 6. Environmental Science		
6.1	Soils	4.2
6.2	Water Quality	3.2
6.7	Solid Waste and Renewable Resource Management	3.2
Strand 7. Food Science		
7.7	Biosecurity	3.2
Strand 8. Plant Science		
8.1	Plant Nutrition	10.5
8.2	Plant Reproduction	5.3
8.3	Pest Management	7.4
8.4	Growth and Management	12.6
8.5	Harvesting	3.2
8.6	Handling and Storage	3.2



Landscape Systems Management

Subject Code: 010615

Outcome #	Outcome Name	% Items Approved by SMEs
Strand 1. Business Operations/21st Century Skills		
1.1	Employability Skills	5.3
1.2	Leadership and Communications	4.2
1.3	Business Ethics and Law	1.1
1.4	Knowledge Management and Information Technology	3.2
1.6	Business Literacy	3.2
1.8	Operations Management	1.1
1.9	Financial Management	1.1
1.10	Sales and Marketing	2.1
1.12	Site and Personal Safety Procedures	7.4
Strand 4. Power Systems		
4.1	Tool, Stationary and Mobile Equipment Maintenance	11.6
4.2	Equipment Operations	5.3
4.3	Engines	7.4
4.4	Lubrication and Cooling Systems	3.2
4.5	Fuel, Air Induction and Exhaust System	1.1
4.7	Transmission of Power	2.1
Strand 6. Environmental Science		
6.1	Soils	3.2
6.8	Contaminants and Pollution Control	2.1
6.10	Ecosystems	2.1
Strand 8. Plant Science		
8.1	Plant Nutrition	6.3
8.2	Plant Reproduction	2.1
8.3	Pest Management	6.3
8.4	Growth and Management	9.5
8.5	Harvesting	3.2
8.6	Handling and Storage	6.3



Plant and Horticulture Science

Subject Code: 010155

Outcome #	Outcome Name	% Items Approved by SMEs
Strand 1. Business Operations/21st Century Skills		
1.1	Employability Skills	9.5
1.2	Leadership and Communications	10.5
1.3	Business Ethics and Law	2.1
1.4	Knowledge Management and Information Technology	3.2
1.6	Business Literacy	2.1
1.9	Financial Management	2.1
1.10	Sales and Marketing	4.2
Strand 5. Structural Engineering		
5.8	Water Distribution Systems	5.3
Strand 6. Environmental Science		
6.1	Soils	10.5
6.2	Water Quality	7.4
Strand 8. Plant Science		
8.1	Plant Nutrition	9.5
8.2	Plant Reproduction	6.3
8.3	Pest Management	9.5
8.4	Growth and Management	7.4
8.5	Harvesting	9.5
8.6	Handling and Storage	1.1



Turf Science and Management

Subject Code: 010635

Outcome #	Outcome Name	% Items Approved by SMEs
Strand 1. Business Operations/21st Century Skills		
1.1	Employability Skills	1.1
1.2	Leadership and Communications	3.2
1.3	Business Ethics and Law	2.1
1.4	Knowledge Management and Information Technology	3.2
1.6	Business Literacy	0.0
1.8	Operations Management	0.0
1.9	Financial Management	1.1
1.10	Sales and Marketing	2.1
1.12	Site and Personal Safety Procedures	5.3
Strand 4. Power Systems		
4.1	Tool, Stationary and Mobile Equipment Maintenance	10.5
4.2	Equipment Operations	7.4
Strand 5. Structural Engineering		
5.3	Design and Estimate	4.2
5.8	Water Distribution Systems	9.5
Strand 6. Environmental Science		
6.1	Soils	9.5
6.2	Water Quality	5.3
Strand 8. Plant Science		
8.1	Plant Nutrition	10.5
8.2	Plant Reproduction	1.1
8.3	Pest Management	7.4
8.4	Growth and Management	16.8



Business Management for Agricultural and Environmental Systems

Subject Code: 010115

Outcome #	Outcome Name	% Items Approved by SMEs
Strand 1. Business Operations/21st Century Skills		
1.1	Employability Skills	12.6
1.2	Leadership and Communications	13.7
1.3	Business Ethics and Law	4.2
1.4	Knowledge Management and Information Technology	6.3
1.5	Global Environment	2.1
1.6	Business Literacy	14.7
1.7	Entrepreneurship/Entrepreneurs	8.4
1.8	Operations Management	12.6
1.9	Financial Management	12.6
1.10	Sales and Marketing	8.4
Strand 7. Food Science		
7.7	Biosecurity	4.2

Companion Animal Selection Nutrition and Management

Subject Code: 010925

Outcome #	Outcome Name	% Items Approved by SMEs
Strand 1. Business Operations/21st Century Skills		
1.1	Employability Skills	3.2
1.2	Leadership and Communications	5.3
1.3	Business Ethics and Law	5.3
1.6	Business Literacy	3.2
1.8	Operations Management	4.2
1.10	Sales and Marketing	7.4
1.12	Site and Personal Safety Procedures	5.3
Strand 2. Animal Science		
2.1	Nutrition	11.6
2.2	Body Systems	5.3
2.3	Care and Management	21.1
2.5	Animal Health	3.2
2.6	Population Management	11.6
2.7	Animal Behavior	10.5
Strand 7. Food Science		
7.1	The Science of Food	2.1
Strand 9. Energy		
9.3	Biomass	1.1



Environmental Science for Agriculture and Natural Resources

Subject Code: 010720

Outcome #	Outcome Name	% Items Approved by SMEs
Strand 1. Business Operations/21st Century Skills		
1.1	Employability Skills	2.1
1.2	Leadership and Communications	2.1
1.3	Business Ethics and Law	1.1
1.4	Knowledge Management and Information Technology	1.1
1.11	Principles of Business Economics	3.2
1.12	Site and Personal Safety Procedures	2.1
Strand 2. Animal Science		
2.3	Care and Management	1.1
2.4	Recognizing Diseases and Disorders	2.1
2.6	Population Management	1.1
Strand 3. Biotechnology		
3.8	Research and Experiments	11.6
Strand 6. Environmental Science		
6.1	Soils	7.4
6.2	Water Quality	4.2
6.3	Air Quality	3.2
6.4	Water Use and Management	4.2
6.5	Potable Water Treatment	2.1
6.6	Wastewater Operations	4.2
6.7	Solid Waste and Renewable Resource Management	6.3
6.8	Contaminants and Pollution Control	7.4
6.9	Hazardous Materials and Waste Management	3.2
6.10	Ecosystems	8.4
6.11	Habitat Management and Restoration	10.5
Strand 8. Plant Science		
8.3	Pest Management	3.2
Strand 9. Energy		
9.1	Energy	8.4



Equine Selection Nutrition and Management

Subject Code: 010935

Outcome #	Outcome Name	% Items Approved by SMEs
Strand 1. Business Operations/21st Century Skills		
1.1	Employability Skills	3.2
1.2	Leadership and Communications	6.3
1.3	Business Ethics and Law	4.2
1.6	Business Literacy	3.2
1.8	Operations Management	3.2
1.10	Sales and Marketing	3.2
Strand 2. Animal Science		
2.1	Nutrition	12.6
2.2	Body Systems	4.2
2.3	Care and Management	21.1
2.4	Recognizing Diseases and Disorders	6.3
2.5	Animal Health	8.4
2.6	Population Management	9.5
2.7	Animal Behavior	14.7

Zoo and Aquarium

Subject Code: 010930

Outcome #	Outcome Name	% Items Approved by SMEs
Strand 1. Business Operations/21st Century Skills		
1.1	Employability Skills	5.3
1.3	Business Ethics and Law	4.2
1.4	Knowledge Management and Information Technology	4.2
1.5	Global Environment	4.2
1.6	Business Literacy	4.2
Strand 2. Animal Science		
2.1	Nutrition	8.4
2.3	Care and Management	27.4
2.4	Recognizing Diseases and Disorders	8.4
2.6	Population Management	16.8
2.7	Animal Behavior	16.8



Energy Systems Management

Subject Code: 010715

Outcome #	Outcome Name	% Items Approved by SMEs
Strand 1. Business Operations/21st Century Skills		
1.1	Employability Skills	5.3
1.2	Leadership and Communications	5.3
1.3	Business Ethics and Law	1.1
1.4	Knowledge Management and Information Technology	2.1
1.6	Business Literacy	2.1
1.10	Sales and Marketing	1.1
1.11	Principles of Business Economics	3.2
1.12	Site and Personal Safety Procedures	6.3
Strand 3. Biotechnology		
3.8	Research and Experiments	1.1
Strand 4. Power Systems		
4.1	Tool, Stationary and Mobile Equipment Maintenance	7.4
4.2	Equipment Operations	3.2
Strand 5. Structural Engineering		
5.1	Electrical Theory	8.4
5.2	Structural Electrical Circuits	6.3
5.3	Design and Estimate	6.3
5.4	Surveying and Mapping	3.2
5.8	Water Distribution Systems	5.3
Strand 6. Environmental Science		
6.10	Ecosystems	5.3
Strand 9. Energy		
9.1	Energy	9.5
9.2	Crude Oil and Natural Gas	2.1
9.3	Biomass	5.3
9.4	Solar Energy	4.2
9.5	Wind Energy	6.3



Hydraulics and Pneumatics

Subject Code: 010225

Outcome #	Outcome Name	% Items Approved by SMEs
Strand 1. Business Operations/21st Century Skills		
1.1	Employability Skills	5.3
1.2	Leadership and Communications	4.2
1.3	Business Ethics and Law	3.2
1.4	Knowledge Management and Information Technology	3.2
1.6	Business Literacy	2.1
1.8	Operations Management	2.1
1.10	Sales and Marketing	2.1
1.12	Site and Personal Safety Procedures	17.9
Strand 4. Power Systems		
4.1	Tool, Stationary and Mobile Equipment Maintenance	9.5
4.2	Equipment Operations	5.3
4.11	Hydraulic Systems	36.8
4.12	Brakes	4.2
Strand 6. Environmental Science		
6.8	Contaminants and Pollution Control	2.1
6.9	Hazardous Materials and Waste Management	2.1



Power Sports

Subject Code: 010240

Outcome #	Outcome Name	% Items Approved by SMEs
Strand 1. Business Operations/21st Century Skills		
1.1	Employability Skills	6.3
1.2	Leadership and Communications	6.3
1.3	Business Ethics and Law	5.3
1.4	Knowledge Management and Information Technology	5.3
1.6	Business Literacy	3.2
1.8	Operations Management	2.1
1.10	Sales and Marketing	3.2
1.12	Site and Personal Safety Procedures	7.4
Strand 4. Power Systems		
4.1	Tool, Stationary and Mobile Equipment Maintenance	2.1
4.2	Equipment Operations	1.1
4.3	Engines	5.3
4.4	Lubrication and Cooling Systems	6.3
4.5	Fuel, Air Induction and Exhaust System	9.5
4.6	Ignition System	7.4
4.7	Transmission of Power	7.4
4.8	Starting and Charging Systems	5.3
4.9	Steering, Suspension and Traction	5.3
4.11	Hydraulic Systems	6.3
4.12	Brakes	5.3



Power Trains

Subject Code: 010230

Outcome #	Outcome Name	% Items Approved by SMEs
Strand 1. Business Operations/21st Century Skills		
1.1	Employability Skills	5.3
1.2	Leadership and Communications	5.3
1.3	Business Ethics and Law	5.3
1.4	Knowledge Management and Information Technology	5.3
1.6	Business Literacy	5.3
1.8	Operations Management	5.3
1.10	Sales and Marketing	5.3
1.12	Site and Personal Safety Procedures	5.3
Strand 4. Power Systems		
4.1	Tool, Stationary and Mobile Equipment Maintenance	8.4
4.2	Equipment Operations	4.2
4.7	Transmission of Power	29.5
4.10	Drive Axle Universal and Differential	15.8

Park and Recreational Management

Subject Code: 010735

Outcome #	Outcome Name	% Items Approved by SMEs
Strand 1. Business Operations/21st Century Skills		
1.1	Employability Skills	6.3
1.2	Leadership and Communications	7.4
1.3	Business Ethics and Law	5.3
1.4	Knowledge Management and Information Technology	5.3
1.6	Business Literacy	4.2
1.8	Operations Management	5.3
1.10	Sales and Marketing	5.3
1.12	Site and Personal Safety Procedures	6.3
Strand 2. Animal Science		
2.3	Care and Management	2.1
Strand 4. Power Systems		
4.1	Tool, Stationary and Mobile Equipment Maintenance	7.4
4.2	Equipment Operations	5.3
Strand 5. Structural Engineering		
5.3	Design and Estimate	7.4
5.4	Surveying and Mapping	5.3
5.6	Construction	2.1
Strand 6. Environmental Science		
6.1	Soils	6.3
6.7	Solid Waste and Renewable Resource Management	1.1
6.8	Contaminants and Pollution Control	3.2
6.9	Hazardous Materials and Waste Management	2.1
6.10	Ecosystems	8.4
6.11	Habitat Management and Restoration	2.1
Strand 7. Food Science		
7.7	Biosecurity	1.1
Strand 8. Plant Science		
8.4	Growth and Management	1.1



Forestry and Woodland Ecosystems

Subject Code: 010730

Outcome #	Outcome Name	% Items Approved by SMEs
Strand 1. Business Operations/21st Century Skills		
1.1	Employability Skills	8.4
1.2	Leadership and Communications	9.5
1.3	Business Ethics and Law	2.1
1.4	Knowledge Management and Information Technology	2.1
1.6	Business Literacy	2.1
1.10	Sales and Marketing	7.4
1.12	Site and Personal Safety Procedures	7.4
Strand 4. Power Systems		
4.1	Tool, Stationary and Mobile Equipment Maintenance	8.4
4.2	Equipment Operations	4.2
Strand 5. Structural Engineering		
5.4	Surveying and Mapping	3.2
5.5	Geographic Information Systems (GIS)	3.2
Strand 6. Environmental Science		
6.1	Soils	4.2
6.8	Contaminants and Pollution Control	3.2
6.10	Ecosystems	5.3
Strand 8. Plant Science		
8.1	Plant Nutrition	4.2
8.2	Plant Reproduction	4.2
8.3	Pest Management	4.2
8.4	Growth and Management	8.4
8.5	Harvesting	5.3
8.6	Handling and Storage	3.2



Natural Resources

Subject Code: 010710

Outcome #	Outcome Name	% Items Approved by SMEs
Strand 1. Business Operations/21st Century Skills		
1.1	Employability Skills	0.0
1.2	Leadership and Communications	2.1
1.3	Business Ethics and Law	1.1
1.4	Knowledge Management and Information Technology	0.0
1.11	Principles of Business Economics	1.1
1.12	Site and Personal Safety Procedures	2.1
Strand 2. Animal Science		
2.1	Nutrition	0.0
2.2	Body Systems	14.7
2.3	Care and Management	3.2
2.4	Recognizing Diseases and Disorders	1.1
2.7	Animal Behavior	3.2
Strand 3. Biotechnology		
3.8	Research and Experiments	1.1
Strand 5. Structural Engineering		
5.5	Geographic Information Systems (GIS)	2.1
5.8	Water Distribution Systems	2.1
Strand 6. Environmental Science		
6.1	Soils	7.4
6.2	Water Quality	7.4
6.3	Air Quality	4.2
6.4	Water Use and Management	5.3
6.5	Potable Water Treatment	2.1
6.6	Wastewater Operations	2.1
6.7	Solid Waste and Renewable Resource Management	3.2
6.8	Contaminants and Pollution Control	2.1
6.10	Ecosystems	8.4
6.11	Habitat Management and Restoration	8.4
Strand 7. Food Science		
7.7	Biosecurity	0.0
Strand 8. Plant Science		
8.1	Plant Nutrition	1.1
8.2	Plant Reproduction	3.2
8.3	Pest Management	2.1
8.4	Growth and Management	8.4



8.5	Harvesting	0.0
8.6	Handling and Storage	0.0
Strand 9. Energy		
9.1	Energy	1.1

Outdoor Power Technology

Subject Code: 010235

Outcome #	Outcome Name	% Items Approved by SMEs
Strand 1. Business Operations/21st Century Skills		
1.1	Employability Skills	3.2
1.2	Leadership and Communications	3.2
1.3	Business Ethics and Law	3.2
1.4	Knowledge Management and Information Technology	3.2
1.6	Business Literacy	3.2
1.8	Operations Management	3.2
1.10	Sales and Marketing	3.2
1.12	Site and Personal Safety Procedures	3.2
Strand 4. Power Systems		
4.1	Tool, Stationary and Mobile Equipment Maintenance	10.5
4.2	Equipment Operations	3.2
4.3	Engines*	12.6
4.4	Lubrication and Cooling Systems	3.2
4.5	Fuel, Air Induction and Exhaust System	6.3
4.6	Ignition System	1.1
4.7	Transmission of Power	1.1
4.8	Starting and Charging Systems	1.1
4.11	Hydraulic Systems	9.5
Strand 5. Structural Engineering		
5.1	Electrical Theory	10.5
5.10	Joining and Cutting Metals with Heat	10.5
5.11	Fabricating with Cold Metals	3.2
Strand 6. Environmental Science		
6.8	Contaminants and Pollution Control	2.1



Urban Forestry

Subject Code: 010740

Outcome #	Outcome Name	% Items Approved by SMEs
Strand 1. Business Operations/21st Century Skill		
1.1	Employability Skills	9.5
1.2	Leadership and Communications	11.6
1.3	Business Ethics and Law	1.1
1.4	Knowledge Management and Information Technology	6.3
1.6	Business Literacy	7.4
1.8	Operations Management	2.1
1.9	Financial Management	1.1
1.10	Sales and Marketing	4.2
1.12	Site and Personal Safety Procedures	9.5
Strand 4. Power Systems		
4.1	Tool, Stationary and Mobile Equipment Maintenance	8.4
4.2	Equipment Operations	4.2
Strand 5. Structural Engineering		
5.3	Design and Estimate	1.1
Strand 6. Environmental Science		
6.1	Soils	7.4
6.10	Ecosystems	1.1
Strand 8. Plant Science		
8.1	Plant Nutrition	4.2
8.3	Pest Management	7.4
8.4	Growth and Management	13.7



Wildlife and Fisheries

Subject Code: 010745

Outcome #	Outcome Name	% Items Approved by SMEs
Strand 1. Business Operations/21st Century Skill		
1.1	Employability Skills	0.0
1.2	Leadership and Communications	2.1
1.3	Business Ethics and Law	1.1
1.4	Knowledge Management and Information Technology	0.0
1.11	Principles of Business Economics	1.1
1.12	Site and Personal Safety Procedures	3.2
Strand 2. Animal Science		
2.1	Nutrition	3.2
2.2	Body Systems	14.7
2.3	Care and Management	8.4
2.4	Recognizing Diseases and Disorders	6.3
2.5	Animal Health	1.1
2.6	Population Management	1.1
2.7	Animal Behavior	6.3
Strand 3. Biotechnology		
3.8	Research and Experiments	12.6
Strand 4. Power Systems		
4.1	Tool, Stationary and Mobile Equipment Maintenance	4.2
4.2	Equipment Operations	1.1
Strand 5. Structural Engineering		
5.4	Surveying and Mapping	1.1
5.5	Geographic Information Systems (GIS)	2.1
Strand 6. Environmental Science		
6.2	Water Quality	6.3
6.4	Water Use and Management	2.1
6.10	Ecosystems	8.4
6.11	Habitat Management and Restoration	10.5
Strand 7. Food Science		
7.7	Biosecurity	1.1
Strand 8. Plant Science		
8.4	Growth and Management	2.1



Bio Energy

Subject Code: 010716

Outcome #	Outcome Name	% Items Approved by SMEs
Strand 1. Business Operations/21st Century Skill		
1.1	Employability Skills	8.4
1.2	Leadership and Communications	3.2
1.3	Business Ethics and Law	5.3
1.4	KM & IT	5.3
1.6	Business Literacy	3.2
1.10	Sales and Marketing	4.2
1.11	Principles of Business Economics	4.2
1.12	Site and Personal Safety Procedures	7.4
Strand 3. Biotechnology		
3.1	Handling, Preparation, Storage and Disposal	5.3
3.2	Foundations of Chemistry	7.4
3.7	Bioreactor Technologies	4.2
3.8	Research and Experiments	9.5
Strand 6. Environmental Science		
6.8	Contaminants and Pollution Control	3.2
6.9	Hazardous Materials and Waste Management	3.2
Strand 8. Plant Science		
8.5	Harvesting	4.2
8.6	Handling and Storage	7.4
Strand 9. Energy		
9.1	Energy	7.4
9.3	Biomass	7.4

