

End of Course (EOC) Bank Blueprints

Agribusiness and Production Systems

Table of Contents

| | |
|--|----|
| Table of Contents | 1 |
| About Test Blueprints | 2 |
| Agriculture Food and Natural Resources | 3 |
| Animal and Plant Science..... | 4 |
| Mechanical Principles..... | 5 |
| Science & Technology of Food | 6 |
| Animal and Plant Biotechnology..... | 7 |
| Greenhouse and Nursery Management..... | 8 |
| Forestry and Woodland Ecosystems | 9 |
| Business Management for Agricultural and Environmental Systems | 10 |
| Agronomic Systems..... | 11 |
| Global Economics and Food Markets | 13 |
| Animal Anatomy and Physiology | 14 |
| Animal Health..... | 15 |
| Livestock Selection Nutrition and Management..... | 16 |
| Meat Science and Technology | 17 |
| Energy Systems Management | 18 |
| Environmental Science for Agriculture and Natural Resources | 19 |

To learn more call 614-292-6869
or visit us at
cete.osu.edu/expertise/assessment

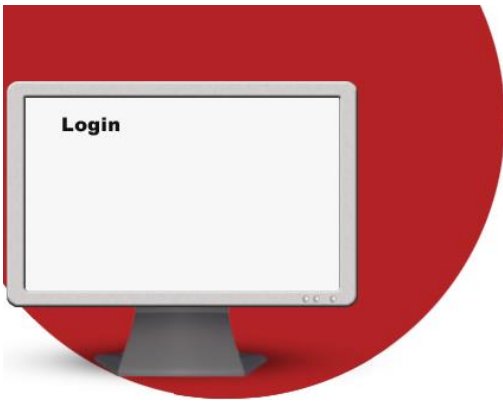




About Test Blueprints

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 review the blueprint as a large group before item writing for a specific EOC test. There and in small groups, SMEs review the course outline and have the ability to make changes to the blueprint with a documented rationale based on their experience and expertise.
3. Any revisions during small group work must be approved by the larger panel of SMEs attending an item writing workshop, which is the last step and produces the final blueprint which is summarized in this document.



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 structure of 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 newer process for producing test blueprints was implemented October 1, 2015. Item banks created prior to this date were completed under a different blueprint process and therefore we are looking backward to provide the structure of the item bank. As revisions are completed for those career fields, for example Information Technology (2017-18), the blueprint process used will be the newer model.

Learn more at cete.osu.edu/expertise/assessment

Agriculture Food and Natural Resources

ODE Subject Code: 010105

| Outcome # | Outcome Name | % Items Approved by SMEs |
|--|---|--------------------------|
| Strand 1. Business Operations/21st Century Skills | | |
| 1.2. | Leadership and Communications | 2.22 |
| 1.4. | Knowledge Management and Information Technology | 1.11 |
| 1.6. | Business Literacy | 1.11 |
| 1.9. | Financial Management | 2.22 |
| 1.12. | Site and Personal Safety Procedures | 8.89 |
| Strand 2. Animal Science | | |
| 2.3. | Care and Management | 13.33 |
| Strand 3. Biotechnology | | |
| 3.1. | Handling, Preparation, Storage and Disposal | 3.33 |
| 3.4. | Molecular-Genetics Technology | 5.56 |
| 3.6. | Culturing | 3.33 |
| Strand 4. Power Systems | | |
| 4.1. | Tool, Stationary and Mobile Equipment Maintenance | 1.11 |
| 4.3. | Engines | 5.56 |
| Strand 5. Structural Engineering | | |
| 5.3. | Design and Estimate | 3.33 |
| 5.6. | Construction | 5.56 |
| 5.10. | Joining and Cutting Metals with Heat | 3.33 |
| Strand 6. Environmental Science | | |
| 6.1. | Soils | 11.11 |
| 6.2. | Water Quality | 3.33 |
| 6.11 | Habitat Management and Restoration | 3.33 |
| Strand 7. Food Sciences | | |
| 7.2. | Quality Assurance | 3.33 |
| 7.5. | Food Product Development | 3.33 |
| Strand 8. Plant Science | | |
| 8.1. | Plant Nutrition | 4.44 |
| 8.4. | Growth and Management | 5.56 |
| Strand 9. Energy | | |
| 9.1. | Energy | 5.56 |



Animal and Plant Science

ODE Subject Code: 010125

| Outcome # | Outcome Name | % Items Approved by SMEs |
|--|------------------------------------|--------------------------|
| Strand 1. Business Operations/21st Century Skills | | |
| 1.3. | Business Ethics and Law | 2.30 |
| 1.6. | Business Literacy | 2.30 |
| 1.8. | Operations Management | 1.15 |
| 1.9. | Financial Management | 1.15 |
| 1.10. | Sales and Marketing | 1.15 |
| Strand 2. Animal Science | | |
| 2.1. | Nutrition | 4.60 |
| 2.2. | Body Systems | 11.49 |
| 2.3. | Care and Management | 5.75 |
| 2.4. | Recognizing Diseases and Disorders | 2.30 |
| 2.5. | Animal Health | 4.60 |
| 2.6. | Population Management | 5.75 |
| 2.7. | Animal Behavior | 4.60 |
| Strand 6. Environmental Science | | |
| 6.1. | Soils | 5.75 |
| 6.2. | Water Quality | 6.90 |
| 6.3. | Air Quality | 3.45 |
| 6.4. | Water Use and Management | 2.30 |
| Strand 7. Food Sciences | | |
| 7.5. | Food Product Development | 1.15 |
| Strand 8. Plant Science | | |
| 8.1. | Plant Nutrition | 6.90 |
| 8.2. | Plant Reproduction | 5.75 |
| 8.3. | Pest Management | 3.45 |
| 8.4. | Growth and Management | 12.64 |
| 8.5. | Harvesting | 4.60 |



Mechanical Principles

ODE Subject Code: 010120

| Outcome # | Outcome Name | % Items Approved by SMEs |
|--|---|--------------------------|
| Strand 1. Business Operations/21st Century Skills | | |
| 1.1. | Employability Skills | 1.06 |
| 1.2. | Leadership and Communications | 4.26 |
| 1.12. | Site and Personal Safety Procedures | 6.38 |
| Strand 4. Power Systems | | |
| 4.1. | Tool, Stationary and Mobile Equipment Maintenance | 7.45 |
| 4.2. | Equipment Operations | 4.26 |
| 4.3. | Engines | 13.83 |
| 4.4. | Lubrication and Cooling Systems | 2.13 |
| 4.5. | Fuel, Air Induction and Exhaust System | 1.06 |
| 4.11. | Hydraulic Systems | 7.45 |
| Strand 5. Structural Engineering | | |
| 5.1. | Electrical Theory | 11.70 |
| 5.2. | Structural Electrical Circuits | 5.32 |
| 5.3. | Design and Estimate | 7.45 |
| 5.6. | Construction | 6.38 |
| 5.8. | Water Distribution Systems | 8.51 |
| 5.9. | Physics and Metallurgy of Welding | 2.13 |
| 5.10. | Joining and Cutting Metals with Heat | 6.38 |
| 5.11. | Fabricating with Cold Metals | 4.26 |



Science & Technology of Food

ODE Subject Code: 011010

| Outcome # | Outcome Name | % Items Approved by SMEs |
|--|--|--------------------------|
| Strand 1. Business Operations/21st Century Skills | | |
| 1.3. | Business Ethics and Law | 3.61 |
| Strand 3. Biotechnology | | |
| 3.2. | Foundations of Chemistry | 7.23 |
| 3.3. | Microbiology Testing and Technology | 4.82 |
| 3.5. | Laboratory Standard Operational Procedures | 4.82 |
| 3.6. | Culturing | 3.61 |
| 3.8. | Research and Experiments | 10.84 |
| Strand 7. Food Sciences | | |
| 7.1. | The Science of Food | 26.51 |
| 7.2. | Quality Assurance | 3.61 |
| 7.4. | Food Production and Processing | 10.84 |
| 7.5. | Food Product Development | 10.84 |
| 7.6. | Food Safety and Sanitation | 6.02 |
| 7.7. | Biosecurity | 7.23 |



Animal and Plant Biotechnology

ODE Subject Code: 012010

| Outcome # | Outcome Name | % Items Approved by SMEs |
|--|---|--------------------------|
| Strand 1. Business Operations/21st Century Skills | | |
| 1.1. | Employability Skills | 15.12 |
| 1.2. | Leadership and Communications | 5.81 |
| 1.3. | Business Ethics and Law | 3.49 |
| 1.4. | Knowledge Management and Information Technology | 3.49 |
| 1.5. | Global Environment | 4.65 |
| 1.10. | Sales and Marketing | 4.65 |
| 1.12. | Site and Personal Safety Procedures | 5.81 |
| Strand 3. Biotechnology | | |
| 3.2. | Foundations of Chemistry | 4.65 |
| 3.3. | Microbiology Testing and Technology | 4.65 |
| 3.4. | Molecular-Genetics Technology | 20.93 |
| 3.5. | Laboratory Standard Operational Procedures | 6.98 |
| 3.6. | Culturing | 5.81 |
| 3.8. | Research and Experiments | 6.98 |
| Strand 4. Power Systems | | |
| 4.1. | Tool, Stationary and Mobile Equipment Maintenance | 2.33 |
| Strand 7. Food Sciences | | |
| 7.7. | Biosecurity | 4.65 |



Greenhouse and Nursery Management

ODE Subject Code: 010610

| Outcome # | Outcome Name | % Items Approved by SMEs |
|--|---|--------------------------|
| Strand 1. Business Operations/21st Century Skills | | |
| 1.1. | Employability Skills | 11.83 |
| 1.2. | Leadership and Communications | 1.08 |
| 1.4. | Knowledge Management and Information Technology | 2.15 |
| 1.6. | Business Literacy | 3.23 |
| 1.8. | Operations Management | 3.23 |
| 1.9. | Financial Management | 2.15 |
| 1.10. | Sales and Marketing | 5.38 |
| 1.12. | Site and Personal Safety Procedures | 3.23 |
| Strand 3. Biotechnology | | |
| 3.8. | Research and Experiments | 2.15 |
| Strand 5. Structural Engineering | | |
| 5.1. | Electrical Theory | 3.23 |
| 5.2. | Structural Electrical Circuits | 2.15 |
| Strand 6. Environmental Science | | |
| 6.1. | Soils | 4.30 |
| 6.2. | Water Quality | 3.23 |
| 6.7. | Solid Waste and Renewable Resource Management | 3.23 |
| Strand 7. Food Sciences | | |
| 7.7. | Biosecurity | 3.23 |
| Strand 8. Plant Science | | |
| 8.1. | Plant Nutrition | 12.90 |
| 8.2. | Plant Reproduction | 6.45 |
| 8.3. | Pest Management | 6.45 |
| 8.4. | Growth and Management | 15.05 |
| 8.5. | Harvesting | 2.15 |
| 8.6. | Handling and Storage | 3.23 |



Forestry and Woodland Ecosystems

ODE Subject Code: 010730

| Outcome # | Outcome Name | % Items Approved by SMEs |
|--|---|--------------------------|
| Strand 1. Business Operations/21st Century Skills | | |
| 1.1. | Employability Skills | 6.17 |
| 1.2. | Leadership and Communications | 9.88 |
| 1.3. | Business Ethics and Law | 1.23 |
| 1.4. | Knowledge Management and Information Technology | 2.47 |
| 1.6. | Business Literacy | 2.47 |
| 1.10. | Sales and Marketing | 6.17 |
| 1.12. | Site and Personal Safety Procedures | 8.64 |
| Strand 4. Power Systems | | |
| 4.1. | Tool, Stationary and Mobile Equipment Maintenance | 7.41 |
| 4.2. | Equipment Operations | 4.94 |
| Strand 5. Structural Engineering | | |
| 5.4. | Surveying and Mapping | 2.47 |
| 5.5. | Geographic Information Systems (GIS) | 1.23 |
| Strand 6. Environmental Science | | |
| 6.1. | Soils | 4.94 |
| 6.8. | Contaminants and Pollution Control | 3.70 |
| 6.10. | Ecosystems | 6.17 |
| Strand 8. Plant Science | | |
| 8.1. | Plant Nutrition | 4.94 |
| 8.2. | Plant Reproduction | 2.47 |
| 8.3. | Pest Management | 6.17 |
| 8.4. | Growth and Management | 9.88 |
| 8.5. | Harvesting | 6.17 |
| 8.6. | Handling and Storage | 2.47 |



Business Management for Agricultural and Environmental Systems

ODE Subject Code: 010115

| Outcome # | Outcome Name | % Items Approved by SMEs |
|--|---|--------------------------|
| Strand 1. Business Operations/21st Century Skills | | |
| 1.1. | Employability Skills | 12.64 |
| 1.2. | Leadership and Communications | 13.79 |
| 1.3. | Business Ethics and Law | 5.75 |
| 1.4. | Knowledge Management and Information Technology | 4.60 |
| 1.5. | Global Environment | 1.15 |
| 1.6. | Business Literacy | 14.94 |
| 1.7. | Entrepreneurship/Entrepreneurs | 8.05 |
| 1.8. | Operations Management | 10.34 |
| 1.9. | Financial Management | 17.24 |
| 1.10. | Sales and Marketing | 6.90 |
| Strand 7. Food Sciences | | |
| 7.7. | Biosecurity | 4.60 |



Agronomic Systems

ODE Subject Code: 010620

| Outcome # | Outcome Name | % Items Approved by SMEs |
|--|---|--------------------------|
| Strand 1. Business Operations/21st Century Skills | | |
| 1.1. | Employability Skills | 1.90 |
| 1.2. | Leadership and Communications | 1.90 |
| 1.3. | Business Ethics and Law | 1.90 |
| 1.4. | Knowledge Management and Information Technology | 1.90 |
| 1.6. | Business Literacy | 2.86 |
| 1.8. | Operations Management | 4.76 |
| 1.9. | Financial Management | 1.90 |
| 1.12. | Site and Personal Safety Procedures | 4.76 |
| Strand 3. Biotechnology | | |
| 3.8. | Research and Experiments | 0.95 |
| Strand 4. Power Systems | | |
| 4.1. | Tool, Stationary and Mobile Equipment Maintenance | 3.81 |
| 4.2. | Equipment Operations | 1.90 |
| Strand 5. Structural Engineering | | |
| 5.4. | Surveying and Mapping | 2.86 |
| 5.5. | Geographic Information Systems (GIS) | 1.90 |
| Strand 6. Environmental Science | | |
| 6.1. | Soils | 8.57 |
| 6.2. | Water Quality | 3.81 |
| 6.3. | Air Quality | 1.90 |
| 6.7. | Solid Waste and Renewable Resource Management | 2.86 |
| 6.8. | Contaminants and Pollution Control | 1.90 |
| 6.9. | Hazardous Materials and Waste Management | 2.86 |
| 6.10. | Ecosystems | 6.67 |
| 6.11 | Habitat Management and Restoration | 1.90 |
| Strand 7. Food Sciences | | |
| 7.1. | The Science of Food | 1.90 |
| 7.7. | Biosecurity | 1.90 |
| Strand 8. Plant Science | | |
| 8.1. | Plant Nutrition | 9.52 |
| 8.2. | Plant Reproduction | 3.81 |
| 8.3. | Pest Management | 3.81 |
| 8.4. | Growth and Management | 6.67 |



| | | |
|------|----------------------|------|
| 8.5. | Harvesting | 6.67 |
| 8.6. | Handling and Storage | 1.90 |



Global Economics and Food Markets

ODE Subject Code: 010130

| Outcome # | Outcome Name | % Items Approved by SMEs |
|--|----------------------------------|--------------------------|
| Strand 1. Business Operations/21st Century Skills | | |
| 1.7. | Entrepreneurship/Entrepreneurs | 7.27 |
| 1.8. | Operations Management | 10.91 |
| 1.9. | Financial Management | 7.27 |
| 1.11. | Principles of Business Economics | 10.91 |
| Strand 2. Animal Science | | |
| 2.3. | Care and Management | 9.09 |
| 2.6. | Population Management | 5.45 |
| Strand 7. Food Sciences | | |
| 7.3. | Meat Science | 5.45 |
| 7.5. | Food Product Development | 5.45 |
| Strand 8. Plant Science | | |
| 8.4. | Growth and Management | 5.45 |
| 8.5. | Harvesting | 9.09 |
| 8.6. | Handling and Storage | 5.45 |



Animal Anatomy and Physiology

ODE Subject Code: 010945

| Outcome # | Outcome Name | % Items Approved by SMEs |
|--|-------------------------------------|--------------------------|
| Strand 1. Business Operations/21st Century Skills | | |
| 1.12. | Site and Personal Safety Procedures | 11.22 |
| Strand 2. Animal Science | | |
| 2.2. | Body Systems | 67.35 |
| 2.4. | Recognizing Disease and Disorders | 4.08 |
| 2.6. | Population Management | 6.12 |
| 2.7. | Animal Behavior | 11.22 |



Animal Health

ODE Subject Code: 010915

| Outcome # | Outcome Name | % Items Approved by SMEs |
|--|------------------------------------|--------------------------|
| Strand 1. Business Operations/21st Century Skills | | |
| 1.2. | Leadership and Communications | 3.26 |
| Strand 2. Animal Science | | |
| 2.1. | Nutrition | 14.13 |
| 2.2. | Body Systems | 9.78 |
| 2.3. | Care and Management | 15.22 |
| 2.4. | Recognizing Diseases and Disorders | 18.48 |
| 2.5. | Animal Health | 15.22 |
| 2.6. | Population Management | 4.35 |
| 2.7. | Animal Behavior | 10.87 |
| Strand 3. Biotechnology | | |
| 3.8. | Research and Experiments | 4.35 |
| Strand 7. Food Sciences | | |
| 7.7. | Biosecurity | 4.35 |



Livestock Selection Nutrition and Management

ODE Subject Code: 010920

| Outcome # | Outcome Name | % Items Approved by SMEs |
|--|---|--------------------------|
| Strand 1. Business Operations/21st Century Skills | | |
| 1.6. | Business Literacy | 1.01 |
| 1.8. | Operations Management | 1.01 |
| 1.11. | Principles of Business Economic | 1.01 |
| Strand 2. Animal Science | | |
| 2.1. | Nutrition | 17.17 |
| 2.2. | Body Systems | 13.13 |
| 2.3. | Care and Management | 11.11 |
| 2.4. | Recognizing Diseases and Disorders | 4.04 |
| 2.5. | Animal Health | 3.03 |
| 2.6. | Population Management | 11.11 |
| 2.7. | Animal Behavior | 11.11 |
| Strand 3. Biotechnology | | |
| 3.4. | Molecular-Genetics Technology | 4.04 |
| Strand 6. Environmental Science | | |
| 6.7. | Solid Waste and Renewable Resource Management | 3.03 |
| Strand 7. Food Science | | |
| 7.1. | The Science of Food | 3.03 |
| 7.2. | Quality Assurance | 3.03 |
| 7.3. | Meat Science | 4.04 |
| 7.7. | Biosecurity | 6.06 |
| Strand 9. Energy | | |
| 9.3. | Biomass | 3.03 |



Meat Science and Technology

ODE Subject Code: 011020

| Outcome # | Outcome Name | % Items Approved by SMEs |
|--|---|--------------------------|
| Strand 1. Business Operations/21st Century Skills | | |
| 1.2. | Leadership and Communications | 2.33 |
| 1.3. | Business Ethics and Law | 4.65 |
| 1.6. | Business Literacy | 2.33 |
| 1.8. | Operations Management | 2.33 |
| 1.9. | Financial Management | 2.33 |
| 1.10. | Sales and Marketing | 4.65 |
| 1.12. | Site and Personal Safety Procedures | 10.47 |
| Strand 4. Power Systems | | |
| 4.1. | Tool, Stationary and Mobile Equipment Maintenance | 10.47 |
| 4.2. | Equipment Operations | 6.98 |
| Strand 6. Environmental Science | | |
| 6.7. | Solid Waste and Renewable Resource Management | 2.33 |
| Strand 7. Plant Science | | |
| 7.1. | The Science of Food | 9.30 |
| 7.3. | Meat Science | 11.63 |
| 7.4. | Food Production and Processing | 9.30 |
| 7.5. | Food Product Development | 2.33 |
| 7.6. | Food Safety and Sanitation | 12.79 |
| 7.7. | Biosecurity | 5.81 |



Energy Systems Management

ODE Subject Code: 010715

| Outcome # | Outcome Name | % Items Approved by SMEs |
|--|---|--------------------------|
| Strand 1. Business Operations/21st Century Skills | | |
| 1.1. | Employability Skills | 6.67 |
| 1.2. | Leadership and Communications | 6.67 |
| 1.3. | Business Ethics and Law | 1.33 |
| 1.4. | Knowledge Management and Information Technology | 2.67 |
| 1.6. | Business Literacy | 2.67 |
| 1.10. | Sales and Marketing | 1.33 |
| 1.11. | Principles of Business Economics | 4.00 |
| 1.12. | Site and Personal Safety Procedures | 8.00 |
| Strand 3. Biotechnology | | |
| 3.8. | Research and Experiments | 1.33 |
| Strand 4. Power Systems | | |
| 4.1. | Tool, Stationary and Mobile Equipment Maintenance | 9.33 |
| 4.2. | Equipment Operations | 4.00 |
| Strand 5. Structural Engineering | | |
| 5.1. | Electrical Theory | 10.67 |
| 5.2. | Structural Electrical Circuits | 6.67 |
| 5.3. | Design and Estimate | 8.00 |
| 5.4. | Surveying and Mapping | 4.00 |
| 5.8. | Water Distribution Systems | 6.67 |
| Strand 6. Environmental Science | | |
| 6.10. | Ecosystems | 2.67 |
| Strand 9. Energy | | |
| 9.1. | Energy Source | 12.00 |
| 9.2. | Crude Oil and Natural Gas | 4.00 |
| 9.3. | Biomass | 5.33 |
| 9.4. | Solar Energy | 5.33 |
| 9.5. | Wind Energy | 8.00 |



Environmental Science for Agriculture and Natural Resources

ODE Subject Code: 010720

| Outcome # | Outcome Name | % Items Approved by SMEs |
|--|---|--------------------------|
| Strand 1. Business Operations/21st Century Skills | | |
| 1.1. | Employability Skills | 2.13 |
| 1.2. | Leadership and Communications | 3.19 |
| 1.3. | Business Ethics and Law | 1.06 |
| 1.11. | Principles of Business Economic | 3.19 |
| 1.12. | Site and Personal Safety Procedures | 2.13 |
| Strand 2. Animal Science | | |
| 2.3. | Care and Management | 1.06 |
| 2.4. | Recognizing Diseases and Disorders | 2.13 |
| 2.6. | Population Management | 1.06 |
| Strand 3. Biotechnology | | |
| 3.8. | Research and Experiments | 9.57 |
| Strand 6. Environmental Science | | |
| 6.1. | Soils | 7.45 |
| 6.2. | Water Quality | 5.32 |
| 6.3. | Air Quality | 3.19 |
| 6.4. | Water Use and Management | 3.19 |
| 6.5. | Potable Water Treatment | 2.13 |
| 6.6. | Wastewater Operations | 5.32 |
| 6.7. | Solid Waste and Renewable Resource Management | 7.45 |
| 6.8. | Contaminants and Pollution Control | 7.45 |
| 6.9. | Hazardous Materials and Waste Management | 5.32 |
| 6.10. | Ecosystems | 8.51 |
| 6.11 | Habitat Management and Restoration | 8.51 |
| Strand 8. Plant Science | | |
| 8.3. | Pest Management | 2.13 |
| Strand 9. Energy | | |
| 9.1. | Energy Source | 8.51 |