

**AGRICULTURE, FOOD AND NATURAL
RESOURCES (AFNR) CAREER CLUSTER**

EXAMPLE CROSSWALKS

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Agriculture, Food and Natural Resources Content Standards

Example Crosswalks

A goal of the 2015 revision of the Agriculture, Food and Natural Resource Career Cluster Content Standards was to identify strategies for encouraging the adoption and use of this body of work. In addition to the revisions to update the technical content and improve clarity and consistency, the AFNR content standards were also cross-walked with several key frameworks to assist with state and local implementation.

Standards in the following key frameworks were cross-walked to the performance indicators in the AFNR Career Cluster Content Standards:

Common Core English Language Arts & Literacy

English Language Arts Standards. (2010, June 2). Retrieved February 25, 2015, from <http://www.corestandards.org/ELA-Literacy/>.

Common Core Mathematics

Mathematics Standards. (2010, June 2). Retrieved February 25, 2015, from <http://www.corestandards.org/Math/>.

Next Generation Science Standards

DCI Arrangements of Standards | Next Generation Science Standards. (2013, November). Retrieved February 25, 2015, from <http://www.nextgenscience.org/search-standards-dci>.

Green/Sustainability Knowledge and Skill Statements

Proposed Green/Sustainability Knowledge And Skill Statements. Version 2. 2012. Web. 25 Feb. 2015.

National Standards For Financial Literacy

National Standards For Financial Literacy. New York: Council for Economic Education, 2013. Web. 25 Feb. 2015.

In order for a crosswalk to be established, the content of the cross-walked standard must be **explicitly** taught in order to attain the related Performance Indicator in the AFNR Content Standards given the stated sample measurements. Educators in the field of science, math and language arts reviewed and provided formative feedback on all crosswalks to help confirm their face validity.

The crosswalks identified are not a finite list of all potential crosswalks. They are based upon the **sample** measurements identified for each of the performance indicators. If states or local educators edit or add to the stated sample measurements to meet local needs or emphasize specific academic content additional crosswalks may be identified.

AFNR CLUSTER SKILLS



Agriculture, Food and Natural Resources Content Standards

Example Crosswalks | AFNR Cluster Skills (CS)

| Alignment Key | Green/Sustainability Knowledge and Skill Statements (KSS) | Common Core English Language Arts/Literacy Standards (ELA) | Common Core Mathematics Standards (MATH) | Next Generation Science Standards (NGSS) | National Standards for Financial Literacy (NSFL) |
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CS.01. CCTC Standard: Analyze how issues, trends, technologies and public policies impact systems in the Agriculture, Food & Natural Resources Career Cluster.

CS.01.01. Performance Indicator: Research, examine and discuss issues and trends that impact AFNR systems on local, state, national and global levels.

CS.01.02. Performance Indicator: Examine technologies and analyze their impact on AFNR systems.

CS.01.03. Performance Indicator: Identify public policies and examine their impact on AFNR systems.

CS.02. CCTC Standard: Evaluate the nature and scope of the Agriculture, Food and Natural Resources Career Cluster and the role of agriculture, food and natural resources (AFNR) in society and the economy.

CS.02.01. Performance Indicator: Research and use geographic and economic data to solve problems in AFNR systems.

CS.02.02. Performance Indicator: Examine the components of the AFNR systems and assess their impact on the local, state, national and global society and economy.

CS.03. CCTC Standard: Examine and summarize the importance of health, safety and environmental management systems in AFNR business.

CS.03.01. Performance Indicator: Identify and explain the implications of required regulations to maintain and improve safety, health and environmental management systems.

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CS.03.02. Performance Indicator: Develop and implement a plan to maintain and improve health, safety and environmental compliance and performance.

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| KSS | AFNR Career Cluster, Statement 6 |
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CS.03.03. Performance Indicator: Apply health and safety practices to AFNR workplaces.

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CS.03.04. Performance Indicator: Use appropriate protective equipment and demonstrate safe and proper use of AFNR tools and equipment.

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CS.04. CCTC Standard: Demonstrate stewardship of natural resources in AFNR activities.

CS.04.01. Performance Indicator: Identify and implement practices to steward natural resources in different AFNR systems.

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| KSS | AFNR Career Cluster, Statement 2 AFNR Career Cluster, Statement 3 |
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CS.04.02. Performance Indicator: Assess and explain the natural resource related trends, technologies and policies that impact AFNR systems.

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| KSS | AFNR Career Cluster, Statement 7 |
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CS.05. CCTC Standard: Describe career opportunities and means to achieve those opportunities in each of the Agriculture, Food and Natural Resources Career Pathways.

CS.05.01. Performance Indicator: Evaluate and implement the steps and requirements to pursue a career opportunity in each of the AFNR career pathways (e.g., goals, degrees, certifications, resumes, cover letter, portfolios, interviews, etc.).

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CS.05.02. Performance Indicator: Examine and choose career opportunities that are matched to personal skills, talents, and career goals in an AFNR pathway of interest.

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CS.06. CCTC Standard: Analyze the interaction among AFNR systems in the production, processing and management of food, fiber and fuel and the sustainable use of natural resources.

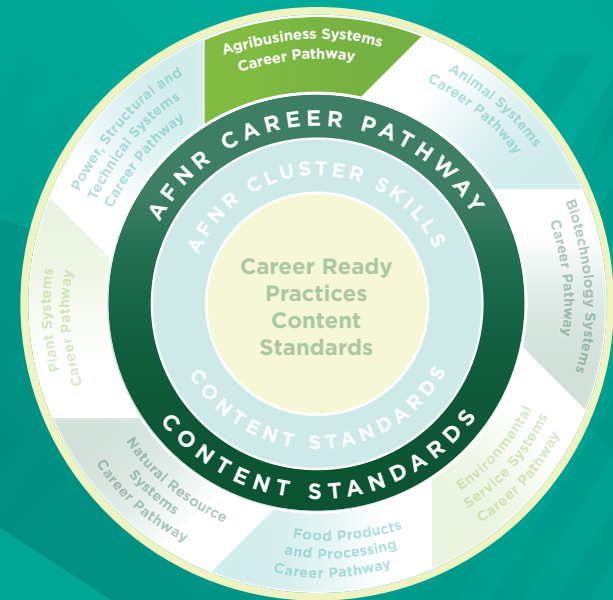
CS.06.01. Performance Indicator: Examine and explain foundational cycles and systems of AFNR.

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CS.06.02. Performance Indicator: Analyze and explain the connection and relationships between different AFNR systems on a national and global level.

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AGRIBUSINESS SYSTEMS CAREER PATHWAY



Agriculture, Food and Natural Resources Content Standards

Example Crosswalks | Agribusiness Systems (ABS)

| Alignment Key | Green/Sustainability Knowledge and Skill Statements (KSS) | Common Core English Language Arts/Literacy Standards (ELA) | Common Core Mathematics Standards (MATH) | Next Generation Science Standards (NGSS) | National Standards for Financial Literacy (NSFL) |
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|---------------|---|--|--|--|--|

ABS.01. CCTC Standard: Apply management planning principles in AFNR businesses.

ABS.01.01. Performance Indicator: Apply micro- and macroeconomic principles to plan and manage inputs and outputs in an AFNR business.

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| ELA | CCSS.ELA-Literacy.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 |
| MATH | CCSS.MATH.CONTENT.HSS.ID.C.7 CCSS.MATH.CONTENT.HSS.IC.B.6 |
| NSFL | Financial Investing: Benchmarks: Grade 12, Statement 9 |

ABS.01.02. Performance Indicator: Read, interpret, evaluate and write statements of purpose to guide business goals, objectives and resource allocation.

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|-----|---|
| ELA | CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.W.9-10.9 CCSS.ELA-LITERACY.W.11-12.9 CCSS.ELA-LITERACY.RI.9-10.4 CCSS.ELA-LITERACY.RI.11-12.4 |
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ABS.01.03. Performance Indicator: Devise and apply management skills to organize and run an AFNR business in an efficient, legal and ethical manner.

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| ELA | CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 |
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ABS.01.04. Performance Indicator: Evaluate, develop and implement procedures used to recruit, train and retain productive human resources for AFNR businesses.

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| ELA | <p>CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.W.9-10.9 CCSS.ELA-LITERACY.W.11-12.9 CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 CCSS.ELA-LITERACY.RI.9-10.4 CCSS.ELA-LITERACY.RI.11-12.4 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4</p> |
| NSFL | <p>Earning Income: Benchmarks: Grade 12, Statements 1 Earning Income: Benchmarks: Grade 12, Statements 2 Earning Income: Benchmarks: Grade 12, Statements 4 Protecting and Insuring: Benchmarks: Grade 12, Statements 8 Protecting and Insuring: Benchmarks: Grade 12, Statements 9 Protecting and Insuring: Benchmarks: Grade 12, Statements 10 Protecting and Insuring: Benchmarks: Grade 12, Statements 12</p> |

ABS.02. CCTC Standard: Use record keeping to accomplish AFNR business objectives, manage budgets and comply with laws and regulations.

ABS.02.01. Performance Indicator: Apply fundamental accounting principles, systems, tools and applicable laws and regulations to record, track and audit AFNR business transactions (e.g., accounts, debits, credits, assets, liabilities, equity, etc.).

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| MATH | <p>CCSS.MATH.CONTENT.HSS.IC.B.6 CCSS.MATH.CONTENT.HSN.Q.A.1</p> |
| NSFL | <p>Earning Income: Benchmarks: Grade 12, Statements 7 Earning Income: Benchmarks: Grade 12, Statements 8</p> |

ABS.02.02. Performance Indicator: Assemble, interpret and analyze financial information and reports to monitor AFNR business performance and support decision-making (e.g., income statements, balance sheets, cash-flow analysis, inventory reports, break-even analysis, return on investment, taxes, etc.).

| | |
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| ELA | <p>CCSS.ELA-LITERACY.W.9-10.9 CCSS.ELA-LITERACY.W.11-12.9 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7</p> |
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|---|---|
| MATH | CCSS.MATH.CONTENT.HSS.ID.C.7 CCSS.MATH.CONTENT.HSS.IC.B.6 CCSS.MATH.CONTENT.HSN.Q.A.1 |
| NSFL | Savings: Benchmarks: Grade 12, Statements 3 Savings: Benchmarks: Grade 12, Statements 4 Savings: Benchmarks: Grade 12, Statements 6 Savings: Benchmarks: Grade 12, Statements 7 Financial Investing: Benchmarks: Grade 12, Statement 2 |
| ABS.03. CCTC Standard: Manage cash budgets, credit budgets and credit for an AFNR business using generally accepted accounting principles. | |
| ABS.03.01. Performance Indicator: Develop, assess and manage cash budgets to achieve AFNR business goals. | |
| ELA | CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA- LITERACY.L.9-10.6 CCSS.ELA-LITERACY. L.11-12.6 CCSS.ELA- LITERACY.RST.9-10.4 CCSS.ELA- LITERACY.RST.11-12.4 |
| MATH | CCSS.MATH.CONTENT.HSS.IC.B.6 |
| ABS.03.02. Performance Indicator: Analyze credit needs and manage credit budgets to achieve AFNR business goals. | |
| ELA | CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 |
| MATH | CCSS.MATH.CONTENT.HSS.IC.B.6 |
| NSFL | Using Credit: Benchmarks: Grade 12, Statements 1 Using Credit: Benchmarks: Grade 12, Statements 2 Using Credit: Benchmarks: Grade 12, Statements 3 Using Credit: Benchmarks: Grade 12, Statements 4 Using Credit: Benchmarks: Grade 12, Statements 5 Using Credit: Benchmarks: Grade 12, Statements 6 Using Credit: Benchmarks: Grade 12, Statements 12 Using Credit: Benchmarks: Grade 12, Statements 13 Financial Investing: Benchmarks: Grade12, Statement 9 |

ABS.04. CCTC Standard: Develop a business plan for an AFNR business.

ABS.04.01. Performance Indicator: Analyze characteristics and planning requirements associated with developing business plans for different types of AFNR businesses.

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| ELA | CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.W.9-10.9 CCSS.ELA-LITERACY.W.11-12.9 |
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ABS.04.02. Performance Indicator: Develop production and operational plans for an AFNR business.

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| KSS | AFNR Career Cluster - Agribusiness Systems Pathway, Statement 3 |
| ELA | CCSS.ELA-LITERACY.ELA-W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 |

ABS.04.03. Performance Indicator: Identify and apply strategies to manage or mitigate risk.

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| NSFL | Financial Investing: Benchmarks: Grade 12, Statement 11 Protecting and Insuring: Benchmarks: Grade 12, Statements 2 Protecting and Insuring: Benchmarks: Grade 12, Statements 3 Protecting and Insuring: Benchmarks: Grade 12, Statements 4 |
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ABS.05. CCTC Standard: Use sales and marketing principles to accomplish AFNR business objectives.

ABS.05.01. Performance Indicator: Analyze the role of markets, trade, competition and price in relation to an AFNR business sales and marketing plans.

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| KSS | AFNR Career Cluster, Statement 7 AFNR Career Cluster - Agribusiness Systems Pathway, Statement 1 |
| NSFL | Financial Investing: Benchmarks: Grade 12, Statement 13 |

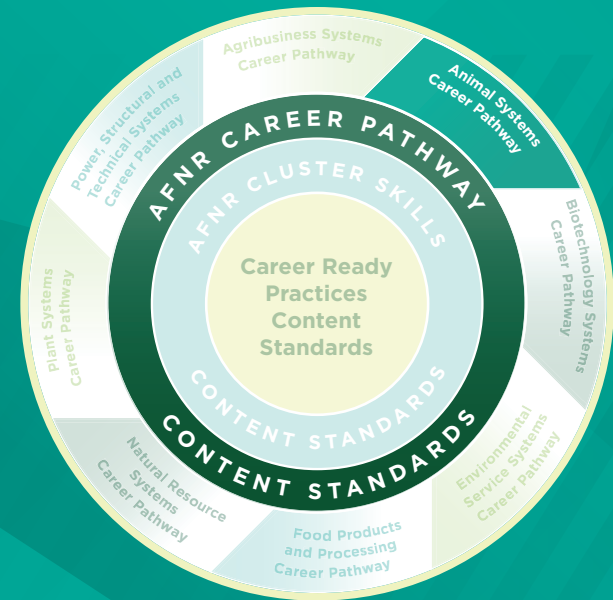
ABS.05.02. Performance Indicator: Assess and apply sales principles and skills to accomplish AFNR business objectives.

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| ELA | CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 |
| NSFL | Buying Goods & Services: Benchmarks: Grade 12, Statements 1 Buying Goods & Services: Benchmarks: Grade 12, Statements 3 Buying Goods & Services: Benchmarks: Grade 12, Statements 4 Buying Goods & Services: Benchmarks: Grade 12, Statements 5 |

ABS.05.03. Performance Indicator: Assess marketing principles and develop marketing plans to accomplish AFNR business objectives.

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| KSS | AFNR Career Cluster – Agribusiness Systems Pathway, Statement 4 |
| ELA | CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 |
| NSFL | Buying Goods & Services: Benchmarks: Grade 12, Statements 1 Buying Goods & Services: Benchmarks: Grade 12, Statements 3 Buying Goods & Services: Benchmarks: Grade 12, Statements 4 Buying Goods & Services: Benchmarks: Grade 12, Statements 7 |

ANIMAL SYSTEMS CAREER PATHWAY



Agriculture, Food and Natural Resources Content Standards

Example Crosswalks | Animal Systems (AS)

| Alignment Key | Green/Sustainability Knowledge and Skill Statements (KSS) | Common Core English Language Arts/Literacy Standards (ELA) | Common Core Mathematics Standards (MATH) | Next Generation Science Standards (NGSS) | National Standards for Financial Literacy (NSFL) |
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AS.01. CCTC Standard: Analyze historic and current trends impacting the animal systems industry.

AS.01.01. Performance Indicator: Evaluate the development and implications of animal origin, domestication and distribution on production practices and the environment.

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| NGSS | HS-LS4-3 |
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AS.01.02. Performance Indicator: Assess and select animal production methods for use in animal systems based upon their effectiveness and impacts.

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| KSS | AFNR Career Cluster, Statement 1 AFNR Career Cluster - Animal Systems Pathway, Statement 3 STEM Career Cluster, Statement 1 |
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| NSFL | Buying Goods and Services, Benchmarks: Grade 12, Statement 1 Buying Goods and Services, Benchmarks: Grade 12, Statement 3 |
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AS.01.03. Performance Indicator: Analyze and apply laws and sustainable practices to animal agriculture from a global perspective.

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| KSS | AFNR Career Cluster, Statement 2 AFNR Career Cluster - Animal Systems Pathway, Statement 1 STEM Career Cluster, Statement 1, 4 |
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| ELA | CCSS.ELA-Literacy.W.9-10.9b CCSS.ELA-Literacy.W.11-12.9b CCSS.ELA-Literacy.RI.9-10.1 CCSS.ELA-Literacy.RI.11-12.1 |
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| NGSS | HS-ETS1-1 |
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AS.02. CCTC Standard: Utilize best-practice protocols based upon animal behaviors for animal husbandry and welfare.

AS.02.01. Performance Indicator: Demonstrate management techniques that ensure animal welfare.

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| NGSS | HS-ETS1-2 |
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AS.02.02. Performance Indicator: Analyze procedures to ensure that animal products are safe for consumption (e.g., use in food system, etc.).

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| NGSS | HS-ETS1-2 |
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AS.03. CCTC Standard: Design and provide proper animal nutrition to achieve desired outcomes for performance, development, reproduction and/or economic production.

AS.03.01. Performance Indicator: Analyze the nutritional needs of animals.

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AS.03.02 Performance Indicator: Analyze feed rations and assess if they meet the nutritional needs of animals.

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AS.03.03 Performance Indicator: Utilize industry tools to make animal nutrition decisions.

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AS.04. CCTC Standard: Apply principles of animal reproduction to achieve desired outcomes for performance, development and/or economic production.

AS.04.01. Performance Indicator: Evaluate animals for breeding readiness and soundness.

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AS.04.02. Performance Indicator: Apply scientific principles to select and care for breeding animals.

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| MATH | CCSS.MATH.CONTENT.HSS.MD.A.3 |
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| NGSS | HS-LS3-2 HS-LS3-3 |
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AS.04.03 Performance Indicator: Apply scientific principles to breed animals.

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AS.05. CCTC Standard: Evaluate environmental factors affecting animal performance and implement procedures for enhancing performance and animal health.

AS.05.01. Performance Indicator: Design animal housing, equipment and handling facilities for the major systems of animal production.

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| ELA | AFNR Career Cluster – Animal Systems Pathway, Statement 2 STEM Career Cluster, Statement 4 STEM Career Cluster, Statement 5 |
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AS.05.02. Performance Indicator: Comply with government regulations and safety standards for facilities used in animal production.

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| ELA | CCSS.ELA-Literacy.W.9-10.9b CCSS.ELA-Literacy.W.11-12.9b |
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AS.06. CCTC Standard: Classify, evaluate and select animals based on anatomical and physiological characteristics.

AS.06.01. Performance Indicator: Classify animals according to taxonomic classification systems and use (e.g. agricultural, companion, etc.).

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AS.06.02. Performance Indicator: Apply principles of comparative anatomy and physiology to uses within various animal systems.

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| NGSS | HS-LS1-2 |
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AS.06.03. Performance Indicator: Select and train animals for specific purposes and maximum performance based on anatomy and physiology.

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| KSS | STEM Career Cluster, Statement 5 |
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AS.07. CCTC Standard: Apply principles of effective animal health care.

AS.07.01. Performance Indicator: Design programs to prevent animal diseases, parasites and other disorders and ensure animal welfare.

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| MATH | CCSS.MATH.CONTENT.HSN.Q.A.1 CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3 |
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AS.07.02. Performance Indicator: Analyze biosecurity measures utilized to protect the welfare of animals on a local, state, national, and global level.

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AS.08. CCTC Standard: Analyze environmental factors associated with animal production.

AS.08.01. Performance Indicator: Design and implement methods to reduce the effects of animal production on the environment.

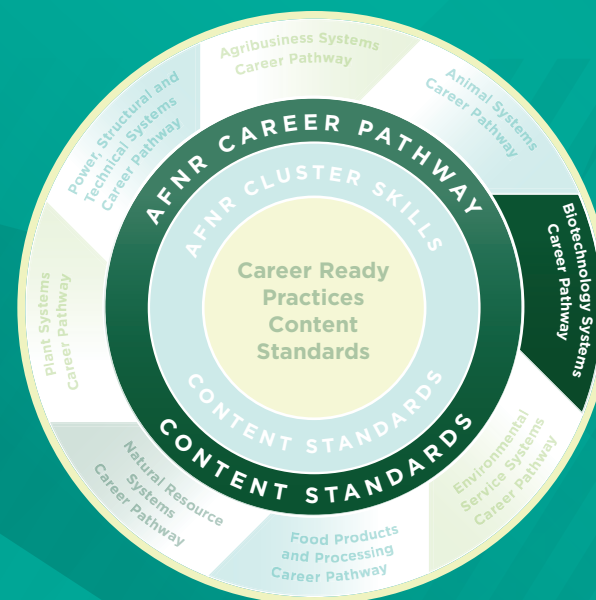
| | |
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| KSS | AFNR Career Cluster - Environmental Service Systems Pathway, Statement 1 |
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| NGSS | HS-LS2-6 HS-LS2-7 |
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AS.08.02. Performance Indicator: Evaluate the effects of environmental conditions on animals and create plans to ensure favorable environments for animals.

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| NGSS | HS.LS4-6 |
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BIOTECHNOLOGY SYSTEMS CAREER PATHWAY



Agriculture, Food and Natural Resources Content Standards

Example Crosswalks | Biotechnology Systems (BS)

| Alignment Key | Green/Sustainability Knowledge and Skill Statements (KSS) | Common Core English Language Arts/Literacy Standards (ELA) | Common Core Mathematics Standards (MATH) | Next Generation Science Standards (NGSS) | National Standards for Financial Literacy (NSFL) |
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BS.01. NCAE Standard: Assess factors that have influenced the evolution of biotechnology in agriculture (e.g., historical events, societal trends, ethical and legal implications, etc.).

BS.01.01. Performance Indicator: Investigate and explain the relationship between past, current and emerging applications of biotechnology in agriculture (e.g., major innovators, historical developments, potential applications of biotechnology, etc.).

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| ELA | CCSS.ELA-Literacy.RI.9-10.1 CCSS.ELA-Literacy.RI.11-12.1 CCSS.ELA-Literacy.RI.9-10.6 CCSS.ELA-Literacy.RI.11-12.6 CCSS.ELA-Literacy.WI.9-10.2 CCSS.ELA-Literacy.WI.11-12.2 |
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BS.01.02. Performance Indicator: Evaluate the scope and implications of regulatory agencies on applications of biotechnology in agriculture and protection of public interests (e.g., health, safety, environmental issues, etc.).

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| ELA | CCSS.ELA-Literacy.RI.9-10.5 CCSS.ELA-Literacy.RI.11-12.5 CCSS.ELA-Literacy.RI.9-10.6 CCSS.ELA-Literacy.RI.11-12.6 |
|-----|--|

BS.01.03. Performance Indicator: Analyze the relationship and implications of bioethics, laws and public perceptions on applications of biotechnology in agriculture (e.g., ethical, legal, social, cultural issues).

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| ELA | CCSS.ELA-Literacy.RI.9-10.5 CCSS.ELA-Literacy.RI.11-12.5 CCSS.ELA-Literacy.RI.9-10.6 CCSS.ELA-Literacy.RI.11-12.6 CCSS.ELA-Literacy.WI.9-10.1 CCSS.ELA-Literacy.WI.11-12.1 |
|-----|---|

BS.02. NCAE Standard: Demonstrate proficiency by safely applying appropriate laboratory skills to complete tasks in a biotechnology research and development environment (e.g., standard operating procedures, record keeping, aseptic technique, equipment maintenance, etc.).

BS.02.01. Performance Indicator: Read, document, evaluate and secure accurate laboratory records of experimental protocols, observations and results.

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| ELA | CCSS.ELA-Literacy.RST.9-10.1 CCSS.ELA-Literacy.RST.11-12.1 CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.RST.11-12.3 |
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BS.02.02. Performance Indicator: Implement standard operating procedures for the proper maintenance, use and sterilization of equipment in a laboratory.

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BS.02.03. Performance Indicator: Apply standard operating procedures for the safe handling of biological and chemical materials in a laboratory.

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| NGSS | HS-ETS1-2 |
|------|-----------|

BS.02.04. Performance Indicator: Safely manage and dispose of biological materials, chemicals and wastes according to standard operating procedures.

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| ELA | CCSS.ELA-Literacy.RST.9-10.4 CCSS.ELA-Literacy.RST.11-12.4 |
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BS.02.05. Performance Indicator: Examine and perform scientific procedures using microbes, DNA, RNA and proteins in a laboratory.

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| ELA | CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.RST.11-12.3 |
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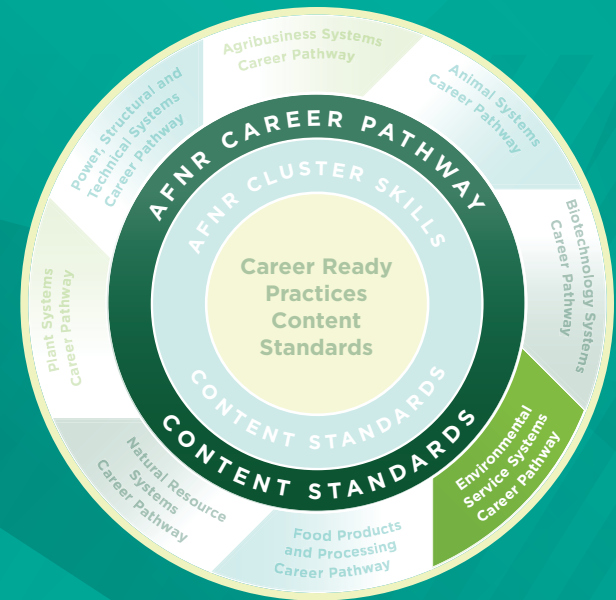
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| NGSS | HS-LS3-1 |
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BS.03. NCAE Standard: Demonstrate the application of biotechnology to solve problems in Agriculture, Food and Natural Resources (AFNR) systems (e.g., bioengineering, food processing, waste management, etc.).

BS.03.01. Performance Indicator: Apply biotechnology principles, techniques and processes to create transgenic species through genetic engineering.

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| NGSS | HS-LS3-2 |
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| BS.03.02. Performance Indicator: Apply biotechnology principles, techniques and processes to enhance the production of food through the use of microorganisms and enzymes. | |
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| BS.03.03. Performance Indicator: Apply biotechnology principles, techniques and processes to protect the environment and maximize use of natural resources (e.g., biomass, bioprospecting, industrial biotechnology, etc.). | |
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| BS.03.04. Performance Indicator: Apply biotechnology principles, techniques and processes to enhance plant and animal care and production (e.g., selective breeding, pharmaceuticals, biodiversity, etc.). | |
| NGSS | HS-ETS1-2 HS-LS4-6 |
| BS.03.05. Performance Indicator: Apply biotechnology principles, techniques and processes to produce biofuels (e.g., fermentation, transesterification, methanogenesis, etc.). | |
| KSS | AFNR Career Cluster, Statement 5 |
| ELA | CCSS.ELA-Literacy.RI.9-10.1 CCSS.ELA-Literacy.RI.11-12.1 CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.RST.11-12.3 |
| BS.03.06. Performance Indicator: Apply biotechnology principles, techniques and processes to improve waste management (e.g., genetically modified organisms, bioremediation, etc.). | |
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ENVIRONMENTAL SERVICE SYSTEMS CAREER PATHWAY

Agriculture, Food and Natural Resources Content Standards

Example Crosswalks | Environmental Service Systems (ESS)

| Alignment Key | Green/Sustainability Knowledge and Skill Statements (KSS) | Common Core English Language Arts/Literacy Standards (ELA) | Common Core Mathematics Standards (MATH) | Next Generation Science Standards (NGSS) | National Standards for Financial Literacy (NSFL) |
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ESS.01. CCTC Standard: Use analytical procedures and instruments to manage environmental service systems.

ESS.01.01. Performance Indicator: Analyze and interpret laboratory and field samples in environmental service systems.

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| ELA | CCSS.ELA-LITERACY.SL.11-12.5 CCSS.ELA-LITERACY.RST.11-12.9 |
| MATH | CCSS.MATH.CONTENT.HSN.Q.A.1 CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3 CCSS.MATH.CONTENT.HSS.ID.A.2 CCSS.MATH.CONTENT.HSS.ID.B.5 |
| NGSS | HS-ESS2-2 |

ESS.01.02. Performance Indicator: Properly utilize scientific instruments in environmental monitoring situations (e.g., laboratory equipment, environmental monitoring instruments, etc.).

ESS.02. CCTC Standard: Evaluate the impact of public policies and regulations on environmental service system operations.

ESS.02.01. Performance Indicator: Interpret and evaluate the impact of laws, agencies, policies and practices affecting environmental service systems.

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| KSS | AFNR Career Cluster, Statement 2 AFNR Career Cluster, Agribusiness Systems Pathway, Statement 1 AFNR Career Cluster, Natural Resources Systems Pathway, Statement 2 STEM Career Cluster, Statement 3 |
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ESS.02.02. Performance Indicator: Compare and contrast the impact of current trends on regulation of environmental service systems (e.g., climate change, population growth, international trade, etc.).

ESS.02.03. Performance Indicator: Examine and summarize the impact of public perceptions and social movements on the regulation of environmental service systems.

ESS.03. CCTC Standard: Develop proposed solutions to environmental issues, problems and applications using scientific principles of meteorology, soil science, hydrology, microbiology, chemistry and ecology.

ESS.03.01. Performance Indicator: Apply meteorology principles to environmental service systems.

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| ELA | CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.WHST.9-12.7 |
| MATH | CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 |
| NGSS | HS-ESS2-6 HS-ESS3-5 |

ESS.03.02. Performance Indicator: Apply soil science and hydrology principles to environmental service systems.

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| ELA | CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 |
| MATH | CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 |
| NGSS | HS-ESS2-5 HS-ESS2-6 |

| ESS.03.03. Performance Indicator: Apply chemistry principles to environmental service systems. | |
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| ELA | CCSS.ELA-LITERACY.RST.9-10.7 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.5 CCSS.ELA-LITERACY.WHST.11-12.5 |
| MATH | CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.3 |
| NGSS | HS-ESS2-6 |
| ESS.03.04. Performance Indicator: Apply microbiology principles to environmental service systems. | |
| ELA | CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.5 CCSS.ELA-LITERACY.WHST.11-12.5 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9 |
| MATH | CCSS.MATH.CONTENT.HSF.BF.A.1 |
| NGSS | HS-LS2-3 HS-LS3-2 HS-ET1-2 |
| ESS.03.05. Performance Indicator: Apply ecology principles to environmental service systems. | |
| ELA | CCSS.ELA-LITERACY.RST.9-10.8 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9 |
| MATH | CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 |
| NGSS | HS-LS2-1 HS-LS4-4 |

ESS.04. CCTC Standard: Demonstrate the operation of environmental service systems (e.g., pollution control, water treatment, wastewater treatment, solid waste management and energy conservation).

ESS.04.01. Performance Indicator: Use pollution control measures to maintain a safe facility and environment.

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| NGSS | HS-ETS1-2 |
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ESS.04.02. Performance Indicator: Manage safe disposal of all categories of solid waste in environmental service systems.

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| NGSS | HS-ETS1-2 |
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ESS.04.03. Performance Indicator: Apply techniques to ensure a safe supply of drinking water and adequate treatment of wastewater according to applicable rules and regulations.

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| NGSS | HS-ETS1-2 HS-ETS1-4 |
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ESS.04.04. Performance Indicator: Compare and contrast the impact of conventional and alternative energy sources on the environment and operation of environmental service systems.

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| ELA | CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.5 CCSS.ELA-LITERACY.WHST.11-12.5 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.RST.11-12.9 CCSS.ELA-LITERACY.WHST 11-12.9 |
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| MATH | CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 |
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| NGSS | HS-ETS1-2 HS-ETS1-4 |
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ESS.05. CCTC Standard: Use tools, equipment, machinery and technology common to tasks in environmental service systems.

ESS.05.01. Performance Indicator: Use technological and mathematical tools to map land, facilities and infrastructure for environmental service systems.

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| NGSS | HS-ETS1-4 |
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ESS.05.02. Performance Indicator: Perform assessments of environmental conditions using equipment, machinery and technology.

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| NGSS | HS-ETS1-4 HS-ETS1-2 |
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FOOD PRODUCTS AND PROCESSING SYSTEMS CAREER PATHWAY



Agriculture, Food and Natural Resources Content Standards

Example Crosswalks | Food Product and Processing Systems (FPP)

| Alignment Key | Green/Sustainability Knowledge and Skill Statements (KSS) | Common Core English Language Arts/Literacy Standards (ELA) | Common Core Mathematics Standards (MATH) | Next Generation Science Standards (NGSS) | National Standards for Financial Literacy (NSFL) |
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FPP.01. CCTC Standard: Develop and implement procedures to ensure safety, sanitation and quality in food product and processing facilities.

FPP.01.01. Performance Indicator: Analyze and manage operational and safety procedures in food products and processing facilities.

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| KSS | <p>AFNR Career Cluster - Food Products and Processing Systems Pathway, Statement 1</p> <p>AFNR Career Cluster - Food Products and Processing Systems Pathway, Statement 2</p> <p>AFNR Career Cluster, Statement 6</p> <p>Manufacturing Career Cluster - Maintenance, Installation and Repair Pathway Statement 2</p> <p>Manufacturing Career Cluster - Maintenance, Installation and Repair Pathway Statement 4</p> <p>Manufacturing Career Cluster - Production Pathway 2</p> <p>Manufacturing Career Cluster - Production Pathway 3</p> |
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FPP.01.02. Performance Indicator: Apply food safety and sanitation procedures in the handling and processing of food products to ensure food quality.

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| KSS | <p>AFNR Career Cluster - Food Products and Processing Systems Pathway, Statement 1</p> <p>AFNR Career Cluster - Food Products and Processing Systems Pathway, Statement 2</p> |
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FPP.01.03. Performance Indicator: Apply food safety procedures when storing food products to ensure food quality.

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FPP.02. CCTC Standard: Apply principles of nutrition, biology, microbiology, chemistry and human behavior to the development of food products.

FPP.02.01. Performance Indicator: Apply principles of nutrition and biology to develop food products that provide a safe, wholesome and nutritious food supply for local and global food systems.

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FPP.02.02. Performance Indicator: Apply principles of microbiology and chemistry to develop food products to provide a safe, wholesome and nutritious food supply for local and global food systems.

FPP.02.03. Performance Indicator: Apply principles of human behavior to develop food products to provide a safe, wholesome and nutritious food supply for local and global food systems.

FPP.03. CCTC Standard: Select and process food products for storage, distribution and consumption.

FPP.03.01. Performance Indicator: Implement selection, evaluation and inspection techniques to ensure safe and quality food products.

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| KSS | AFNR Career Cluster - Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster - Food Products and Processing Systems Pathway, Statement 2 |
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| NSFL | Buying Goods and Services, Benchmarks: Grade 12, Statement 7 |
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FPP.03.02. Performance Indicator: Design and apply techniques of food processing, preservation, packaging and presentation for distribution and consumption of food products.

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| KSS | AFNR Career Cluster - Food Products and Processing Systems Pathway, Statement 3 |
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FPP.03.03. Performance Indicator: Create food distribution plans and procedures to ensure safe delivery of food products.

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| KSS | AFNR Career Cluster, Statement 7 AFNR Career Cluster - Food Products and Processing Pathway, Statement 3 Manufacturing Career Cluster - Logistics and Inventory Control, Pathway 2 Manufacturing Career Cluster - Manufacturing Product Process Development Pathway, Statement 1 Manufacturing Career Cluster - Manufacturing Product Process Development Pathway, Statement 2 Transportation, Distribution and Logistics Career Cluster, Statement 3 |
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| ELA | CCSS.ELA-Literacy.W.9-10.2 CCSS.ELA-Literacy.W.11-12.2 |
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| NGSS | HS-ETS1-2 |
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FPP.04. CCTC Standard: Explain the scope of the food industry and the historical and current developments of food product and processing.

FPP.04.01. Performance Indicator: Examine the scope of the food industry by evaluating local and global policies, trends and customs for food production.

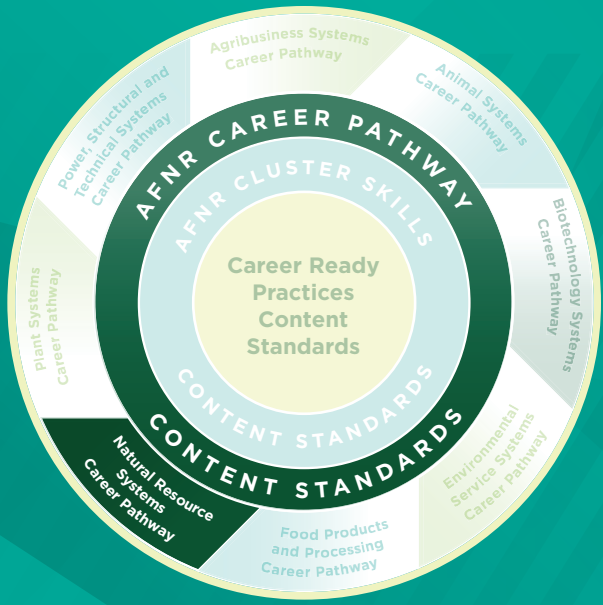
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| NGSS | HS-ETS1-3 |
| NSFL | Buying Goods and Services, Benchmarks: Grade 12, Statement 1 Buying Goods and Services, Benchmarks: Grade 12, Statement 2 |

FPP.04.02. Performance Indicator: Evaluate the significance and implications of changes and trends in the food products and processing industry in the local and global food systems.

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| NSFL | Buying Goods and Services, Benchmarks: Grade 12, Statement 1 |
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FPP.04.03. Performance Indicator: Identify and explain the purpose of industry organizations, groups and regulatory agencies that influence the local and global food systems.

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| KSS | Transportation, Distribution and Logistics Career Cluster – Transportation Systems/Infrastructure Planning, Management and Regulation Pathway, Statement 4 |
| NSFL | Buying Goods and Services, Benchmarks: Grade 12, Statement 7 |



NATURAL RESOURCE SYSTEMS CAREER PATHWAY

Agriculture, Food and Natural Resources Content Standards

Example Crosswalks | Natural Resource Systems (NRS)

| Alignment Key | Green/Sustainability Knowledge and Skill Statements (KSS) | Common Core English Language Arts/Literacy Standards (ELA) | Common Core Mathematics Standards (MATH) | Next Generation Science Standards (NGSS) | National Standards for Financial Literacy (NSFL) |
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NRS.01. CCTC Standard: Plan and conduct natural resource management activities that apply logical, reasoned and scientifically based solutions to natural resource issues and goals.

NRS.01.01. Performance Indicator: Apply methods of classification to examine natural resource availability and ecosystem function in a particular region.

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| KSS | AFNR Career Cluster, Statement 1 AFNR Career Cluster, Statement 2 AFNR Career Cluster - Natural Resources Systems Pathway, Statement 3 STEM Career Cluster, Statement 1 |
| ELA | CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9 |

NRS.01.02. Performance Indicator: Classify different types of natural resources in order to enable protection, conservation, enhancement and management in a particular geographical region.

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| KSS | AFNR Career Cluster - Natural Resources Systems Pathway, Statement 3 |
| ELA | CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9 |

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| MATH | CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 |
| NGSS | HS-ESS3-2 |
| NRS.01.03. Performance Indicator: Apply ecological concepts and principles to atmospheric natural resource systems. | |
| KSS | AFNR Career Cluster - Natural Resources Systems Pathway, Statement 3 |
| ELA | CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 |
| MATH | CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 CCSS.MATH.CONTENT.HSS-ID.A.1 CCSS.MATH.CONTENT.HSS-IC.A.1 CCSS.MATH.CONTENT.HSS-IC.B.6 |
| NGSS | HS-ESS2-4 HS-ESS2-6 HS-ESS3-4 HS-ESS3-5 |
| NRS.01.04. Performance Indicator: Apply ecological concepts and principles to aquatic natural resource systems. | |
| KSS | AFNR Career Cluster, Statement 1 AFNR Career Cluster - Animal Systems Pathway, Statement 3 AFNR Career Cluster - Natural Resources Systems Pathway, Statement 3 |
| ELA | CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 |
| MATH | CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 CCSS.MATH.CONTENT.HSS-ID.A.1 CCSS.MATH.CONTENT.HSS-IC.A.1 CCSS.MATH.CONTENT.HSS-IC.B.6 |
| NGSS | HS-ESS3-6 |

NRS.01.05. Performance Indicator: Apply ecological concepts and principles to terrestrial natural resource systems.

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| KSS | AFNR Career Cluster, Statement 1 AFNR Career Cluster - Animal Systems Pathway, Statement 3 AFNR Career Cluster - Natural Resources Systems Pathway, Statement 3 |
| ELA | CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 |
| MATH | CCSS.MATH.CONTENT.HSS-ID.A.1 CCSS.MATH.CONTENT.HSS-IC.A.1 CCSS.MATH.CONTENT.HSS-IC.B.6 |
| NGSS | HS-ESS3-4 HS-ESS3-2 |

NRS.01.06. Performance Indicator: Apply ecological concepts and principles to living organisms in natural resource systems.

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| KSS | AFNR Career Cluster, Statement 1 AFNR Career Cluster - Animal Systems Pathway, Statement 3 AFNR Career Cluster - Natural Resources Systems Pathway, Statement 3 |
| ELA | CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.5 CCSS.ELA-LITERACY.WHST.11-12.5 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9 |
| NGSS | HS-LS4-4 HS-LS4-6 HS-ESS3-4 |

NRS.02.01. CCTC Standard: Analyze the interrelationships between natural resources and humans.

NRS.02.01. Performance Indicator: Examine and interpret the purpose, enforcement, impact and effectiveness of laws and agencies related to natural resource management, protection, enhancement and improvement (e.g., water regulations, game laws, historic preservation laws, environmental policy, etc.).

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| KSS | AFNR Career Cluster, Statement 2 AFNR Career Cluster - Agribusiness Systems Pathway, Statement 1 AFNR Career Cluster - Natural Resources Systems Pathway, Statement 2 STEM Career Cluster, Statement 3 |
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NRS.02.02. Performance Indicator: Assess the impact of human activities on the availability of natural resources.

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| KSS | AFNR Career Cluster - Animal Systems Pathway, Statement 1 STEM Career Cluster, Statement 2 |
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| ELA | CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 |
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| MATH | CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 |
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| NGSS | HS-LS2-7 HS-ESS3-2 HS-ESS3-3 HS-ESS3-4 HS-ESS3-5 HS-ESS3-6 |
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NRS.02.03. Performance Indicator: Analyze how modern perceptions of natural resource management, protection, enhancement and improvement change and develop over time.

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| KSS | AFNR Career Cluster, Statement 7 |
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NRS.02.04. Performance Indicator: Examine and explain how economics affects the use of natural resources.

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| KSS | AFNR Career Cluster, Statement 4 AFNR Career Cluster - Agribusiness Systems Pathway, Statement 4 AFNR Career Cluster - Natural Resources Systems Pathway, Statement 4 AFNR Career Cluster - Plant Systems Pathway, Statement 1 |
| ELA | CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.WHST.11-12.8 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.ELA-LITERACY.SL.11-12.4 |
| NGSS | HS-ESS3-2 |

NRS.02.05. Performance Indicator: Communicate information to the public regarding topics related to the management, protection, enhancement, and improvement of natural resources.

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| KSS | AFNR Career Cluster, Statement 2 AFNR Career Cluster, Statement 3 STEM Career Cluster, Statement 2 STEM Career Cluster, Statement 3 |
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NRS.03. CCTC Standard: Develop plans to ensure sustainable production and processing of natural resources.

NRS.03.01. Performance Indicator: Sustainably produce, harvest, process and use natural resource products (e.g., forest products, wildlife, minerals, fossil fuels, shale oil, alternative energy, recreation, aquatic species, etc.).

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| KSS | AFNR Career Cluster - Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster - Plant Systems Pathway, Statement 4 |
| ELA | CCSS.ELA-LITERACY.RST.11-12.8 |
| NGSS | HS-ESS3-2 HS-ESS3-3 |

NRS.03.02. Performance Indicator: Demonstrate cartographic skills, tools and technologies to aid in developing, implementing and evaluating natural resource management plans.

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NRS.04. CCTC Standard: Demonstrate responsible management procedures and techniques to protect, maintain, enhance, and improve natural resources.

NRS.04.01. Performance Indicator: Demonstrate natural resource protection, maintenance, enhancement and improvement techniques.

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| KSS | AFNR Career Cluster - Environmental Service Systems Pathway, Statement 3 AFNR Career Cluster - Environmental Service Systems Pathway, Statement 4 AFNR Career Cluster - Natural Resources Systems Pathway, Statement 2 AFNR Career Cluster - Natural Resources Systems Pathway, Statement 5 AFNR Career Cluster - Plant Systems Pathway, Statement 2 AFNR Career Cluster - Plant Systems Pathway, Statement 3 |
| ELA | CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.SL.11-12.4 |
| NGSS | HS-ESS3-2 HS-ESS3-3 HS-ESS3-4 |

NRS.04.02. Performance Indicator: Diagnose plant and wildlife diseases and follow protocols to prevent their spread.

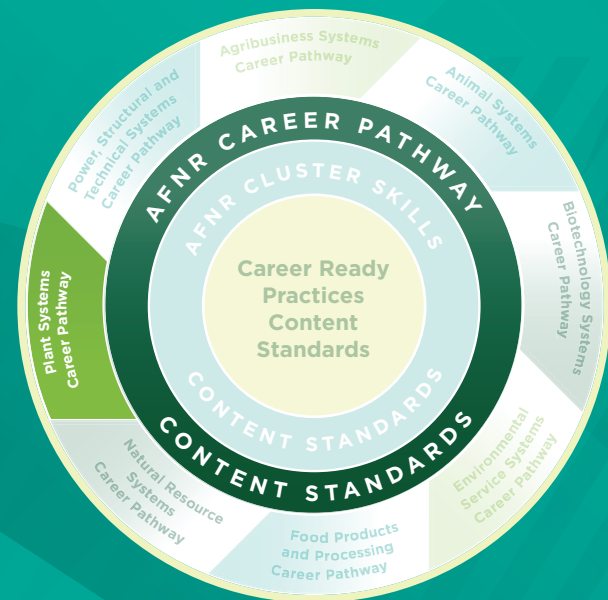
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| ELA | CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.WHST.11-12.8 CCSS.ELA-LITERACY.WHST.11-12.9 |
| MATH | CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 |
| NGSS | HS-LS2-7 |

NRS.04.03. Performance Indicator: Prevent or manage introduction of ecologically harmful species in a particular region.

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| ELA | CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.5 CCSS.ELA-LITERACY.WHST.11-12.5 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 |
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| MATH | CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 CCSS.MATH.CONTENT.HSS-ID.A.1 CCSS.MATH.CONTENT.HSS-IC.A.1 CCSS.MATH.CONTENT.HSS-IC.B.6 |
| NGSS | HS-LS2-7 HS-LS4-6 |
| NRS.04.04. Performance Indicator: Manage fires in natural resource systems. | |
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PLANT SYSTEMS CAREER PATHWAY



Agriculture, Food and Natural Resources Content Standards

Example Crosswalks | Plant Systems (PS)

| Alignment Key | Green/Sustainability Knowledge and Skill Statements (KSS) | Common Core English Language Arts/Literacy Standards (ELA) | Common Core Mathematics Standards (MATH) | Next Generation Science Standards (NGSS) | National Standards for Financial Literacy (NSFL) |
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PS.01. CCTC Standard: Develop and implement a crop management plan for a given production goal that accounts for environmental factors.

PS.01.01. Performance Indicator: Determine the influence of environmental factors on plant growth.

PS.01.02. Performance Indicator: Prepare and manage growing media for use in plant systems.

PS.01.03. Performance Indicator: Develop and implement a fertilization plan for specific plants or crops.

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| MATH | CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3 |
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PS.02. CCTC Standard: Apply principles of classification, plant anatomy, and plant physiology to plant production and management.

PS.02.01. Performance Indicator: Classify plants according to taxonomic systems.

PS.02.02. Performance Indicator: Apply knowledge of plant anatomy and the functions of plant structures to activities associated with plant systems.

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| NGSS | HS-LS1-4 |
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PS.02.03. Performance Indicator: Apply knowledge of plant physiology and energy conversion to plant systems.

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| NGSS | HS-LS1-5 |
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PS.03. CCTC Standard: Propagate, culture and harvest plants and plant products based on current industry standards.

PS.03.01. Performance Indicator: Demonstrate plant propagation techniques in plant system activities.

PS.03.02. Performance Indicator: Develop and implement a management plan for plant production.

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| ELA | CCSS.ELA-Literacy.RI.9-10.1 CCSS.ELA-Literacy.RI.9-10.8 CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.WHST.9-10.2 CCSS.ELA-Literacy.WHST.9-10.4 CCSS.ELA-Literacy.WHST.9-10.9 |
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PS.03.03. Performance Indicator: Develop and implement a plan for integrated pest management for plant production.

PS.03.04. Performance Indicator: Apply principles and practices of sustainable agriculture to plant production.

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| KSS | AFNR Career Cluster, Statement 2 STEM Career Cluster, Statement 1 STEM Career Cluster, Statement 4 |
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| NGSS | HS-ESS3-2 |
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PS.03.05. Performance Indicator: Harvest, handle and store crops according to current industry standards.

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| ELA | CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.RST.9-10.4 CCSS.ELA-Literacy.WHST.9-10.2a |
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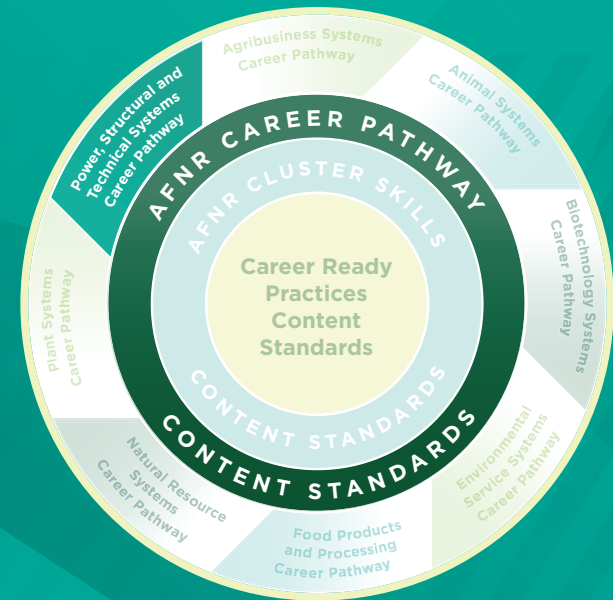
PS.04. CCTC Standard: Apply principles of design in plant systems to enhance an environment (e.g. floral, forest landscape, and farm).

PS.04.01. Performance Indicator: Evaluating, identifying and preparing plants to enhance an environment.

PS.04.02. Performance Indicator: Create designs using plants.

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| KSS | AFNR Career Cluster - Natural Resources Systems Pathway, Statement 3 AFNR Career Cluster - Plant Systems Pathway, Statement 2 STEM Career Cluster, Statement 4 |
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POWER, STRUCTURAL AND TECHNICAL SYSTEMS CAREER PATHWAY



Agriculture, Food and Natural Resources Content Standards

Example Crosswalks | Power, Structural and Technical Systems (PST)

| Alignment Key | Green/Sustainability Knowledge and Skill Statements (KSS) | Common Core English Language Arts/Literacy Standards (ELA) | Common Core Mathematics Standards (MATH) | Next Generation Science Standards (NGSS) | National Standards for Financial Literacy (NSFL) |
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PST.01. CCTC Standard: Apply physical science principles and engineering applications to solve problems and improve performance in AFNR power, structural and technical systems.

PST.01.01. Performance Indicator: Apply physical science and engineering principles to assess and select energy sources for AFNR power, structural and technical systems.

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| KSS | AFNR Career Cluster, Statement 4 AFNR Career Cluster, Statement 5 |
| NGSS | HS-ESS3-3 HS-PS3-3 |

PST.01.02. Performance Indicator: Apply physical science and engineering principles to design, implement and improve safe and efficient mechanical systems in AFNR situations.

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| NGSS | HS-PS3-1 HS-PS3-3 |
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PST.01.03. Performance Indicator: Apply physical science principles to metal fabrication using a variety of welding and cutting processes (e.g., SMAW, GMAW, GTAW, fuel-oxygen and plasma arc torch, etc.).

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PST.02. CCTC Standard: Operate and maintain AFNR mechanical equipment and power systems.

PST.02.01. Performance Indicator: Perform preventative maintenance and scheduled service to maintain equipment, machinery and power units used in AFNR settings.

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| PST.02.02. Performance Indicator: Operate machinery and equipment while observing all safety precautions in AFNR settings. | |
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| PST.03. CCTC Standard: Service and repair AFNR mechanical equipment and power systems. | |
| PST.03.01. Performance Indicator: Troubleshoot, service and repair components of internal combustion engines using manufacturers' guidelines. | |
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| PST.03.02. Performance Indicator: Service electrical systems and components of mechanical equipment and power systems using a variety of troubleshooting and/or diagnostic methods. | |
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| PST.03.03. Performance Indicator: Utilize manufacturers' guidelines to diagnose and troubleshoot malfunctions in machinery, equipment and power source systems (e.g., hydraulic, pneumatic, transmission, steering, suspension, etc.). | |
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| PST.04. CCTC Standard: Plan, build and maintain AFNR structures. | |
| PST.04.01. Performance Indicator: Create sketches and plans for AFNR structures. | |
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| PST.04.02. Performance Indicator: Determine structural requirements, specifications and estimate costs for AFNR structures | |
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| PST.04.03. Performance Indicator: Follow architectural and mechanical plans to construct, maintain and/or repair AFNR structures (e.g., material selection, site preparation and/or layout, plumbing, concrete/masonry, etc.). | |
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| PST.04.04. Performance Indicator: Apply electrical wiring principles in AFNR structures. | |
| NGSS | HS-PS3-5 |

PST.05. CCTC Standard: Use control, monitoring, geospatial and other technologies in AFNR power, structural and technical systems.

PST.05.01. Performance Indicator: Apply computer and other technologies (e.g., robotics, CNC, UAS, etc.) to solve problems and increase the efficiency of AFNR systems.

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| NGSS | HS-ETS1-3 HS-ESS3-2 |
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PST.05.02. Performance Indicator: Prepare and/or use electrical drawings to design, install and troubleshoot electronic control systems in AFNR settings.

PST.05.03. Performance Indicator: Apply geospatial technologies to solve problems and increase the efficiency of AFNR systems.

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| NGSS | HS-ESS3-4 HS-ETS1-3 HS-ESS3-2 |
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The logo for The Council, featuring the words "THE" and "COUNCIL" in a bold, white, sans-serif font. "THE" is positioned above "COUNCIL", and the two words are connected by a thin horizontal line. The background is a teal color with a subtle pattern of white, parallel lines that create a sense of depth and movement.

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