Course Code	Course Name	Recommended Grade Levels	Description	High School Credit Options*	License/credential Required**
01011	Introduction to Agriculture	9-12	This applied course is designed to introduce students to agriculture, its applications, and leadership development as the core foundation of the Agriculture Education program. Individual units will familiarize the student with basic mechanical theory and skills – emphasis will be placed on safety and proper use of tools and equipment; principles of evaluation and selection of beef, swine, sheep, horse, and dairy animals; soil and plant relationships that affect the production of food and fiber. Topics may include soils, irrigation, land judging, plants, crop and weed identification, range management, horticulture, nursery, diseases, insects, and chemicals. This applied course introduces students to agricultural sciences emphasizing technical skills, entrepreneurship, and occupational opportunities. Units may include agricultural construction, food, fiber science, supervised agricultural experiences, and leadership development. Agricultural mechanics units are designed to develop skills in selecting, operating, and maintaining engines, hydraulics, and agricultural machinery and tractors. Skills in equipment operation and maintenance, determining a bill of materials, construction techniques, metal fabrication, and joining processes of metals and alloys will be included. Emphasis is on problem-solving and scientific reasoning applied to real-world problems integrating knowledge from the life and earth sciences.	½ or 1 Max credit = 1	License Code: 01005-Agriculture Education • 5-12 or 9-12

Course Code	Course Name	Recommended Grade Levels	Description	High School Credit Options*	License/credential Required**
01012	Foundations of Agriculture	9-12	This applied course is designed to enhance students' perception of agriculture, its applications, and leadership development as the core foundation of the Agriculture Education program. Individual units will familiarize the student with basic mechanical theory and skills – emphasis will be placed on safety and proper use of tools and equipment; principles of evaluation and selection of beef, swine, sheep, horse, and dairy animals; soil and plant relationships that affect the production of food and fiber. Topics may include soils, irrigation, land judging, plants, crop and weed identification, range management, horticulture, nursery, diseases, insects, and chemicals. This applied course introduces students to agricultural sciences emphasizing technical skills, entrepreneurship, and occupational opportunities. Units may include agricultural construction, food, fiber science, supervised agricultural experiences, and leadership development. Agricultural mechanics units are designed to further develop skills in selecting, operating, and maintaining engines, hydraulics, and agricultural machinery and tractors. Skills in equipment operation and maintenance, determining a bill of materials, construction techniques, metal fabrication, and joining processes of metals and alloys will be included.	½ or 1 Max credit = 1	License Code: 01005-Agriculture Education • 5-12 or 9-12

Course Code	Course Name	Recommended Grade Levels	Description	High School Credit Options*	License/credential Required**
01021	Agriscience Technology I	9-12	Agriscience Technology courses integrate biological and technological concepts with principles of agriculture. Courses are designed in sequences to provide experiences in the subject matter. Units are selected to develop knowledge and skills about animal and plant nutrition, reproduction, diseases, breeding, genetics, anatomy, and physiology. Genetic engineering, biotechnology, plant propagation techniques, agricultural production technologies, marketing technologies, aquaculture, animal health, and small animal care may be taught. These courses integrate leadership and supervise agricultural experience programs. Career opportunities and educational preparation are examined. Learning activities are varied with classroom, laboratory, and field experiences. <i>Note: These courses can be taught for Agricultural Education credit only.</i>	½ or 1 Max credit = 1	License Code:
01022	Agriscience Technology II	9-12	Agriscience Technology courses integrate biological and technological concepts with principles of agriculture. Courses are designed in sequences to provide experiences in the subject matter. Units are selected to develop knowledge and skills about animal and plant nutrition, reproduction, diseases, breeding, genetics, anatomy, and physiology. Genetic engineering, biotechnology, plant propagation techniques, agricultural production technologies, marketing technologies, aquaculture, animal health, and small animal care may be taught. These courses integrate leadership and supervise agricultural experience programs. Career opportunities and educational preparation are examined. Learning activities are varied with classroom, laboratory, and field experiences. Note: These courses can be taught for Agricultural Education credit only.	½ or 1 Max credit = 1	01005-Agriculture Education

Course Code	Course Name	Recommended Grade Levels	Description	High School Credit Options*	License/credential Required**
01023	Agriscience Technology III	9-12	Agriscience Technology courses integrate biological and technological concepts with principles of agriculture. Courses are designed in sequences to provide experiences in the subject matter. Units are selected to develop knowledge and skills about animal and plant nutrition, reproduction, diseases, breeding, genetics, anatomy, and physiology. Genetic engineering, biotechnology, plant propagation techniques, agricultural production technologies, marketing technologies, aquaculture, animal health, and small animal care may be taught. These courses integrate leadership and supervise agricultural experience programs. Career opportunities and educational preparation are examined. Learning activities are varied with classroom, laboratory, and field experiences. Note: These courses can be taught for Agricultural Education credit only.	½ or 1 Max credit = 1	License Code: 01005-Agriculture Education
01025	Agronomy Science	9-12	This course studies plant physiology and morphology and their relationship to the growth, development, and reproduction of crop and forage plants in the global environment. Topics include seed identification, testing, grain grading, agronomic crop identification, and major crop production weeds. Harvesting and handling will be emphasized. Supervised agricultural experience programs and leadership are integrated into the course. Career opportunities and educational preparation are examined. Learning activities are varied with classrooms, laboratories, and field experiences. Note: These courses can be taught for Agricultural Education credit only.	1∕₂ or 1 Max credit = 1	◆ 5-12 or 9-12

Course Code	Course Name	Recommended Grade Levels	Description	High School Credit Options*	License/credential Required**
01034	Agriculture Sales and Service	10-12	To provide students with skills necessary for entry into employment or furthering education in agriculture sales and service. The course deals with business organizations, business structures, job responsibilities, applications, interviewing, human relations, marketing, selling, displaying, using business machines, business accounting, and management skills. Learning activities are varied with classroom, laboratory, and field experiences. Leadership development and supervised agricultural experience programs are integral to this course.	½ or 1 Max credit = 1	
01035	Agricultural Business Management	10-12	A course designed to introduce the students to agribusiness management in the free enterprise system. It includes a study of economic principles, budgeting, recordkeeping, finance, risk management, business law, marketing, and careers in agribusiness. Leadership development and supervised agricultural experience programs are integral to this course.	½ or 1 Max credit = 1	
01043	Agricultural Mechanics Technology I	9-12	Agricultural Mechanics courses are designed to reinforce and extend students' understanding of applied mechanical applications by associating scientific principles and concepts with relevant applications in mechanics-related fields. Students will be exposed to mechanical, fluid, electrical, and thermal power that is related to the field of agriculture. The course sequence is designed to provide students with applied activities, including metal fusion (welding), structures, surveying, electrical wiring principles, agricultural power and equipment, plumbing, electric motors and controls, CNC, robotics, CADD, Lasers, GIS, and GPS systems. Leadership development and supervised agricultural experiences are integral to these courses.	½ or 1 Max credit = 1	License Code: 01005-Agriculture Education ♦ 5-12 or 9-12
01044	Agricultural Mechanics Technology II	9-12	Agricultural Mechanics courses are designed to reinforce and extend students' understanding of applied mechanical applications by associating scientific principles and concepts with relevant applications in mechanics-related fields. Students will be exposed to mechanical, fluid, electrical, and thermal power that is related to the field of agriculture. The course sequence is designed to provide students with applied activities, which may include metal fusion (welding), structures, surveying, electrical wiring principles, agricultural power and equipment, plumbing, electric motors and controls, CNC, robotics, CADD, Lasers, GIS, and GPS systems. Leadership development and supervised agricultural experiences are integral to these courses.	½ or 1 Max credit = 1	

Course Code	Course Name	Recommended Grade Levels	Description	High School Credit Options*	License/credential Required**
01045	Agricultural Mechanics Power Systems	9-12	Agricultural Mechanics courses are designed to reinforce and extend students' understanding of applied mechanical applications by associating scientific principles and concepts with relevant applications in mechanics-related fields. Students will be exposed to fluid, electrical, and thermal power that are related to the field of agriculture. The course is designed to provide students with applied activities, which may include small engine maintenance and repair, agricultural power and equipment, electric motors and controls, robotics, renewable energy, and precision ag systems. Leadership development and supervised agricultural experiences are integral to this course.	½ or 1 Max credit = 1	
01046	Agricultural Welding and Fabrication	10-12	This course provides students in agriculture an opportunity to reinforce and extend their understanding of applied mechanical applications. Students will be exposed to mechanical, electrical, and thermal power associated with agricultural welding. Applied activities develop an understanding and skill development in metal joining and fabrication processes. Instruction will prepare students to select, operate, repair, fabricate and maintain a variety of agricultural machinery and equipment. Processes covered may include Oxyfuel Cutting/Heating/Welding, Shielded Metal Arc Welding (SMAW), Gas Metal Arc Welding (GMAW), Flux-cored Arc Welding (FCAW), Gas Tungsten Arc Welding (GTAW), Air-carbon Arc Cutting, Plasma Arc Cutting, Safety and Metal Fabrication. In addition, record-keeping, communication skills, employability, and human relations skills will be covered. Leadership development and supervised Agricultural Experiences (SAEs) are also integral to this course.	½ or 1 Max credit = 1	License Code: 01005-Agriculture Education ♦ 5-12 or 9-12
01047	Advanced Ag Welding and Fabrication	10-12	This course can be a continuation of 01046 Agricultural Welding and Fabrication or be offered in alternating years. This course provides students in agriculture an additional opportunity to reinforce and extend their understanding of applied mechanical applications. Advanced applications will further develop knowledge and skill development in metal joining and fabrication processes. Instruction will prepare students to select, operate, repair, fabricate and maintain a variety of agricultural machinery and equipment. Processes covered may include Oxyfuel Cutting/Heating/Welding, Shielded Metal Arc Welding (SMAW), Gas Metal Arc Welding (GMAW), Flux-cored Arc Welding (FCAW), Gas Tungsten Arc Welding (GTAW), Air-carbon Arc Cutting, Plasma Arc Cutting, Safety and Metal Fabrication projects. In addition, record-keeping, communication skills, employability, and human relations skills will be covered. Leadership development and supervised Agricultural Experiences (SAEs) are also integral to this course.	½ or 1 Max credit = 1	

Course Code	Course Name	Recommended Grade Levels	Description	High School Credit Options*	License/credential Required**
01053	Botany/ Horticultural Science I	9-12	These courses prepare students to produce greenhouse/nursery plants and to maintain plant growth and propagation structures. Topics include soils, plants, plant identification, and plant entomology. Courses examine the importance of plant cell structures, functions of cells, plant processes, nonvascular plants, vascular plants, roots, stems, leaves, flowers, and reproduction of plants. Students may be introduced to the biological, environmental, conservation, and ecological concepts encountered in our environment. Landscape design units will prepare students to design, construct, and maintain planted areas and devices for beautifying home grounds and other human habitation and recreation areas. These courses will reinforce and extend students' understanding of science by associating basic scientific principles and concepts with relevant applications in agriculture. Leadership development and supervised agricultural experience programs are also integral to this course. <i>Note: These courses can be taught for Agricultural Education credit only. For Science credit, Botany/Horticultural Science I can be found under Science.</i>	½ or 1 Max credit = 1	License Code: 01005-Agriculture Education
01054	Botany/ Horticultural Science II	9-12	These courses prepare students to produce greenhouse/nursery plants and to maintain plant growth and propagation structures. Topics include soils, plants, plant identification, and plant entomology. Courses examine the importance of plant cell structures, functions of cells, plant processes, nonvascular plants, vascular plants, roots, stems, leaves, flowers, and reproduction of plants. Students may be introduced to the biological, environmental, conservation, and ecological concepts encountered in our environment. Landscape design units will prepare students to design, construct, and maintain planted areas and devices for beautifying home grounds and other human habitation and recreation areas. These courses will reinforce and extend students' understanding of science by associating basic scientific principles and concepts with relevant applications in agriculture. Leadership development and supervised agricultural experience programs are also integral to this course. <i>Note: These courses can be taught for Agricultural Education credit only. For Science credit, Botany/Horticultural Science II can be found under Science.</i>	½ or 1 Max credit = 1	◆ 5-12 or 9-12

Course Code	Course Name	Recommended Grade Levels	Description	High School Credit Options*	License/credential Required**
01061	Livestock Production	10-12	This course is designed to prepare students for careers in animal science and production in species, including, but not limited to, beef cattle, dairy cattle, swine, sheep, goats, and poultry. The student will demonstrate technical skills relating to the interrelated human, botanical, scientific, and technological dimensions of animal systems and be able to assess the importance of the United States' impact on world commodity markets while applying the principles of livestock breeding and nutrition in predicting the impact of current advances in genetics. The student is expected to describe common veterinary procedures and skills, practice proper animal restraint techniques, demonstrate identification techniques, and demonstrate effective management strategies. The student will learn the anatomy and physiology related to nutrition, reproduction, health, and management of domesticated animals while understanding the nutritional requirements of ruminant and non-ruminant animals. The student is expected to discuss feeding practices and feed quality issues, explain animal genetics and reproduction. The student identifies animal pests and disease control, treatment, and prevention methods. The student knows the factors impacting commodity prices and costs.	½ or 1 Max credit = 1	License Code: 01005-Agriculture Education ♦ 5-12 or 9-12
01062	Equine Science	10-12	This course is designed to provide students with opportunities to learn, reinforce, apply, and transfer their animal systems knowledge and skills (including, but not limited to, horses, donkeys, and mules.) The student will analyze the selection of horses, how to provide proper nutrition using accepted protocols and processes, describe the anatomy and physiology of horses, and select equipment and facilities which demonstrate methods of handling and breeding horses safely. The student will compare, and contrast issues affecting the industry and describe biotechnology-related issues related to the equine field. The student will also learn the employability characteristics of a successful employee in the field of equine science by participating in laboratory-based or other supervised agricultural experiences and learning from the challenging hands-on approach in equine activities.	½ or 1 Max credit = 1	

Course Code	Course Name	Recommended Grade Levels	Agricultural Education require 150 contact hours per Career and Description	High School Credit Options*	License/credential Required**
01063	Natural/ Environmental Resources	9-12	This course allows students to increase awareness of the close ties among living organisms. Natural and environmental concerns with the interrelationships of living organisms and the world around us. Leadership development and supervised agricultural experience programs are also integral to this course.	¹ / ₂ or 1 Max credit = 1	
01066	Small Animal Care	9-12	This course is designed to teach students about the management of small animals, which may include, but are not limited to, small mammals, amphibians, reptiles, avians, dogs, and cats. The student will understand the importance of responsible small animal ownership by explaining the domestication and use of small animals, the influence small animals and the small animal industry on society, and the hazards associated with working in the small animal industry (including transmittance of disease and handling of dangerous chemicals). The student will evaluate current topics in animal rights and animal welfare, thus understanding the care and management requirements for a variety of small animals and be able to discuss the physical characteristics of each species studied; list the breeds or types of each species; discuss the habitat, housing, and equipment needs for each; compare and contrast nutritional requirements; describe and practice common methods of handling, and use available laboratory equipment to perform procedures.	½ or 1 Max credit = 1	License Code: 01005-Agriculture Education ♦ 5-12 or 9-12

Course Code	Course Name	Recommended Grade Levels	Description	High School Credit Options*	License/credential Required**
01067	Veterinary Science	11-12	This course is designed to prepare students for careers in animal science by introducing them to veterinary practices related to large and small animal species. The student will participate in laboratory and field investigations and demonstrate safety using critical thinking, scientific reasoning, and problem-solving to make informed decisions. They will research and describe the history of veterinary medicine, current topics, the importance of animals in society, and the professional ethics and laws related to veterinary medicine. The student will learn to explain the human-animal bond and describe the legal aspects of animal welfare. The student will identify anatomical structures and systems of animals and correct terminology while exploring animal management as it relates to animal identification, animal characteristics, and behavioral temperament (i.e., normal behavior compared to sick.) The student will evaluate animal diseases and identifies internal and external parasites and can evaluate an animal's health during a clinical examination while safely operating and maintaining equipment used in veterinary science. The student will also learn to determine nutritional requirements and the importance of nutrition in maintaining a healthy animal. The student will be conscious of the procedures, skills, and objectives included in the job description of an animal care assistant.	½ or 1 Max credit = 1	License Code: 01005-Agriculture Education ♦ 5-12 or 9-12
01068	Agricultural Processing	10-12	This course is designed to introduce students to the processing of agricultural products. The course will include the processing of food, fiber, and material product processing for the global economy will be emphasized. Personal communication skills, human relations skills, leadership development skills, and supervised agricultural experiences will be emphasized.	½ or 1 Max credit = 1	
01069	World Agricultural Science and Technology	10-12	A course designed to introduce students to global agriculture. This course also includes agricultural career development, leadership, communications, and personal finance. <i>Note: This course can be taught for Agricultural Education credit only.</i>	½ or 1 Max credit = 1	

Course Code	Course Name	Recommended Grade Levels	Description	High School Credit Options*	License/credential Required**
01073	Agriculture III	10-12	This course develops agricultural skills necessary for employment, entrepreneurship, or further education in agriculture and agricultural occupations. Units may include crop and livestock production, farm business management, agribusiness, horticulture, natural resources, agricultural mechanics, aquaculture, and water management. Leadership development and supervised agricultural experiences will also be emphasized.	½ or 1 Max credit = 1	
01074	Agriculture IV	10-12	This course develops agricultural skills necessary for employment, entrepreneurship, or further education in agriculture and agricultural occupations. Units may include crop and livestock production, farm business management, agribusiness, horticulture, natural resources, agricultural mechanics, aquaculture, and water management. Leadership development and supervised agricultural experiences will also be emphasized. This course can be a continuation of Agriculture III or can be offered in alternating years with Agriculture III.	½ or 1 Max credit = 1	License Code: 01005-Agriculture Education ♦ 5-12 or 9-12
01990	Individual Agricultural Studies	9-12	This course provides students in agriculture an opportunity to expand and explore the fields of agriculture, leadership, and personal development individually.	½ or 1 <i>Max credit</i> = 1	
01080	CASE Introduction to AFNR	9-12	Introduction to AFNR (Agriculture, Food, and Natural Resources) will introduce students to the world of agriculture, the pathways they may pursue, and the science, mathematics, reading, and writing components they will use throughout the CASE curriculum. Student experiences will involve the study of communication, the science of agriculture, plants, animals, natural resources, and agricultural mechanics.	1 Max credit = 1	License Code: 01080-CASE Introduction to AFNR
01081	CASE Principles of Agricultural Science - Animal	9-12	Principles of Agricultural Science – Animal is a foundation-level course designed to engage students in hands-on laboratories and activities to explore the world of animal agriculture. Student experiences will involve the student of animal anatomy, physiology, behavior, nutrition, reproduction, health, selection, and marketing.	1 Max credit = 1	License Code: 01081-CASE Introduction to AFNR
01082	CASE Principles of Agricultural Science - Plant	9-12	Principles of Agricultural Science – Plant is a foundation-level course that will teach students about the form and function of plant systems. Students are immersed in inquiry-based exercises filled with activities, projects, and problems to teach them plant concepts through laboratory and practical experiences. Student experiences will include soils, hydroponics, plant anatomy and physiology, taxonomy, growing environments, sexual reproduction, asexual reproduction, insects and diseases, and production and marketing. Classroom and laboratory activities are supplemented through supervised agricultural experiences and FFA programs and activities.	1 Max credit = 1	License Code: 01082-CASE Introduction to AFNR

Course Code	Course Name	Recommended Grade Levels	Description	High School Credit Options*	License/credential Required**
01083	CASE Agricultural Power & Technology	9-12	Agricultural Power and Technology is a foundation-level course designed to prepare students for various career opportunities in agricultural engineering. Students are immersed in inquiry-based exercises that tie in the math and science of agricultural mechanics and engineering. Students apply technical skills while becoming competent in operating, repairing, engineering, and designing agricultural tools and equipment.	1 Max credit = 1	License Code: 01083 -CASE Agricultural Power and Technology ♦ 9-12
01084	CASE Natural Resources & Ecology	9-12	Natural Resources and Ecology course is a foundation-level course that provides students with various experiences in natural resources and ecology. Students will explore hands-on projects and activities while studying land use, water quality, stewardship, and environmental agencies. The study of the natural world, including biomes, land, air, water, energy, use, and care, as well as a focus on issues surrounding man's interaction with the earth, will be addressed in this course.	1 Max credit = 1	License Code: 01084 - CASE Natural Resources and Ecology ∳ 9-12
01085	CASE Animal & Plant Biotechnology	9-12	Animal and Plant Biotechnology is a specialization course that provides students with experiences in industry-appropriate applications of biotechnology related to plant and animal agriculture. Students are expected to become proficient at biotechnological skills involving micro pipetting, bacterial cultures and transformations, electrophoresis, and polymerase chain reaction. Research and experimental design will be highlighted.	1 Max credit = 1	License Code: 01085 CASE Animal & Plant Biotechnology ♦ 9-12
01086	CASE Food Science & Safety	9-12	Food Science and Safety is a specialization course in which students complete hands-on activities, projects, and problems that simulate actual concepts and situations in the food science and safety industry, allowing students to build content knowledge and technical skills. Students will investigate areas of food science, including food safety, food chemistry, food processing, food product development, and marketing	1 Max credit = 1	License Code: 01086 CASE Food Science and Safety ♦ 10-12
01087	CASE Agricultural Business Foundations	9-12	Agricultural Business Foundations introduces students to business management in agriculture, mathematics, reading, and writing components woven in the context of agriculture. Students will use the introductory skills and knowledge developed in this course throughout subsequent CASE courses. The course includes concepts in starting a business, financial documents, risk management, and writing a business plan.	1 Max credit = 1	License Code: 01087 CASE Agricultural Business Foundations ♦ 9-12

High school (grades 9-12) courses in Agricultural Education require 150 contact hours per Career and Technical Education (CTE) credit.

Course Code	Course Name	Recommended Grade Levels	Description	High School Credit Options*	License/credential Required**
01088	CASE Environmental Science Issues	9-12	The course is a specialization level course that enables students to research, analyze, and propose sustainable solutions to environmental issues. Students are immersed in inquiry-based exercises filled with activities, projects, and problems, which develop data acquisition and analysis techniques, critical thinking and evaluation abilities related to environmental issues, and independent research and problem-solving.	1 Max credit = 1	License Code: 01088 CASE Environmental Science Issues ♦ 9-12
01993	Community Development	9-12	This course provides students in agriculture an opportunity to understand the principles and fundamentals of community development and gain an appreciation of essential community needs. Students will have the opportunity to study the community development process and select, plan, and implement a community development project or projects. Community leadership development and service learning are integral to the success of this course.	¼, ½, or 1 Max credit = 1	License Code: 01005-Agriculture Education ♦ 5-12 or 9-12
01995	Supervised Agricultural Experience Program	9-12	This course provides credit for student agricultural experience exploration. Fulfillment of the standards outlined in the Policy Statement for Supervised Agricultural Experience Programs in agricultural education in North Dakota. All students must complete a minimum program of supervised agricultural experience; those who wish to exceed the minimum may earn 1/4, 1/2, or 1 credit each year.	¼, ½, or 1 Max credit = 2	License Code: 01005-Agriculture Education ♦ 5-12 or 9-12
01999	Cooperative Work Experience	11-12	This course provides students with a regularly scheduled, supervised employment opportunity related to agriculture occupations to develop and improve work skills. The employment must be preceded by, or concurrent with, classroom instruction about the work experience, consistent with the student's occupational goals, and related to the Agriculture Education program area. There shall be a training agreement among all partners regarding the work experience (school, employer, student, and parents/guardians) outlining the expectations of each party. The instructor shall also develop a specific training plan with the employer for each student placed. The training plan shall include provisions for student progress assessment and on-site visits by the instructor during the student's placement. NOTE: Students must be at least 16 years old and may be paid a wage by the employer .	Maximum of ½ credit per semester, not to exceed 4 credits while in high school <i>Max credit</i> = 4	License Code: 01005-Agriculture Education ♦ 5-12 or 9-12

* High school curricular requirements are spelled out in NDCC 15.1-21-02, and High school unit - instructional time is NDCC 15.1-21-03. Maximum credit refers to the maximum units of credit a student may earn for a course over four years of high school. (Example: Band - a student may be enrolled in band all four years of high school -- earning a possible total of four units of credit.)

** Please refer to the second page of the teacher's North Dakota Educator's Professional license to verify which subject areas a teacher is qualified to teach. Licenses and endorsements are obtained on a teaching license from the Education Standards and Practices Board (ESPB).

Credentials are obtained from the Department of Public Instruction (DPI) and issued to individuals with a teaching license.