

# New Mexico Public Education Department

## Student Teacher Accountability Reporting System

### 2. Agriculture, Food and Natural Resources – 0129-0199

This subject area encompasses courses that prepare learners for careers in the planning, implementation, production, management, processing, and/or marketing of agricultural commodities and services, including food, fiber, wood products, natural resources, horticulture, and other plant and animal products. All courses should adhere to the complete program model, incorporating 1) classroom and laboratory instruction, 2) supervised agricultural (occupational) experience, and 3) participation in leadership, knowledge and skill development activities provided through FFA.

**\*\*CODE NUMBERS ARE SUBJECT TO CHANGE UPON ACCEPTANCE FROM NMPED\*\***

**0131 Agricultural Explorations** - *Recommended for Students Grades 7* - Surveys a wide array of topics within the agricultural industry, exposing students to the many and varied types of agricultural career opportunities and to those in related fields. As the name implies, these courses serve simply to introduce the agricultural field, providing students the opportunity to identify and focus on continued study. Primarily designed for seventh and/or eighth grade.

**0132 Agricultural Science** - *Recommended for Students Grades 8* - Surveys a wide array of topics within the agricultural industry, exposing students to the main and varied types of agricultural career opportunities and to those in related fields. This course serves as stage two, building upon the seventh-grade class.

**0133 Introduction to the Science of Agriculture** - *Recommended for Students Grades 9-10* - The local, national, and global definitions, history, and scope of agriculture in society is covered in this course. It also covers plant and animal sciences, production and processing; agricultural mechanics, including tool and machine operation; business and natural resource management; management of food and fiber systems; soil characteristics, formation and properties; and development of leadership and communication skills.

**0134 Physical Science of Agriculture** - *Recommended for Students Grades 10 - 12* - The course covers the global marketplace, development of a Program of Activities, and leadership development. Animal science emphasis is on the selection, reproduction and genetics of breeds of beef, sheep, and swine, dairy cattle, horses, poultry, and specialty animals. Plant science emphasis is on the structure and function of plant parts; identification of common pasture and range plants; plant growth and development; sexual and asexual reproduction of plants. Soil science topics include nutrients, fertilizers, and organic matter, conservation practices and sampling techniques.

**0136 Applied Science in Agriculture** - *Recommended for Students Grades 10 - 12* - Specific subject matter covered in this course includes current issues relevant to the agricultural industry, marketing and sales techniques. Disease and parasites effecting the various breeds of livestock; Animal welfare and relationship to the human environment; May include the horticultural practices of greenhouse management; fruit, nut and vegetable production; and landscaping principles; Forest fire prevention and techniques, public and private land forests; Wildlife mammals, waterfowl, freshwater fish, and game management.

**0137 Agricultural Leadership/Communication** - *Recommended for Students Grades 10 - 12* - Course is designed to strengthen students' personal and group leadership skills. Topics such as public speaking, effective communication, human relations, parliamentary law, and group dynamics are covered. Also covered is the development of Programs of Activity, and Service-Learning projects, including student development, chapter development, and community development.

**0138 CASE Introduction to Agriculture, Food, and Natural Resources (AFNR)** - *Grades 9-12* - introduces students to the range of agricultural opportunities and the pathways of study they may pursue. Science, mathematics, reading, and writing components are woven in the context of agriculture and students will use the introductory skills and knowledge developed in this course throughout the CASE curriculum (**CASE course**).

**0141 Horticulture/Botany** - *Recommended for Students Grades 10 - 12* - The focus of this course is on the science of plants (botany). Specific topics include photosynthesis and respiration, analysis of the difference of plant and animal cell structure, genetics, taxonomy and classification. Also included are topics covering entomology, soil chemistry, and plant diseases, virus and bacteria life cycles and effects on plant growth. The focus is on horticultural crops including greenhouses, landscape and floral plants.

**0143 Greenhouse/Nursery Operations** - *Recommended for Students Grades 10 - 12* - This course covers greenhouse/nursery operation and management. Plant propagation includes grafting, budding, and layering. Students are often involved in the planning, management, and marketing associated with the school greenhouse/nursery.

**0144 Landscape** - *Recommended for Students Grades 10 - 12* - Introduction to landscape design, construction, and maintenance. Irrigation systems for the landscape, including water conservation and use, and xeriscape for plants. Drawing instruments and symbols are used in designing the landscape plan, identification and selection of landscape ground covers, shrubs, trees, and other construction materials. Cost estimates and landscape proposals are also covered in this course.

**0145 Floriculture** - *Recommended for Students Grades 10 - 12* - Focus is on the floriculture industry including plant production, processing, marketing, and principles of floral design. Students are often involved in a simulated floral shop on the school grounds. Interior landscaping may also be included in this course.

**0146 CASE Principles of Agricultural Science (Plant) - Grades 9-12** - is a foundation-level course within the CASE sequence of courses teaching students the form and function of plant systems. Students experience various plant science concepts through inquiry-based exercises and will include the study of plant anatomy and physiology, classification, and the fundamentals of production and harvesting. Students will learn how to apply scientific knowledge and skills to use plants effectively for agricultural and horticultural production. Students will discover the value of plant production and its impact on the individual, the local, and the global economy. Every lesson is aligned with national standards for agriculture, science, mathematics, and English language arts **(CASE course)**.

**0151 Introduction to Agricultural Mechanics - Recommended for Students Grades 9 - 12** - Course provides for the skill and knowledge development applicable to the tools and equipment used in the agricultural industry. In learning to apply basic industrial knowledge and skills (engines, power, welding, and carpentry), a broad range of topics may be explored, including the operation, mechanics, and care of tools and machines; the construction and repair of structures; introduction to electricity and power. Procedures for safe operations in the agricultural mechanics laboratory are included in this course.

**0152 Agricultural Structures and Construction - Recommended for Students Grades 10 - 12** - Topics include surveying, concrete and masonry, plumbing, drafting, carpentry and electrical wiring; use of bids and billing information to develop a complete materials list and project cost estimate; use of measurement and layout tools. Procedures for safe operations in the agricultural mechanics laboratory are included in this course.

**0153 Metal Fabrication for the Agricultural Industry - Recommended for Students Grades 10 - 12** - Topics include oxyacetylene and MIG welding techniques including cutting, brazing, and welding: Fabrication techniques and project design including estimating and developing materials list. Tool room management and safety procedures are essential to the course.

**0154 Agricultural Power and Machinery - Recommended for Students Grades 10 - 12** - The course includes maintenance and troubleshooting, and repair of small gas engines, auto and farm equipment maintenance: Identification and comparison of energy sources. Troubleshoot problems and evaluate performance to service and repair components of internal combustion engines. Follow manufacturers' guidelines to service and repair power transmission systems. Utilize maintenance manuals to service and repair hydraulic systems. Utilize schematics to service vehicle electrical systems.

**0156 CASE Agricultural Power and Technology - Grades 9-12** - is a foundation level course within the CASE sequence of courses designed to prepare students for the wide array of career opportunities in agricultural engineering. Students are immersed in inquiry-based exercises that tie in the math and science of agricultural mechanics and engineering. Throughout the course, students apply technical skills while becoming competent in the process used to operate, repair, engineer, and design agricultural tools and equipment. Every lesson is aligned to national standards for agriculture, science, mathematics, and English language arts **(CASE course)**.

**0157 CASE Mechanical Systems in Agriculture** - *Grades 10-12* - is the specialization course designed to provide rigorous applications in the agricultural engineering field. Throughout the course, students apply technical skills while becoming competent in the process used to operate, repair, engineer, and design agricultural tools and equipment. Mechanical Systems in Agriculture areas of study include electrical systems, structural systems, energy systems, machine service and maintenance, geographic information and global position systems, mechanical design and management **(CASE course)**.

**0161 Science of Large Agriculture Animals** - *Recommended for Students Grades 10 - 12* - Course imparts information about the care and management of domesticated animals. Animal nutrition, health, reproduction, genetics, facilities, and marketing are all possible topics, Study of anatomy and physiology of livestock and other domesticated animals. Examination of developmental stages and analysis of feed ration for different parts of an animal's life cycle. Identification of environmental factors that affect an animal's performance, and recognition of animal behaviors to facilitate working with animals safely. This course may include dairy cattle and equine.

**0162 Science of Small Animals** - *Recommended for Students Grades 10 - 12* - Course imparts information about the care and management of domesticated animals. Animal nutrition, health, reproduction, genetics, facilities, and marketing are all possible topics, Study of anatomy and physiology of livestock and other domesticated animals. Examination of developmental stages and analysis of feed ration for different parts of an animal's life cycle; Identification of environmental factors that affect an animal's performance; Recognition of animal behaviors to facilitate working with animal safely. The specific focus of this course is on small animals including rabbits, fowl, dogs, and cats.

**0164 Veterinary Science/Technician** - *Grades 11-12* - Course imparts basic information about employment as a veterinary technician. Animal health, nutrition, reproduction, genetics, facilities maintenance, anatomy and physiology and business management are all possible areas of study. The specific focus of this course is on mastering the entry level skills needed for employment as a veterinary assistant or technician. *(Introductory units available via New Mexico Secondary Agriculture Education. Resources should be followed by dual credit enrollment in a recognized certification program).*

**0166 CASE Principles of Agricultural Science (Animal)** - *Grades 9-12* - is a foundation-level course within the CASE sequence of courses engaging students in hands-on laboratories and activities to explore the world of animal agriculture. Student experiences will involve the study of animal anatomy, physiology, behavior, nutrition, reproduction, health, selection, and marketing. Students will explore hands-on projects and activities to learn the characteristics of animal science and work on major projects and problems similar to those that animal science specialists, such as veterinarians, zoologists, livestock producers, and industry personnel, face in their respective careers. Every lesson is aligned with national standards for agriculture, science, mathematics, and English language arts **(CASE course)**.

**0167 CASE Animal and Plant Biotechnology - Grades 10-12** - a specialization course in the CASE Program of Study, 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. Students will maintain a research level Laboratory Notebook throughout the course documenting their experiences in the laboratory. Research and experimental design will be highlighted as students develop and conduct industry appropriate investigations. Students should take Introduction to AFNR followed by either Principles of Agricultural Science - Animal or Principles of Agricultural Science - Plant prior to registering for this course. An alternative route could be Biology, Chemistry, foundational agricultural science for plants and animals **(CASE course)**.

**0171 Agricultural Economics and Business Management - Recommended for Students Grades 10 - 12** - Course provides students with the information and skills necessary for career success in agribusiness and in the operation of entrepreneurial ventures. Topics include economic principles, budgeting, risk management, finance, business law, insurance and resource management. Other possible topics are development of a business plan, employee/employer relations, problem solving and decision making, using computers. A survey of the careers within the agricultural industry is also incorporated.

**0173 Science of Food Products and Food Processing - Recommended for Students Grades 10 - 12** - Course imparts the knowledge and skill needed to bring animal and plant products to market. Processing topics will include quality selection and preservation, equipment care and sanitation, government regulations, and consumer trends.

**0177 CASE Food Science and Safety Grades - 10-12** - is a specialization course in which students will complete hands-on activities, projects, and problems that simulate actual concepts and situations found in the food science and safety industry, allowing students to build content knowledge and technical skills. Research and experimental design will be highlighted as students develop and conduct industry appropriate investigations. Students should take Introduction to AFNR followed by either Principles of Agricultural Science - Animal or Principles of Agricultural Science - Plant prior to registering for this course. An alternative route could be Biology, Chemistry, foundational agricultural science for plants and animals and a strong background in student-directed, project-, and inquiry-based learning **(CASE course)**.

**0181 Environmental Science/Natural Resources - Recommended for Students Grades 10 - 12** - Course combines the fields of ecology and conservation with planning for the efficient use and preservation of land, water, wildlife, and forests. Within this course may be topics covering environmental factors affecting water, water pollution, water and land use management, alternative energy resources, metals and minerals.

**0182 Science of Wildlife and Forestry Management - Recommended for Students Grades 10 - 12** - Course provides the information necessary for the cultivation and care of forests or timberlands. Forestry topics covered are the processes of regeneration and reforestation, conservation of natural resources, erosion control, trail development and maintenance, mapping and surveying, operation of forestry tools, government regulations, and recreational uses. Wildlife topics include land and ecological systems that enable non-domesticated animals to thrive. Emphasize on how humans and animals may both take advantage of the same land, how to gain economic benefits from the land while not degrading its natural resources or depleting the plant and animal populations.

**0183 PLTW Environmental Sustainability** - *Recommended for Students Grades 9 - 12* - In ES, students investigate and design solutions in response to real-world challenges related to clean and abundant drinking water, food supply issues, and renewable energy. Applying their knowledge through hands-on activities and simulations, students research and design potential solutions to these true-to-life challenges. *(A Project Lead the Way course).*

**0186 CASE Natural Resources and Ecology** - *Grades 9-12* - is a foundation course within the CASE sequence of courses. The course provides students with a variety of experiences in the fields of natural resources and ecology. Students will explore hands-on projects and activities while studying topics such as land use, water quality, stewardship, and environmental agencies. 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. Every lesson is aligned to national standards for agriculture, science, mathematics, and English language arts **(CASE course).**

**0187 CASE Environmental Science Issues** - *Grades 10-12* - course is a specialized 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, as well as independent research and problem solving. Areas of study in Environmental Science Issues include the following: issue analysis, biodiversity, industrial impacts, agriculture and environmental interactions, research projects **(CASE course).**

**0188 CASE Agricultural Business Foundations (ABF)** - *Grades 11-12* -introduces students to business management in agriculture. Mathematics, reading, and writing components are woven in the context of agriculture and students will use the introductory skills and knowledge developed in this course throughout subsequent CASE courses. Throughout the course are practical and engaging activities, projects, and problems to develop and improve business and employability skills. Additionally, students investigate and develop viable business plans in order to solve local problems. The business plan ideas are communicated to student peers and members of the professional community. **(CASE course. This course is a semester course and 0.5 credits)**

**0191 Agricultural Internship/OJT/Coop** - *Recommended for Students Grades 11 - 12* - Through these courses, work experience is gained within the agricultural industry. Goals are set for the employment period. Classroom experience may involve further study in the field, improvement of employability and career readiness skills.

**0192 Agricultural Entrepreneurship** - *Recommended for Students Grades 11 - 12* - Through this course the student will gain knowledge in the development of a business enterprise. Financial and resource management is an important aspect of this course. Classroom experience may involve further study in the field, improvement of responsibility and career readiness skills.

**0197 CASE Agricultural Research and Development** - *Grades 11-12* - is the capstone course designed to culminate students' experiences in agriculture, based on the pathway of study they pursued. Woven throughout the course are projects and problems based on practical applications and designed to develop and improve employability skills of students. Students will further enhance critical thinking and teamwork skills as they expand on content knowledge from previous CASE courses. In this course students will learn to: solve complex real-world problems, conduct research analyze data, work in teams, develop new products **(CASE course)**.

**0199 Agriculture Other** - *Recommended for Students Grades 11 - 12* - Course provides knowledge and skills in specific areas of the agricultural industry and is designed to adapt to the needs of the local community. Typically used with advanced dual credit topics.