

Erie County Technical School
Natural Resources and Environmental Sciences
Proposed Duty and Task List

ANR8034	Horticulture Sciences
ANR8034.000	Gaining an Overview of the Environmental Horticulture Industry
ANR8034.001	Identify the components of the program and the course.
ANR8034.002	Follow safety procedures for personal protection in the horticulture industry.
ANR8034.003	Examine career opportunities in the horticulture industry.
ANR8034.0031	Practicing Leadership Skills
ANR8034.004	Identify benefits and responsibilities of FFA membership.
ANR8034.005	Identify duties of all officers in the FFA.
ANR8034.006	Participate in a committee meeting.
ANR8034.007	Prepare and deliver an oral presentation or speech.
ANR8034.008	Participate in a panel discussion.
ANR8034.009	Write a news release.
ANR8034.010	Develop communication skills.
ANR8034.011	Use parliamentary procedure.
ANR8034.012	Develop record-keeping skills, using the Virginia SAE Record Book.
ANR8034.013	Complete an FFA award and/or officer application.
ANR8034.014	Participate in a community improvement project.
ANR8034.015	Develop an annual plan for Supervised Agricultural Experience (SAE) based on personal goals.
ANR8034.016	Apply for an FFA proficiency award.
ANR8034.0161	Applying Science to Horticulture
ANR8034.017	Demonstrate understanding of plant taxonomy.
ANR8034.018	Analyze plant anatomy and physiology.
ANR8034.019	Identify how environmental factors influence plant growth.
ANR8034.020	Establish plant propagation procedures.
ANR8034.0201	Investigating the Floriculture Industry
ANR8034.021	Establish greenhouse growing practices.
ANR8034.022	Design interior plantings.
ANR8034.023	Design floral arrangements.
ANR8034.024	Identify floriculture crops.
ANR8034.0241	Investigating the Landscaping Industry
ANR8034.025	Design landscapes.
ANR8034.026	Construct landscapes.
ANR8034.027	Maintain landscapes.
ANR8034.028	Identify landscape plants.
ANR8034.0281	Establishing and Maintaining Turf Grass
ANR8034.029	Establish turf.
ANR8034.030	Maintain turf.
ANR8034.031	Renovate turf.
ANR8034.0311	Producing Fruits and Vegetables
ANR8034.032	Identify vegetable crops.
ANR8034.033	Plan and prepare a vegetable garden site.
ANR8034.034	Plant and maintain vegetable plantings.
ANR8034.035	Identify small fruits.
ANR8034.036	Plan a fruit garden.

ANR8034.037	Plant and maintain fruit crops.
ANR8034.0371	Managing Pests
ANR8034.038	Demonstrate understanding of Integrated Pest Management (IPM).
ANR8034.039	Identify greenhouse and garden pests.
ANR8034.040	Interpret pesticide labels.
ANR8034.041	Locate and interpret Material Safety Data Sheets.
ANR8034.042	Follow environmental and personal safety procedures.
ANR8034.043	Follow pest control programs for greenhouse and landscape crops.
ANR8034.0431	Gaining Skills for Success in the Workplace
ANR8034.044	Improve writing skills.
ANR8034.045	Improve speaking and listening skills.
ANR8034.046	Exhibit desirable work habits.
ANR8034.047	Show respect for individual diversity.
ANR8040	Introduction to Natural Resources III
ANR8040.000	Developing Human Relations for a Career in Natural Resource Management
ANR8040.009	Complete a placement agreement.
ANR8040.010	Demonstrate skills in communicating with others.
ANR8040.011	Evaluate aspects of personal appearance or physical traits which may hinder an individual's employability.
ANR8040.012	Exhibit positive human relations traits.
ANR8040.013	Identify the basic human needs that play a part in a worker's motivation.
ANR8040.014	Demonstrate an understanding of skills needed for effective relations with fellow employees.
ANR8040.015	Maintain effective supervisory relations with employee.
ANR8040.016	Maintain effective relations with employer/firm.
ANR8040.017	Make a decision using the decision-making process.
ANR8040.0171	Understanding Basic Environment Management
ANR8040.018	Demonstrate knowledge of the environment, its pollution problems, and possible solutions.
ANR8040.019	Define basic terminology related to ecology, environmental sciences, and environmental stability.
ANR8040.023	Explain the role of biodiversity in ecosystem stability and effects of latitude on species diversity.
ANR8040.026	Describe methods of dealing with conservation problems, planning, and practices.
ANR8040.027	Estimate the water needs for a farm or natural resource enterprise.
ANR8040.028	Interpret the various programs of the soil conservation agencies.
ANR8040.029	Operate and maintain the Dissolved Meter and Sampler.
ANR8040.030	Describe federal and state agencies responsible for protecting the environment.
ANR8040.0301	Protecting the Environment – Air and Noise
ANR8040.032	Locate and interpret sources of weather information.
ANR8040.034	Describe the effects of air pollutants on the environment.
ANR8040.035	Identify biotic and abiotic substances in indoor air as they relate to the Sick Building Syndrome.
ANR8040.036	Identify local sources of air pollution in the community.
ANR8040.038	Describe current air quality tests.
ANR8040.040	Identify characteristics of ozone layer depletion, including causes, effects, and steps being taken to retard the process.
ANR8040.041	Debate global warming and ozone depletion's possible effects on agriculture.
ANR8040.044	Using noise levels and loudness ratings, assess sound to determine whether a sound control plan is needed.
ANR8040.0441	Protecting the Environment--Soil
ANR8040.045	Define soil in terms of origin and materials content.
ANR8040.047	Classify soils by using a soil taxonomy system.
ANR8040.049	Collect and analyze samples of soil to identify composition.
ANR8040.050	Make nutrient recommendations based on findings.

ANR8040.051	Identify procedures for improving the soil.
ANR8040.052	Discuss water erosion and its effects on agricultural production.
ANR8040.053	Describe and design a crop rotation plan.
ANR8040.058	Identify practices to control soil erosion.
ANR8040.0581	Protecting the Environment--Water
ANR8040.059	Define characteristics of water and the hydrologic cycle.
ANR8040.060	Design and construct a model to illustrate components of the local surface water system.
ANR8040.064	Develop a watershed management plan.
ANR8040.068	Describe the source of water for home and industrial use.
ANR8040.069	Discuss current government legislation that relates to water quality.
ANR8040.072	Identify major water pollutants and their effects on the environment, including agricultural production.
ANR8040.073	Explain the various methods of water treatment.
ANR8040.074	Monitor potential pollutants.
ANR8040.075	Collect necessary samples for EPA inspections, and analyze them for chemical pollutants and biological organisms.
ANR8040.079	Identify best management practices for various water resource issues.
ANR8040.080	Select the best method to control water pollution.
ANR8040.081	Make recommendations regarding good sanitation practices and principles.
ANR8040.082	Participate in investigative activities by collecting field data for agencies.
ANR8040.0821	Managing Forest Resources
ANR8040.085	Identify diseases of trees caused by organic pathogens, environment, and insects.
ANR8040.086	Identify and name forest products.
ANR8040.087	Use various methods of measuring wood and volume of pulpwood.
ANR8040.088	Locate markets for forest products.
ANR8040.089	Select timber for purchase.
ANR8040.090	Produce Christmas trees, including a plan for delivery to wholesale buyers.
ANR8040.091	Estimate the volume of standing timber on a given tract.
ANR8040.092	Determine the value of standing timber.
ANR8040.093	Remove debris from work area.
ANR8040.094	Describe different methods of harvesting trees and determine equipment needed.
ANR8040.095	Demonstrate knowledge and ability to operate tree equipment, observing safety rules.
ANR8040.096	Determine equipment costs.
ANR8040.097	Demonstrate ability to operate circular saw.
ANR8040.098	Demonstrate sawmill safety, operating equipment, and first-aid procedures.
ANR8040.099	Demonstrate ability to perform general sawmill operation activities.
ANR8040.100	Demonstrate ability to operate carriage.
ANR8040.101	Grade a stack of lumber.
ANR8040.102	Demonstrate ability to fell trees according to cutting patterns, using chain saw.
ANR8040.103	Demonstrate ability to limb and top felled trees.
ANR8040.104	Make bucking cuts.
ANR8040.105	Plan logging activities.
ANR8040.107	Manage a forest-harvesting plot.
ANR8040.108	Outline procedures for supervising the loading and unloading of logs.
ANR8040.110	Design plans to establish forest roads.
ANR8040.111	Outline procedures for managing harvesting operations.
ANR8040.114	Demonstrate knowledge of tree fertilization.
ANR8040.115	Develop a plan for the management of a forest.
ANR8040.116	Develop a plan to deliver forest products to manufacturing sites.
ANR8040.1161	Managing Fires in the Forest

ANR8040.120	Demonstrate knowledge of fire control measures.
ANR8040.121	Describe the location of a forest fire, using Forest Service terminology.
ANR8040.122	Write a control program for a fire.
ANR8040.123	Conduct safety-training exercises in fire control.
ANR8040.124	Develop and explain a fire safety program and a fire safety-training program.
ANR8040.125	Prepare publicity showing how people can prevent timber, forest, and grass fires.
ANR8040.126	Lay out a plan on paper to mop up the fire after it is brought under control.
ANR8040.127	Complete the Forest Services fire report.
ANR8042	Forestry, Wildlife, and Soil Management IV
ANR8042.000	Managing a Natural Resources Business or Agency
ANR8042.001	Demonstrate ability to handle a cash transaction.
ANR8042.002	Demonstrate knowledge of credit and loan application.
ANR8042.003	Demonstrate knowledge of a financial statement.
ANR8042.004	Set up a budget for a natural resources enterprise.
ANR8042.005	Identify facility needs for a natural resources enterprise.
ANR8042.006	Maintain an accurate inventory.
ANR8042.007	Demonstrate ability to keep employment records.
ANR8042.008	Demonstrate knowledge of employee safety and standards.
ANR8042.009	Determine insurance needs.
ANR8042.010	Prepare requisitions.
ANR8042.011	Maintain accurate records of a natural resource enterprise.
ANR8042.012	Maintain field inspection reports.
ANR8042.013	Write a business letter.
ANR8042.014	Explain general business office procedures.
ANR8042.015	Maintain an organized filing system.
ANR8042.016	Evaluate attitude regarding change in work routines.
ANR8042.017	Prepare a complete income and expense budget for a natural resources business or agency.
ANR8042.018	Interpret a financial statement.
ANR8042.019	Complete government tax forms used in business.
ANR8042.020	Complete application forms for business licenses, and state, local, and federal identification numbers.
ANR8042.021	Become familiar with forms for employees, including social security, state, local, and federal forms.
ANR8042.022	Apply the principles of double-entry bookkeeping.
ANR8042.023	Determine personnel requirements.
ANR8042.024	Interview and select employees.
ANR8042.025	Demonstrate training techniques.
ANR8042.026	Supervise subordinate workers.
ANR8042.027	Evaluate employees' performance.
ANR8042.028	Develop work methods and procedures.
ANR8042.029	Lay out a weekly schedule of activities for an employee.
ANR8042.030	Explain working conditions under the existing contract agreements.
ANR8042.031	Determine the most effective methods of promoting a natural resources enterprise.
ANR8042.0311	Advertising and Promoting a Natural Resources Enterprise
ANR8042.032	Develop a public relations program for the enterprise.
ANR8042.033	Prepare a brochure to promote business.
ANR8042.034	Prepare business cards, letterhead paper, inventory forms, and other forms needed in business.
ANR8042.035	Prepare a natural resources enterprise exhibit.
ANR8042.036	Present demonstrations to promote a natural resources enterprise.
ANR8042.037	Demonstrate knowledge of media promotions.

ANR8042.038	Assist in conducting tours.
ANR8042.039	Address audience interested in natural resources.
ANR8042.0391	Applying Legal Aspects of Natural Resources
ANR8042.040	Interpret state, local, and federal laws pertaining to wildlife.
ANR8042.041	Demonstrate knowledge of various state, local, and federal laws pertaining to the operation of public facilities.
ANR8042.042	Demonstrate knowledge of compliance with federal and state laws on fishing and boating facilities operation.
ANR8042.043	Write a sales contract.
ANR8042.044	Describe the work of the Environmental Protection Agency.
ANR8042.045	Interpret Occupational Safety and Health Act regulations as they apply to a natural resources enterprise.
ANR8042.046	Demonstrate knowledge of federal, state, and local laws and regulations related to environmental protection.
ANR8042.047	Demonstrate a knowledge of federal, state, and local laws, rules, and regulations related to USDA and VDACS.
ANR8042.048	Interpret appropriate federal, state, and local labor laws.
ANR8042.049	Identify laws that regulate public access.
ANR8042.0491	Dealing with Issues in Natural Resources Management
ANR8042.050	Compare the ways various media groups report on environmental issues.
ANR8042.052	Discuss the development of environmental awareness and conservation trends.
ANR8042.053	Describe the impact of the National Environmental Protection Act, with emphasis on the Environmental Impact Statement.
ANR8042.057	Describe effects of natural events and human influences on ecosystems.
ANR8042.059	Discuss what can be done in the next five years to combat environmental problems.
ANR8042.060	Explain how technology has been used to combat pollution problems.
ANR8042.0601	Managing Land Use
ANR8042.061	Explain the impact of major land uses on the environment and ecosystems.
ANR8042.063	Explain the effects of zoning.
ANR8042.064	Classify land zoning according to its relationship with the land's capability to produce crops.
ANR8042.065	Design a community with the environment as its major area of concern.
ANR8042.066	Identify alternative land treatment plans.
ANR8042.067	Develop farm land-use plans.
ANR8042.068	Identify activities of the conservation district in a local area.
ANR8042.069	Interpret land-use maps.
ANR8042.070	Formulate the agricultural land-use section of a comprehensive plan for community development.
ANR8042.0701	Managing Fish and Wildlife
ANR8042.074	Write a plan to manage a stream or lake.
ANR8042.075	Design a wildlife preserve area.
ANR8042.076	Measure wildlife population.
ANR8042.077	Develop a plan to provide food for animal and bird wildlife species.
ANR8042.078	Seed, mulch, and fertilize waterholes.
ANR8042.079	Explain the differences between extinct, endangered, and threatened species of wildlife, waterfowl, and birds.
ANR8042.080	Describe the main points, importance, and advantages/disadvantages of the Endangered Species Act.
ANR8042.081	Research an American endangered species, describing its progress since being named an endangered species.
ANR8042.082	Discuss Virginia State Laws regulating hunting, fishing, and boating.
ANR8042.083	Operate a game animal and fishing-checking station during hunting and fishing seasons.
ANR8042.084	Identify diseases and parasites in wildlife, waterfowl, and birds.
ANR8042.085	Report on the control of diseases and parasites in game animals.
ANR8042.086	List ways to attract animals, birds, and insects to a local natural habitat.
ANR8042.087	Identify elements for maintenance of a marsh for wildlife habitat.
ANR8042.088	Supervise operation of equipment and facilities for plant life projects.
ANR8042.089	Breed and raise game birds.

ANR8042.090	Demonstrate ability to manage wildlife.
ANR8042.091	Describe the establishment of a wildlife preserve area.
ANR8042.092	Develop recommendations to conduct a wildlife control program.
ANR8042.095	Propagate fish.
ANR8042.096	Determine ration to feed fish.
ANR8042.097	Determine proper stocking rate in ponds.
ANR8042.098	Develop recommendations for maintaining ponds.
ANR8042.099	Outline plans for a stock water pond.
ANR8042.100	Write a plan to establish and maintain a fish pond.
ANR8042.101	Explain the differences between marine fish, marine shellfish, and marine mammals.
ANR8042.103	Identify environmental conditions for a fish operation and appropriate fish for production.
ANR8042.1031	Maintaining lawns
ANR8042.104	Identify types of fertilizers and pesticides.
ANR8042.105	Describe types of grasses and weeds native to Virginia, with a focus on local species.
ANR8042.106	Describe the use of fertilizers and pesticides, including safe handling, application, and storage practices.
ANR8042.109	Describe and determine weed control measures.
ANR8042.110	Irrigate turf.
ANR8042.111	Determine necessary lawn equipment and repairs.
ANR8042.112	Maintain landscape maintenance equipment.
ANR8042.113	Become a certified private pest license holder.
ANR8042.114	Aerate sod.
ANR8042.115	Haul and spread topsoil.
ANR8042.116	Prepare and apply a compost.
ANR8042.117	Sterilize soil.
ANR8042.118	Add mulch to new seedling.
ANR8042.119	Check plants for insects.
ANR8042.120	Apply weed-killer compounds to lawns.
ANR8042.121	Develop fertilizer schedules.
ANR8044	Natural Resources Business Management V
ANR8044.000	Understanding Urban Ecosystems
ANR8044.001	Explain how urban forests fit into an urban ecosystem.
ANR8044.002	List and identify benefits of urban forests.
ANR8044.003	Identify plant species appropriate to urban development.
ANR8044.004	List and describe unfavorable conditions that urban trees experience.
ANR8044.005	Explain a pruning, fertilization, and pest control plan for urban plantings.
ANR8044.006	Water plants.
ANR8044.007	Remove weeds and grasses from flowerbeds.
ANR8044.008	Remove dead, diseased, or damaged plants and plant parts.
ANR8044.009	Plant annual flowers.
ANR8044.010	Plant flower bulbs.
ANR8044.011	Protect new plants from direct sunlight.
ANR8044.012	Plant trees appropriate for an urban environment.
ANR8044.013	Wrap trees or shrubs to protect from weather.
ANR8044.014	Compile information necessary for purchasing chemicals for a specific use.
ANR8044.015	Apply chemical treatment to diseased plants.
ANR8044.016	Apply chemical treatment to insect-infested plants.
ANR8044.017	Prune and trim trees.
ANR8044.0171	Providing Leadership

ANR8044.018	Demonstrate understanding of FFA.
ANR8044.020	Research the accomplishments of an environmental organization or conservationist.
ANR8044.021	Develop a plan for participating in the Envirothon.
ANR8044.022	Participate in Envirothon.
ANR8044.023	Communicate environmentally-sound practices to others.
ANR8044.0231	Managing Solid and Liquid Waste
ANR8044.024	Explain a sewage plant and disposal system and most common methods of waste disposal.
ANR8044.025	Design a home septic system.
ANR8044.026	Outline systems for hazardous waste disposal.
ANR8044.027	Identify most common solid waste forms (paper, aluminum, glass, and plastics).
ANR8044.028	Develop a plan for recycling programs for the classroom and for the home.
ANR8044.029	Conduct a study to describe solid waste sources in home, school, farm, and community.
ANR8044.030	Identify methods and elements necessary for a compost.
ANR8044.0301	Using Maps and Orienteering
ANR8044.031	Identify and describe topographic map, relief map, aerial photography, and infrared photography.
ANR8044.032	Identify and reference specified landmarks on a topographic land map and relief map.
ANR8044.033	Demonstrate ability to read engineer's scale in determining distance.
ANR8044.034	Write ledge description of plotted land.
ANR8044.035	Use an engineer's scale and topographic map to determine percentage of slope.
ANR8044.036	Identify cardinal directions on maps and in the outdoors.
ANR8044.037	Demonstrate ability to read and use a compass to orient various locations on a map.
ANR8044.038	Use a compass and map to conduct a land navigation exercise.
ANR8044.039	Set up and operate a transit level and rod.
ANR8044.041	Make linear measurements by pacing.
ANR8044.042	Carry and set stakes.
ANR8044.043	List the uses of surveys.
ANR8044.044	Set up and operate surveying instruments.
ANR8044.045	Adjust and clean surveying instruments.
ANR8044.046	Identify and correct malfunctions of surveying instruments.
ANR8044.047	Locate and stake a terrace line.
ANR8044.048	Determine field area of specific plots of land in acres.
ANR8044.049	Measure and record distances, run compass lines, and identify topographic features.
ANR8044.050	Complete a surveying job.
ANR8044.051	Demonstrate ability to use hand level or engineering level and tape.
ANR8044.052	Write legal descriptions of a selected plot of land.
ANR8044.053	Convert English measurement units to metric equivalents and metric equivalents to units.
ANR8044.054	Perform land line location and corner restoration work.
ANR8044.0541	Managing Recreational Areas
ANR8044.055	Identify major components of state and local recreation areas.
ANR8044.056	Discuss safety practices while boating, hunting, and fishing.
ANR8044.057	Discuss procedures for maintaining security and preventing accidents.
ANR8044.058	Develop a plan to establish living fences.
ANR8044.059	Inspect recreational areas.
ANR8044.060	Describe the procedure involved in promoting, organizing, and conducting a hunting and/or fishing expedition.
ANR8044.061	Advise others on navigational methods.
ANR8044.062	Develop rules for campgrounds.
ANR8044.063	Order weekly campground supplies.
ANR8044.064	Locate trails, considering scenery and grades.

ANR8044.065	Identify and list the natural resources of a given site.
ANR8044.066	Plan sled and snowmobile areas.
ANR8044.067	Select method to control insects in camping areas.
ANR8044.068	Design recreational enterprise.
ANR8044.069	Assist in the formulation and development of interpretive program services.
ANR8044.070	Plan security programs for recreational enterprise.
ANR8044.071	Design special features including a skeet range, rifle and pistol area, and archery range.
ANR8044.072	Develop rules for campgrounds and recreational areas.
ANR8044.073	Develop a program to lead people in indoor and outdoor recreation activities.
ANR8044.074	Design a recreational area.
ANR8044.075	Identify and plan the financial backing needed for a recreational facility.
ANR8044.076	Demonstrate ability to apprehend violators and take appropriate action.
ANR8044.077	Explain procedure for preparing cases for prosecution.
ANR8044.078	Develop a plan for cleaning and sanitizing buildings.
ANR8044.0781	Constructing and Maintaining Facilities
ANR8044.079	Demonstrate how to pour concrete and do masonry repair work.
ANR8044.080	Demonstrate ability to build a masonry retaining wall.
ANR8044.081	Build a stone wall.
ANR8044.082	Demonstrate knowledge and ability in performing sub-journey-level skills of carpentry.
ANR8044.083	Construct fences.
ANR8044.084	Demonstrate knowledge and ability in performing sub-journey-level skills of electricity.
ANR8044.085	Demonstrate knowledge and ability in performing sub-journey-level skills of plumbing.
ANR8044.086	Maintain and operate water treatment plants, wells, swimming pools, and chlorine systems.
ANR8044.087	Demonstrate ability to clean and refill pools.
ANR8044.088	Demonstrate knowledge and ability in performing painting.
ANR8044.0881	Maintaining and Operating Vehicles and Equipment
ANR8044.089	Demonstrate knowledge and ability in performing repairs of roads and driveways.
ANR8044.090	Demonstrate ability to operate vehicles and equipment applicable to Natural Resources Management V.
ANR8044.091	Demonstrate ability to maintain vehicles and equipment applicable to Natural Resources Management V.
ANR8044.092	Attach accessory equipment to basic power unit.
ANR8045	Ecology and Environmental Management
ANR8045.000	Identifying Careers in Environmental Management
ANR8045.001	Describe occupations in environmental management.
ANR8045.002	Describe occupations in natural resource conservation areas.
ANR8045.003	Identify local, state, and federal agencies that work with the environment.
ANR8045.0031	Developing Basic Environmental Science Concepts
ANR8045.005	Explain the importance of our environment.
ANR8045.006	Define basic terminology in ecology and other environmental sciences.
ANR8045.007	Contrast the perspectives of "balance" and "dynamic change" in explaining environmental stability.
ANR8045.008	Explain energy transfer.
ANR8045.009	Identify and describe effects of natural events and human influences on ecosystems.
ANR8045.010	Explain principles and processes of ecological succession.
ANR8045.011	Explain and illustrate geometric versus arithmetic increases in population growth.
ANR8045.012	Describe the logistics of population growth.
ANR8045.013	Discuss the "Paradox of the Commons."
ANR8045.014	Explain the role of biodiversity in ecosystem stability.
ANR8045.015	Describe effects of latitude on species diversity.
ANR8045.016	Explain the process of species differentiation.

ANR8045.017	Analyze a local ecosystem.
ANR8045.018	Explain essential components of a controlled living environment.
ANR8045.019	Describe and give examples of a controlled living environment.
ANR8045.020	Design a closed environment as an example of an ecosystem.
ANR8045.0201	Protecting the Environment—Air and Noise
ANR8045.021	Describe the composition of the atmosphere.
ANR8045.022	Describe and identify air pollutants and describe their effects on the environment.
ANR8045.023	Analyze and discuss the effects of air pollution on crops, plants, environment.
ANR8045.024	Take a sample of air and examine the pollutants.
ANR8045.026	Outline effective methods to control various air pollutants.
ANR8045.027	Explain effects of "Greenhouse" gases.
ANR8045.028	Explain sources and effects of acid rain.
ANR8045.029	Discuss ozone depletion controversy.
ANR8045.030	Explain the dynamic nature of global temperatures.
ANR8045.031	Discuss controversy over global warming.
ANR8045.032	Outline effects of potential global warming on agriculture.
ANR8045.033	Calculate air temperature at different altitudes.
ANR8045.034	Given an altitude, estimate the temperature.
ANR8045.035	Define noise pollution.
ANR8045.036	Identify different types of noise pollution.
ANR8045.037	Discuss noise levels and loudness rating.
ANR8045.038	Measure noise levels in different locations of the school.
ANR8045.039	Design a plan to control noise pollution in the school.
ANR8045.0391	Investigating Environmental Issues
ANR8045.040	Define soil and materials it contains.
ANR8045.041	Explain soil formation process.
ANR8045.042	Evaluate soil texture.
ANR8045.043	Classify soils by soil taxonomy system.
ANR8045.044	Identify soil profiles.
ANR8045.045	Determine land capability classes.
ANR8045.046	Explain leaching in soils.
ANR8045.047	Test soil for water percolation.
ANR8045.048	Describe different types of soil.
ANR8045.049	Illustrate procedure for testing soil pH.
ANR8045.050	Collect and analyze samples of soil and identify composition.
ANR8045.051	Interpret soil test results and make nutrient recommendation based on findings.
ANR8045.052	Explain how wind erodes soil.
ANR8045.053	Explain how water erodes soil.
ANR8045.054	Explain how weeds and grass protect the soil.
ANR8045.055	Explain the environmental impacts of sedimentation on plants and animals.
ANR8045.056	Discuss water erosion and effects on agricultural production.
ANR8045.057	Describe crop rotation.
ANR8045.058	Identify common vegetation materials used for soil conservation.
ANR8045.059	Explain vegetation erosion controls.
ANR8045.060	Explain mechanical erosion controls.
ANR8045.061	Describe ways to improve the soil.
ANR8045.062	Prepare land use plan.
ANR8045.0621	Planning and Managing Land Use

ANR8045.063	Define characteristics of water.
ANR8045.064	Draw and explain a hydrologic cycle.
ANR8045.065	Compute flux and residual time in the hydrologic cycle.
ANR8045.066	Design and construct a model to illustrate components of the riverine system.
ANR8045.067	Identify characteristics of estuarine system.
ANR8045.068	Describe ocean zonation.
ANR8045.069	Discuss types of ocean water movements.
ANR8045.070	Explain the zones of the lake and the habitat of each.
ANR8045.071	Explain groundwater and sources.
ANR8045.072	Explain the role of ice in the water reservoirs.
ANR8045.073	Define water table.
ANR8045.074	Discuss the Safe Water Act.
ANR8045.074	Discuss the Safe Water Act.
ANR8045.075	Set up a distillation unit.
ANR8045.076	Discuss ways water is used at home and in industry.
ANR8045.077	Calculate the water needs for a farm or natural resource enterprise.
ANR8045.078	Define point and non-point pollution.
ANR8045.079	Identify major water pollutants and their effects on the environment.
ANR8045.079	Identify major water pollutants and their effects on the environment.
ANR8045.080	Define causes of ground water pollution
ANR8045.081	Collect and analyze water samples and examine them for chemical pollutants and biological organisms.
ANR8045.082	Discuss effects of water pollution on agricultural production.
ANR8045.083	Define eutrophication and its relationship to nutrient-rich waters.
ANR8045.084	Discuss effects of polluted water on animals and humans.
ANR8045.085	Describe ways to control surface water pollution.
ANR8045.086	Discuss ways to manage ground water contamination.
ANR8045.087	Discuss improving water quality by managing animal waste.
ANR8045.088	Develop a plan to manage a stream or lake to prevent pollution.
ANR8045.089	Identify BMPs for water.
ANR8045.0891	Managing Fish and Wildlife
ANR8045.090	Define environmental programs: EPA, USDA, VADA, and others.
ANR8045.091	Identify local, state, and national problems and issues concerning the environment.
ANR8045.092	Discuss E.A.R.T.H (Environment, Agriculture, Research, and Technology in Harmony).
ANR8045.093	Describe how agriculture and environment are related.
ANR8045.094	Describe human population curve.
ANR8045.095	Identify environmental management and conservation businesses in the community.
ANR8045.096	Describe multiple-use management.
ANR8045.097	Discuss Virginia erosion and sediment law.
ANR8045.098	Identify major land uses and their impact on the environment and ecosystems.
ANR8045.100	Collect or describe samples of plants and animals effected by pollution.
ANR8045.101	Discuss the assistance available from the Natural Resources Conservation Service.
ANR8045.103	Define organic farming.
ANR8045.104	Define wet lands and uses.
ANR8045.105	Explain how technology has solved pollution problems.
ANR8045.1051	Managing Fish and Wildlife
ANR8045.106	Explain zoning classifications.
ANR8045.107	Explain effects of zoning.
ANR8045.108	Classify land zoning according to its capability to produce.

ANR8045.109	Describe how agriculture and environment are integrated.
ANR8045.110	Design a community with the environment as its major planning.
ANR8045.111	Identify activities of the conservation district in your area.
ANR8045.112	Describe a conservation district.
ANR8045.113	Determine and draw a site and size plan for a pond.
ANR8045.1131	Protecting Woodland Management and Conservation
ANR8045.114	Identify game, waterfowl, and fish.
ANR8045.115	Describe habitat requirements for various fish and game animals and fowl.
ANR8045.116	Identify local plants or trees that provide food and/or cover for animals and birds.
ANR8045.117	Explain measurement of wildlife and fish population.
ANR8045.118	Explain the difference between extinct, endangered, and threatened species of wildlife.
ANR8045.119	Identify Virginia's threatened and endangered species.
ANR8045.120	Identify diseases and parasites in wildlife.
ANR8045.122	List ways to attract animals and birds to a local natural habitat.
ANR8045.123	Explain main management procedures for freshwater fisheries.
ANR8045.124	Describe the aquaculture industry.
ANR8045.125	Explain difference between marine fish, marine shellfish, and marine mammals.
ANR8045.126	Identify diseases and parasites in fish.
ANR8045.127	Identify environmental conditions for a fish operation.
ANR8045.128	Identify appropriate fish for production.
ANR8045.129	Illustrate recording of fish operation data.
ANR8045.130	Explain the zones of the lake and habitat of each.
ANR8045.1301	Protecting Environmental Leadership
ANR8045.132	Explain basic tree structure and growth.
ANR8045.133	Identify trees.
ANR8045.134	Differentiate between forest types.
ANR8045.135	Identify disease of trees caused by organic pathogens.
ANR8045.136	Identify forest insect pests.
ANR8045.137	Identify environmentally-caused diseases of trees
ANR8045.138	Develop plan for managing forest insect pests and diseases.
ANR8045.139	Develop tree fertilization plan.
ANR8045.140	Use various methods of measuring wood and calculating volume of pulpwood.
ANR8045.141	Determine value of standing timber.
ANR8045.142	Describe different methods of harvesting trees.
ANR8045.143	Describe disadvantages and advantages of forest harvesting methods.
ANR8045.144	Determine undesirable trees for removal.
ANR8045.145	Describe methods of forest regeneration.
ANR8045.146	Identify tree species best suited for conservation and replanting.
ANR8045.147	Identify new tree care practices.
ANR8045.149	Develop a plan for managing a specific forest site.
ANR8045.150	Explain prescribed burns.
ANR8045.151	Explain the development and anatomy of a forest wildfire.
ANR8045.152	Explain climate effects which produce fires.
ANR8045.153	Describe the location of a fire using Forest Service terminology.
ANR8045.154	Describe forest wildfire prevention techniques.
ANR8045.155	Describe forest wildfire fighting techniques.
ANR8045.1551	Understanding Conservation Cartography and Orienteering
ANR8045.156	Explain FFA.

ANR8045.158	Explain FFA awards programs for environmental management.
ANR8045.161	Develop a plan for recycling program in a community.
ANR8045.1611	Investigating Waste Management
ANR8045.163	Identify specified landmarks on a topographic land map.
ANR8045.164	Reference known landmarks to topographic map and to relief map.
ANR8045.167	Interpret various maps for correlation to geographic features.
ANR8045.169	Use a compass to orient various locations on a map.
ANR8045.170	Use triangulation to estimate unknown location from one or more known locations.
ANR8045.173	Read a rod and a level to calculate slope.
ANR8045.174	Use a transit level to lay out level and sloping contour lines on a sloping land.
ANR8045.175	Explain the parts of a field map.
ANR8045.175	Explain the parts of a field map.
ANR8045.176	Define GIS (Geographic Information System).
ANR8045.177	Determine land use from aerial photography.
ANR8045.1771	Exploring Urban Forestry
ANR8045.178	Explain the processes carried out in a sewage plant.
ANR8045.179	Explain a sewage disposal system.
ANR8045.183	Identify common methods of waste disposal.
ANR8045.185	Describe and design a landfill.
ANR8045.186	Identify methods of composting.
ANR8045.187	Identify four elements needed for compost.
ANR8045.188	Determine biological activity in various solid and liquid wastes.
ANR8045.1881	Understanding Watershed Management
ANR8045.189	Explain how urban forests fit into urban ecosystem.
ANR8045.191	Explain the relationship between urban forest and air and water quality.
ANR8045.193	Describe tree inventory of urban spaces.
ANR8045.194	Describe unfavorable conditions that urban trees experience.
ANR8045.195	Calculate cost of a "new" rehabilitated urban forest.
ANR8045.1951	Practicing Lawn Maintenance
ANR8045.197	Explain flood hazard analysis.
ANR8045.198	Evaluate a flood-damaged area.
ANR8045.199	Explain how a flood-control structure (dam) functions.
ANR8045.200	Locate a flood-control structure in a given area.
ANR8045.202	Discuss measures to prevent stream bank erosion.
ANR8045.203	Develop a watershed management plan for a specific watershed.
ANR8045.204	Construct a stream bank protection measure.
ANR8045.205	Locate watersheds on map.
ANR8045.206	Identify characteristics of a watershed.
ANR8045.2061	Managing Energy Resources
ANR8045.207	Identify different types of fertilizers.
ANR8045.208	Determine fertilizer needs for a one-acre field of grass.
ANR8045.209	Determine pesticide need for one-acre field of grass.
ANR8045.210	Describe weed control measures.
ANR8045.211	Discuss forms of energy usable to humans.
ANR8045.212	Outline energy production trends in the United States and worldwide.
ANR8045.213	Explain traditional, primary energy sources in use today.
ANR8045.214	Discuss alternative sources of energy.
ANR8045.215	Evaluate energy and use patterns in specific local situations.

ANR8045.216	Evaluate appliances for energy use and conservation.
ANR8045.217	Describe how various energy sources are obtained, processed, distributed, and used.
ANR8045.218	Explain problems associated with production, processing, distribution, and use of various energy sources.
ANR8045.219	Develop an energy management plan for an individual and a community.
ANR8085	Biotechnology Foundations
ANR8085.000	Exploring Foundations in Biotechnology
ANR8085.001	Define biotechnology.
ANR8085.002	Define terms related to biotechnology.
ANR8085.003	Demonstrate safe laboratory procedures.
ANR8085.004	Give examples of historical biotechnology milestones.
ANR8085.005	Describe social impacts of biotechnology.
ANR8085.006	Participate in student organization as an individual member, leader, and committee member.
ANR8085.007	Use the scientific method and the technological method to solve biotechnology problems.
ANR8085.008	Explain the roles of organic chemistry and biochemistry in biotechnology.
ANR8085.009	Analyze data generated from lab activities.
ANR8085.010	Describe technology transfer in biotechnology.
ANR8085.011	Identify careers related to biotechnology.
ANR8085.0111	Understanding Bio-processing
ANR8085.012	Describe the process of fermentation.
ANR8085.013	Prepare cultured products.
ANR8085.014	Describe genetic engineering applications.
ANR8085.015	Demonstrate the application of microbes in bio-processing.
ANR8085.016	Describe the social impacts of bio-processing.
ANR8085.017	Perform separation and purification techniques.
ANR8085.018	Produce bio-products.
ANR8085.019	Explore processing design techniques.
ANR8085.0191	Investigating Genetic Engineering
ANR8085.020	Develop a historic timeline of genetic engineering milestones.
ANR8085.021	Identify the importance of the genetic information contained in DNA.
ANR8085.022	Demonstrate techniques for genetic manipulation.
ANR8085.023	Explain vaccine (immunology) research and development in relation to genetic engineering.
ANR8085.024	Explain the importance of genome projects.
ANR8085.025	Identify social impacts of genetic engineering.
ANR8085.0251	Examining the Role of Biotechnology in Agriculture
ANR8085.026	Demonstrate proper tissue culture procedures.
ANR8085.027	Explain the impacts of plant and animal genetic engineering on society.
ANR8085.028	Identify social impacts of biotechnology in agriculture.
ANR8085.029	Identify microbial applications in agriculture.
ANR8085.030	Explain animal physiological systems.
ANR8085.031	Explain plant physiological systems.
ANR8085.032	Discover the role of agrichemicals in biotechnology.
ANR8085.033	Identify the factors that jeopardize food safety.
ANR8085.034	Illustrate advances in food science.
ANR8085.0341	Exploring Biochemistry
ANR8085.035	Explain the catalyzation process.
ANR8085.036	Explain the characteristics and functions of enzymes.
ANR8085.037	Identify applications for enzymes in an organism.
ANR8085.038	Illustrate the function or use of the enzyme, using a prototype or model.

ANR8085.039	Explain the basic principles of protein utilization in organisms.
ANR8085.040	Explain the advantages of protein utilization in organisms.
ANR8085.041	Explain the function of carbohydrates.
ANR8085.0411	Examining Biotechnology's Role in Medicine
ANR8085.042	Identify the impacts biotechnology has on medicine.
ANR8085.043	Describe the impacts of molecular research on society.
ANR8085.044	Identify emerging health care technologies.
ANR8085.045	Explain the applications of genetics in pharmacology.
ANR8085.046	Describe the impacts of biotechnology on preventive health care.
ANR8085.047	Describe the ethical, legal, and social impacts of biomedicine.
ANR8085.0471	Applying Biotechnology to the Environment
ANR8085.048	Explore the social impact of environmental quality management.
ANR8085.049	Describe mistreatment systems.
ANR8085.050	Identify biological controls in plant and animal systems.
ANR8085.051	Design a bioremediation system.
ANR8085.052	Plan a bio-restoration system.
ANR8087	Biotechnology Applications in Agriculture
ANR8087.000	Exploring Bio-Agriculture
ANR8087.002	Demonstrate basic biological research techniques.
ANR8087.003	Practice quality control and data collection.
ANR8087.004	Follow state and national regulations regarding Bio-Agriculture.
ANR8087.005	Investigate careers related to Bio-Agriculture.
ANR8087.006	Explain issues concerning bioethics.
ANR8087.0061	Discovering Plant Biotechnology
ANR8087.007	Illustrate examples of products of plant biotechnology.
ANR8087.008	Identify methods of plant breeding.
ANR8087.009	Conduct plant field trials.
ANR8087.010	Perform tissue culture.
ANR8087.011	Analyze gene transfer.
ANR8087.012	Explain gene verification.
ANR8087.013	Explore bio-controls.
ANR8087.014	Discuss the impacts of plant biotechnology.
ANR8087.015	Identify plant response systems and components.
ANR8087.0151	Exploring Animal Biotechnology
ANR8087.016	Illustrate examples of products of animal biotechnology.
ANR8087.017	Investigate animal reproductive technologies.
ANR8087.018	Explore cloning.
ANR8087.019	Describe genetic engineering.
ANR8087.020	Explore the use of biotechnology in food production.
ANR8087.021	Describe bio-pharming and its impacts.
ANR8087.022	Explain the impacts of animal biotechnology.
ANR8087.0221	Discovering Environmental Biotechnology
ANR8087.023	Investigate the use of microbes in environmental management.
ANR8087.024	Explore how plants are used in environmental management.
ANR8087.025	Describe the use of monitoring systems in pollution detection.