

Orange County 4-H School Enrichment Curriculum Catalog

2019-2020



Contact:

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Dear Educators,

My name is Jonathon Smith and I serve as the 4-H Agent with the Orange County Center of North Carolina Cooperative Extension. NC State Extension helps create prosperity for North Carolina through programs and partnerships focused on agriculture and food, health and nutrition, and 4-H youth development. 4-H serves as the youth development program of NC Cooperative Extension, helping youth prepare for future careers, serve their communities, and build skills for the future. We are "making the best better".

4-H is a program based out of NC State University and NC A&T State University. We are free to partner with classrooms to help them meet their classroom learning objectives through experiential learning. Our research-based curriculum complements what you are already doing in the classroom and provides a tangible opportunity for you to integrate experiential learning in your classroom. From our *Soil Solutions* curriculum that encourages youth to explore the ecosystem below their feet to our embryology and butterfly kits, we have a lot to offer.

I encourage you to review our full catalog and contact us if you would like to schedule a time for us to come to your classroom. If you have any questions, please feel to send an email to me at jonathon_smith@ncsu.edu or call 919-245-2057. I hope to hear from you soon.

Sincerely,

A handwritten signature in black ink, appearing to read "Jonathon Smith".

Jonathon Smith
Extension Agent, 4-H Youth Development
Orange County Center



NC 4-H Curriculum: Soil Solutions- 3rd Grade

Explore the soil ecosystem through experiential learning. Students explore soil properties, the relationship between plants and soil, plant nutrition and growth, and composting.

Lesson	Lesson Title	Clarifying Objectives	Supporting Common Core	Estimated Length
1	Soil Properties	3.L.2.4	ELA: L.3.4.	1.5 hours
2	Soil and Water Relationships	3.L.2.4	Math: 3.MD.1 Math: 3.MD.2	45 minutes
3	Soil and Plant Growth	3.L.2.2, 3.L.2.4	Math: 3.MD.4 ELA: W.3.2. ELA: W.3.10.	1 hour
4	Seed Germination Experiment	3.L.2.1 & 3.L.2.3	Math: 3.MD.3 ELA: W.3.7. ELA: L.3.4.	1 hour for initial lesson; 5-10 observation time led by teacher
5	Pollination Partners	3.L.2.1	ELA: L.3.4.	1 hour
6	Plant Growth and Development: A Fast Plant Experiment	3.L.2.1, 3.L.2.2 & 3.L.2.3	Math: 3.MD.4 ELA: W.3.7. ELA: W.3.10.	1.5 hours for initial lesson; 10 minute observations led by teacher 2-3 times
7	Salad Bowl Experiment	3.L.2.1, 3.L.2.2	Math: 3.MD.3 Math: 3.MD.4 ELA: W.3.7. ELA: W.3.10.	1-1.5 hours for initial lesson; 10 minutes once per week for observation
8	Composting	3.L.2.4	ELA: L.3.4.	1 hour

Visit <https://nc4h.ces.ncsu.edu/4-h-curriculum-at-a-glance/school-enrichment-marketing-tools/> to learn more about this curriculum.

NC 4-H Curriculum: Winged Wonders- 2nd Grade

Lessons include building a butterfly net, collecting insects, learning a song about life cycles, setting up butterfly habitats, chrysalis configuration, pollination, and more! Participating classrooms also receive a cup of larvae and food. Students will watch metamorphosis happen before their very eyes and then release the butterflies into the wild.

Lesson	Lesson Title	Clarifying Objectives	Supporting Common Core	Estimated Length
1	A Big, Buggy World	2.L.1.1 2.L.1.2	ELA-Literacy.W.2.7	45 Minutes
2	What is a Bug?	2.L.1.1 2.L.1.2	ELA-Literacy.W.2.7 ELA-Literacy.W.2.8	45 minutes
3	Change is Happening	2.L.1.1 2.L.1.2	ELA-Literacy.W.2.3	45 Minutes
4	Time to Grow	2.L.1.1 2.L.1.2 2.L.2.1	ELA-Literacy.W.2.8 MATH.CONTENT.2.MD.A.1 MATH.CONTENT.2.MD.A.4	45 Minutes
5	This End Up	2.L.1.1 2.L.1.2	ELA-Literacy.W.2.7	30 Minutes
6	Tiny Transformations (Pupation, Transformation)	2.L.1.1 2.L.1.2	ELA-Literacy.L.2.1 ELA-Literacy.L.2.4	45 Minutes
7	Flitter, Flutter, Moth or Butter?	2.L.1.1 2.L.1.2 2.L.2.2	ELA-Literacy.W.2.2	45 Minutes
8	Pollination: Sweet Rewards	2.L.1.1 2.L.1.2 2.L.2.2	ELA-Literacy.W.2.2	45 Minutes
9	Flutter by, Butterfly	2.L.1.1 2.L.1.2 2.L.2.2		45 Minutes

*Offered in the Spring. Participating classrooms will receive butterfly larvae that they can watch develop over time in their classroom. We ask that each participating class select 2 lessons that the 4-H educator can deliver to your students.

NC 4-H Curriculum: I Am An Ecosystem (Microbiology)- 5th Grade

Students will explore the human ecosystem and see how our body protects itself from germs and disease.

Lesson	Name	Description	Estimated Length
1	Microbes All Around and Inside Us	Youth develop mental models for understanding the volume of microbes in the human body. Youth also begin an experiment on microbe growth which will continue throughout the entire unit.	90 minutes or two 45-minute sessions
2	Role of Microbes in an Ecosystem	Youth play a game to simulate the role of microbes in healthy ecosystems and to better understand the ideas of “producer,” “consumer,” and “decomposer.” Writing is integrated throughout the lesson using the “Claim-Evidence-Reasoning” format. Youth continue the experiment started in lesson 1.	90 minutes or two 45-minute sessions
3	The Ecosystems Inside Us	Youth continue the experiment from Lesson 1. They practice making observations, comparing substances before and after microbes act upon it, in order to understand the chemical changes that occur during digestion/decomposition. Youth also watch a video on the digestive system in order to understand how digestion happens in humans and how bacteria influence digestion.	90 minutes or two 45-minute sessions
4	The Body’s Natural Defenses	Youth investigate the defense systems that the body has in place in order to deter parasites. They rotate through three different stations in order to better understand how the body’s defenses work. Additionally, youth continue adding to their observations for the experiment from Lesson 1.	90 minutes or two 45-minute sessions
5	CSI Bacteria	Youth are presented with a patient suffering from a mysterious disease. They conduct research using “Case Files” from four potential candidates. By matching the patient’s history and symptoms with the information from the Case Files, youth determine which pathogen has invaded the patient’s body.	90 minutes or two 45-minute sessions
6	Engineering a Solution: Defense in Food Safety	Youth use their knowledge of microbes, ecosystems, and food safety in order to develop a technology (product or process) that will help reduce food-borne bacterial illnesses. Youth use the Engineering Design Process as they work in teams to create their solution to the real-world problem of salmonellosis.	120 minutes or two 60-minute sessions

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NC 4-H Curriculum: Embryology Hatching- 2nd Grade*

Using our embryology kit, students will have the opportunity over 21 days to observe the incubation process resulting in baby chicks. Students will learn about the stages of development and be active in monitoring growth.

Lesson	Lesson Title	Clarifying Objectives	Estimated Length
1	Eggsploring the egg	2.L.1 Understand Animal Life Cycles	40 Minutes
2	Pick a Chick	2.L.1	1-2 hours
3	Warming up with eggs (Hatching eggs with our kit)	2.L.1	20 Minutes for egg preparation; 10 minutes daily tending to eggs and incubator
4	Building an eggs-ray viewer	2.L.1	30-40 Minutes
5	Playing peek-a-boo with embryos (Candling)	2.L.1	Using handmade candler to look at eggs daily to view development
6	Building a home 'tweet home	2.L.1	1.5 hours
7	Counting the chicks	2.L.1	Variable (after chicks hatch)
8	Caring and handling	2.L.1	Variable.
9	Eggsploring Careers	2.L.1	30 Minutes

*We request that all classes that will be using our hatching kits select at least 2 lessons from this list. The optimal situation would be for the agent to do one lesson when the kit is delivered, a candling activity about a week into the hatching process, and then a summative activity when he picks up the chicks on the last day. Entire hatching process takes 21 days.

Limited to 10 classrooms for Spring 2020.

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Dairy Education with Virtual Reality Goggles

Target Grade: K-12

Sponsored by the Dairy Alliance and North Carolina State University Dairy Extension. Students are immersed digitally on a North Carolina dairy farm to learn about the dairy process from the farm to the bottling plant. Students get to see a dairy farm and ask questions without ever stepping outside the classroom. The dairy video is about 2.5 minutes in length. We have three sets of goggles available to use. To add to the experience, we can also provide activities to make butter and/or ice cream. A video on swine production is also available for viewing. That video is about 4 minutes in length. Length of program depends on number of students and requested activities. A classroom of 25 students can view the dairy video in about 30 minutes.

Elementary Robotics & Coding

Target Grades: K-3

Students learn the basics of coding using Dash & Dot Robots from Wonder Workshop. We begin the discussion by defining coding terminology and then students work in teams to code using their robots. We begin with Dot robots that are stationary. We then move to Dash robots that are mobile. Students complete assigned challenges that progress from easy to difficult. Each challenge builds on the prior learning objective. We borrow these robots from NC A&T State University. We need at least one month advance notice to secure these robots for use in our county. For more information on these robots, visit <https://www.makewonder.com/>. This program can be a couple of hours to 1-2 half days.



“NC State University and N.C. A&T State University are collectively committed to positive action to secure equal opportunity and prohibit discrimination and harassment regardless of race, color, national origin, religion, political beliefs, family and marital status, sex, age, veteran status, sexual identity, sexual orientation, genetic information, or disability. N.C. State, N.C. A&T, U.S. Department of Agriculture, and local governments cooperating.”