



GREAT NECK PUBLIC SCHOOLS

"Where Discovery Leads to Greatness"

#DiscoverGreatness

Curriculum Profile: Science Research 8

<u>Department</u>	Science		
<u>Course Name</u>	Science Research Elective		
<u>Course Length</u>	1-year, alternate days		
<u>High School Credits</u>	N/A		
<u>Description</u>	This course provides students with the opportunity to actively research science topics that interest them while learning important research and technical skills, including those used by environmental scientists, psychologists, forensic scientists, biologists, microbiologists, geneticists, etc. The research methods taught during this course support participation in various science competitions in which research students are expected to compete. Students will learn how to write abstracts of their work and will summarize current science research.		
<u>Target/eligible students</u>	8th Grade Students		
<u>State Learning Standards Link(s)</u>	Middle School Science-Learning-Standards		
<u>Primary texts and materials</u>	Class texts and materials used are at the discretion of the teacher and building. Science Competition Website: https://www.lisef.org/ms-fair-info/		
<u>Scope/Sequence</u>			
<u>Part 1</u>	The Scientific Process	To start the course, students will conduct a controlled experiment and present their findings in a science-fair style presentation. This will serve as an introduction to the scientific process, collaborating with peers, and communicating their results. Projects can fall into various categories including, but not limited to: biology, chemistry, physics, engineering, psychology, Earth and environmental science, biochemistry, microbiology, and plant sciences.	
<u>Part 2</u>	Research Project 1	Students will initiate this portion of the course by developing a feasible research project using materials in the science lab, or that can be easily secured. After proposing their ideas, students will design their experiment and collect data. Following data collection, students will analyze their findings, create qualitative and quantitative data artifacts and compile their full investigation into a professional presentation. These presentations will then be shared with the school science community. Based on the research, students will choose to either continue with the experiment or develop a new experiment in research project 2. In addition to designing and executing their own projects, students will also evaluate and provide feedback to their peers' projects.	
<u>Part 3</u>	Research Project 2	In the second research project students will decide to either continue with research project 1 or create a new	

		project. During this project students will apply what they have learned in part 1 and part 2 to develop a sophisticated and meaningful scientific project. This project will start with another proposal, developing a feasible research project using materials in the science lab, or that can be easily secured. After proposing, students will design, revise or run more trials of their experiment and collect data. Following data collection, students will analyze their findings, create qualitative and quantitative data artifacts and compile their full investigation into a professional presentation. These presentations will then be shared with the school science community.	
<u>Part 4</u>	Professional Presentation and Communicating Results	After conducting research projects 1 and 2, students will prepare their final professional presentations. These presentations will be given at science fairs and competitions. The specific requirement of the hosting organization will be met and final projects will undergo a self, peer and teacher review process.	
<u>Part 5</u>	Engineering Design Process	To conclude the course, students will examine the engineering design process. In this final challenge students will be tasked with a real-world problem, and will design a solution to the problem using the engineering process. During the process students will identify the problem, define constraints, brainstorm solutions, construct their solution, test their solution, revise their solution and finally reflect on their final performance compared to their peers.	
<u>Engineering</u>	MS-ETS1-1 MS-ETS1-2 MS-ETS1-3 MS-ETS1-4	Throughout the course students utilize the engineering design process to solve problems. This includes defining problems and constraints, evaluating competing designs, analyzing data from tests, and developing models to achieve optimal designs.	52
<u>Additional Notes</u>		Sequence and material are at the discretion of the individual teacher and building.	