Investigatory Project Ideas For High School

Here are the useful Investigatory Project Ideas For High School students:

Environmental Science Projects

1. Test how sun, rain, and clouds change solar panel power in your town.
2. See how fast different plastic bottles break down in various soils.
3. Use simple tools to check air pollution around your school.
4. Build filters from household items and see which clean water best.
5. Plant seeds in soil with different pollutants and watch their growth.
6. Compare small wind turbines and solar panels to see which makes more energy.
7. Look for tiny plastic bits in local water with a microscope.
8. Test which scraps make compost break down fastest at different temperatures.
9. Make fake acid rain and watch how it harms different plants.
10. Measure and compare your school's daily activities' carbon footprints.
11. Plant green roofs and check if they keep buildings cooler in summer.
12. Try different materials to clean oil spills in water jars.
13. Map noise levels around your neighborhood and find the loudest spots.
14. Bury old batteries in soil and see how they change the ground.
15. Build small wind turbines with different blade shapes to test power.
16. Compare watering methods to see which saves the most water.
17. Make plastics from items like starch and see how they break down.
18. Check temperatures in the city and nearby parks to study the heat island.
19. Test how pollutants move through layers of soil samples.
20. Find where your school building wastes energy and suggest fixes.

21. Make natural bug spray and compare it to store sprays on garden plants.
22. Study how wetlands clean dirty water that flows through them.
23. Track cafeteria food waste to find ways to throw away less.
24. Compare energy use and heat from old and new light bulbs.
25. Try ways to stop soil from washing away in heavy rain.
26. Test which indoor plants help clean the air best.
27. Make recycled paper and test its strength and usability.
28. Measure pollution from cars, trucks, and buses using simple tools.
29. Study stream insects and plants to check water quality.
30. Build ovens that use sunlight and see which cooks food fastest.
31. Design rainwater systems and measure how much you collect.
32. Pull colors from plants and test how long they stay on cloth.
33. Time different recycling sorting methods at your school.
34. Test which plants soak up the most carbon dioxide from the air.
35. Compare walking, biking, and driving the same distances for impact.

Health and Medicine Projects

36. Compare how well different hand sanitizers kill germs on fake skin.
37. Study how sleep time affects memory quiz scores.
38. Test if garlic, honey, and other foods kill bacteria in dishes.
39. Measure how heart rate changes after different exercises.
40. Check vitamin C in fresh fruits and in juice or snacks.
41. Test stress levels in students during different school tasks.
42. Compare how long food lasts using salt, sugar, vinegar, or fridge.

43. Study how screen time affects eye strain and blink rate.

44. Make soaps with different ingredients and test germ killing power.

45. Measure heart rate and blood pressure while listening to music.

46. Test how caffeine changes reaction time in simple tasks.

47. Watch how sitting positions affect students' back comfort.

48. Make sunscreen from natural items and test UV protection.

49. Grow probiotic bacteria from yogurt in different foods.

50. Check blood pressure before, during, and after activities.

51. Test antioxidant levels in different herbal teas.

52. Study how air pollution affects lung tests.

53. Compare hand washing methods to see which removes more germs.

54. Test warm-up exercises to see which stop injuries best.

55. Test how dehydration affects thinking and sports performance.

56. Compare ice, heat, and pressure for easing muscle pain.

57. Study food allergens' reaction on cell samples in dishes.

58. Measure stress before and after meditation techniques.

59. Test which foods and activities boost the immune system.

60. Study how room temperature, light, and noise affect sleep.

61. Grow bacteria and test how they resist common antibiotics.

62. Compare vitamins and minerals in supplements and in foods.

63. Test bandages and wound care for stopping bleeding fast.

64. Study how art, music, and sports affect mood and anxiety.

65. Test how stomach acid and enzymes break down foods.

66. Compare different lenses for clear vision at various distances.

67. Measure lung capacity during breathing exercises and tasks.
68. Test how moisturizers and cleansers change skin pH and moisture.
69. Study how age, gender, and fitness affect pain sensitivity.
70. Test which post-exercise activities help muscles recover fastest.

Technology and Engineering Projects

71. Compare phone battery life with different apps and settings.
72. Build robots that use sensors to find their way through mazes.
73. Test which 3D printing materials make the strongest objects.
74. Measure how walls and distance affect WiFi and Bluetooth.
75. Build portable solar chargers and test which charges fastest.
76. Create home systems that control lights and temperature with code.
77. Make model bridges from different materials and test weight limits.
78. Program drones to follow patterns and measure battery use.
79. Build water sensors that tell pollution levels automatically.
80. Test how well voice assistants understand commands in noise.
81. Build motors with different magnets and test speed and power.
82. Compare how fast students learn and finish projects in different coding languages.
83. Build model buildings and test which survive fake earthquakes best.
84. Program LEDs to show patterns, words, and simple animations.
85. Build maglev trains that float with magnets and test track designs.
86. Create alarms with motion sensors and test their sensitivity.
87. Build weather stations that record temperature, humidity, and wind.
88. Make prosthetic hands and test grip strength and control.

89. Build water rockets and test which designs fly highest.
90. Study how game difficulty settings affect player fun and performance.
91. Build systems to move solar panels to follow the sun.
92. Watch how students use apps and design better interfaces.
93. Build small electric cars and test speed and efficiency.
94. Test what makes internet speed faster and suggest fixes.
95. Build robotic arms and test precise movements and tasks.
96. Compare audio quality of different digital music formats.
97. Create AR apps to help learn science and math concepts.
98. Build small water turbines and test power in different flows.
99. Program computers to count objects in photos and videos.
100. Test ways to charge devices without plugs.
101. Build devices that show 3D images floating in air.
102. Program computers to play games and get better over time.
103. Sew electronics into clothes to make smart fabrics.
104. Create fingerprint, voice, and face scanners for security.
105. Build vehicles you control with a smartphone and test range.

Food Science and Agriculture Projects

106. Grow plants in water only and compare their growth rates.
107. Test how much salt stops bacteria in different foods.
108. Extract colors from fruits and veggies to use as natural dyes.
109. Make bread, yogurt, and pickles and test fermenting time and heat.
110. Plant different crops in a row and watch soil health change.

111. Compare plant growth with homemade compost and store fertilizers.
112. Test ways to keep fruits and veggies fresh the longest.
113. Study how light, warmth, and water affect seed sprouting.
114. Grow plants in soils with different pH levels and measure growth.
115. Make eatable food containers from natural materials.
116. Compare food output per area in normal and vertical farms.
117. Test natural sprays and plants to keep pests away.
118. Change food textures by cooking and ask people which they like.
119. Compare vitamins in boiled, steamed, and fried veggies.
120. Study why honey turns solid and test ways to keep it liquid.
121. Grow fish and plants together to help each other.
122. Measure bacteria growth in foods stored at different temperatures.
123. Test crop types that need less water but give good yields.
124. Compare taste changes when you add herbs and spices.
125. Grow mushrooms in different setups and measure yield and quality.
126. Test which additives speed up composting of food scraps.
127. Study insects, algae, and other foods as meat alternatives.
128. Test how helpful soil bacteria make plants grow stronger.
129. Compare how fast food containers break down in soil.
130. Compare nutrition in local and imported seasonal foods.
131. Test old methods like smoking and drying to preserve meat.
132. Make plant-based meat substitutes and test taste and nutrition.
133. Compare nutrient levels in baby greens and full-grown veggies.
134. Find substitutes for wheat, nuts, and dairy for allergies.

135. Study how kimchi and sauerkraut help digestion.
136. Test city farming methods that work in small spaces.
137. See how food colors change how people think food tastes.
138. Compare fishing methods' impact on ocean health.
139. Test how food textures affect enjoyment for different ages.
140. Study how farmers can change methods for new weather patterns.

Chemistry and Materials Science Projects

141. Grow crystals in different solutions and temperatures to compare them.
142. Use red cabbage juice to test pH in household items.
143. Make plastic from corn starch and see how fast it breaks down.
144. Test coatings that stop iron and steel from rusting.
145. See how heat affects enzymes that break down starch.
146. Use paper and liquids to separate ink colors.
147. Mix oil and water with different additives to learn emulsions.
148. Layer liquids by density and test temperature effects.
149. Test how concentration and heat change reaction speed.
150. Make glue from plants or animals and test how strong it is.
151. Burn metals and salts to see flame colors and find elements.
152. Test how much salt and sugar dissolve in water at different temperatures.
153. Make plastics with different molecule lengths and test strength.
154. Mix acids and bases to watch pH and heat changes.
155. Coat objects with metal using electricity and test durability.
156. Test ways to stop apples and potatoes from turning brown.

157. Grow pure salt crystals from dirty water to separate impurities.
158. Change reaction conditions to see how reversible reactions shift.
159. Test how different liquids form drops and support small objects.
160. See how catalysts speed up reactions without being used up.
161. Build molecule models and see how shape affects properties.
162. Make simple batteries and test voltage and current.
163. Break light with prisms to see element color patterns.
164. Measure energy to melt and boil substances at different temperatures.
165. Mix particles in liquids and test what keeps them floating.
166. Make indicators that change color with acids, bases, and salts.
167. Separate liquids by boiling and condensing at set temperatures.
168. Test which substances dissolve in water or oil based on structure.
169. Measure heat released or absorbed in reactions and changes.
170. Mix solutions to form solids and study crystal factors.
171. Observe electron transfer reactions and watch color shifts.
172. Test how gas pressure, volume, and temperature relate mathematically.
173. Study why some reactions go faster or slower under certain conditions.
174. Scratch and hit materials to test and rank their hardness.
175. Use acids and bases to break down rocks over time.

Physics and Astronomy Projects (25 Ideas)

176. Test how pendulum length changes swing time and find patterns.
177. Build scale models of planets and sun to show real distances.
178. Study how sound travels through materials and changes pitch.

179. Map magnetic fields around magnets using filings and compasses.
180. Measure how light bends through water, glass, and other clear materials.
181. Launch objects at angles and see how angle affects height and distance.
182. Test levers, pulleys, and ramps to see how they make work easier.
183. Move magnets near coils to make electricity and measure voltage.
184. Compare conduction, convection, and radiation heat transfer in materials.
185. Make water waves collide and watch how they add up or cancel out.
186. Test wing models to see how air pressure differences make lift.
187. Measure sound pitch changes when the source moves past you.
188. Rub materials to make static charge and test which combos work best.
189. Use lenses to focus light and calculate their focal lengths.
190. Roll balls and watch how energy changes from one form to another.
191. Find objects' natural vibration frequencies and watch resonance.
192. Build circuits with resistors to see effects on current and voltage.
193. Spin objects in circles to measure the inward force needed.
194. Study how eyes and brain make optical illusions from light.
195. Test how much water objects push aside and relate to buoyancy.
196. Send waves through springs or ropes to measure speed and wavelength.
197. Build simple electric motors and try design improvements.
198. Use small objects to model how the moon blocks the sun's light.
199. Spin gyroscopes and test how rotation helps balance and stability.
200. Study how light acts like waves and particles using interference.

Investigatory Project Ideas for Grade 12

1. Learn how bacteria find ways to beat common antibiotic drugs by doing simple lab tests.
2. Compare the cost and benefit of solar, wind, and water power systems where you live.
3. See how tiny bits of plastic change the health and habits of sea animals.
4. Think about right and wrong when using CRISPR gene editing in modern medicine.
5. Learn how farmers can change what they plant and how they grow it when the weather shifts.
6. Find out how smart computer programs can treat people unfairly in hiring or lending.
7. Test how brain workouts can help teens remember more and think better.
8. Plan a green city design that cuts down on pollution and saves energy.
9. Check how everyday medicines work together and affect patient health.
10. Look at real uses for quantum computers to solve hard science and math problems.
11. Study how GMO crops affect nutrition, crop yield, and the environment.
12. See how phone apps and online tools can help people with mental health issues.
13. Learn how ocean acid change harms coral reefs and sea life.
14. Compare ways to make biofuel from algae, corn, or farm waste.
15. Study how tiny particles can carry drugs to target cancer cells.
16. See how social media sites affect teen mood and friendships.
17. Test self-driving car features and how they could make roads safer.
18. Check how stem cell treatments might help heal injuries and diseases.
19. Study common online attack methods and plan ways to keep data safe.
20. Research bugs, algae, and plants as new protein sources instead of meat.
21. Look at today’s space tech for future Mars trips and living there.
22. Learn how DNA tests can help doctors pick the best treatment for each person.

23. Study ways to clean soil and water where factories have polluted.
24. Investigate high-tech prosthetic limbs that work with nerve signals and give feeling.
25. Make models to show how diseases spread and find ways to stop outbreaks.

Physics Investigatory Project Ideas

26. Test how magnetic fields can lift trains with no friction for super-fast travel.
27. See how solar panel angle, material, and weather change power output.
28. Study how sound waves can be blocked or lowered in busy places.
29. Learn how X-rays, radio waves, and other rays help doctors see inside and treat patients.
30. Investigate tools that find tiny space ripples made by big cosmic events.
31. Research materials that let electricity flow with no loss and how we can use them.
32. See how light moves through fiber cables and why they beat old wires.
33. Find out how linked quantum particles could send messages safely over distance.
34. Study hydrogen plasma at high heat to learn fusion energy basics.
35. Learn how holograms work and where they could store data or show 3D images.
36. Test how electric and magnetic fields speed up tiny particles to near light speed.
37. Research special materials that bend light and waves in new ways.
38. Study airflow over plane wings to learn about lift, drag, and saving fuel.
39. Use X-ray patterns on crystals to find out their atom layout.
40. Learn why heat engines can only turn so much heat into work and how to improve them.
41. Study how electrons move in semiconductors to make modern electronics work.
42. Investigate how random radioactive decay helps date old objects.
43. Research how lasers are made and used in factories, medicine, and communication.

44. See what happens when materials change from solid to liquid or gas.
45. Check how heated elements glow with unique colors to identify them.
46. Learn how speed and gravity can slow or speed up time.
47. Study how tiny changes in a system’s start can lead to big differences later.
48. Investigate how magnetic fields move conducting fluids like in stars.
49. Research how we can use light particles for fast computers and data links.
50. Model how stars grow, change, and end over billions of years.

Science Investigatory Project Ideas for Grade 4

51. Test how red, blue, and green lights change how tall plants grow.
52. Compare magnet strengths by counting how many paperclips each one picks up.
53. See which home items float or sink in water and find a pattern.
54. Write down temperature, clouds, and rain for a month to find weather patterns.
55. Offer different seeds and count which ones birds eat the most.
56. Measure how far sounds from different instruments travel.
57. Make soap bubbles with different mixes and see which get the biggest.
58. Grow salt and sugar crystals to see which form faster in different setups.
59. Time how fast ice cubes melt in the sun, shade, and indoors.
60. Plant seeds in sand, soil, and paper towels to see which helps sprouts grow best.
61. Rub balloons, plastic, and cloth to see which makes the strongest static charge.
62. Fold paper planes different ways and measure how far each one flies.
63. Mix red, blue, and yellow paint to make new colors and write the recipes.
64. Test different brands of batteries to see which keep a flashlight bright the longest.
65. Pour water on cloth, paper, and sponge to see which soaks up the most.

66. Measure how long shadows are every hour and draw what you find.
67. Stick magnets to coins, nails, and keys to see which are magnetic.
68. Float fruit and veggies to see which sink or float and talk about why.
69. Build a simple weather vane to track and record wind direction each day.
70. Watch ants or bees and note what they do when they eat.
71. Scratch stones with a coin, nail, and glass to see which rock is hardest.
72. Leave water in cups, bowls, and plates to see which dries up fastest.
73. Plant seeds in warm and cool spots to see which temperature helps them sprout faster.
74. Use a lever or pulley to lift things and compare which tool makes lifting easiest.
75. Water plants with juice, soda, and plain water to see how pH affects growth.

Chemistry Investigatory Project Ideas

76. Study how enzymes speed up reactions and what helps or slows them down.
77. Test different metals in batteries to see which mix makes the strongest voltage.
78. Make plastic polymers and see how changing the process changes their size and strength.
79. Use acids and bases to find exact solution strength with different color indicators.
80. Separate mixtures with paper or column chromatography and identify parts.
81. Cool solutions at different rates to see how crystal size and purity change.
82. Check how heat and concentration change the speed of redox reactions.
83. Use light absorbance to measure how much dye is in a solution.
84. Measure heat given off or taken in during different chemical reactions.
85. Find the balance point of reversible reactions by changing temperatures or pressure.
86. Test how yield changes when you tweak reaction temperature, time, or mix.

87. See how much salt dissolves in water at different temperatures to find solubility limits.
88. Use gas chromatography to separate and spot compounds by their boiling points.
89. Study how atoms in a molecule act in a magnetic field to learn structure.
90. Plate metal objects with different currents and times to see how thick the coating gets.
91. Shine lights of different colors to see how they change reaction speed and outcome.
92. Test chemicals that stop metal from rusting and see which works best.
93. Run simple distillation with different column setups to see which gives the purest liquid.
94. Measure how dissolved particles change boiling, freezing, and osmotic pressure.
95. Watch reactions step by step to find and study any short-lived intermediates.
96. Burn fuels in oxygen and measure the heat they release to compare energy.
97. Test how different molecules bind to metals and how that affects compound stability.
98. Add molecules that block enzyme sites and see how they slow down reactions.
99. Measure how well molecules turn absorbed light into glowing energy.
100. Study how electrons move in molecules to explain their properties and reactions.