# STEM Fair Project Ideas For High School

Here are the useful STEM Fair Project Ideas for students:

## **Biology Projects**

- 1. See how different kinds of music make plants grow faster or slower.
- 2. Check which grows more bacteria: a phone or a doorknob.
- 3. Find out if your eye color changes how you see optical tricks.
- 4. Test which drink stains teeth the most.
- 5. Measure how quickly plants clean dirty water.
- 6. Discover if playing video games changes your reaction time.
- 7. Check if fingerprint patterns stay the same in families.
- 8. See how exercise makes your heart slow down after activity.
- 9. Compare memory skills of young and older people.
- 10. Test which soap leaves more germs behind.
- 11. See if temperature makes bread mold grow faster.
- 12. Compare how different sugars help yeast grow.
- 13. Measure how listening to music changes blood pressure.
- 14. Test if light color makes plants lean one way.
- 15. Compare which outdoor foods attract the most bugs.
- 16. See if getting more sleep helps you do better on tests.
- 17. Watch how sunlight breaks down colored paper.
- 18. Test if sniffing scents helps you remember things.
- 19. Find which foods go moldy fastest.
- 20. Compare how pets and people react to sounds.

- 21. See if writing with your right or left hand is faster.
- 22. Test if eye color makes bright light feel stronger.
- 23. Compare fingerprint patterns of parents and kids.
- 24. Measure how loud noises change your focus.
- 25. See if smelling food changes how it tastes.
- 26. Check how caffeine makes your heart beat faster.
- 27. Measure bacteria in different spots of your fridge.
- 28. Test if handwriting style shows personality.
- 29. Compare plant growth with tap water, rainwater, and salt water.
- 30. Measure how age changes how flexible you are.
- 31. See if breathing patterns change with different tasks.
- 32. Test if people remember pictures better than words.
- 33. Measure how fast water, juice, and soda dry up.
- 34. Compare how plants grow under red, green, and blue lights.
- 35. Watch how seed sprouts grow in warm versus cool places.
- 36. Test if noise makes reading harder.
- 37. See if what you eat changes how fast your nails grow.
- 38. Measure how different foods affect your blood sugar.
- 39. Test how walking, running, or biking change your breathing after exercise.
- 40. Compare bacteria levels in different school areas.

## **Chemistry Projects**

- 41. Test which household cleaner kills the most germs.
- 42. Make colorful "rainbows" by mixing marker inks in water.

- 43. See if hot or cold water dissolves sugar faster.
- 44. Compare which fruits make the most electricity in a simple battery.
- 45. Test which antacid works best to stop stomach acid.
- 46. See how salt makes water freeze at a lower temperature.
- 47. Make invisible ink with items you find at home.
- 48. Test which metal rusts fastest in saltwater.
- 49. Compare how well water, juice, and oil conduct electricity.
- 50. Find which fruits and veggies have the most vitamin C.
- 51. See if soda fizzes more when it is warm or cold.
- 52. Grow crystals using different salt and sugar solutions.
- 53. Compare how acids react with chalk, limestone, and marble.
- 54. Test which cleaners remove ink stains best.
- 55. See if cold or warm changes how bright glow sticks shine.
- 56. Compare how foam, plastic, and wool keep heat in.
- 57. Test which bubble mix makes the biggest bubbles.
- 58. See how vinegar reacts on coins, chalk, and baking soda.
- 59. Compare how quick steel and iron rust in water.
- 60. Make simple batteries from lemons, potatoes, and apples.
- 61. Test if tap, bottled, or salt water makes soap suds best.
- 62. Compare salt, vinegar, and baking soda to remove rust.
- 63. See which soda or juice is the most acidic.
- 64. Make casein plastic from milk and vinegar.
- 65. Test which cooking oils mix best with water, vinegar, or alcohol.
- 66. Compare soap, oil, and alcohol for changing water's surface tension.

- 67. See if cold or heat makes a battery die sooner.
- 68. Test which sponges, dirt, or sawdust soak up oil best.
- 69. Make rainbow flames by adding chemicals to a candle.
- 70. Compare how sugar, salt, and baking soda dissolve in water.
- 71. Test which red, yellow, or blue food dyes color cloth best.
- 72. See if light makes vitamins break down in fruit juice.
- 73. Compare how fast fresh and salt water freeze.
- 74. Test which sand, charcoal, or fabric cleans muddy water best.
- 75. See which acid (lemon, vinegar, or soda) makes iron rust faster.
- 76. Compare lemon juice, honey, and sugar water to keep apple slices fresh.
- 77. Test how sugar amount, temperature, and air affect salt crystal growth.
- 78. See which candy (hard, gummy, or marshmallow) dissolves fastest.
- 79. Compare how dish soap, shampoo, and hand soap change water's surface tension.
- 80. Test which natural acids like lemon or vinegar clean pennies best.

## **Physics Projects**

- 81. Compare which bridge shape holds the most weight.
- 82. Test how big a parachute needs to be to slow a fall.
- 83. Measure how a higher ramp makes toy cars roll farther.
- 84. See which materials block sound best (cloth, foam, metal).
- 85. Test how adding weight changes a paper airplane's flight.
- 86. Compare which balls (rubber, tennis, or foam) bounce highest.
- 87. Measure how bike wheel size affects speed.
- 88. See which materials (metal, plastic, or wood) spread heat fastest.

89. Test how a longer string changes a pendulum's swing time.

- 90. Compare boat designs to see which carry the most weight.
- 91. Measure how rough or smooth surfaces change friction for sliding blocks.
- 92. Test how moving a bar magnet closer or farther changes its pull.
- 93. See which materials (wool, foam, or feathers) keep things warm best.
- 94. Compare how water, oil, and air bend light in a straw.
- 95. Measure how pulleys make lifting heavy things easier.
- 96. Test which fan blade shape catches the most wind.
- 97. See if heavier or lighter toy cars speed up faster down a ramp.
- 98. Compare how wood, carpet, and tile bounce back sound.

99. Measure tire air pressure change when you heat or cool tires.

- 100. Test which paper plane shape flies farthest.
- 101. See how wing shape changes how far paper gliders fly.
- 102. Compare which cups or tubes make sounds louder.
- 103. Measure how rough or smooth marble tracks change rolling distance.
- 104. Test which cup shape keeps hot water warm the longest.
- 105. See how string tightness changes the pitch on a homemade guitar.
- 106. Compare roof shapes to see which hold more weight.
- 107. Measure how convex and concave lenses focus sunlight to heat a spot.
- 108. Test how different boat hull shapes affect speed in water.
- 109. See which magnets block each other's fields best.
- 110. Compare how fast wood, metal, and plastic sink in water.
- 111. Measure how gear sizes change the force you need to turn them.
- 112. Test which surfaces (plastic, glass, or carpet) create the most static shock.

- 113. See how different balloon sizes change how far they fly when released.
- 114. Compare which materials (foam, rubber, felt) absorb shaking and vibrations best.
- 115. Measure how changing the launch angle changes how far a toy rocket flies.
- 116. Test how walls, furniture, or glass block Wi-Fi signals.
- 117. See which bridge designs hold more weight before they break.
- 118. Compare how fast a baseball and a ping-pong ball fall in water.
- 119. Measure how hallway, bathroom, or living room echoes sound.
- 120. Test which paper plane design flies straightest.

### Earth & Environmental Science Projects

- 121. Compare how fast leaves, paper, and plastic break down in soil.
- 122. Test if plants grow in soil like Mars soil.
- 123. See which sponges, filters, or cloth clean water best at home.
- 124. Measure how dark rocks, sand, or mulch change soil warmth.
- 125. Test if garden scraps or yard leaves make compost faster.
- 126. Compare plants like cattails, reeds, or algae for removing pollution from water.
- 127. See how sprayed acid rain affects oak, pine, or rose plants.
- 128. Measure how metal, tile, or shingle roofs change indoor heat.
- 129. Test which clay, sand, or sawdust soak up oil best in water.
- 130. Compare clay, sand, and loam for how quickly they wash away in rain.
- 131. See how black, clear, or foil-lined boxes heat up inside as solar ovens.
- 132. Test if recycled paper breaks down faster than new paper in soil.
- 133. Measure how oak, pine, and maple leaves change soil pH.
- 134. Compare dish soap, bleach, and oil spills for harming water plants.

- 135. See how hot or cold water holds different amounts of salt.
- 136. Test air quality near busy roads and in parks.
- 137. Compare concrete, grass, and asphalt for making heat islands.
- 138. Measure indoor carbon dioxide near wood, brick, or metal walls.
- 139. Test if straw, stones, or plants keep soil from washing away.
- 140. See how plastic bags, bottles, and cutlery break down under sunlight.
- 141. Compare city and country skies to see how bright stars look.
- 142. Measure how granite, sand, and soil warm and cool each day.
- 143. Test fog net, dew collectors, and drip irrigation for gathering water.
- 144. See if humidity, wind, or pressure help you guess tomorrow's weather.
- 145. Compare grass, weeds, and flowers for growing in dirty soil.
- 146. Measure how rock, pavement, and grass change stormwater runoff.
- 147. Test if high clouds, low clouds, or no clouds match certain weather signs.
- 148. See if oak, pine, or bamboo hold more water in dry soil.
- 149. Compare water pitcher, charcoal, and sand filters for removing dirt.
- 150. Measure how city growth has raised local daytime temperatures.
- 151. Test if hills, trees, or walls cut down noise in a busy road.
- 152. See how parks, buildings, or roads affect bird numbers near you.
- 153. Compare barrels, tanks, and roofs for collecting rainwater.
- 154. Test city taps, wells, and streams for tiny plastic bits.
- 155. Measure how brick, metal, and glass reflect sunlight back out.
- 156. See which weather factors (wind, traffic, factories) change air quality most.
- 157. Compare steep, gentle, and flat slopes for how fast soil erodes.
- 158. Test house plants, charcoal, and paint for lowering indoor carbon dioxide.

- 159. Measure how maple, eucalyptus, and birch trees clean the air near your home.
- 160. Compare faucet, fountain, and pond water for clarity and safety.

#### **Computer Science & Technology Projects**

- 161. Test if walls, glass, or wood slow down your Wi-Fi signal.
- 162. Build a phone app that changes words from one language to another.
- 163. Make a computer program that guesses tomorrow's weather.
- 164. Create a phone game that times how fast you click a button.
- 165. Build a small robot that follows a black line on the floor.
- 166. Design a website that shows math lessons in simple steps.
- 167. Write code that finds copied parts in essays or articles.
- 168. Build a program that reads handwritten numbers and knows them.
- 169. Make software that listens to tunes and shows the notes it hears.
- 170. Design a game that teaches kids about caring for Earth.
- 171. Build code that guesses who will win a sports game.
- 172. Create a system that waters house plants when the soil is dry.
- 173. Design a virtual walk through your school on a phone.
- 174. Make a model that shows how cars move in city streets.
- 175. Build a robot arm that sorts blocks by color.
- 176. Write code that reads posts and finds happy or sad feelings.
- 177. Design a digital world that shows how an ecosystem changes over time.
- 178. Make a music composer that writes simple songs.
- 179. Build a security alert that watches for movement and beeps.
- 180. Create a "smart mirror" that shows time, weather, or notes.

- 181. Design code that turns sign language gestures into words.
- 182. Make a voice helper that follows simple spoken commands.
- 183. Build a 3D-printed hand that can open and close.
- 184. Write software that spots leaf spots and plant diseases from photos.
- 185. Design a solar gadget that monitors weather in your yard.
- 186. Make a face-finder that knows family members in pictures.
- 187. Build a quiz game to teach the chemical elements.
- 188. Write code that studies how people walk and find odd steps.
- 189. Design a tool that tracks how much energy your home uses.
- 190. Create a model that shows how planets move around the sun.
- 191. Build a program that guesses how fast cities will grow.
- 192. Make a virtual tour of an old building in history.
- 193. Design a machine that sorts recyclables (paper, plastic, metal).
- 194. Write code that compares two fingerprints to see if they match.
- 195. Build a robot that finds its way through a simple maze.
- 196. Create a program that spots fake news articles online.
- 197. Design an app that draws math problems and shows solutions.
- 198. Make an AI that can play checkers or tic-tac-toe against you.
- 199. Build a sensor that checks soil moisture and sends an alert.
- 200. Write code that guesses how fast a plant will grow under set conditions.

#### Mathematics & Engineering Projects

- 201. Test which paper, wood, or plastic bridge holds the most weight.
- 202. Build a small motor with wire, magnets, and a battery.

- 203. Make a math model that shows how fast people multiply in a population.
- 204. Design a water filter from sand, charcoal, and cloth.
- 205. Build a chair from cardboard that can hold a person.
- 206. Use math to find patterns in songs and their beats.
- 207. Design a model building that can sway safely in an earthquake.
- 208. Build a small system that uses the sun to heat water.
- 209. Make a math formula that predicts heads or tails in a coin flip.
- 210. Design a small windmill that gets more energy from a fan.
- 211. Build a catapult that hits a target accurately.
- 212. Study sports scores and find number patterns with math.
- 213. Design a water rocket that flies as high as possible.
- 214. Build a simple generator that makes electricity with magnets.
- 215. Model how cars move in traffic using math equations.
- 216. Design a box that bakes food in the sun like an oven.
- 217. Build a system that lifts heavy items with water pressure.
- 218. Use math to find chances of winning in card games.
- 219. Design a morning-dew collector that gathers water at dawn.
- 220. Build a filter that cleans dirty water for drinking.
- 221. Model weather changes like rain or sun using math.
- 222. Make a strong bridge from paper towels using little material.
- 223. Build a musical instrument from old cans or bottles.
- 224. Model how germs spread through a crowd with math.
- 225. Design a toy car shape that cuts through air best.
- 226. Build a simple telegraph that sends dots and dashes.

- 227. Use math to see how people shop and what they buy.
- 228. Design a gray-water system that uses sink water to water plants.
- 229. Build a robot that follows your voice or remote commands.
- 230. Model stock market trends with math predictions.
- 231. Find the best paper airplane shape with math and tests.
- 232. Build a small car powered by a solar panel.
- 233. Study word patterns in books using math formulas.
- 234. Design a helmet that stops an egg from breaking when dropped.
- 235. Build a small dam or levee to keep water from flooding.
- 236. Model plant growth patterns under different light and water.
- 237. Design a tall tower from newspaper that won't fall.
- 238. Build a speaker to make your phone's sound louder.
- 239. Map how friends in a social network connect with math.
- 240. Design a sorter that separates blocks by size automatically.