Name _____ Date _____

Department of Chemistry & Biochemistry

SuperSTEM Saturday

March 14, 2026

Please obtain blue merit-badge card from troop leader and bring it on March 14 and 21 for sign-off.

CHEMISTRY MERIT BADGE Activities

Merit Badge. Have a fun time and don't forget to have each section signed by the person required.

Chemistry explores how substances react with each other, how they change, how certain forces connect molecules, and how molecules are made. Stretch your imagination to envision molecules that cannot be seen!

A. You will be doing the following requirements on Saturday March 14, 2026 at the superSTEM Saturday event:

2. Chemistry and First Aid. (c)

Booth 41: Feast for Yeast

You will observe how rubbing alcohol affects microbial growth using baker's yeast. Discuss the results with your counselor.

Observations: _____

_____

Get Table Leader Signatures _____ _____

4. Chemistry and Camping. (d)

Booth 42: The ultimate stretch challenge

You will observe synthesis of nylon and try to stretch the synthesized nylon.

Observations: _____

_____

Get Table Leader Signatures _____ _____

Visit one other booth that interests you to earn the Fun Patch for the SuperSTEM Saturday Event. Booth Number ___

B. You will do the following requirements at home/ remote/ as discussion before Saturday March 21st, 2026

Zoom session to go over non-hands-on requirements is scheduled on March 18 Wednesday, 7-8:30 pm. Please email edconchg@hotmail.com to sign up.

1. Chemistry and Safety. Do the following and discuss with your counselor:

(a) Obtain safety data sheets (SDS) for sucrose (sugar), isopropyl alcohol (rubbing alcohol), and a waterproofing spray. Compare their properties and potential hazard(s), including handling and disposal guidelines and toxicity information.

(b) What types of personal protective equipment (PPE) are recommended for each, and why? How does the recommended PPE change with toxicity and route of exposure?

(c) Review the pictograms in Section 2 of each SDS. What do they mean, and how do you see them used in your community?

(d) Discuss the safe storage of chemicals. How does the safe storage of chemicals apply to your home, school, community, and the environment?

2. Chemistry and First Aid.

(a) Discuss with your counselor why you think soap and alcohol are used to clean cuts and scrapes. Discuss how you could test your hypotheses with your counselor.

(b) Coat your hands with a mixture of cooking oil and a nontoxic powder, such as sand or cocoa. Wash your hands with water and observe what happens. Coat your hands again, then wash with soap and water. Discuss the differences with your counselor.

3. Chemistry and Cooking.

(a) Perform a Maillard, or browning, reaction. Discuss with your counselor whether a physical or chemical change has occurred, and what happened to molecules in the food during the cooking process.

4. Chemistry and camping

(b) For this requirement, you will describe the four classes of fires, and the four classes of fire extinguishers. Discuss with your counselor how sand, baking soda, and the four classes of extinguishers work to put out fires.

5. Describe how chemistry can be used to reduce the environmental impacts of single-use items, such as water bottles, bags, straws, or batteries.

6. Identify five fields of chemistry. Briefly describe each, tell how each applies to your life and how they interact.

7. Identify three government agencies that oversee or provide guidance on the use of chemicals for personal, pharmaceutical, commercial, or industrial use, and discuss the agencies' history and responsibilities with your counselor.

C. You will do the following requirements on the follow up event on March 21st, 2026, 9-12 pm, in SCI Hall 1, room 111.

3 (b) For this requirement, you will prepare and use red cabbage indicator to measure the pH of five common household liquids, including water. Discuss your observations with your counselor.

4 (a) For this requirement, you will design and conduct an experiment to compare at least two different types of waterproofing. Discuss with your counselor which one you would prefer to use on your tent and which one you would prefer to use on your boots, and why.

4 (c) For this requirement, you will conduct flame tests of at least five elements using a kitchen or propane torch.

8. For this requirement, you will visit a research laboratory, and discuss the research performed there with a chemist or chemical technician. Learn what education and training they received.