Event Requirements

Merit Badge College 2027

Merit Badge College

American Business (2019 version): American Business 2019-01-01

U PR

null NOTE: The official merit badge pamphlets are now free and downloadable HERE or can be purchased at the Scout Shop.

#1. Do the following:

- [X] [ ] **#1a** Explain four features of the free enterprise system in the United States. Describe the difference between freedom and license. Tell how the Scout Oath and Scout Law apply to business and free enterprise.
- [X] [ ] **#1b** Describe the Industrial Revolution and tell about the major developments that marked the start of the modern industrial era in the United States. Discuss three people who had a great influence on business or industry in the United States and describe what each did.
- [X] [ ] **#1c** Identify and describe to your counselor the five primary areas of business.
- [X] [ ] **#1d** Explain the history of labor unions in the United States and the importance of labor unions and employers working together. Identify two major labor unions currently in existence.
- [X] [ ] **#1e** Discuss with your counselor how business impacts the local, national, and global economy.

#2. Do the following:

- [X] [ ] **#2a** Explain the three basic types of financial statements (income statement, balance sheet, and statement of cash flows). Discuss with your counselor how each statement can help business leaders make better decisions.
- [X] [ ] **#2b** Explain how changes in interest rates, taxes, and government spending affect the flow of money into or out of business and industry.
- [X] [ ] **#2c** Explain how a sole proprietorship, partnership, or limited liability company gets its capital. Discuss and explain four ways a corporation obtains capital.
- [X] [ ] **#2d** Name five kinds of insurance useful to business. Describe their purposes.

#3. Do the following:

- [X] [ ] **#3a** Explain the place of profit in business.
- [X] [ ] **#3b** Describe to your counselor green marketing and sustainable business practices.
- [X] [ ] **#3c** Explain how ethics plays a role in business decision making.
- [X] [ ] **#3d** Discuss the differences between operating a brick-and-mortar business versus an online business.

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American Business (2019 version): American Business 2019-01-01

U	PR	
X		**#4** Describe the role of the U.S. Department of Labor. Discuss TWO of the following topics with your counselor: Fair Labor Standards Act (FLSA), Occupational Safety and Health Act (OSHA), Family and Medical Leave Act (FMLA), or Employee Retirement Income Security Act (ERISA).
X		**#5** Choose a business and research how it applies to each of the primary areas of business (accounting, finance, economics, marketing, and management). Share what you have learned with your counselor.
		#**6.** Do ONE of the following:
X		**#6a** Choose one of the primary areas of business and identify three career opportunities. Select one and research the education, training, and experience required for this career. Discuss this with your counselor and explain why this interests you.
		#**6b** Select a business leader and interview this individual to learn more about his or her company and career path. Discuss the role ethics plays in making business decisions. Share what you have learned with your counselor.

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American Labor **2016-01-01**

U	PR	
X		**#1** Using resources available to you, learn about working people and work-related concerns. List and briefly describe or give examples of at least EIGHT concerns of American workers. These may include, but are not limited to, working conditions, workplace safety, hours, wages, seniority, job security, equal-opportunity employment and discrimination, guest workers, automation and technologies that replace workers, unemployment, layoffs, outsourcing, and employee benefits such as health care, child care, profit sharing, continuing education, and retirement benefits.
		#2. With your counselor's and parent or guardian's approval and permission, visit the office or attend a meeting of a local union, a central labor council, or an employee organization, or contact one of these organizations via the internet. Then do the following:
X		**#2a** Find out what the organization does.
X		**#2b** Share the list of issues and concerns you made for requirement 1. Ask the people you communicate with which issues are of greatest interest or concern to them and why.
X		**#2c** Draw a diagram showing how the organization is structured, from the local to the national level, if applicable.
X		**#3** Explain to your counselor what labor unions are, what they do, and what services they provide to members. In your discussion, show that you understand the concepts of labor, management, collective bargaining, negotiation, union shops, open shops, grievance procedures, mediation, arbitration, work stoppages, strikes, and lockouts.
X		**#4** Explain what is meant by the adversarial model of labor-management relations, compared with a cooperative-bargaining style.
		#5. Do ONE of the following:
X		**#5a** Develop a time line of significant events in the history of the American labor movement from the 1770s to the present.
X		**#5b** Prepare an exhibit, a scrapbook, or a computer presentation, such as a slide show, illustrating three major achievements of the American labor movement and how those achievements affect American workers.
X		**#5c** With your counselor's and parent or guardian's approval and permission, watch a movie that addresses organized labor in the United States. Afterward, discuss the movie with your counselor and explain what you learned.
X		**#5d** Read a biography (with your counselor's approval) of someone who has made a contribution to the American labor movement. Explain what contribution this person has made to the American labor movement.
X		**#6** Explain the term globalization. Discuss with your counselor some effects of globalization on the workforce in the United States. Explain how this global workforce fits into the economic system of this country.
X		**#7** Choose a labor issue of widespread interest to American workers—an issue in the news currently or known to you from your work on this merit badge. Before your counselor, or in writing, argue both sides of the issue, first taking management's side, then presenting labor's or the employee's point of view.

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American Labor **2016-01-01**

U PR

In your presentation, summarize the basic rights and responsibilities of employers and employees, including union members and nonunion members.

[X] [ ] **#8** Discuss with your counselor the different goals that may motivate the owners of a business, its stockholders, its customers, its employees, the employees' representatives, the community, and public officials. Explain why agreements and compromises are made and how they affect each group in achieving its goals.

[X] [ ] **#9** Learn about opportunities in the field of labor relations. Choose one career in which you are interested and discuss with your counselor the major responsibilities of that position and the qualifications, education, and training such a position requires.

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Animation **2015-01-01**

U PR

#1. General Knowledge. Do the following:

- [X] [ ] **#1a** In your own words, describe to your counselor what animation is.
- [X] [ ] **#1b** Discuss with your counselor a brief history of animation.
- [X] [ ] **#2** Principles of Animation. Choose five of the following 12 principles of animation, and discuss how each one makes an animation appear more believable: squash and stretch, anticipation, staging, straight ahead action and pose to pose, follow through and overlapping action, slow in and slow out, arcs, secondary action, timing, exaggeration, solid drawing, and appeal.

#3. Projects. With your counselor's approval, choose two animation techniques and do the following for each:

#(a) Technique 1

- [X] [ ] **#3a(1)** Plan your animation using thumbnail sketches and/or layout drawings either on paper or using an animation software program.
- [X] [ ] **#3a(2)** Create the animation.
- [X] [ ] **#3a(3)** Share your animations with your counselor. Explain how you created each one, and discuss any improvements that could be made.

#(b) Technique 2

- [X] [ ] **#3b(1)** Plan your animation using thumbnail sketches and/or layout drawings.
- [X] [ ] **#3b(2)** Create the animation.
- [X] [ ] **#3b(3)** Share your animations with your counselor. Explain how you created each one, and discuss any improvements that could be made.

#4. Animation in our World. Do the following:

- [X] [ ] **#4a** Tour an animation studio or a business where animation is used, either in person, via video, or via the internet. Share what you have learned with your counselor.
- [X] [ ] **#4b** Discuss with your counselor how animation might be used in the future to make your life more enjoyable and productive.
- [X] [ ] **#5** Careers. Learn about three career opportunities in animation. Pick one and find out about the education, training, and experience required for this profession. Discuss your findings with your counselor. Explain why this profession might interest you.

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Archeology: Archaeology 2021-01-01

U	PR	
X		**#1** Tell what archaeology is and explain to your counselor how it differs or relates to other fields of study such as anthropology, geology, paleontology, and history. Explain how archaeology is different than artifact collecting or treasure hunting.
X		**#2** Describe the following steps of the archaeological process: site location, development of background research and a research design, site survey and fieldwork, artifact identification and examination, interpretation, preservation, and information sharing.
X		**#3** Describe at least two ways in which archaeologists determine the age of sites, structures, or artifacts. Explain what absolute dating and relative dating are.
		#4. Learn about a combined total of five archaeological sites located both within and outside the United States.
X	X	**#4a** For EACH site you research, point it out on a map and explain how it became known to archaeologists. Describe some of the information about the past that has been found at each site. Explain how the information gained from the study of these sites answers questions that archaeologists are asking and how the information may be important to modern people. Compare the relative ages of the sites you research.
X	X	**#4b** Choose ONE of the sites you picked and give a short presentation about your findings to a Cub Scout pack, your Scout troop, your school class, or another group.
		#5. Do the following:
X		**#5a** Learn about the federal laws and international conventions that protect archaeological sites. Find out if your state, county, or local government has regulations that apply to archaeological or historic sites.
X		**#5b** Identify a national, international, or local organization that helps to protect archaeological sites.
		#6. Do the following:
X		**#6a** Explain why it is important to protect archaeological sites.
X		**#6b** Explain what people should do if they think they have found an artifact.
X		**#6c** Describe the ways in which you can be a protector of the past.
		#7. Do ONE of the following and discuss your findings with your counselor:
X	X	**#7a** Visit a museum to observe how artifacts aid in conveying history.
X	X	**#7b** Present to your counselor a significant family artifact/heirloom and discuss its history.

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Archeology: Archaeology **2021-01-01**

U	PR	
X	X	**#7c** Make a list of the trash your family throws out during one week. Discuss with your counselor what archaeologists might learn about you and your family if they found your trash a thousand years from now.
X		**#8** Research a group of people who lived in your area more than 100 years ago. Find out about their ways of life, including housing, clothing, arts and crafts, tools, trade and markets, rituals and religions, and diets, and their relationships with other groups of people in the area. Describe what you would expect to find at an archaeological site where these people lived. Explain how these people influenced your current community.
X		**#9** Explore careers related to this merit badge. Research one career to learn about the training and education needed, costs, job prospects, salary, job duties, and career advancement. Your research methods may include—with your parent or guardian's permission—an internet or library search, an interview with a professional in the field, or a visit to a location where people in this career work. Discuss with your counselor both your findings and what about this profession might make it an interesting career.
		#10. Do ONE of the following:
X	X	**#10a** With your parent or guardian's and counselor's permission, assist a qualified archaeologist for at least eight hours with a project being worked on. Projects may include surveying, site monitoring, site stabilization, excavation, laboratory analysis, use of digital archaeological technology, or public outreach. Describe your involvement in the project, what you learned about archaeology, and the steps of archaeological inquiry. Note: Visiting an archaeological site will require advance planning. An archaeological site during study can be a dangerous place. While there, you will need to closely follow the archaeologist's directions and comply with all the safety procedures. Be aware of the changing conditions at the site.
X	X	**#10b** With your counselor's approval, take part in a simulated archaeological project designed by a qualified archaeologist. The project must include the use of a simulated archaeological site including artifacts and features for the site. Using the steps of archaeological inquiry, analyze the artifacts and features and document the spatial relationships of the artifacts and features at the simulated site. Explain how the environment and time can affect the interpretation of an artifact and the overall archaeological site. Tell how you would share the results of your analysis with other researchers and the public. Note: To find out how to make a simulated archaeological site, talk with a professional archaeologist, trained avocational archaeologist, museum school instructor, science teacher, advisor from a local archaeology society, or other qualified instructor.
		#11. Under the supervision of a qualified archaeologist or instructor, do ONE of the following:
X		**#11a** Help prepare an archaeological exhibit for display in a museum, visitor center, school, or other public area.
X		**#11b** Use the methods of experimental archaeology to re-create an item or to practice a skill from the past. Write a brief report explaining the experiment and its results.

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Artificial Intelligence: Artificial Intelligence (AI) **2025-01-01**

U	PR	
X		**#1.** Key Concepts. Define the following terms and share the meaning of each with your counselor: artificial intelligence (AI), artificial intelligence agents, automation, basic programming, bots, data, databases, digital workers, general AI, machine learning (ML), narrow AI, superintelligent AI, tasks, triggers, workflows, and variables.
		#2. Artificial Intelligence (AI) Basics. Do the following and share what you learned with your counselor:
X		**#2(a).** Identify 10 examples of how AI is currently used in everyday life.
X		**#2(b).** Identify five examples of how AI is currently used in the workplace.
X		**#2(c).** Identify five examples of how AI can be used at school or in support of your education.
X		**#2(d).** Meet with your counselor and play 10 rounds of the "AI or Not?" game to determine if the presented scenario utilizes AI. Discuss your answers.
X		**#2(e).** Create a timeline with five key milestones in the development of artificial intelligence.
		#3. Automation Basics. Do the following and share what you learned with your counselor:
X		**#3(a).** Identify 10 examples of how automation is currently used in everyday life.
X		**#3(b).** Identify five examples of how automation is currently used in the workplace.
X		**#3(c).** Identify five examples of how automation can be used at school or in support of your education.
X		**#3(d).** Explain how automation performs repetitive tasks without human intervention and how it reduces human error and optimizes resources.
X		**#3(e).** Create a timeline with five significant milestones in automation development.
		#4. Ethics in AI. Do the following and share what you learned with your counselor:
X		**#4(a).** Research ethical concerns and responsible use in AI, including bias, privacy, and AI decision-making.
X		**#4(b).** Meet with your counselor, play, and discuss five rounds of the "What Would You Do?" ethical decision-making scenarios.
X		**#4(c).** Develop your own ethical guidelines for the use of AI.
X		**#4(d).** What is the Turing test?

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Artificial Intelligence: Artificial Intelligence (AI) **2025-01-01**

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#5. Deepfakes. Do the following and share what you learned with your counselor:

- [X] [ ] **#5(a).** Explain what a deepfake is and how it can affect an individual.
- [X] [ ] **#5(b).** Describe what actions to take if you or someone you know is impacted by a deepfake.

#6. Developing AI Skills. Do the following and share what you learned with your counselor:

- [X] [ ] **#6(a).** Discuss the learning process for AI and its limitations.
- [X] [ ] **#6(b).** Identify five methods of how to effectively communicate with AI.
- [X] [ ] **#6(c).** Explain the importance of prompt engineering when using AI to create better output.
- [X] [ ] **#6(d).** Demonstrate three examples of writing clear instructions for a school-related task.
- [X] [ ] **#6(e).** Complete the "Clear Communication Challenge" activity.

#7. Practical Application. Do ONE of the following:

- [X] [ ] **#6(f).** Teach the AI a skill or something that you know well.
- [X] [ ] **#7(a).** With your counselor's approval, choose an artificial intelligence project based on your personal interest or a community need. Develop a plan outlining the project's objectives, data requirements, and potential ethical considerations. Implement the project utilizing appropriate artificial intelligence tools, languages, or platforms. Share your project with your counselor. Discuss the steps you followed to create the project and your experience during the process.
- [X] [ ] **#7(b).** With your counselor's approval, design a short lesson plan on AI and teach it to your patrol or a group of Scouts. The lesson should include an AI-generated age-appropriate explanation of AI, examples of how AI is used in both everyday life as well as in the workplace, and an interactive demonstration of how Scouts could utilize AI to assist them with a school assignment, Scouting activity, or rank advancement. Share information on the development process and teaching experience with your counselor.

#8. Career Exploration. Do ONE of the following:

- [X] [ ] **#8(a).** Identify three career opportunities that would use skills and knowledge in artificial intelligence or automation. Pick one and research the training, education, certification requirements, experience, and expenses associated with entering the field. Research the prospects for employment, starting salary, advancement opportunities, and career goals associated with this career. Discuss what you learned with your counselor and whether you might be interested in this career.

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Artificial Intelligence: Artificial Intelligence (AI) **2025-01-01**

U	PR	
X		**#8(b).** Interview an artificial intelligence or automation professional. Learn about their day-to-day work, the challenges they face, and their vision for the future of artificial intelligence or automation. Inquire about training, education, certification requirements, experience, and expenses associated with entering the field. Share what you learned with your counselor.

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Astronomy **2025-01-01**

U	PR	
		#1. Do the following:
X		**#1a** Explain to your counselor the most likely hazards you may encounter while participating in astronomy activities, and what you should do to anticipate, help prevent, mitigate, and respond to these hazards.
X		**#1b** Explain first aid for injuries or illnesses such as heat and cold reactions, dehydration, bites and stings, and damage to your eyes that could occur during observations.
X		**#1c** Describe the proper clothing and other precautions for safely making observations at night and in cold weather.
X		**#1d** Explain how to safely observe the Sun, objects near the Sun and solar eclipses.
X		**#2** Explain what light pollution is and how it and air pollution affect astronomy.
		#3. With the aid of diagrams (or real telescopes if available), do the following:
X		**#3a** Explain why binoculars and telescopes are important astronomical tools. Demonstrate or explain how these tools are used.
X		**#3b** Describe the similarities and differences of several types of astronomical telescopes, including at least one that observes light beyond the visible part of the spectrum (i.e., radio, X-ray, ultraviolet, or infrared).
X		**#3c** Explain the purposes of three instruments used with astronomical telescopes.
X		**#3d** Describe the proper care and storage of telescopes and binoculars both at home and in the field.
		#4. Do the following (if instruction is done in a planetarium, Scouts must still identify the required stars and constellations outside under the natural night sky):
X	X	**#4a** Identify in the sky 10 constellations, at least four of which are in the zodiac.
X	X	**#4b** Identify in the sky eight conspicuous stars, five of which are of magnitude 1 or brighter.
X	X	**#4c** Make two sketches of the Big Dipper or Cassiopeia from direct observation. In one sketch, show the Big Dipper's or Cassiopeia's orientation in the early evening sky. Make another sketch, showing its position several hours later. In both sketches, show the North Star and the horizon. Record the date and time each sketch was made.
X	X	**#4d** Explain what we see when we look at the Milky Way.

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Astronomy **2025-01-01**

U	PR	
		#5. Do the following:
X		**#5a** List the names of the five most visible planets. Explain which ones can appear in phases similar to lunar phases and which ones cannot, and explain why.
X		**#5b** Using the internet (with your parent or guardian's permission) and other resources, find out when each of the five most visible planets that you identified in requirement 5(a) will be observable in the evening sky during the next 12 months, then compile this information in the form of a chart or table.
X		**#5c** Describe the motion of the planets across the sky.
X		**#5d** Observe a planet and describe what you saw.
		#6. Do the following:
X		**#6a** Sketch the face of the Moon and indicate five seas and five craters. Label these landmarks.
X		**#6b** Sketch the phase and position of the Moon, at the same hour and place, for four nights (or days) within a one-week period by direct observation. Include landmarks on the horizon such as hills, trees, and buildings. Explain the changes you observe.
X		**#6c** List the factors that keep the Moon in orbit around Earth.
X		**#6d** With the aid of diagrams, explain the relative positions of the Sun, Earth, and the Moon at the times of lunar and solar eclipses, and at the times of new, first-quarter, full, and last-quarter phases of the Moon.
		#7. Do the following:
X		**#7a** Describe the composition of the Sun, its relationship to other stars, and some effects of its radiation on Earth's weather and communications.
X		**#7b** Define sunspots and describe some of the effects they may have on solar radiation.
X		**#7c** Identify at least one red star, one blue star, and one yellow star (other than the Sun). Explain the meaning of these colors.
		#8. With your counselor's approval and guidance, do ONE of the following:
X	X	**#8a** Visit a planetarium or astronomical observatory. Submit a written report, a scrapbook, OR a video presentation afterward to your counselor that includes the following information: activities occurring there, exhibits and displays you saw, telescopes and other instruments being used, and celestial objects you observed.

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Astronomy **2025-01-01**

U	PR	
X	X	**#8b** Plan and participate in an observation session that includes using binoculars or a telescope and includes at least 10 celestial objects beyond those observed in requirement 4. These might be lunar features, Messier objects, additional constellations or planets, or artificial satellites including the International Space Station. List the celestial objects you want to observe and find each in a star chart, guidebook or by using an app. Prepare a log or notebook. Discuss with your counselor what you hope to observe prior to your observation session. Review your log or notebook with your counselor afterward.
X	X	**#8c** Plan and host a star party for your Scout troop or other group such as your class at school. Use binoculars or a telescope to show and explain celestial objects to the group.
X	X	**#8d** Help an astronomy club in your community hold a star party that is open to the public.
X	X	**#8e** Personally take a series of photographs or digital images of the movement of the Moon, a planet, an asteroid, meteor, or a comet. In your visual display, label each image and include the date and time it was taken. Show all positions on a star chart or map. Show your display at school or at a troop meeting. Explain the changes you observed.
X	X	**#8f** With your parent or guardian's and counselor's approval, use online observing opportunities such as SkyNet to observe planets, comets, galaxies, and/or the sun. Describe your experience to your counselor.
		#**9.** Do ONE of the following:
X		**#9a** Identify three career opportunities that would use skills and knowledge in astronomy. Pick one and research the training, education, certification requirements, experience, and expenses associated with entering the field. Research the prospects for employment, starting salary, advancement opportunities and career goals associated with this career. Discuss what you learned with your counselor and whether you might be interested in this career.
X		**#9b** Identify how you might use the skills and knowledge in astronomy to pursue a personal hobby. Research the additional training required, expenses, and affiliation with organizations that would help you maximize the enjoyment and benefit you might gain from it. Discuss what you learned with your counselor and share what short-term and long-term goals you might have if you pursued this.

Event Requirements

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Automotive Maintenance **2024-01-01**

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null Note: You will need access to a car or truck and its owner's manual to meet some requirements for this merit badge. If you do not have your own vehicle, you should work with your counselor or other trusted adult to obtain access to a vehicle and the owner's manual for that vehicle.

#1. Safety and Registration. Do the following:

[X] [ ] **#1a** Explain to your counselor the hazards you are most likely to encounter during automotive maintenance activities, and what you should do to anticipate, help prevent, mitigate, or lessen these hazards.

[X] [ ] **#1b** Discuss with your counselor the safety equipment, tools, and clothing used while checking or repairing a motor vehicle. Use this equipment, tools, and/or clothing (when needed or called for) in meeting the requirements for this merit badge.

[X] [ ] **#1c** Explain the different types of motors you may encounter.

[X] [ ] **#1d** Explain the safety considerations when performing maintenance on a vehicle equipped with a high-voltage electrical system.

[X] [ ] **#1e** Review the maintenance chart in the vehicle owner's manual. Explain the requirements and time limits.

[X] [ ] **#1f** Explain the purpose, importance, and limitations of safety belts and passive restraints.

[X] [ ] **#1g** Find out the requirements for your state's emissions and safety inspections (as applicable), including how often a vehicle needs to be inspected.

[X] [ ] **#1h** Explain the importance of registering a vehicle and find out the annual registration fee for renewing your family car's registration.

#2. General Maintenance. Do the following:

[X] [ ] **#2a** Demonstrate how to check the following:

1. (1) Brake fluid
2. (2) Engine oil
3. (3) Coolant
4. (4) Power steering fluid
5. (5) Windshield washer fluid
6. (6) Transmission fluid
7. (7) Battery fluid (if possible) and condition of the battery terminals

[X] [ ] **#2b** Locate the fuse boxes; determine the type and size of fuses. Demonstrate the proper replacement of burned-out fuses.

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Automotive Maintenance **2024-01-01**

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X		**#2c** Demonstrate how to check the condition and tension of belts and hoses.
X		**#2d** Check the vehicle for proper operation of its lights, including the interior overhead lights, instrument lights, warning lights, and exterior bulbs.
X		**#2e** Locate and check the air filter(s).
		#3. Dashboard/Driver Information Center. Do the following:
X		**#3a** Explain the function of the fuel gauge, speedometer, tachometer, oil pressure, and engine temperature gauge. Point each one out on the instrument cluster.
X		**#3b** Explain the symbols that light up on the dashboard and the difference between the yellow and red symbols. Explain each of the indicators on the dashboard, using the owner's manual if necessary.
X		**#3c** Explain the messages and alerts that may be displayed on the dashboard/ driver information center including maintenance-related reminders.
		#4. Tires. Do the following:
X		**#4a** Explain the difference between tire manufacturer's and vehicle manufacturer's specifications and show where to find them.
X		**#4b** Demonstrate how to check tire pressure and properly inflate a tire. Check the spare tire and make sure it is ready for use.
X		**#4c** Explain why wheel alignment is important to the life of a tire. Explain caster, camber, and toe-in adjustments on wheel alignment.
X		**#4d** Explain the purpose of the lateral-wear bar indicator.
X		**#4e** Explain how to dispose of old tires in accordance with local laws and regulations.
		#5. Engine. Do the following:
X		**#5a** Explain how an internal combustion engine operates. Tell the differences between gasoline and diesel engines. Explain how a gasoline-electric hybrid vehicle is powered.
X		**#5b** Discuss the purpose of engine oil. Explain the API service code, the SAE number, and the viscosity rating.
X		**#5c** Explain where to find the recommended oil type and the amount of oil to be used in the vehicle engine.
		#6. Cooling System. Do the following:

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X		**#6a** Explain the need for coolant in the cooling system, and the importance of selecting the correct coolant type for a given vehicle.
X		**#6b** Explain how to flush and change the engine coolant in the vehicle, and how to properly dispose of the used coolant.
		#**7.** Fuel System. Do the following:
X		**#7a** Explain how the air and fuel systems work together and why it is necessary to have an air filter and fuel filter.
X		**#7b** Explain how a how a fuel injection system works and how an onboard computer works with the fuel injection system.
		#**8.** Ignition and Electrical Systems. Do the following:
		#**(a)** Diagram and explain the parts of one of the following electrical systems:
X		**#8a1** Starting/charging system
X		**#8a2** Hybrid or electric vehicle inverter
X		**#8a3** Lighting system.
X		**#8b** Explain the engine's firing order.
X		**#8c** Explain the purpose of the spark gap.
X		**#8d** Demonstrate how to safely connect jumper cables to your car battery.
X		**#8e** Discuss with your counselor what factors can affect range on an electrified vehicle. Explain the procedure for recharging an electric or plug-in hybrid vehicle.
X		**#8f** Explain what other vehicle systems are dependent on a reliable electrical system.
		#**9.** Drive Train. Do the following:
X		**#9a** Diagram the drive train and explain the different parts.
X		**#9b** Explain the difference between automatic and standard transmissions.
X		**#9c** Explain the types of automatic transmission fluid.

Event Requirements

Merit Badge College 2027

Automotive Maintenance **2024-01-01**

U	PR	
X		**#9d** Explain the types of lubricants used in a standard transmission, and in the differential and transfer case.
X		**#9e** Explain the difference between front-wheel, rear- wheel, and four-wheel drive.
		#10. Brake System. Do the following:
X		**#10a** Explain the brake system (including antilock systems) and how it operates.
X		**#10b** Explain the differences between disc and drum systems.
X		**#10c** Demonstrate how to check the condition of a vehicle's brake system. After checking, make recommendations for repairs (if necessary).
		#11. Do TWO of the following:
X	X	**#11a** Determine the value of three different vehicles you are interested in purchasing. One must be new and one must be used; the third vehicle can be new or used. For each vehicle, find out the requirements and cost of automobile insurance to include basic liability and options for collision, comprehensive, towing, and rental car. Using the three vehicles you chose and with your counselor's assistance, complete the operation/maintenance chart provided in the Automotive Maintenance merit badge pamphlet. Use this information to determine the operating cost per mile for each vehicle, and discuss what you learn with your counselor.
X	X	**#11b** Choose a car cleaner and wax product for a vehicle you want to clean. Explain clear-coat paint and the precautions necessary for care. Clean the vehicle, both inside and out, and wax the exterior. Use a vinyl and rubber protectant (on vinyl tops, rubber door seals, sidewalls, etc.) and explain the importance of this protectant.
X	X	**#11c** Locate the manufacturer's jack. Use the jack to demonstrate how to engage the jack correctly on the vehicle, then change a tire correctly.
X	X	**#11d** Perform an oil filter and oil change on a vehicle. Explain how to properly dispose of the used oil and filter.
X	X	**#12** Find out about three career opportunities in the automotive industry. Pick one and find out the education, training, and experience required for this profession. Discuss this with your counselor, and explain why this profession might interest you.

Event Requirements

Merit Badge College 2027

Chess **2013-01-01**

U	PR	
X		**#1** Discuss with your counselor the history of the game of chess. Explain why it is considered a game of planning and strategy.
		#2. Discuss with your counselor the following:
X		**#2a** The benefits of playing chess, including developing critical thinking skills, concentration skills, and decision-making skills, and how these skills can help you in other areas of your life
X		**#2b** Sportsmanship and chess etiquette.
		#3. Demonstrate to your counselor that you know each of the following. Then, using the EDGE method to teach someone (preferably another Scout) who does not know how to play chess:
X		**#3a** The name of each chess piece
X		**#3b** How to set up a chessboard
X		**#3c** How each chess piece moves, including castling and en passant captures.
		#4. Do the following:
X		**#4a** Demonstrate scorekeeping using the algebraic system of chess notation.
X		**#4b** Discuss the differences between the opening, the middle game, and the endgame.
X		**#4c** Explain four opening principles.
X		**#4d** Explain the four rules for castling.
X		**#4e** On a chessboard, demonstrate a "scholar's mate" and a "fool's mate."
X		**#4f** Demonstrate on a chessboard four ways a chess game can end in a draw.
		#5. Do the following:
X		**#5a** Explain four of the following elements of chess strategy: exploiting weaknesses, force, king safety, pawn structure, space, tempo, time.
X		**#5b** Explain any five of these chess tactics: clearance sacrifice, decoy, discovered attack, double attack, fork, interposing, overloading, overprotecting, pin, remove the defender, skewer, zwischenzug.

Event Requirements

Merit Badge College 2027

Chess **2013-01-01**

U	PR	
X		**#5c** Set up a chessboard with the white king on e1, the white rooks on a1 and h1, and the black king on e5. With White to move first, demonstrate how to force checkmate on the black king.
X		**#5d** Set up and solve five direct-mate problems provided by your counselor.
		#**6.** Do ONE of the following:
X		**#6a** Play at least three games of chess with other Scouts and/or your counselor. Replay the games from your score sheets and discuss with your counselor how you might have played each game differently.
X		**#6b** Play in a scholastic (youth) chess tournament and use your score sheets from that tournament to replay your games with your counselor. Discuss with your counselor how you might have played each game differently.
X		**#6c** Organize and run a chess tournament with at least four players, plus you. Have each competitor play at least two games.

Event Requirements

Merit Badge College 2027

Citizenship in the Community A: Citizenship in the Community (Eagle required) **2025-01-01**

U	PR	
X		**#1** Discuss with your counselor what citizenship in the community means and what it takes to be a good citizen in your community. Discuss the rights, duties, and obligations of citizenship, and explain how you can demonstrate good citizenship in your community, Scouting unit, place of worship, or school.
		#2. Do the following:
X	X	**#2a** Using an electronic mapping tool or paper map, locate and pinpoint the following services and landmarks in your community. Determine and record the distances from your home including driving time AND either walking or biking time. 1. Chief government buildings such as your city hall, county courthouse, and public works/services facilities 2. Fire station, police station, and hospital nearest your home 3. Parks, playgrounds, recreation areas, and trails 4. Historical or other interesting points of interest.
X		**#2b** Chart the organization of your local or state government. Show the top offices and tell whether they are elected or appointed.
		#3. Do the following:
X	X	**#3a** Attend an in-person meeting of your city, town, or county council or school board, local court session; OR another state or local governmental meeting approved in advance by your counselor.
X		**#3b** Choose one of the issues discussed at the meeting where a difference of opinions was expressed, and explain to your counselor why you agree with one opinion more than you do another one.
		#4. Choose an issue that is important to the citizens of your community; then do the following:
X		**#4a** Find out which branch of local government is responsible for this issue.
X	X	**#4b** With your counselor's and a parent or guardian's approval, interview one person from the branch of government you identified in requirement 4(a). Ask what is being done about this issue and how young people can help.
X		**#4c** Share what you have learned with your counselor.
X	X	**#5** With the approval of your counselor and a parent or guardian, watch a movie that shows how the actions of one individual or group of individuals can have a positive effect on a community. Discuss with your counselor what you learned from the movie about what it means to be a valuable and concerned member of the community.
X		**#6** List some of the services (such as the library, recreation center, public transportation, and public safety) your community provides that are funded by taxpayers. Tell your counselor why these services are important to your community.

Event Requirements

Merit Badge College 2027

Citizenship in the Community A: Citizenship in the Community (Eagle required) **2025-01-01**

U	PR	
		#7. Do the following:
X	X	**#7a** Identify three charitable organizations outside of Scouting that interest you and bring people in your community together to work for the good of your community.
X	X	**#7b** Pick ONE of the organizations you chose for requirement 7(a). Using a variety of resources (including newspapers, fliers and other literature, the internet, volunteers, and employees of the organization), find out more about this organization.
X	X	**#7c** With your counselor's and your parent or guardian's approval, contact the organization you chose for requirement 7(b), and find out what young people can do to help. While working on this merit badge, volunteer at least eight hours of your time for the organization. After your volunteer experience is over, discuss what you have learned with your counselor.
X	X	**#8** Develop a public presentation (such as a video, slide show, speech, digital presentation, or photo exhibit) about important and unique aspects of your community. Include information about the history, cultures, and ethnic groups of your community; its best features and popular places where people gather; and the challenges it faces. Stage your presentation in front of your counselor or a group, such as your patrol or a class at school.

Event Requirements

Merit Badge College 2027

Citizenship in the Nation A: Citizenship in the Nation (Eagle required) **2022-01-01**

U	PR	
X		**#1** What is the Constitution of the United States? What does the Constitution do? What principles does it reflect? Why is it important to have a Constitution?
X		**#2** List the six purposes for creating the United States Constitution set forth in the Preamble to the Constitution. How do these purposes affect your family and community?
		#3. List the three branches of the United States government. Explain:
X		**#3a** The function of each branch of government
X		**#3b** Why it is important to divide powers among different branches
X		**#3c** How each branch checks and balances the others
X		**#3d** How citizens can be involved in each branch of government
		#4. Discuss the importance of:
X		**#4a** Declaration of Independence
X		**#4b** Bill of Rights (the first 10 Amendments to the Constitution) and the 14th Amendment
X		**#4c** E Pluribus Unum, the traditional United States motto
X	X	**#5** Watch the national evening news for five days in a row or read the main stories in a national media organization (e.g., a newspaper or news website) for five days in a row. Discuss the national issues that you learned about with your counselor. Choose one issue and explain how it affects you, your family, and community.
		#6. With your counselor's approval, choose a speech of national historical importance. Explain:
X	X	**#6a** Who the author was
X	X	**#6b** What the historical context was
X	X	**#6c** What difficulties the nation faced that the author wished to discuss
X	X	**#6d** What the author said
X	X	**#6e** Why the speech is important to the nation's history

Event Requirements

Merit Badge College 2027

Citizenship in the Nation A: Citizenship in the Nation (Eagle required) **2022-01-01**

U	PR	
X	X	**#6f** Choose a sentence or two from the speech that has significant meaning to you, and tell your counselor why.
		#7. Do TWO of the following:
X	X	**#7a** Visit a place that is listed as a National Historic Landmark or that is on the National Register of Historic Places. Tell your counselor what you learned about the landmark or site and what you found interesting about it.
X	X	**#7b** Tour your state capitol building or the U.S. Capitol. Tell your counselor what you learned about the capitol, its function, and the history.
X	X	**#7c** Tour a federal facility. Explain to your counselor what you saw and what you learned about its function in the local community and how it serves this nation.
X	X	**#7d** Choose a United States national monument that interests you. Using books, brochures, the internet (with your parent or guardian's permission), and other resources, find out more about the monument. Tell your counselor what you learned, and explain why the monument is important to this country's citizens.
X		**#8** Name your representatives in the United States Congress. Write to your representative in Congress explaining your views on a national issue. Show your correspondence, along with any response you receive, to your counselor.

Event Requirements

Merit Badge College 2027

Citizenship in the World A: Citizenship in the World (Eagle required) **2016-01-01**

U	PR	
X		**#1** Explain what citizenship in the world means to you and what you think it takes to be a good world citizen.
X		**#2** Explain how one becomes a citizen in the United States, and explain the rights, duties, and obligations of U.S. citizenship. Discuss the similarities and differences between the rights, duties, and obligations of U.S. citizens and the citizens of two other countries.
		#**3.** Do the following:
X		**#3a** Pick a current world event. In relation to this current event, discuss with your counselor how a country's national interest and its relationship with other countries might affect areas such as its security, its economy, its values, and the health of its citizens.
X		**#3b** Select a foreign country and discuss with your counselor how its geography, natural resources, and climate influence its economy and its global partnerships with other countries.
		#**4.** Do TWO of the following:
X		**#4a** Explain international law and how it differs from national law. Explain the role of international law and how international law can be used as a tool for conflict resolution.
X		**#4b** Using resources such as major daily newspapers, the internet (with your parent or guardian's permission), and news magazines, observe a current issue that involves international trade, foreign exchange, balance of payments, tariffs, and free trade. Explain what you have learned. Include in your discussion an explanation of why countries must cooperate in order for world trade and global competition to thrive.
		#**(c)** Select TWO of the following organizations and describe their role in the world.
X		**#4c[1]** United Nations and United Nations Children's Fund (UNICEF)
X		**#4c[2]** International Court of Justice (The World Court)
X		**#4c[3]** International Criminal Police Organization (Interpol)
X		**#4c[4]** World Organization of the Scout Movement
X		**#4c[5]** World Health Organization (WHO)
X		**#4c[6]** Amnesty International
X		**#4c[7]** International Federation of Red Cross and Red Crescent Societies (IFRC)

Event Requirements

Merit Badge College 2027

Citizenship in the World A: Citizenship in the World (Eagle required) **2016-01-01**

U	PR	
X		**#4c[8]** Cooperative for American Relief Everywhere (CARE)
X		**#4c[9]** European Union
		#5. Do the following:
X		**#5a** Discuss the differences between constitutional and nonconstitutional governments.
X		**#5b** Name at least five different types of governments currently in power in the world.
X		**#5c** Show on a world map countries that use each of these five different forms of government.
		#6. Do the following:
X		**#6a** Explain how a government is represented abroad and how the United States government is accredited to international organizations.
X		**#6b** Describe the roles of the following in the conduct of foreign relations: ambassador, consul, Bureau of Global Public Affairs, United States and Foreign Commercial Service.
X		**#6c** Explain the purpose of a passport and visa for international travel.
		#7. Do TWO of the following (with your parent or guardian's permission) and share with your counselor what you have learned:
X		**#7a** Visit the website of the U.S. State Department. Learn more about an issue you find interesting that is discussed on this website.
X		**#7b** Visit the website of an international news organization or foreign government, OR examine a foreign newspaper available at your local library, bookstore, or newsstand. Find a news story about a human right realized in the United States that is not recognized in another country.
X		**#7c** Visit with a student or Scout from another country and discuss the typical values, holidays, ethnic foods, and traditions practiced or enjoyed there.
X		**#7d** Attend or participate in a World Organization of the Scouting Movement (WOSM) event such as the World Scout Jamboree, World Scout Moot, World Scout Congress, Jamboree Over The Air, or Jamboree Over The Internet. Attendance at a national or regional Jamboree sponsored by a WOSM-National Scout Organization is also allowed.
X		**#7e** Participate in or attend an international event in your area, such as an ethnic festival, concert, or play.

Event Requirements

Merit Badge College 2027

Communications A: Communication (Eagle required) **2014-01-01**

U	PR	
		#1. Do ONE of the following:
X		**#1a** For one day, keep a log in which you describe your communication activities. Keep track of the time and different ways you spend communicating, such as talking person-to-person, listening to teachers, listening to the radio or podcasts, watching television, using social media, reading books and other print media, and using any electronic communication device. Discuss with your counselor what your log reveals about the importance of communication in your life. Think of ways to improve your communication skills.
X		**#1b** For three days, keep a journal of your listening experiences. Identify one example of each of the following, and discuss with your counselor when you have listened to each: obtain information, be persuaded, appreciate or enjoy something, and understand someone's feelings.
X		**#1c** In a small-group setting, meet with other Scouts or with friends. Have them share personal stories about significant events in their lives that affected them in some way. Take note of how each Scout participates in the group discussion and how effectively each Scout communicates their story. Report what you have learned to your counselor about the differences you observed in effective communication.
X		**#1d** List as many ways as you can think of to communicate with others (face-to-face, by telephone, letter, email, text messages, social media, and so on). For each type of communication, discuss with your counselor an instance when that method might not be appropriate or effective.
		#2. Do ONE of the following:
X		**#2a** Think of a creative way to describe yourself using, for example, a collage, short story or autobiography, drawing or series of photographs, or a song or skit. Using the aid you created, make a presentation to your counselor about yourself.
X		**#2b** Choose a concept, product, or service in which you have great confidence. Build a sales plan based on its good points. Try to persuade the counselor to agree with, use, or buy your concept, product, or service. After your sales talk, discuss with your counselor how persuasive you were.
X	X	**#3** Write a five-minute speech. Give it at a meeting of a group.
X	X	**#4** Interview someone you know fairly well, like, or respect because of his or her position, talent, career, or life experiences. Listen actively to learn as much as you can about the person. Then prepare and deliver to your counselor an introduction of the person as though this person were to be a guest speaker, and include reasons why the audience would want to hear this person speak. Show how you would call to invite this person to speak.
X	X	**#5** Attend a public meeting (city council, school board, debate) approved by your counselor where several points of view are given on a single issue. Practice active listening skills and take careful notes of each point of view. Prepare an objective report that includes all points of view that were expressed, and share this with your counselor. Resources: 3 Note-Taking Methods in 3 Minutes (video) Note-Taking Assignment Tips (website)
X		**#6** With your counselor's approval, develop a plan to teach a skill or inform someone about something. Prepare teaching aids for your plan. Carry out your plan. With your counselor, determine whether the person has learned what you intended.

Event Requirements

Merit Badge College 2027

Communications A: Communication (Eagle required) **2014-01-01**

U PR

#7. Do ONE of the following:

- [X] [X] **#7a** Write to the editor of a magazine or your local newspaper to express your opinion or share information on any subject you choose. Send your message by fax, email, or regular mail.

- [X] [X] **#7b** Create a webpage or blog of special interest to you (for instance, your troop or crew, a hobby, or a sport). Include at least three articles or entries and one photograph or illustration, and one link to some other webpage or blog that would be helpful to someone who visits the webpage or blog you have created.Note: It is not necessary to post your webpage or blog to the internet, but if you decide to do so, you must first share it with your parent or guardian and counselor and get their permission.

- [X] [X] **#7c** Use desktop publishing to produce a newsletter, brochure, flyer, or other printed material for your troop or crew, class at school, or other group. Include at least one article and one photograph or illustration.

- [X] [X] **#8** Plan a troop or crew court of honor, campfire program, or an interfaith worship service. Have the patrol leaders' council approve it, then write the script and prepare the program. Serve as master of ceremonies.

- [X] [ ] **#9** Find out about three career opportunities in communication. Pick one and find out the education, training, and experience required for this profession. Discuss this with your counselor, and explain why this profession might interest you.

Event Requirements

Merit Badge College 2027

Communications B: Communication (Eagle required) **2014-01-01**

U	PR	
		#1. Do ONE of the following:
X		**#1a** For one day, keep a log in which you describe your communication activities. Keep track of the time and different ways you spend communicating, such as talking person-to-person, listening to teachers, listening to the radio or podcasts, watching television, using social media, reading books and other print media, and using any electronic communication device. Discuss with your counselor what your log reveals about the importance of communication in your life. Think of ways to improve your communication skills.
X		**#1b** For three days, keep a journal of your listening experiences. Identify one example of each of the following, and discuss with your counselor when you have listened to each: obtain information, be persuaded, appreciate or enjoy something, and understand someone's feelings.
X		**#1c** In a small-group setting, meet with other Scouts or with friends. Have them share personal stories about significant events in their lives that affected them in some way. Take note of how each Scout participates in the group discussion and how effectively each Scout communicates their story. Report what you have learned to your counselor about the differences you observed in effective communication.
X		**#1d** List as many ways as you can think of to communicate with others (face-to-face, by telephone, letter, email, text messages, social media, and so on). For each type of communication, discuss with your counselor an instance when that method might not be appropriate or effective.
		#2. Do ONE of the following:
X		**#2a** Think of a creative way to describe yourself using, for example, a collage, short story or autobiography, drawing or series of photographs, or a song or skit. Using the aid you created, make a presentation to your counselor about yourself.
X		**#2b** Choose a concept, product, or service in which you have great confidence. Build a sales plan based on its good points. Try to persuade the counselor to agree with, use, or buy your concept, product, or service. After your sales talk, discuss with your counselor how persuasive you were.
X		**#3** Write a five-minute speech. Give it at a meeting of a group.
X	X	**#4** Interview someone you know fairly well, like, or respect because of his or her position, talent, career, or life experiences. Listen actively to learn as much as you can about the person. Then prepare and deliver to your counselor an introduction of the person as though this person were to be a guest speaker, and include reasons why the audience would want to hear this person speak. Show how you would call to invite this person to speak.
X	X	**#5** Attend a public meeting (city council, school board, debate) approved by your counselor where several points of view are given on a single issue. Practice active listening skills and take careful notes of each point of view. Prepare an objective report that includes all points of view that were expressed, and share this with your counselor. Resources: 3 Note-Taking Methods in 3 Minutes (video) Note-Taking Assignment Tips (website)
X	X	**#6** With your counselor's approval, develop a plan to teach a skill or inform someone about something. Prepare teaching aids for your plan. Carry out your plan. With your counselor, determine whether the person has learned what you intended.

Event Requirements

Merit Badge College 2027

Communications B: Communication (Eagle required) **2014-01-01**

U PR

#7. Do ONE of the following:

- [X] [X] **#7a** Write to the editor of a magazine or your local newspaper to express your opinion or share information on any subject you choose. Send your message by fax, email, or regular mail.

- [X] [X] **#7b** Create a webpage or blog of special interest to you (for instance, your troop or crew, a hobby, or a sport). Include at least three articles or entries and one photograph or illustration, and one link to some other webpage or blog that would be helpful to someone who visits the webpage or blog you have created.Note: It is not necessary to post your webpage or blog to the internet, but if you decide to do so, you must first share it with your parent or guardian and counselor and get their permission.

- [X] [X] **#7c** Use desktop publishing to produce a newsletter, brochure, flyer, or other printed material for your troop or crew, class at school, or other group. Include at least one article and one photograph or illustration.

- [X] [X] **#8** Plan a troop or crew court of honor, campfire program, or an interfaith worship service. Have the patrol leaders' council approve it, then write the script and prepare the program. Serve as master of ceremonies.

- [X] [ ] **#9** Find out about three career opportunities in communication. Pick one and find out the education, training, and experience required for this profession. Discuss this with your counselor, and explain why this profession might interest you.

Event Requirements

Merit Badge College 2027

Cybersecurity **2025-01-01**

U	PR	
		#1. Safety. Do the following:
X	☐	**#1(a)** View the Personal Safety Awareness "Digital Safety" video (with your parent or guardian's permission).
X	☐	**#1(b)** Explain to your counselor how to protect your digital footprint, such as while using social media, mobile device apps, and online gaming. Show how to set privacy settings to protect your personal information, including photos of yourself or your location.
X	☐	**#1(c)** Discuss first aid and prevention for potential injuries, such as eye strain, repetitive injuries, and handling electronics devices, that could occur during repeated use. Discuss how to keep yourself physically safe while using a mobile device (for example while walking or biking).
		#2. Ethics. Do the following:
X	☐	**#2(a)** Relate three points of the Scout law to things people do on the internet or with computers, phones, and other connected electronic devices.
X	☐	**#2(b)** Discuss with your counselor examples of ethical and unethical behavior in cyberspace. Include how to act responsibly when you encounter situations such as: coming across an unattended or unlocked computer or mobile device; observing someone type their password or seeing it written down near a computer; or discovering a website that is not properly secured. Explain why these situations require good judgement, and how the Scout Law and personal values should guide your actions.
		#3. Fundamentals. Do the following and discuss each with your counselor:
X	☐	**#3(a)** Describe three types of computer systems that need protecting and explain why.
X	☐	**#3(b)** Explain the "C.I.A. Triad"—Confidentiality, Integrity, and Availability—and why these three principles are fundamental to cybersecurity.
		#4 Cyber Threats, Vulnerabilities, and Attacks. Do the following and discuss each with your counselor:
X	☐	**#4(a)** Define the terms vulnerability, threat, and exploit, and give an example of each that might apply to a website or software product you use.
X	☐	**#4(b)** Pick one type of malware (such as virus, worm, Trojan, backdoor, spyware, or ransomware) and find out how it works. Explain what it does and the harm it can cause.
X	☐	**#4(c)** Identify two risks of using public Wi-Fi and describe how to reduce or avoid those risks.
X	☐	**#4(d)** Describe what spoofing and phishing are, and how to recognize a message or website that might be trying to trick you. Explain what steps you should take to protect yourself and others if you come across one.
		#(e) Current Events. Do ONE of the following:

Event Requirements

Merit Badge College 2027

Cybersecurity **2025-01-01**

U	PR	
X		**#4(e)(1)** Read an article or a news report about a recent cybersecurity incident, such as a data breach or malware infection. Explain how the incident happened (to the best of your ability based on the information available) and what the consequences are or might be to the victim.
X		**#4(e)(2)** With your parent or guardian's permission, watch a movie or read a book in which cybersecurity plays a significant role. Discuss how cybersecurity topics were depicted and how realistic you think it was.
X		**#4(f)** Create a list of what is part of your cyber attack surface including all the ways someone could try to access your personal information or devices—such as online accounts, apps, or home networks.
		#**5** Cyber Defenses. Do the following:
X		**#5(a)** Describe three technologies that are used to defend a computer or network, such as access controls, antivirus software, firewall, intrusion detection/prevention systems, and Virtual Private Network.
		#**(b)** Installing updates. Do the following:
X		**#5(b)(1)** Explain to your counselor the importance of installing the latest updates on your computer, why they are needed, and what kinds of problems they can prevent.
X		**#5(b)(2)** Demonstrate to your counselor how to check for, download, and install the latest updates for your computer or mobile device, or another computer you have permission to use. (If you are unable to do this on your computer, you may use an online guide with screenshots to demonstrate this.) Show your counselor how to verify that your computer or mobile device is up-to-date.
		#**(c)** System security. With your parent or guardian's permission, do THREE of the following using a computer or mobile device, and discuss with your counselor:
X		**#5(c)(1)** Describe what makes a good password and why. Set or change an account password to one that is "strong."
X		**#5(c)(2)** Describe multi-factor authentication (MFA) and how it can be used to improve security. Demonstrate how to use an authenticator app or other MFA function.
X		**#5(c)(3)** Install and set up a password manager. Demonstrate how it works to your counselor.
X		**#5(c)(4)** Run a virus scan. Show the results to your counselor.
X		**#5(c)(5)** Using a command line or other built-in tool, see what programs or processes are running on your computer. Discuss with your counselor what you see and what surprises you.

Event Requirements

Merit Badge College 2027

Cybersecurity **2025-01-01**

U	PR	
X		**#5(c)(6)** Use a command line interface to view your computer's open network connections. Discuss the results with your counselor.
X		**#5(c)(7)** Demonstrate how to back up your data from a mobile device to a local computer or the cloud.
X		**#5(c)(8)** Research best practices for protecting a home computer or network, and make a checklist of FIVE things you and your family can do to stay secure.
X		**#5(c)(9)** Identify one or more other vulnerabilities on your home computer or network or another computer or network you have permission to use and discuss with your counselor. With permission from the system owner, take the necessary actions to fix it.
		#6. Cryptography. Do the following:
X		**#6(a)** Research and explain to your counselor three situations where encryption is used in cybersecurity. For each situation, describe what kind of encryption is used and why it is important.
X		**#6(b)** Show how you can know if your connection to a website is encrypted.
		#(c) Do ONE of the following:
X		**#6(c)(1)** Create your own encryption code, such as a substitution cipher or code book, and demonstrate using it to encrypt and decrypt a message. Describe the strengths and weaknesses of your code.
X		**#6(c)(2)** Download and set up an app (from an official app store) that uses end-to-end encryption. Explain to your counselor what this means, how it works, and why it is more secure than other forms of communication (e.g. SMS).
X		**#6(c)(3)** Use a hashing tool (for example, using SHA or MD5) to create a checksum for a file, document, or piece of text. Have a fellow Scout or your counselor make a change to it, then recreate the checksum and compare the new checksum to the original as a demonstration of file integrity checking.
X		**#6(c)(4)** Create your own PGP (pretty good privacy) email key. Share your public key with others (and your counselor). Also, get their public keys and add them to your computer's key ring. Send a message that has been digitally encrypted.
X		**#7.** Connected Devices and Internet of Things (IoT). Describe to your counselor four electronic devices you encounter that could be connected to the internet, why this connectivity can be useful, what risks are posed by the connectivity, and how they could be protected.
		#8. Cybersecurity Activities. Do ONE of the following:
X		**#8(a)** Learn about a cybersecurity competition, camp, or other activity you could participate in (either now or in the future). Share what you learned with your counselor, including the type of activity, time commitment, and age of participants.

Event Requirements

Merit Badge College 2027

Cybersecurity **2025-01-01**

U	PR	
X		**#8(b)** Participate in a cybersecurity competition with members of your troop, school, or some other group approved by your counselor. Either design your own competition or use an existing platform.
X		**#8(c)** Give a presentation to your patrol, troop, or another group approved by your counselor, on a cybersecurity topic of your choice. Your presentation must include at least one demonstration and/or hands-on activity.
		#**9.** Careers. Do ONE of the following:
X		**#9(a)** Identify three career opportunities that would use skills and knowledge in cybersecurity. Pick one and research the training, education, certification requirements, experience, and expenses associated with entering the field. Research the prospects for employment, starting salary, advancement opportunities and career goals associated with this career. Discuss what you learned with your counselor and whether you might be interested in this career.
X		**#9(b)** Visit a business or organization that does work in cybersecurity. Find out about different work roles, what they do, and how they acquired their knowledge through college degrees or certifications. Share what you learned with your counselor.

Event Requirements

Merit Badge College 2027

Digital Technology **2023-01-01**

U	PR	
X		**#1** View the Personal Safety Awareness "Digital Safety" video (with your parent or guardian's permission).
		#2. Do the following:
X		**#2a** Give a brief history of the changes in digital technology over time. Discuss with your counselor how digital technology in your lifetime compares with that of your parent's, grandparent's, or other adult's lifetime. *Resources:* Technology Evolution - 100,000 BCE to 2020 (video) Past & Present Technology, Then & Now (video) Past and Present | Technology Then and Now (video)
X		**#2b** Describe what kinds of computers or devices you imagine might be available when you are an adult. *Resource:* Technologies of the Future (video)
		#3. Do the following:
X		**#3a** Explain to your counselor how text, sound, and pictures are digitized for storage. *Resources:* What Is ASCII? (video) How Images and Sound are Represented in a Computer (video)
X		**#3b** Describe the difference between lossy and lossless data compression, and give an example where each might be used. *Resource:* Lossy vs Lossless Data Compression (video)
X		**#3c** Describe two digital devices and how they are made more useful by their programming. *Resource:* Types of Digital Devices (video)
X		**#3d** Discuss the similarities and differences between computers, mobile devices, and gaming consoles. *Resources:* Comparing PC to Gaming Consoles. (video) Mobile vs Pc vs Console Gaming (website)
X		**#3e** Explain what a computer network is and the difference between a local area network (LAN) versus a wide area network (WAN). *Resource:* Difference Between LAN and WAN (video)
		#4. Do the following:
X		**#4a** Explain what a program or software application or "app" is and how a computer uses a CPU and memory to execute it. *Resources:* How Computers Work (video) What Is an App? (video) How Computer Memory Works (video)

Event Requirements

Merit Badge College 2027

Digital Technology **2023-01-01**

U	PR	
X		**#4b** Name four software programs or mobile apps you or your family use, and explain how each one helps you. *Resource:* Understandng Software Applications (video)
X		**#4c** Describe what malware is, and explain how to protect your digital devices and the information stored on them. *Resource:* What Is Malware? (video)
		#5. Do the following:
X		**#5a** Describe at least two different ways data can be transferred through the internet. *Resources:* How the Internet ACTUALLY Works ? (video) This Is How Data Is Transferred in the Internet (video) Data Transfer Via the Internet Explained (video)
X		**#5b** Using an internet search engine (with a parent or guardian's permission), find ideas from at least three different websites about how to conduct a troop court of honor or campfire program. Present the ideas to your counselor and explain how you used a search engine to find this information.
X		**#5c** Use a web browser to connect to an HTTPS (secure) website (with your parent or guardian's permission). Explain to your counselor how to tell whether the site's security certificate can be trusted, and what it means to use this kind of connection. *Resource:* What Is HTTPS? (video)
		#6. Do THREE of the following. For each project you complete, copy the files to a backup device and share the finished projects with your counselor.
X		**#6a** Using a spreadsheet or database program, develop a food budget for a patrol weekend campout OR create a troop roster that includes the name, rank, patrol, and telephone number of each Scout. Show your counselor that you can sort the roster by each of the following categories: rank, patrol, and alphabetically by name. *Resource:* Introduction to Spreadsheets (video)
X		**#6b** Using a word processor, write a draft letter to the parents of your troop's Scouts, inviting them to a troop event. *Resource:* Word Processing Tutorial (video)
X		**#6c** Using a graphics program, design and draw a campsite plan for your troop OR create a flyer for an upcoming troop event, incorporating text and some type of visual such as a photograph or an illustration. *Resource:* Google Drawing Basics (video)
X		**#6d** Using a presentation software program, develop a report about a topic approved by your counselor. For your presentation, create at least five slides, with each one incorporating text and some type of visual such as a photograph or an illustration. *Resource:* Google Slides for Presentations (video)
X		**#6e** Using a digital device, take a picture of a troop activity. Send or transfer this image to a device where it can be shared with your counselor.

Event Requirements

Merit Badge College 2027

Digital Technology **2023-01-01**

U PR

Resource: Sending Photos on a Smartphone (video)

☒ ☐ **#6f** Make a digital recording of your voice, transfer the file to a different device, and have your counselor play back the recording.
Resource: How to Make an Audio File With a Smartphone (video)

☒ ☐ **#6g** Create a blog and use it as an online journal of your Scouting activities, including group discussions and meetings, campouts, and other events. Include at least five entries and two photographs or illustrations. Share your blog with your counselor. You need not post the blog to the internet; however, if you choose to go live with your blog, you must first share it with your parent or guardian AND counselor AND get their approval.
Resource: How to Write a Blog Post for Beginners: From Start to End (video)

☒ ☐ **#6h** Create a webpage for your troop, patrol, school, or place of worship. Include at least three articles and two photographs or illustrations. Include at least one link to a website of interest to your audience. You need not post the page to the internet; however, if you decide to do so, you must first share the webpage with your parent or guardian AND counselor AND get their approval.
Resource: How to Create a Simple Webpage (video)

#7. Do the following:

☒ ☐ **#7a** Explain to your counselor each of these protections and why they exist: copyright, patents, trademarks, trade secrets.
Resource: Explanations of Copyrights, Patents, Trademarks, Trade Secrets (video)

☒ ☐ **#7b** Explain when it is permissible to accept a free copy of a program from a friend.
Resource: Digital Etiquette for Teenagers (video)

☒ ☐ **#7c** Discuss with your counselor an article or (with your parent or guardian's permission) a report on the internet about a recent legal case involving an intellectual property dispute.
Resource: Intellectual Property (website)

#8. Do TWO of the following:

☒ ☐ **#8a** Describe why it is important to properly dispose of digital technology. List at least three hazardous chemicals that could be used to create digital devices or used inside a digital device.
Resources: What Are the Risks of Not Properly Disposing of Technology? (video)
3 Simple Tips for Recycling Old Electronics (video)

☒ ☐ **#8b** Explain to your counselor why it is important to use a certified recycler of digital technology hardware or devices.
Resource: How to (Properly) Get Rid of Your E-Waste (video)

☒ ☐ **#8c** Do an internet search for an organization that collects discarded digital technology hardware or devices for repurposing or recycling. Find out what happens to that waste. Share with your counselor what you found.

Event Requirements

Merit Badge College 2027

Digital Technology **2023-01-01**

U PR

Resource: How E-Wastes Are Recycled (video)

[X] [ ] **#8d** Visit a recycling center that disposes of digital technology hardware or devices. Find out what happens to that waste. Share what you learned with your counselor.
Resource: Finding an E-Waste Recycler (website)

[X] [ ] **#8e** Find a battery recycling center near you and find out what it does to recycle batteries. Share what you have learned with your counselor about the proper methods for recycling batteries.
Resource: Finding a Battery Recycler (website)

#9. Do ONE of the following:

[X] [ ] **#9a** Identify three career opportunities that involve digital technology. Pick one and investigate the education, training, and experience required for this profession. Discuss this with your counselor, and explain why this profession might interest you.
Resource: Digital Technology Careers (video)

[X] [ ] **#9b** Visit a business or an industrial facility that uses digital technology. Describe four ways digital technology is being used there. Share what you learned with your counselor.

Event Requirements

Merit Badge College 2027

Disability Awareness: Disabilities Awareness 2021-01-01

U PR

#1. Do the following:

- [X] [ ] **#1a** Explain and discuss with your counselor the following disabilities awareness terms: disability, accessibility, adaptation, accommodation, invisible disability, and person-first language.
- [X] [ ] **#1b** Explain why proper disability etiquette is important, and how it may differ depending on the specific disability. Give three examples.
- [X] [ ] **#2** Visit an agency that works with people with physical, mental, emotional, or educational disabilities. Collect and read information about the agency's activities. Learn about opportunities its members have for training, employment, and education. Discuss what you have learned with your counselor.

#3. Do TWO of the following:

- [X] [ ] **#3a** Talk with a Scout who has a disability and learn about the Scout's experiences taking part in Scouting activities and earning different merit badges. Discuss what you have learned with your counselor.
- [X] [ ] **#3b** Talk with an individual who has a disability and learn about this person's experiences and the activities in which this person likes to participate. Discuss what you have learned with your counselor.
- [X] [ ] **#3c** Learn how people with disabilities take part in a particular adaptive sport or recreational activity. Discuss what you have learned with your counselor.
- [X] [ ] **#3d** Learn about independent living aids such as service animals, canes, and augmentative communication devices such as captioned telephones and videophones. Discuss with your counselor how people use such aids.
- [X] [ ] **#3e** Plan or participate in an activity that helps others understand what a person with a visible or invisible disability experiences. Discuss what you have learned with your counselor.

#4. Do ONE of the following options:

null Option A—Access. Visit TWO of the following locations and take notes about the accessibility to people with disabilities. In your notes, give examples of five things that could be done to improve upon the site and five things about the site that make it friendly to people with disabilities. Discuss your observations with your counselor.

- [X] [ ] **#4a in Option A** Your school
- [X] [ ] **#4b in Option A** Your place of worship
- [X] [ ] **#4c in Option A** A Scouting event or campsite

Event Requirements

Merit Badge College 2027

Disability Awareness: Disabilities Awareness 2021-01-01

U	PR	
X		**#4d in Option A** A public exhibit or attraction (such as a theater, museum, or park)
		null Option B—Accommodation. Visit TWO of the following locations and take notes while observing features and methods that are used to accommodate people with invisible disabilities. While there, ask staff members to explain any accommodation features that may not be obvious. Note anything you think could be done to better accommodate people who have invisible disabilities. Discuss your observations with your counselor.
X		**#4a in Option B** Your school
X		**#4b in Option B** Your place of worship
X		**#4c in Option B** A Scouting event or campsite
X		**#4d in Option B** A public exhibit or attraction (such as a theater, museum, or park)
		#5. Explain what advocacy is. Do ONE of the following:
X		**#5a** Present a counselor-approved disabilities awareness program to a Cub Scout pack or other group. During your presentation, explain and use person-first language.
X		**#5b** Find out about disabilities awareness education programs in your school or school system, or contact a disability advocacy agency. Volunteer with a program or agency for eight hours.
X		**#5c** Using resources such as disability advocacy agencies, government agencies, the internet (with your parent or guardian's permission), and news magazines, learn about myths and misconceptions that influence the general public's understanding of people with disabilities. List 10 myths and misconceptions about people with disabilities and learn the facts about each myth. Share your list with your counselor, then use it to make a presentation to a Cub Scout pack or other group.
X		**#6** Make a commitment to your counselor describing what you will do to show a positive attitude about and toward people with disabilities and to encourage positive attitudes among others. Discuss how your awareness has changed as a result of what you have learned.
X		**#7** Name five professions that provide services to people with disabilities. Pick one that interests you and find out the education, training, and experience required for this profession. Discuss what you learn with your counselor, and tell why this profession interests you.

Event Requirements

Merit Badge College 2027

Electricity **2025-01-01**

U	PR	
		#1. Demonstrate that you know how to respond to electrical emergencies by doing the following:
X		**#1a** Explain how to turn off power for a particular circuit and the whole house in the event of an emergency.
X		**#1b** Demonstrate how to rescue a person touching a live wire in the home.
X		**#1c** Describe how to safely get out of a car in an accident if you suspect a utility wire is on the car.
X		**#1d** Show how to render first aid to a person who is unconscious from an apparent electrical shock.
X		**#1e** Show how to treat an electrical burn.
X		**#1f** Explain what to do in the event of an electrical fire.
X		**#1g** Explain what to do if caught out in the open during an electrical storm.
X	X	**#2** Complete an electrical home safety inspection of your home, using the checklist found in the Electricity merit badge pamphlet or one approved by your counselor. Discuss what you find with your counselor.
X		**#3** Make a simple electromagnet and use it to show magnetic attraction and repulsion.
		#4. Do the following:
X		**#4a** Explain the difference between direct current and alternating current, the advantages and disadvantages of each, and give a practical example of the use of each type.
X		**#4b** Explain three ways that electricity is produced.
X		**#5** Make a simple drawing to show how a battery and an electric bell work. Describe the purpose of each of the components.
		#6. Do the following:
X		**#6a** Define what overloading an electric circuit means. Tell what you have done to make sure your home circuits are not overloaded.
X		**#6b** Determine if there is an overload on a branch circuit by either getting the current draw from all the equipment plugged into the circuit or use the power equation to calculate the current draws.
X		**#6c** Explain why a fuse blows and a circuit breaker trips.

Event Requirements

Merit Badge College 2027

Electricity **2025-01-01**

U	PR	
X		**#6d** Tell how to find a blown fuse and a tripped circuit breaker in your home. Show how to safely reset the circuit breaker.
X	X	**#7** Make a floor plan wiring diagram of the lights, switches, and outlets for a room in your home. Show which fuse or circuit breaker protects each one.
		#8. Do the following:
X		**#8a** Read a meter associated with an electric bill. Determine the total power used since the bill, and the cost of that power.
X		**#8b** Explain other charges on the bill that were taxes or fees.
X		**#8c** Discuss with your counselor five ways your family can conserve energy.
		#9. Explain the following:
X		**#9a** Electrical terms: current, energy, power, resistance, and voltage
X		**#9b** Units of measure: ampere (amps), ohms, volts, watts, and watt-hours
X		**#9c** Electrical conditions: generating source with example, ground, open circuit, overvoltage, potential difference, and short circuit Resources: Open Circuits, Closed Circuits & Short Circuits - Basic Introduction (video) What Is Electric Potential Difference? (video)
X		**#9d** Equipment and their use: circuit, conductor, Ground Fault Circuit Interrupter (GFCI), insulator, inverter, rectifier, rheostat, substation, surge protection, solar panel, transformer, transmission and distribution systems, and wind turbine.
		#10. Do TWO of the following:
X		**#10a** Connect a buzzer, bell, or light with a battery. Have a key or switch in the line.
X		**#10b** Make and run a simple electric motor (from a kit is acceptable, if approved by your counselor ahead of time).
X		**#10c** Build a simple rheostat. Show that it works.
X		**#10d** Build a single-pole, double-throw switch. Show that it works.
X		**#10e** Explain how 3-way switch wiring works in a lighting circuit.
X		**#10f** Connect two lights together in a series circuit along with a battery and a switch. Then connect the same circuit in parallel. Discuss the differences in the two circuits.

Event Requirements

Merit Badge College 2027

Electricity **2025-01-01**

U	PR	
X	X	**#11** Identify three career opportunities that would use skills and knowledge in electricity. Pick one and research the training, education, certification requirements, experience, and expenses associated with entering the field. Research the prospects for employment, starting salary, advancement opportunities and career goals associated with this career. Discuss what you learned with your counselor and whether you might be interested in this career.

Event Requirements

Merit Badge College 2027

Emergency Preparedness A: Emergency Preparedness (Eagle required) **2025-01-01**

U PR

[X] [X] **#1 First Aid Merit Badge.** Earn the First Aid merit badge.

#2. Emergency Situations. Do the following:

[X] [ ] **#2a** Discuss with your counselor the aspects of emergency preparedness and include in your discussion the kinds of questions that are important to ask yourself as you consider each of these:

1. Prevention
2. Protection
3. Mitigation
4. Response
5. Recovery

#(b) Using a chart, spreadsheet, or another method approved by your counselor, demonstrate your understanding of each aspect of emergency preparedness listed in requirement 2(a) (prevention, protection, mitigation, response, and recovery) for 10 emergency situations from the list below. Discuss your findings with your counselor.

[X] [ ] **#2b[1]** Home stovetop or oven fire

[X] [ ] **#2b[2]** Home flammable liquid fire

[X] [ ] **#2b[3]** Gas leak in or near a home or with outside cooking

[X] [ ] **#2b[4]** Food poisoning

[X] [ ] **#2b[5]** Automobile crash

[X] [ ] **#2b[6]** Vehicle stalled in the desert

[X] [ ] **#2b[7]** Vehicle trapped in a blizzard

[X] [ ] **#2b[8]** Backcountry injury

[X] [ ] **#2b[9]** Boating or water accident

[X] [ ] **#2b[10]** Toxic chemical spills and releases

Event Requirements

Merit Badge College 2027

Emergency Preparedness A: Emergency Preparedness (Eagle required) **2025-01-01**

U	PR	
X		**#2b[11]** Nuclear power plant emergency
X		**#2b[12]** Fire or explosion in a public place
X		**#2b[13]** Violence in a public place
X		**#2b[14]** Wildland fire
X		**#2b[15]** Avalanche (snowslide or rockslide)
X		**#2b[16]** Earthquake
X		**#2b[17]** Tsunami
X		**#2b[18]** Major flooding or a flash flood with water outage
X		**#2b[19]** Hurricane with power outage
X		**#2b[20]** Tornado
X		**#2b[21]** Lightning storm.
		#3. Planning for Family Emergencies. Do the following:
X		**#3a** At a family meeting, discuss the situations on the chart you created for requirement 2(b) and make emergency plans for sheltering-in-place and for evacuation of your home. Discuss your family meeting and plans with your counselor.
X		**#3b** Develop and practice a plan of escape for your family in case of fire in your home. Draw a floor plan with escape routes and a map with a safe meeting place. Discuss your family's home escape plan with your counselor.
X		**#3c** Using a checklist in the Emergency Preparedness merit badge pamphlet or one approved by your counselor, prepare or inspect a family disaster kit for sheltering-in-place and for evacuation of your home. Review the needs and uses of the items in a kit with your counselor.
		#4. Preventing Accidents and Emergencies. Do ONE of the following:
X		**#4a** Using a home safety checklist included in the Emergency Preparedness merit badge pamphlet or one approved by your counselor, inspect a home (or a similar building near where you live or at a camp) for safety hazards with the help of an adult. Present your completed checklist to and discuss your findings with your counselor.

Event Requirements

Merit Badge College 2027

Emergency Preparedness A: Emergency Preparedness (Eagle required) **2025-01-01**

U	PR	
X		**#4b** Develop emergency prevention plans for five family activities outside the home, as approved by your counselor. (Examples are taking a picnic to a park, seeing a movie, attending a worship service, an outing at a beach, traveling to visit a relative, or attending a ball game or concert.) Each plan should include an analysis of possible hazards, proposals to prevent, protect from, mitigate, respond to, and recover from emergencies, and the reasons for the actions that you propose.
		#5. Dangerous Situations. Show how you could save a person from the following dangerous situations without putting yourself in danger:
X		**#5a** Live household electric wire
X		**#5b** A structure filled with carbon monoxide
X		**#5c** Clothes on fire
X		**#5d** Drowning, using nonswimming rescues (including accidents on ice).
		#6. Signaling for Help. Do the following:
X		**#6a** Show three ways of attracting and communicating with rescue aircraft or drones.
X		**#6b** Show ways to attract attention of searchers on the ground if you are lost in the wilderness.
X		**#6c** Show ways to attract attention of searchers on the water if you are stranded with a capsized or disabled motorboat or sailboat.
X		**#7 Moving an Injured Person.** With another person, show two good ways to transport an injured person out of a remote area using improvised stretchers to conserve the energy of rescuers while ensuring the well-being and protection of the injured person.
		#8. National Incident Management System (NIMS) and Incident Command System (ICS). Do the following:
X		**#8a** Describe the National Incident Management System (NIMS) and the local Incident Command System (ICS).
X	X	**#8b** Find out how your community and its leaders work to manage and to train for disasters. Discuss this information with your counselor.
X		**#8c** Discuss how a Scout troop can help in an emergency situation using ICS.
		#9. Emergency Service. Do the following:
X	X	**#9a** Discuss with your counselor the duties that a Scout troop should be prepared to do, the training they need, and the safety precautions they should take for the following emergency services:

Event Requirements

Merit Badge College 2027

Emergency Preparedness A: Emergency Preparedness (Eagle required) **2025-01-01**

U	PR	
X		**#9a[1]** Crowd and traffic control
X		**#9a[2]** Messenger service during an incident
X		**#9a[3]** Collection and distribution services
X		**#9a[4]** Group feeding, shelter, and sanitation.
X		**#9b** Prepare a written plan for mobilizing your troop when needed to do emergency service. If your troop already has a mobilization plan, present the plan to your counselor and tell your part in making the plan work.
X		**#9c** Using a checklist in the Emergency Preparedness merit badge pamphlet or one approved by your counselor, prepare or inspect a personal emergency service pack for a mobilization call. Explain the needs and uses of the contents to your counselor.
X		**#9d** Take part in an emergency service project, either a real one or a practice exercise, with a Scouting troop or a community agency or at Scout camp or at a school. Review what you learned and practiced with your counselor.
X		**#10** Do ONE of the following:
X		**#10a** Interview an emergency services coordinator or a civil servant about their work in disaster management. Learn about how they chose this career and about their duties. Discuss what you learned with your counselor and whether you might be interested in this career.
X		**#10b** Identify three career opportunities that would use skills and knowledge in emergency services. Pick one and research the training, education, certification requirements, experience, and expenses associated with entering the field. Research the prospects for employment, starting salary, advancement opportunities, and career goals associated with this career. Discuss what you learned with your counselor and whether you might be interested in this career.
X		**#10c** Identify how you might use the skills and knowledge in the field of emergency preparedness to pursue a personal hobby and/or healthy lifestyle. Research the additional training required, expenses, and affiliation with organizations that would help you maximize the enjoyment and benefit you might gain from it. Discuss what you learned with your counselor and share what short-term and long-term goals you might have if you pursued this.

Event Requirements

Merit Badge College 2027

Emergency Preparedness B: Emergency Preparedness (Eagle required) **2025-01-01**

U	PR	
X	X	**#1 First Aid Merit Badge.** Earn the First Aid merit badge.
		#2. Emergency Situations. Do the following:
X		**#2a** Discuss with your counselor the aspects of emergency preparedness and include in your discussion the kinds of questions that are important to ask yourself as you consider each of these: 1. Prevention 2. Protection 3. Mitigation 4. Response 5. Recovery
		#(b) Using a chart, spreadsheet, or another method approved by your counselor, demonstrate your understanding of each aspect of emergency preparedness listed in requirement 2(a) (prevention, protection, mitigation, response, and recovery) for 10 emergency situations from the list below. Discuss your findings with your counselor.
X		**#2b[1]** Home stovetop or oven fire
X		**#2b[2]** Home flammable liquid fire
X		**#2b[3]** Gas leak in or near a home or with outside cooking
X		**#2b[4]** Food poisoning
X		**#2b[5]** Automobile crash
X		**#2b[6]** Vehicle stalled in the desert
X		**#2b[7]** Vehicle trapped in a blizzard
X		**#2b[8]** Backcountry injury
X		**#2b[9]** Boating or water accident
X		**#2b[10]** Toxic chemical spills and releases

Event Requirements

Merit Badge College 2027

Emergency Preparedness B: Emergency Preparedness (Eagle required) **2025-01-01**

U	PR	
X		**#2b[11]** Nuclear power plant emergency
X		**#2b[12]** Fire or explosion in a public place
X		**#2b[13]** Violence in a public place
X		**#2b[14]** Wildland fire
X		**#2b[15]** Avalanche (snowslide or rockslide)
X		**#2b[16]** Earthquake
X		**#2b[17]** Tsunami
X		**#2b[18]** Major flooding or a flash flood with water outage
X		**#2b[19]** Hurricane with power outage
X		**#2b[20]** Tornado
X		**#2b[21]** Lightning storm.
		#3. Planning for Family Emergencies. Do the following:
X		**#3a** At a family meeting, discuss the situations on the chart you created for requirement 2(b) and make emergency plans for sheltering-in-place and for evacuation of your home. Discuss your family meeting and plans with your counselor.
X		**#3b** Develop and practice a plan of escape for your family in case of fire in your home. Draw a floor plan with escape routes and a map with a safe meeting place. Discuss your family's home escape plan with your counselor.
X		**#3c** Using a checklist in the Emergency Preparedness merit badge pamphlet or one approved by your counselor, prepare or inspect a family disaster kit for sheltering-in-place and for evacuation of your home. Review the needs and uses of the items in a kit with your counselor.
		#4. Preventing Accidents and Emergencies. Do ONE of the following:
X		**#4a** Using a home safety checklist included in the Emergency Preparedness merit badge pamphlet or one approved by your counselor, inspect a home (or a similar building near where you live or at a camp) for safety hazards with the help of an adult. Present your completed checklist to and discuss your findings with your counselor.

Event Requirements

Merit Badge College 2027

Emergency Preparedness B: Emergency Preparedness (Eagle required) **2025-01-01**

U	PR	
X		**#4b** Develop emergency prevention plans for five family activities outside the home, as approved by your counselor. (Examples are taking a picnic to a park, seeing a movie, attending a worship service, an outing at a beach, traveling to visit a relative, or attending a ball game or concert.) Each plan should include an analysis of possible hazards, proposals to prevent, protect from, mitigate, respond to, and recover from emergencies, and the reasons for the actions that you propose.
		#5. Dangerous Situations. Show how you could save a person from the following dangerous situations without putting yourself in danger:
X		**#5a** Live household electric wire
X		**#5b** A structure filled with carbon monoxide
X		**#5c** Clothes on fire
X		**#5d** Drowning, using nonswimming rescues (including accidents on ice).
		#6. Signaling for Help. Do the following:
X		**#6a** Show three ways of attracting and communicating with rescue aircraft or drones.
X		**#6b** Show ways to attract attention of searchers on the ground if you are lost in the wilderness.
X		**#6c** Show ways to attract attention of searchers on the water if you are stranded with a capsized or disabled motorboat or sailboat.
X		**#7 Moving an Injured Person.** With another person, show two good ways to transport an injured person out of a remote area using improvised stretchers to conserve the energy of rescuers while ensuring the well-being and protection of the injured person.
		#8. National Incident Management System (NIMS) and Incident Command System (ICS). Do the following:
X		**#8a** Describe the National Incident Management System (NIMS) and the local Incident Command System (ICS).
X	X	**#8b** Find out how your community and its leaders work to manage and to train for disasters. Discuss this information with your counselor.
X		**#8c** Discuss how a Scout troop can help in an emergency situation using ICS.
		#9. Emergency Service. Do the following:
X	X	**#9a** Discuss with your counselor the duties that a Scout troop should be prepared to do, the training they need, and the safety precautions they should take for the following emergency services:

Event Requirements

Merit Badge College 2027

Emergency Preparedness B: Emergency Preparedness (Eagle required) **2025-01-01**

U	PR	
X		**#9a[1]** Crowd and traffic control
X		**#9a[2]** Messenger service during an incident
X		**#9a[3]** Collection and distribution services
X		**#9a[4]** Group feeding, shelter, and sanitation.
X		**#9b** Prepare a written plan for mobilizing your troop when needed to do emergency service. If your troop already has a mobilization plan, present the plan to your counselor and tell your part in making the plan work.
X		**#9c** Using a checklist in the Emergency Preparedness merit badge pamphlet or one approved by your counselor, prepare or inspect a personal emergency service pack for a mobilization call. Explain the needs and uses of the contents to your counselor.
X		**#9d** Take part in an emergency service project, either a real one or a practice exercise, with a Scouting troop or a community agency or at Scout camp or at a school. Review what you learned and practiced with your counselor.
X		**#10** Do ONE of the following:
X		**#10a** Interview an emergency services coordinator or a civil servant about their work in disaster management. Learn about how they chose this career and about their duties. Discuss what you learned with your counselor and whether you might be interested in this career.
X		**#10b** Identify three career opportunities that would use skills and knowledge in emergency services. Pick one and research the training, education, certification requirements, experience, and expenses associated with entering the field. Research the prospects for employment, starting salary, advancement opportunities, and career goals associated with this career. Discuss what you learned with your counselor and whether you might be interested in this career.
X		**#10c** Identify how you might use the skills and knowledge in the field of emergency preparedness to pursue a personal hobby and/or healthy lifestyle. Research the additional training required, expenses, and affiliation with organizations that would help you maximize the enjoyment and benefit you might gain from it. Discuss what you learned with your counselor and share what short-term and long-term goals you might have if you pursued this.

Event Requirements

Merit Badge College 2027

Entrepreneurship **2014-01-01**

U	PR	
X		**#1** In your own words, define entrepreneurship. Explain to your counselor how entrepreneurs impact the U.S. economy.
X		**#2** Explain to your counselor why having good skills in the following areas are important for an entrepreneur: communication, planning, organization, problem solving, decision making, basic math, adaptability, technical and social skills, teamwork, and leadership.
X	X	**#3** Identify and interview an individual who has started a business. Learn about this person's educational background, early work experiences, where the idea for the business came from, and what was involved in starting the business. Find out how the entrepreneur raised the capital (money) to start the business, examples of successes and challenges faced, and how the business is currently doing (if applicable). Discuss with your counselor what you have learned.
X		**#3** Identify and interview an individual who has started a business. Learn about this person's educational background, early work experiences, where the idea for the business came from, and what was involved in starting the business. Find out how the entrepreneur raised the capital (money) to start the business, examples of successes and challenges faced, and how the business is currently doing (if applicable). Discuss with your counselor what you have learned.
X	X	**#4** Think of as many ideas for a business as you can, and write them down. From your list, select three ideas you believe represent the best opportunities. Choose one of these and explain to your counselor why you selected it and why you feel it can be successful.
X		**#4** Think of as many ideas for a business as you can, and write them down. From your list, select three ideas you believe represent the best opportunities. Choose one of these and explain to your counselor why you selected it and why you feel it can be successful.
		#**5.** Create a written business plan for your idea that includes all of the following:
		#**(a)** Product or Service
X		**#5a[1]** Describe the product or service to be offered.
X		**#5a[2]** Identify goals for your business.
X		**#5a[3]** Explain how you can make enough of the product or perform the service to meet your goals.
X		**#5a[4]** Identify and describe the potential liability risks for your product or service.
X		**#5a[5]** Determine what type of license, if any, you might need in order to sell or make your product or service.
		#**(b)** Market Analysis
X		**#5b[1]** Identify the types of people who would buy your product or service.

Event Requirements

Merit Badge College 2027

Entrepreneurship **2014-01-01**

U	PR	
X		**#5b[2]** Identify your business's competitors, and describe their strengths and weaknesses.
X		**#5b[3]** Describe what makes your product or service unique.
		#**(c)** Financial
X		**#5c[1]** Determine how much money you will need to start your business, and identify how you will obtain the money.
X		**#5c[2]** Determine the cost of offering your product or service and the price you will charge in order to make a profit.
X		**#5c[3]** Describe what will happen with the money you make from the sales of your product or service.
		#**(d)** Personnel
X		**#5d[1]** Determine what parts of the business you will handle yourself, and describe your qualifications.
X		**#5d[2]** Determine whether you will need additional help to operate your business. If you will need help, describe the responsibilities and qualifications needed for the personnel who will fill each role.
		#**(e)** Promotion and Marketing
X		**#5e[1]** Describe the methods you will use to promote your business to potential customers.
X		**#5e[2]** Explain how you will utilize the internet and social media to increase awareness of your product or service.
X		**#5e[3]** Design a promotional flyer or poster for your product or service.
X		**#6** When you believe your business idea is feasible, imagine your business idea is now up and running. What successes and problems might you experience? How would you overcome any failures? Discuss with your counselor any ethical questions you might face and how you would deal with them.

Event Requirements

Merit Badge College 2027

Merit Badge College Adult

Entrepreneurship (2014 version): Entrepreneurship 2014-01-01

U	PR	
X		**#1** In your own words, define entrepreneurship. Explain to your counselor how entrepreneurs impact the U.S. economy.
X		**#2** Explain to your counselor why having good skills in the following areas are important for an entrepreneur: communication, planning, organization, problem solving, decision making, basic math, adaptability, technical and social skills, teamwork, and leadership.
X	X	**#3** Identify and interview an individual who has started a business. Learn about this person's educational background, early work experiences, where the idea for the business came from, and what was involved in starting the business. Find out how the entrepreneur raised the capital (money) to start the business, examples of successes and challenges faced, and how the business is currently doing (if applicable). Discuss with your counselor what you have learned.
X		**#3** Identify and interview an individual who has started a business. Learn about this person's educational background, early work experiences, where the idea for the business came from, and what was involved in starting the business. Find out how the entrepreneur raised the capital (money) to start the business, examples of successes and challenges faced, and how the business is currently doing (if applicable). Discuss with your counselor what you have learned.
X	X	**#4** Think of as many ideas for a business as you can, and write them down. From your list, select three ideas you believe represent the best opportunities. Choose one of these and explain to your counselor why you selected it and why you feel it can be successful.
X		**#4** Think of as many ideas for a business as you can, and write them down. From your list, select three ideas you believe represent the best opportunities. Choose one of these and explain to your counselor why you selected it and why you feel it can be successful.
		#**5.** Create a written business plan for your idea that includes all of the following:
		#**(a)** Product or Service
X		**#5a[1]** Describe the product or service to be offered.
X		**#5a[2]** Identify goals for your business.
X		**#5a[3]** Explain how you can make enough of the product or perform the service to meet your goals.
X		**#5a[4]** Identify and describe the potential liability risks for your product or service.
X		**#5a[5]** Determine what type of license, if any, you might need in order to sell or make your product or service.
		#**(b)** Market Analysis

Event Requirements

Merit Badge College 2027

Entrepreneurship (2014 version): Entrepreneurship 2014-01-01

U	PR	
X		**#5b[1]** Identify the types of people who would buy your product or service.
X		**#5b[2]** Identify your business's competitors, and describe their strengths and weaknesses.
X		**#5b[3]** Describe what makes your product or service unique.
		#**(c)** Financial
X		**#5c[1]** Determine how much money you will need to start your business, and identify how you will obtain the money.
X		**#5c[2]** Determine the cost of offering your product or service and the price you will charge in order to make a profit.
X		**#5c[3]** Describe what will happen with the money you make from the sales of your product or service.
		#**(d)** Personnel
X		**#5d[1]** Determine what parts of the business you will handle yourself, and describe your qualifications.
X		**#5d[2]** Determine whether you will need additional help to operate your business. If you will need help, describe the responsibilities and qualifications needed for the personnel who will fill each role.
		#**(e)** Promotion and Marketing
X		**#5e[1]** Describe the methods you will use to promote your business to potential customers.
X		**#5e[2]** Explain how you will utilize the internet and social media to increase awareness of your product or service.
X		**#5e[3]** Design a promotional flyer or poster for your product or service.
X		**#6** When you believe your business idea is feasible, imagine your business idea is now up and running. What successes and problems might you experience? How would you overcome any failures? Discuss with your counselor any ethical questions you might face and how you would deal with them.

Event Requirements

Merit Badge College 2027

Merit Badge College

Fire Safety **2025-01-01**

U PR

#1. Science of and Hazards of Fire. Do the following:

- [X] [ ] **#1a.** Explain the concept of fire.
- [X] [ ] **#1b.** Name the parts of the fire tetrahedron and the products of combustion.
- [X] [ ] **#1c.** Describe the life cycle of a fire.
- [X] [ ] **#1d** Explain the three methods of heat transfer.

#2. Fire Extinguishers. Do the following:

- [X] [ ] **#2a** Explain the different classes of fires.
- [X] [ ] **#2b** Identify the different classes of fire extinguishers and which should be used for each class of fire.
- [X] [ ] **#2c** Demonstrate how to use a fire extinguisher and a fire blanket.

#3. Fire-related Injuries. Do the following:

- [X] [ ] **#3a** Explain and demonstrate the technique of stop, drop, roll, cool, and call.
- [X] [ ] **#3b** Describe how clothing fires occur, how to prevent them, and how clothing can prevent or contribute to burn injuries.
- [X] [ ] **#3c** Identify the most frequent causes of burn injuries and how to prevent them.
- [X] [ ] **#3d** Review the prevention of, symptoms and signs of, and treatment of airway burns and carbon monoxide (CO) poisoning.

#4. Origins of Fires. Do the following:

- [X] [ ] **#4a.** Explain the four classifications of fire origin (natural, accidental, incendiary, or undetermined) and give an example of each.
- [X] [ ] **#4b** Describe how a fire classified as incendiary might lead to criminal prosecution of a person charged with arson.

#5. Fire Safety at Home. Do the following:

Event Requirements

Merit Badge College 2027

Fire Safety **2025-01-01**

U	PR	
X		**#5a** Describe how to prevent the frequent causes of home fires, including unattended cooking, electricity, smoking, clothes dryers, and rechargeable batteries.
X		**#5b** Describe how to prevent frequent causes of seasonal and holiday-related home fires, including fires related to home heating, holiday trees, candles, and fireworks.
X		**#5c** Demonstrate how to safely light and extinguish a candle. Discuss with your counselor, then with your family, how to safely use candles.
X		**#5d** Using the Home Fire Safety Checklist in the Fire Safety merit badge pamphlet or one approved by your counselor, and with the help of an adult, inspect a home (or a similar building near where you live or at a camp) for fire safety hazards. Present your completed checklist to your counselor and discuss your findings.
X		**#5e** Determine if, and what types of, smoke and CO alarms are required in homes in your community. List what types of smoke and CO alarms your home has, their locations, and their expiration dates.
X		**#5f** Demonstrate maintenance of smoke and CO alarms to your counselor and review plans to replace expired alarms.
X	X	**#5g** Develop a home fire-escape plan and a fire-drill schedule with your family, draw a floor plan of your home with exits marked and a map showing your family meeting point, and conduct a home fire drill.
X		**#5h** Explain what to do and what not to do if you smell natural gas and if you smell smoke.
X		**#5i** Explain how you would report a fire to have the fire department respond.
		#6. Safety with Flammable and Combustible Liquids. Do the following:
X		**#6a.** Explain what flammable and combustible liquids are commonly used in homes and how to safely store them.
X		**#6b.** Describe the safe way to refuel a liquid-fueled engine, such as a lawn mower, outboard motor, farm machine, or automobile with fuel from an approved container.
X		**#6c.** Describe the options available for safely disposing of unwanted flammable, combustible, and hazardous substances in your community.
		#7. Fire Safety in Public Buildings. Do the following:
X		**#7a.** Explain how public buildings are designed for fire safety.
X		**#7b.** Explain what fire safety systems and equipment can be found in public buildings.

Event Requirements

Merit Badge College 2027

Fire Safety **2025-01-01**

U	PR	
X		**#7c** Explain what fire safety precautions you should take when you are in a public building.
		#8. Fire Safety at Camp. Do the following:
X	X	**#8a** Explain how the Leave No Trace Seven Principles and the Outdoor Code apply to camping fires.
X	X	**#8b** Demonstrate lighting a match safely, the proper way to extinguish it, and to dispose of it. Explain the similarities and differences between safety matches and strike-anywhere matches.
X	X	**#8c** Explain and demonstrate making sparks with flint and steel or with a ferro rod and catching a spark to create a flame. Extinguish the flame safely using one of the principles of the fire tetrahedron.
X	X	**#8d** Demonstrate the safe way to start a charcoal fire.
X	X	**#8e** Describe three common campsite fire lays. Collect, prepare, and set up tinder, kindling, and fuel for a campfire following the Leave No Trace Seven Principles and the Outdoor Code. Ignite your fire lay and safely extinguish your fire.
X	X	**#8f** Demonstrate using a camp stove.
X	X	**#8g** Explain how to set up and keep a campsite safe from fire.
X	X	**#8h** Develop a lesson plan to teach a fire safety skill or topic, such as lighting a candle or a match or a charcoal fire or a lantern or a camp stove or using flint and steel or setting up a fire lay. Review your lesson plan with your counselor. Teach your skill or topic to one or more Scouts using the EDGE method.
		#9. Wildland Fires. Do the following:
X		**#9a.** List causes of wildland fires and ways to prevent them.
X		**#9b.** Explain the social, economic, and environmental consequences of wildland fires.
		#10. Careers. Do ONE of the following:
X	X	**#10a.** Visit a fire station in-person. Identify the various types of fire service vehicles. From the firefighters you meet during your visit, learn about the fire prevention activities in your community and about their careers. Discuss with your counselor what you learned during your tour and interviews.
X		**#10b.** Identify three career opportunities that would use skills and knowledge in the field of fire safety. Pick one and research the training, education, certification requirements, experience, and expenses associated with entering the field. Research the prospects for employment, starting salary, advancement opportunities and career goals associated with this career. Discuss what you learned with your counselor and whether you might be

Event Requirements

Merit Badge College 2027

Fire Safety	2025-01-01

U PR

interested in this career.

Event Requirements

Merit Badge College 2027

First Aid (Eagle required) **2025-01-01**

U	PR	
		#1. Handling a First Aid Emergency. Do the following:
X		**#1(a)** Explain the steps necessary to assess and handle a first aid emergency, including a safety evaluation of the scene.
X		**#1(b)** Tell how you would obtain emergency medical assistance from your home and from a remote location on a wilderness camping trip.
X		**#1(c)** Demonstrate the precautions you must take to reduce the risk of transmitting an infection between you and the victim while administering first aid, including the safe disposal of used first aid supplies.
X		**#1(d)** Demonstrate evaluation of and management of a patient's airway and breathing.
X		**#1(e)** Demonstrate a thorough examination of an accident victim.
X		**#1(f)** Discuss why shock is an emergency.
X		**#1(g)** Define the term triage and describe examples of triage situations that you may encounter.
		#2. Preparing for First Aid Emergencies. Do the following:
X		**#2(a)** Obtain a copy of the Scout Annual Health and Medical Record and discuss the importance of the form including information on immunizations, allergies, medications, health history, and medical examinations to providing first aid at Scouting events.
		#(b) Using checklists provided in the First Aid merit badge pamphlet or ones approved by your counselor, do the following:
X	X	**#2(b)(1)** Assemble a personal first-aid kit for hiking and backpacking. Demonstrate the proper use of each item in your first-aid kit to your counselor.
X	X	**#2(b)(2)** With your counselor, inspect a unit, home, vehicle, or camp first-aid kit and discuss your findings.
		#3. Wounds with No External Bleeding. Describe the symptoms and signs of, show first aid for, and explain prevention of these wounds:
X		**#3(a)** Closed wounds, such as a bruise (contusion) or a hematoma
X		**#3(b)** Superficial, partial thickness, and full thickness thermal (heat) burns or scalds
X		**#3(c)** Chemical burns
X		**#3(d)** Electrical burns

Event Requirements

Merit Badge College 2027

First Aid (Eagle required) **2025-01-01**

U	PR	
X		**#3(e)** Sunburn
X		**#3(f)** Snow blindness
X		**#3(g)** Immersion foot, frostnip, frostbite, and ice burns Resources: Immersion (Trench) Foot (video) Immersion (Trench) Foot (website) Frostbite (video) Frostbite (website)
X		**#3(h)** Abrasions, such as chafing and rope burns Resources: How To Prevent Chafing While Hiking (website) Treatment of Rope Burns (website)
X		**#3(i)** Blisters on the hands, feet, buttocks, and shoulders
X		**#3j.** Puncture wounds from splinters, rope splinters, nails, and fish hooks
X		**#3(k)** Rash from poisonous plants
X		**#3(l)** Bug bites of chiggers, ticks, mosquitoes, and biting gnats
X		**#3(m)** Bee stings
X		**#3(n)** Bites of spiders
X		**#3(o)** Sting of a scorpion
X		**#3(p)** Bite of a pet or wild mammal or human
X		**#3(q)** Bite of a venomous snake
		#4. Bleeding Wounds. Describe the symptoms and signs of, show first aid for, and explain prevention of these wounds:
X		**#4(a)** A nosebleed.
X		**#4(b)** An open wound with mild or moderate bleeding, such as a scratch or a scrape (abrasions), or a shallow cut (laceration).
X		**#4(c)** An open wound with severe bleeding such as a deep cut on an arm or leg.
X		**#4(d)** Explain when it is appropriate and is not appropriate to use one or more tourniquets. List some of the benefits and dangers of using a tourniquet. Demonstrate the application of a tourniquet without tightening it. Resources: How to Use a Tourniquet (video) Tourniquet Mistakes (video)

Event Requirements

Merit Badge College 2027

First Aid (Eagle required) **2025-01-01**

U PR

#5. Breathing Emergencies. Describe the symptoms and signs of, show first aid for, and explain prevention of these conditions affecting breathing:

- [X] [ ] **#5(a)** Choking
- [X] [ ] **#5(b)** Asthmatic attack
- [X] [ ] **#5(c)** Anaphylaxis from an insect bite or sting or from food or product allergy Resources: Food Allergy with Anaphylaxis (video) How to Inject an EpiPen (video)
- [X] [ ] **#5(d)** Inhalation injuries
- [X] [ ] **#5(e)** Altitude sickness

#6. Loss of Consciousness. Describe the symptoms and signs of, show first aid for, and explain prevention of these conditions causing loss of consciousness:

- [X] [ ] **#6(a)** Fainting
- [X] [ ] **#6(b)** Hypoglycemia
- [X] [ ] **#6(c)** Seizure
- [X] [ ] **#6(d)** Drug overdose and alcohol poisoning
- [X] [ ] **#6(e)** Underwater hypoxic blackout
- [X] [ ] **#6(f)** Cold water shock and drowning
- [X] [ ] **#6(g)** Lightning strike and electric shock

#7. Heart Attack. Do the following:

- [X] [ ] **#7(a)** Explain what a heart attack is.
- [X] [ ] **#7(b)** Describe the symptoms and signs of a heart attack and first aid for this condition.
- [X] [ ] **#7(c)** Describe the conditions that must exist before performing CPR on a person.

Event Requirements

Merit Badge College 2027

First Aid (Eagle required) **2025-01-01**

U	PR	
X		**#7(d)** Demonstrate proper CPR technique using a training device approved by your counselor.
X		**#7(e)** Explain the use of an automated external defibrillator (AED).
X		**#7(f)** Demonstrate or simulate the proper use of an AED, using an AED training device if available.
X	X	**#7(g)** Identify the typical location(s) of one or more AED(s) at public facilities in your community, such as, your school, place of worship, unit meeting place, sports facilities, and/or camp or by using a smart phone app. Discuss the reasons for choosing locations like these.
		#**8.** Muscle and Bone Injuries. Do the following:
X		**#8(a)** Explain the similarities and differences in a strain, a muscle tear, a tendon rupture, a sprain, a dislocation, a simple fracture, and a compound fracture.
X		**#8(b)** Describe the symptoms and signs of and first aid for a muscle strain, a muscle tear, and a tendon rupture.
X		**#8(c)** Describe the symptoms and signs of, and potential complications of, a sprain, a fracture, and a dislocation.
		#**(d)** Demonstrate bandages for these injuries:
X		**#8(d)(1)** Arm slings for forearm or upper arm or collarbone fractures
X		**#8(d)(2)** Elastic wrap and cravat bandages for ankle sprain
X		**#8(d)(3)** Elastic wrap and cravat bandages for wrist sprain or hand injury
		#**(e)** Demonstrate the proper procedures for handling and splinting of suspected closed or open fractures or dislocations of the:
X		**#8(e)(1)** Finger and toe
X		**#8(e)(2)** Forearm or wrist
X		**#8(e)(3)** Upper leg
X		**#8(e)(4)** Lower leg or ankle
		#**9.** Head and Spine Injuries. Do the following:

Event Requirements

Merit Badge College 2027

First Aid (Eagle required) **2025-01-01**

U	PR	
X		**#9(a)** Describe the symptoms and signs of, relationships between, possible complications of, and prevention of head, neck, and back injuries.
X		**#9(b)** Describe the symptoms and signs of and first aid for a concussion.
X		**#9(c)** Demonstrate first aid for an open head wound with a triangular or other bandage.
X		**#9(d)** Demonstrate first aid for someone with a suspected neck or back injury.
X		**#10.** Moving a Patient. Do the following:
X		**#10(a)** Describe the conditions under which an injured person should and should not be moved.
X		**#10(b)** If a sick or an injured person must be moved, tell how you would decide the best method. Demonstrate these methods.
X		**#10(c)** By yourself and with a partner, demonstrate how to transport a person from a smoke-filled room.
X		**#10(d)** By yourself and with a partner, demonstrate how to transport a person with a sprained ankle for at least 25 yards.
X		**#10(e)** With helpers under your supervision, improvise a stretcher and move a presumably unconscious person for at least 25 yards.
		#11. Heat- and Cold-Related Conditions. Describe the symptoms and signs of, show first aid for, and explain prevention of these conditions associated with exertion and/or heat or cold exposure:
X		**#11(a)** Dehydration and over-hydration
X		**#11(b)** Heat cramps and muscle pain after exertion Resources: Heat Cramps, Heat Exhaustion, and Heat Stroke (video) Muscle Damage from Over-exercising (video)
X		**#11(c)** Heat exhaustion
X		**#11(d)** Heat stroke
X		**#11(e)** Chest pains associated with cold exposure
X		**#11(f)** Hypothermia
		#12. Mental Health Conditions. Describe the following:

Event Requirements

Merit Badge College 2027

First Aid (Eagle required) **2025-01-01**

U	PR	
X		**#12(a)** Reactions associated with at least three stressful situations, such as mountain backpacking, rappelling, a ropes course, speaking before an audience, making a phone call to an adult, taking a swim test, missing home, lighting a match, trying out for a sports team, meeting someone for the first time, or other stressful circumstances
X		**#12(b)** The actions that you and others should take to prepare for and manage these situations
X		**#12(c)** The indications that someone might be a danger to themselves or others
X		**#12(d)** The actions that you should take if you suspect that someone might be a danger to themselves or others
		#13. Miscellaneous Conditions. Describe the symptoms and signs of, show first aid for, and explain prevention of the following conditions:
X		**#13(a)** Object in the eye
X		**#13(b)** Broken, chipped, loosened, or knocked out tooth
X		**#13(c)** Vomiting and diarrhea associated with food poisoning
X		**#13(d)** Abdominal pain
X		**#13(e)** Stroke
X	X	**#14.** With guidance from your counselor, develop a plan to teach a first-aid skill or topic using the EDGE method. Discuss your skill, topic, and plan with your counselor, and then teach your skill or topic to your family or to one or more Scouts.
X		**#15.** Do ONE of the following:
X		**#15(a)** Visit an emergency medical station house or training center in person. From the medical first responders that you meet during your visit, learn about how they serve their community and about their careers. Discuss with your counselor what you learned during your tour and interviews.
X		**#15(b)** Interview an emergency medical services professional about their work. Learn about how they chose this career and about their duties. Discuss what you learned with your counselor and whether you might be interested in this career.
X		**#15(c)** Identify three career opportunities that would use skills and knowledge in emergency medical services. Pick one and research the training, education, certification requirements, experience, and expenses associated with entering the field. Research the prospects for employment, starting salary, advancement opportunities, and career goals associated with this career. Discuss what you learned with your counselor and whether you might be interested in this career.

Event Requirements

Merit Badge College 2027

First Aid (Eagle required) **2025-01-01**

U	PR	
X		**#15(d)** Identify how you might use the skills and knowledge in the field of emergency medical services to pursue a personal hobby and/or healthy lifestyle. Research the additional training required, expenses, and affiliation with organizations that would help you maximize the enjoyment and benefit you might gain from it. Discuss what you learned with your counselor and share what short-term and long-term goals you might have if you pursued this.

Event Requirements

Merit Badge College 2027

Game Design **2025-01-01**

U	PR	
		#1. Do the following:
X		**#1a** Analyze four games you have played, each from a different medium. Identify the medium, player format, objectives, rules, resources, and theme (if relevant). Discuss with your counselor the play experience, what you enjoy in each game, and what you dislike. Make a chart to compare and contrast the games.
X		**#1b** Describe four types of play value and provide an example of a game built around each concept. Discuss with your counselor other reasons people play games.
X		**#2** Discuss with your counselor FIVE of the following 17 game design terms. For each term that you pick, describe how it relates to a specific game: story, setting, characters, play sequence, level design, interface design, difficulty, balance, depth, pace, replay value, age appropriateness, single-player vs. multiplayer, cooperative vs. competitive, turn-based vs. real-time, strategy vs. reflex vs. chance, or abstract vs. thematic.
X		**#3** Define the term intellectual property. Describe the types of intellectual property associated with the game design industry. Describe how intellectual property is protected and why protection is necessary. Define and give an example of a licensed property.
		#4. Do the following:
X		**#4a** Pick a game where the players can change the rules or objectives (examples: basketball, hearts, chess, kickball). Briefly summarize the standard rules and objectives and play through the game normally.
X		**#4b** Propose changes to several rules or objectives. Predict how each change will affect gameplay.
X		**#4c** Play the game with one rule or objective change, observing how the players' actions and emotional experiences are affected by the rule change. Repeat this process with two other changes.
X		**#4d** Explain to your counselor how the changes affected the actions and experience of the players. Discuss the accuracy of your predictions.
		#5. Design a new game. Any game medium or combination of mediums is acceptable. Record your work in a game design notebook.
X		**#5a** Write a vision statement for your game. Identify the medium, player format, objectives, and theme of the game. If suitable, describe the setting, story, and characters.
X		**#5b** Describe the reason that someone would want to play your game.
X		**#5c** Make a preliminary list of the rules of the game. Define the resources.
X		**#5d** Draw the game elements.

Event Requirements

Merit Badge College 2027

Game Design **2025-01-01**

U PR

#6. Do the following: Note: You must have your counselor's approval of your concept before you begin creating the prototype.

- [X] [ ] **#6a** Prototype your game from requirement 5. If applicable, demonstrate to your counselor that you have addressed player safety through the rules and equipment. Record your work in your game design notebook.
- [X] [ ] **#6b** Test your prototype with as many other people as you need to meet the player format. Compare the play experience to your descriptions from requirement 5(b). Correct unclear rules, holes in the rules, dead ends, and obvious rule exploits. Change at least one rule, mechanic, or objective from your first version of the game, and describe why you are making the change. Play the game again. Record in your game design notebook whether or not your change had the expected effect.
- [X] [ ] **#6c** Repeat 6(b) at least two more times and record the results in your game design notebook.

#7. Blind test your game. Do the following:

- [X] [ ] **#7a** Write an instruction sheet that includes all of the information needed to play the game. Clearly describe how to set up the game, play the game, and end the game. List the game objectives.
- [X] [ ] **#7b** Share your prototype from requirement 6 with a group of players that has not played it or witnessed a previous playtest. Provide them with your instruction sheet(s) and any physical components. Watch them play the game, but do not provide them with instruction. Record their feedback in your game design notebook.
- [X] [ ] **#7c** Share your game design notebook with your counselor. Discuss the player reactions to your project and what you learned about the game design process. Based on your testing, determine what you like most about your game and suggest one or more changes.

#8. Do ONE of the following:

- [X] [ ] **#8a** With your parent or guardian's permission and your counselor's approval, visit with a professional in the game development industry and ask them about their job and how it fits into the overall development process.
- [X] [ ] **#8b** Meet with a professional in game development education and discuss the skills they emphasize in the classroom.

Event Requirements

Merit Badge College 2027

Geology **2023-01-01**

U	PR	
X		**#1** Define geology. Discuss how geologists learn about rock formations. In geology, explain why the study of the present is important to understanding the past.
X		**#2** Pick three resources that can be extracted or mined from Earth for commercial use. Discuss with your counselor how each product is discovered and processed.
X		**#3** Review a geologic map of your area or an area selected by your counselor, and discuss the different rock types and estimated ages of rocks represented. Determine whether the rocks are horizontal, folded, or faulted, and explain how you arrived at your conclusion.
		#4. Do ONE of the following:
X		**#4a** With your parent or guardian's and counselor's approval, visit with a geologist, land use planner, or civil engineer. Discuss this professional's work and the tools required in this line of work. Learn about a project that this person is now working on, and ask to see reports and maps created for this project. Discuss with your counselor what you have learned.
X		**#4b** Find out about three career opportunities available in geology. Pick one and find out the education, training, and experience required for this profession. Discuss this with your counselor, and explain why this profession might interest you.
		#5. Do ONE of the following:
		#(a) Surface and Sedimentary Processes Option
X		**#5a[1]** Conduct an experiment approved by your counselor that demonstrates how sediments settle from suspension in water. Explain to your counselor what the exercise shows and why it is important.
X		**#5a[2]** Using topographical maps provided by your counselor, plot the stream gradients (different elevations divided by distance) for four different stream types (straight, meandering, dendritic, trellis). Explain which ones flow fastest and why, and which ones will carry larger grains of sediment and why.
X		**#5a[3]** On a stream diagram, show areas where you will ,find the following features: cut bank, fill bank, point bar, medial channel bars, lake delta. Describe the relative sediment grain size found in each feature.
X		**#5a[4]** Conduct an experiment approved by your counselor that shows how some sedimentary material carried by water may be too small for you to see without a magnifier.
X		**#5a[5]** Visit a nearby stream. Find clues that show the direction of water flow, even if the water is missing. Record your observations in a notebook, and sketch those clues you observe. Discuss your observations with your counselor.
		#(b) Energy Resources Option

Event Requirements

Merit Badge College 2027

Geology **2023-01-01**

U	PR	
X		**#5b[1]** List the top five Earth resources used to generate electricity in the United States.
X		**#5b[2]** Discuss source rock, trap, and reservoir rock - the three components necessary for the occurrence of oil and gas underground.
X		**#5b[3]** Explain how each of the following items is used in subsurface exploration to locate oil or gas: reflection seismic, electric well logs, stratigraphic correlation, offshore platform, geologic map, subsurface structure map, subsurface isopach map, and core samples and cutting samples.
X		**#5b[4]** Using at least 20 data points provided by your counselor, create a subsurface structure map and use it to explain how subsurface geology maps are used to find oil, gas, or coal resources.
		#**(5)** Do ONE of the following:
X		**#5b[5]a** Make a display or presentation showing how oil and gas or coal is found, extracted, and processed. You may use maps, books, articles from periodicals, and research found on the internet (with your parent or guardian's permission). Share the display with your counselor or a small group (such as your class at school) in a five-minute presentation.
X		**#5b[5]b** With your parent or guardian's and counselor's permission and assistance, arrange for a visit to an operating drilling rig. While there, talk with a geologist and ask to see what the geologist does onsite. Ask to see cutting samples taken at the site.
		#**(c)** Mineral Resources Option
X		**#5c[1]** Define rock. Discuss the three classes of rocks including their origin and characteristics.
X		**#5c[2]** Define mineral. Discuss the origin of minerals and their chemical composition and identification properties, including hardness, specific gravity, color, streak, cleavage, luster, and crystal form.
		#**(3)** Do ONE of the following:
X	X	**#5c[3]a** Collect 10 different rocks or minerals. Record in a notebook where you obtained (found, bought, traded) each one. Label each specimen, identify its class and origin, determine its chemical composition, and list its physical properties. Share your collection with your counselor.
X		**#5c[3]b** With your counselor's assistance, identify 15 different rocks and minerals. List the name of each specimen, tell whether it is a rock or mineral, and give the name of its class (if it is a rock) or list its identifying physical properties (if it is a mineral).
X		**#5c[4]** List three of the most common road building materials used in your area. Explain how each material is produced and how each is used in road building.
X		**#5c[5]a** With your parent or guardian's and counselor's approval, visit an active mining site, quarry, or sand and gravel pit. Tell your counselor what you learned about the resources extracted from this location and how these resources are used by society.

Event Requirements

Merit Badge College 2027

Geology **2023-01-01**

U	PR	
X		**#5c[5]b** With your counselor, choose two examples of rocks and two examples of minerals. Discuss the mining of these materials and describe how each is used by society.
X		**#5c[5]c** With your parent or guardian's and counselor's approval, visit the office of a civil engineer and learn how geology is used in construction. Discuss what you learned with your counselor.
		#**(d)** Earth History Option
X		**#5d[1]** Create a chart showing suggested geological eras and periods. Determine which period the rocks in your region might have been formed.
X		**#5d[2]** Explain the theory of plate tectonics. Make a chart explaining, or discuss with your counselor, how the processes of plate tectonics work. Discuss how plate tectonics determines the distribution of most of the Earth's volcanoes, earthquakes, and mountain belts.
X		**#5d[3]** Explain to your counselor the processes of burial and fossilization, and discuss the concept of extinction.
X		**#5d[4]** Explain to your counselor how fossils provide information about ancient life, environment, climate, and geography. Discuss the following terms and explain how animals from each habitat obtain food: benthonic, pelagic, littoral, lacustrine, open marine, brackish, fluvial, eolian, and protected reef.
X		**#5d[5]** Collect 10 different fossil plants or animals OR (with your counselor's assistance) identify 15 different fossil plants or animals. Record in a notebook where you obtained (found, bought, traded) each one. Classify each specimen to the best of your ability, and explain how each one might have survived and obtained food. Tell what else you can learn from these fossils.
		#**(6)** Do ONE of the following:
X		**#5d[6]a** Visit a science museum or the geology department of a local university that has fossils on display. With your parent or guardian's and counselor's approval, before you go, make an appointment with a curator or guide who can show you how the fossils are preserved and prepared for display.
X		**#5d[6]b** Visit a structure in your area that was built using fossiliferous rocks. Determine what kind of rock was used and tell your counselor the kinds of fossil evidence you found there.
X		**#5d[6]c** Visit a rock outcrop that contains fossils. Determine what kind of rock contains the fossils, and tell your counselor the kinds of fossil evidence you found at the outcrop.
X		**#5d[6]d** Prepare a display or presentation on your state fossil. Include an image of the fossil, the age of the fossil, and its classification. You may use maps, books, articles from periodicals, and research found on the internet (with your parent or guardian's permission). Share the display with your counselor or a small group (such as your class at school). If your state does not have a state fossil, you may select a state fossil from a neighboring state.

Event Requirements

Merit Badge College 2027

Insect Study **2025-01-01**

U	PR	
		#1. Safety. Do the following:
X		**#1a.** Explain to your counselor the most likely hazards associated with exposure to ants and bees and what you should do to anticipate, help prevent, mitigate, and respond to these hazards.
X		**#1b.** Discuss the prevention of and treatment for health concerns that could occur while working with ants and bees, including insect bites and anaphylactic shock.
		#2. Anatomy. Do the following:
X		**#2a.** Tell how insects are different from other animals.
X		**#2b.** Show how insects are different from millipedes and spiders.
X		**#2c.** Point out and name the main parts of an insect.
X		**#2d.** Describe the characteristics that distinguish the major orders of insects.
		#3. Life Cycles. Do the following:
X		**#3a.** Compare the life histories of a butterfly and a grasshopper. Tell how they are different.
X	X	**#3b.** Raise an insect through complete metamorphosis from its larval stage to its adult stage (e.g., raise a butterfly or moth from a caterpillar). (Some insects are endangered species and are protected by federal or state law. Every species is found only in its own special type of habitat. Be sure to check natural resources authorities in advance to be sure that you will not be collecting any species that is known to be protected or endangered, or in any habitat where collecting is prohibited. In most cases, all specimens should be returned at the location of capture after the requirement has been met. Check with your counselor for those instances where the return of these specimens would not be appropriate.)
X		**#3b.** Raise an insect through complete metamorphosis from its larval stage to its adult stage (e.g., raise a butterfly or moth from a caterpillar). (Some insects are endangered species and are protected by federal or state law. Every species is found only in its own special type of habitat. Be sure to check natural resources authorities in advance to be sure that you will not be collecting any species that is known to be protected or endangered, or in any habitat where collecting is prohibited. In most cases, all specimens should be returned at the location of capture after the requirement has been met. Check with your counselor for those instances where the return of these specimens would not be appropriate.)
		#4. Observation and Analysis. Do the following:
X		**#4a.** Discuss the importance of the Leave No Trace Seven Principles and the Outdoor Code as they relate to insect study. Explain how you have followed the Leave No Trace Seven Principles and the Outdoor Code during field observation, specimen collection, and identification.

Event Requirements

Merit Badge College 2027

Insect Study **2025-01-01**

U	PR	
X	X	**#4b.** Observe 20 different live species of insects in their habitat. In your observations, include at least four orders of insects.
X		**#4b.** Observe 20 different live species of insects in their habitat. In your observations, include at least four orders of insects.
X	X	**#4c.** Make a scrapbook of the 20 insects you observe in 4(b). Include photographs, sketches, illustrations, and articles. Label each insect with its common and scientific names, where possible. Share your scrapbook with your counselor.
X		**#4c.** Make a scrapbook of the 20 insects you observe in 4(b). Include photographs, sketches, illustrations, and articles. Label each insect with its common and scientific names, where possible. Share your scrapbook with your counselor.
X	X	**#4d.** From your scrapbook collection, select eight species of insects and identify what role they play in the ecosystem.
X		**#4d.** From your scrapbook collection, select eight species of insects and identify what role they play in the ecosystem.
		#**5.** Social Insects. Do the following:
X		**#5a.** Tell things that make social insects different from solitary insects.
		#**(b)** Do ONE of the following:
X	X	**#5b(1).** Observe an ant colony in a formicarium (ant farm). Find the queen and worker ants. Explain to your counselor the different chambers found within an ant colony.
X	X	**#5b(2).** Study a hive of bees. Remove the combs and find the queen. Estimate the amount of brood and count the number of queen cells. Explain how to determine the amount of honey in the hive. (If you are allergic to bee stings, pick option (1) above.)
		#**6.** Ecology. Do the following:
X		**#6a.** Tell how insects fit in the food web of other insects, fish, birds, and mammals.
X		**#6b.** Explain the role insects serve as pollinators for plants.
		#**7.** Insects and People. Do the following:
X		**#7a.** Explain the symbiotic relationship between bees and humankind. Explain what colony collapse disorder (CCD) is and some of the possible causes. Discuss how CCD affects our food supply.
X		**#7b.** Describe three alternatives to insecticides as a way of preventing crop injury and subsequent yield loss. Explain the advantages and disadvantages of

Event Requirements

Merit Badge College 2027

Insect Study **2025-01-01**

U PR

these alternatives.

#8. Conservation. Do the following:

- [X] [X] **#8a.** Tell the migration route of an insect (e.g., monarch butterfly). Discuss the challenges they face and how Scouts can contribute to their success.
- [X] [ ] **#8a.** Tell the migration route of an insect (e.g., monarch butterfly). Discuss the challenges they face and how Scouts can contribute to their success.
- [X] [ ] **#8b.** Find out about an insect that is a threatened or endangered species. Discuss the challenges they face and how Scouts can contribute to their success.

#9. Careers and Hobbies. Do ONE of the following:

- [X] [X] **#9a.** Identify three career opportunities that would use skills and knowledge in Insect Study. Pick one and research the training, education, certification requirements, experience, and expenses associated with entering the field. Research the prospects for employment, starting salary, advancement opportunities and career goals associated with this career. Discuss what you learned with your counselor and whether you might be interested in this career.
- [X] [X] **#9b.** Identify three career opportunities that would use skills and knowledge in Insect Study. Pick one and research the training, education, certification requirements, experience, and expenses associated with entering the field. Research the prospects for employment, starting salary, advancement opportunities and career goals associated with this career. Discuss what you learned with your counselor and whether you might be interested in this career.

Event Requirements

Merit Badge College 2027

Merit Badge College Adult

Insect Study (2025 version): Insect Study 2025-01-01

U	PR	
		#1. Safety. Do the following:
X		**#1a.** Explain to your counselor the most likely hazards associated with exposure to ants and bees and what you should do to anticipate, help prevent, mitigate, and respond to these hazards.
X		**#1b.** Discuss the prevention of and treatment for health concerns that could occur while working with ants and bees, including insect bites and anaphylactic shock.
		#2. Anatomy. Do the following:
X		**#2a.** Tell how insects are different from other animals.
X		**#2b.** Show how insects are different from millipedes and spiders.
X		**#2c.** Point out and name the main parts of an insect.
X		**#2d.** Describe the characteristics that distinguish the major orders of insects.
		#3. Life Cycles. Do the following:
X		**#3a.** Compare the life histories of a butterfly and a grasshopper. Tell how they are different.
X	X	**#3b.** Raise an insect through complete metamorphosis from its larval stage to its adult stage (e.g., raise a butterfly or moth from a caterpillar). (Some insects are endangered species and are protected by federal or state law. Every species is found only in its own special type of habitat. Be sure to check natural resources authorities in advance to be sure that you will not be collecting any species that is known to be protected or endangered, or in any habitat where collecting is prohibited. In most cases, all specimens should be returned at the location of capture after the requirement has been met. Check with your counselor for those instances where the return of these specimens would not be appropriate.)
X		**#3b.** Raise an insect through complete metamorphosis from its larval stage to its adult stage (e.g., raise a butterfly or moth from a caterpillar). (Some insects are endangered species and are protected by federal or state law. Every species is found only in its own special type of habitat. Be sure to check natural resources authorities in advance to be sure that you will not be collecting any species that is known to be protected or endangered, or in any habitat where collecting is prohibited. In most cases, all specimens should be returned at the location of capture after the requirement has been met. Check with your counselor for those instances where the return of these specimens would not be appropriate.)
		#4. Observation and Analysis. Do the following:
X		**#4a.** Discuss the importance of the Leave No Trace Seven Principles and the Outdoor Code as they relate to insect study. Explain how you have followed the Leave No Trace Seven Principles and the Outdoor Code during field observation, specimen collection, and identification.

Event Requirements

Merit Badge College 2027

Insect Study (2025 version): Insect Study 2025-01-01

U	PR	
X	X	**#4b.** Observe 20 different live species of insects in their habitat. In your observations, include at least four orders of insects.
X		**#4b.** Observe 20 different live species of insects in their habitat. In your observations, include at least four orders of insects.
X	X	**#4c.** Make a scrapbook of the 20 insects you observe in 4(b). Include photographs, sketches, illustrations, and articles. Label each insect with its common and scientific names, where possible. Share your scrapbook with your counselor.
X		**#4c.** Make a scrapbook of the 20 insects you observe in 4(b). Include photographs, sketches, illustrations, and articles. Label each insect with its common and scientific names, where possible. Share your scrapbook with your counselor.
X	X	**#4d.** From your scrapbook collection, select eight species of insects and identify what role they play in the ecosystem.
X		**#4d.** From your scrapbook collection, select eight species of insects and identify what role they play in the ecosystem.
		#**5.** Social Insects. Do the following:
X		**#5a.** Tell things that make social insects different from solitary insects.
		#**(b)** Do ONE of the following:
X	X	**#5b(1).** Observe an ant colony in a formicarium (ant farm). Find the queen and worker ants. Explain to your counselor the different chambers found within an ant colony.
X	X	**#5b(2).** Study a hive of bees. Remove the combs and find the queen. Estimate the amount of brood and count the number of queen cells. Explain how to determine the amount of honey in the hive. (If you are allergic to bee stings, pick option (1) above.)
		#**6.** Ecology. Do the following:
X		**#6a.** Tell how insects fit in the food web of other insects, fish, birds, and mammals.
X		**#6b.** Explain the role insects serve as pollinators for plants.
		#**7.** Insects and People. Do the following:
X		**#7a.** Explain the symbiotic relationship between bees and humankind. Explain what colony collapse disorder (CCD) is and some of the possible causes. Discuss how CCD affects our food supply.
X		**#7b.** Describe three alternatives to insecticides as a way of preventing crop injury and subsequent yield loss. Explain the advantages and disadvantages of

Event Requirements

Merit Badge College 2027

Insect Study (2025 version): Insect Study 2025-01-01

U PR

these alternatives.

#8. Conservation. Do the following:

[X] [X] **#8a.** Tell the migration route of an insect (e.g., monarch butterfly). Discuss the challenges they face and how Scouts can contribute to their success.

[X] [ ] **#8a.** Tell the migration route of an insect (e.g., monarch butterfly). Discuss the challenges they face and how Scouts can contribute to their success.

[X] [ ] **#8b.** Find out about an insect that is a threatened or endangered species. Discuss the challenges they face and how Scouts can contribute to their success.

#9. Careers and Hobbies. Do ONE of the following:

[X] [X] **#9a.** Identify three career opportunities that would use skills and knowledge in Insect Study. Pick one and research the training, education, certification requirements, experience, and expenses associated with entering the field. Research the prospects for employment, starting salary, advancement opportunities and career goals associated with this career. Discuss what you learned with your counselor and whether you might be interested in this career.

[X] [X] **#9b.** Identify three career opportunities that would use skills and knowledge in Insect Study. Pick one and research the training, education, certification requirements, experience, and expenses associated with entering the field. Research the prospects for employment, starting salary, advancement opportunities and career goals associated with this career. Discuss what you learned with your counselor and whether you might be interested in this career.

Event Requirements

Merit Badge College 2027

Merit Badge College

Journalism **2024-01-01**

U	PR	
X		**#1.** Explain what freedom of the press is and how the First Amendment guarantees that you can voice your opinion. In your discussion, tell how to distinguish between fact and opinion, and explain the terms libel, slander, defamation, fair comment and criticism, public figure, privacy, and malice. Discuss how these matters relate to ethics in journalism.
		#2. Do ONE of the following:
		#(a) Option A—Newspaper, Magazine, and Online Journalism. (Ask your parent or guardian's permission for the online option.) Do ALL of the following:
X		**#2a1.** On the same day, read a local news source or newspaper, a national news source or newspaper, a news magazine (online or printed) and a social media news feed. From each source, clip, read, and compare a story about the same event. Tell your counselor how long each story is and how fair and accurate the stories are in presenting different points of view. Tell how each source handled the story.
X		**#2a2.** Visit the office of a newspaper, magazine, or internet news site. Ask for a tour of the various divisions (editorial, business, and printing). During your tour, talk to an executive from the business side about management's relations with reporters, editors, and photographers, and what makes a "good" newspaper, magazine, or internet news site. Note: If there are no opportunities for in-person visits in your community, a virtual visit is acceptable with the news site of your choice, provided your counselor approves this option in advance. (You can request a virtual visit with Scout Life magazine)
		#(b) Option B—Radio and Television Journalism. Do ALL of the following:
X		**#2b1.** All on the same day, watch a local and national network newscast, listen to a radio newscast, and (with your parent or guardian's permission) view a national broadcast news source online. List the different news items and features presented, the different elements used, and the time in minutes and seconds and the online space devoted to each story. Compare the story lists and discuss whether the stories are fair and accurate. Explain why different news outlets treated the stories differently and/or presented a different point of view.
X		**#2b2.** Visit a radio or television station. Ask for a tour of the various departments, concentrating on those related to news broadcasts. During your tour, talk to the station manager or other station management executive about station operations, particularly how management and the news staff work together, and what makes a "good" station. If possible, go with a reporter to cover a news event.
		#3. Discuss the differences between a hard news story and a feature story. Explain what the five W's and H are. Then do ONE of the following:
X	X	**#3a.** Choose a current or an unusual event of interest to you, and write either a hard news article OR a feature article about the event. Gear the article for print OR online OR audio OR video journalism. Share your article with your counselor.
X	X	**#3b.** With your parent or guardian's permission and counselor's approval, interview someone in your community who is influential because of his or her leadership, talent, career, or life experiences. Then present to your counselor either a written or oral report telling what you learned about this person.
X	X	**#3c.** With your parent or guardian's permission and counselor's approval, read an autobiography written by a journalist you want to learn more about. Write an article that tells what you learned about this person and the contributions this person has made to the field of journalism.

Event Requirements

Merit Badge College 2027

Journalism **2024-01-01**

U	PR	
X	X	**#3d.** Attend a Scouting event and write a 200-word article (feature or hard news) about the event. Use either the inverted pyramid style or the chronological style. Review the article with your counselor, then submit it to your community newspaper or Scouting America local council or district newsletter for consideration.
		#4. Attend a public event and do ONE of the following:
X	X	**#4a.** Write two articles about the event, one using the inverted pyramid style and one using the chronological style.
X	X	**#4b** Using a radio, television, or podcasting style, write a news story, a feature story, and a critical review of the event.
X	X	**#4c.** Take a series of photographs to help tell the story of the event in pictures. Include news photos and feature photos in your presentation. Write a brief synopsis of the event as well as captions for your photos.
X		**#5.** Identify three career opportunities that would use skills and knowledge in journalism. Pick one and research the training, education, certification requirements, experience, and expenses associated with entering the field. Research the prospects for employment, starting salary, advancement opportunities and career goals associated with this career. Discuss what you learned with your counselor and whether you might be interested in this career.

Event Requirements

Merit Badge College 2027

Merit Badge College Adult

Journalism (2024 version): Journalism 2024-01-01

U	PR	
X		**#1.** Explain what freedom of the press is and how the First Amendment guarantees that you can voice your opinion. In your discussion, tell how to distinguish between fact and opinion, and explain the terms libel, slander, defamation, fair comment and criticism, public figure, privacy, and malice. Discuss how these matters relate to ethics in journalism.
		#2. Do ONE of the following:
		#(a) Option A—Newspaper, Magazine, and Online Journalism. (Ask your parent or guardian's permission for the online option.) Do ALL of the following:
X		**#2a1.** On the same day, read a local news source or newspaper, a national news source or newspaper, a news magazine (online or printed) and a social media news feed. From each source, clip, read, and compare a story about the same event. Tell your counselor how long each story is and how fair and accurate the stories are in presenting different points of view. Tell how each source handled the story.
X		**#2a2.** Visit the office of a newspaper, magazine, or internet news site. Ask for a tour of the various divisions (editorial, business, and printing). During your tour, talk to an executive from the business side about management's relations with reporters, editors, and photographers, and what makes a "good" newspaper, magazine, or internet news site. Note: If there are no opportunities for in-person visits in your community, a virtual visit is acceptable with the news site of your choice, provided your counselor approves this option in advance. (You can request a virtual visit with Scout Life magazine)
		#(b) Option B—Radio and Television Journalism. Do ALL of the following:
X		**#2b1.** All on the same day, watch a local and national network newscast, listen to a radio newscast, and (with your parent or guardian's permission) view a national broadcast news source online. List the different news items and features presented, the different elements used, and the time in minutes and seconds and the online space devoted to each story. Compare the story lists and discuss whether the stories are fair and accurate. Explain why different news outlets treated the stories differently and/or presented a different point of view.
X		**#2b2.** Visit a radio or television station. Ask for a tour of the various departments, concentrating on those related to news broadcasts. During your tour, talk to the station manager or other station management executive about station operations, particularly how management and the news staff work together, and what makes a "good" station. If possible, go with a reporter to cover a news event.
		#3. Discuss the differences between a hard news story and a feature story. Explain what the five W's and H are. Then do ONE of the following:
X	X	**#3a.** Choose a current or an unusual event of interest to you, and write either a hard news article OR a feature article about the event. Gear the article for print OR online OR audio OR video journalism. Share your article with your counselor.
X	X	**#3b.** With your parent or guardian's permission and counselor's approval, interview someone in your community who is influential because of his or her leadership, talent, career, or life experiences. Then present to your counselor either a written or oral report telling what you learned about this person.
X	X	**#3c.** With your parent or guardian's permission and counselor's approval, read an autobiography written by a journalist you want to learn more about. Write an article that tells what you learned about this person and the contributions this person has made to the field of journalism.

Event Requirements

Merit Badge College 2027

Journalism (2024 version): Journalism 2024-01-01

U	PR	
X	X	**#3d.** Attend a Scouting event and write a 200-word article (feature or hard news) about the event. Use either the inverted pyramid style or the chronological style. Review the article with your counselor, then submit it to your community newspaper or Scouting America local council or district newsletter for consideration.
		#4. Attend a public event and do ONE of the following:
X	X	**#4a.** Write two articles about the event, one using the inverted pyramid style and one using the chronological style.
X	X	**#4b** Using a radio, television, or podcasting style, write a news story, a feature story, and a critical review of the event.
X	X	**#4c.** Take a series of photographs to help tell the story of the event in pictures. Include news photos and feature photos in your presentation. Write a brief synopsis of the event as well as captions for your photos.
X		**#5.** Identify three career opportunities that would use skills and knowledge in journalism. Pick one and research the training, education, certification requirements, experience, and expenses associated with entering the field. Research the prospects for employment, starting salary, advancement opportunities and career goals associated with this career. Discuss what you learned with your counselor and whether you might be interested in this career.

Event Requirements

Merit Badge College 2027

Merit Badge College

Law **2025-01-01**

U	PR	
X		**#1.** Define law. Tell some of its sources. Describe the functions it serves.
		#2. Discuss TWO of the following:
X		**#2a.** Justinian's Code, the Code of Hammurabi, and the Magna Carta
X		**#2b.** The development of the jury system
X		**#2c.** Two famous trials in history
X		**#3.** Tell what civil law is; tell what criminal law is. Tell the main differences between them. Give examples of each.
X	X	**#4.** Ask five people (not more than one from your immediate family) about the role of law enforcement officers in our society. Discuss their answers with them. Report your findings to your counselor.
X		**#5.** Discuss with your counselor several laws that were passed to protect the consumer and the seller. Describe several organizations that provide help to consumers and sellers.
		#6. Do ONE of the following:
X		**#6a.** Attend a session of a civil or criminal court. Write 250 words or more on what you saw.
X		**#6b.** Plan and conduct a mock trial with your troop, school class or other group. After the trial is over, discuss it with the group.
X	X	**#7.** Arrange a visit with a lawyer who works for a business, bank, title company, or government agency. Find out his or her duties and responsibilities. Report what you have learned.
X		**#8.** Explain the requirements for becoming a lawyer in your state. Describe how judges are selected in your state.
X	X	**#9.** Make a list of 15 jobs that deal with some aspects of law or legal processes. Tell which you prefer. Why?
X		**#10.** Tell where people can go to obtain the help of a lawyer if they are unable to pay for one. Tell what you can do if you can afford a lawyer but do not know of any in your area.
		#11. Discuss with your counselor the importance in our society of TWO of the following areas of the law or process:
X		**#11a.** Administrative

Event Requirements

Merit Badge College 2027

Law	2025-01-01

U	PR	
X		**#11b.** Alternative Dispute Resolution
X		**#11c.** Bankruptcy
X		**#11d.** Biotechnology
X		**#11e** Environmental
X		**#11f.** Family
X		**#11g.** Immigration
X		**#11h.** Information Technology
X		**#11i.** Intellectual Property (Copyright, Patents and Trademarks)
X		**#11j.** International
X		**#11k.** Privacy

Event Requirements

Merit Badge College 2027

Mining in Society **2022-01-01**

U PR

#1. Do the following:

- [X] [ ] **#1a** Select 10 different minerals. For each one, name a product for which the mineral is used.
- [X] [ ] **#1b** Explain the role mining has in producing and processing things that are grown.
- [X] [ ] **#1c** From the list of minerals you chose for requirement 1(a), determine the countries where those minerals can be found, and discuss what you learned from your counselor.
- [X] [ ] **#2** Obtain a map of your state or region showing major cities, highways, rivers, and railroads. Mark the locations of five mining enterprises. Find out what resource is processed at each location, and identify the mine as a surface or underground operation. Discuss with your counselor how the resources mined at these locations are used.

#3. Discuss with your counselor the potential hazards a miner may encounter at an active mine and the protective measures used by miners. In your discussion, explain how:

- [X] [ ] **#3a** The miner's personal protective equipment is worn and used, including a hard hat, safety glasses, earplugs, dust mask or respirator, self-rescue device, and high-visibility vest.
- [X] [ ] **#3b** Miners protect their hands and feet from impact, pinch, vibration, slipping, and tripping/falling hazards.
- [X] [ ] **#3c** Monitoring equipment warns miners of imminent danger, and how robots, drones, and other technology may be used in mine rescues.
- [X] [ ] **#4** Discuss with your counselor the dangers someone might encounter at an abandoned mine or quarry.

#5. Do ONE of the following:

- [X] [ ] **#5a** With your parent or guardian's approval and your counselor's assistance, use the internet to find and take a virtual tour of two types of mines. Determine the similarities and differences between them regarding resource exploration, mine planning and permitting, types of equipment used, and the minerals produced. Discuss with your counselor what you learned from your internet-based mine tours.
- [X] [ ] **#5b** With your parent or guardian's permission and counselor's approval, visit a mining or minerals exhibit at a museum. Find out about the history of the museum's exhibit and the type of mining it represents. Give three examples of how mineral resources have influenced history.
- [X] [ ] **#5c** With your parent or guardian's permission and counselor's approval, visit an active mine. Find out about the tasks required to explore, plan, permit, mine, and process the resource mined at that site. Take photographs, if allowed, and request brochures from your visit. Share photos, brochures, and what you have learned with your counselor.

Event Requirements

Merit Badge College 2027

Mining in Society **2022-01-01**

U	PR	
X		**#5d** With your parent or guardian's permission and counselor's approval, visit a mining equipment manufacturer or supplier.* Discuss the types of equipment produced or supplied there, and in what part of the mining process this equipment is used. Take photographs if allowed, and request brochures from your visit. Share photos, brochures, and what you have learned with your counselor.
X		**#5e** Discuss with your counselor two methods used to reduce rock in size, one of which uses a chemical process to extract a mineral. Explain the difference between smelting and refining.
X		**#5f** Learn about the history of a local mine, including what is or was mined there, how the deposit was found, the mining techniques and processes used, and how the mined resource is or was used. Find out from a historian, community leader, or business person how mining has affected your community. Note any social, cultural, or economic consequences of mining in your area. Share what you have learned with your counselor.
		#6. Do the following:
X		**#6a** Choose a modern mining site. Find out what is being done to help control environmental impacts. Share what you have learned about mining and sustainability.
X		**#6b** Explain reclamation as it is used in mining and how mine reclamation pertains to the Leave No Trace Seven Principles and the Outdoor Code.
X		**#6c** Discuss with your counselor what values society has about returning the land to the benefit of wildlife and people after mining has ended. Discuss the transformation of the Scouting America's Summit Bechtel Family National Scout Reserve from a mine site to its current role.
		#7. Do ONE of the following:
X		**#7a** Explore the anticipated benefits of interplanetary mining. Learn how NASA and private investors may search for, extract, and process minerals in outer space, and the primary reasons for mining the moon, other planets, or near- Earth asteroids. Find out how exploration and mineral processing in space differ from exploration on Earth. Share what you have learned with your counselor, and discuss the difficulties encountered in exploring, collecting, and analyzing surface or near-surface samples in space.
X		**#7b** Identify three minerals found dissolved in seawater or found on the ocean floor, and list three places where the ocean is mined today. Share this information with your counselor, and discuss the chief incentives for mining the oceans for minerals, the reclamation necessary after mining is over, and any special concerns when mining minerals from the ocean. Find out what sustainability problems arise from mining the oceans. Discuss what you learned with your counselor.
X		**#7c** Learn what metals and minerals are recycled after their original use has ended. List four metals and two nonmetals, and find out how each can be recycled. Find out how recycling affects the sustainability of natural resources and how this idea is related to mining. Discuss what you learn with your counselor.
X		**#7d** With your parent or guardian's permission, use the internet and other resources to determine the current price of gold, copper, aluminum, or other commodities like cement or coal, and find out the five-year price trend for two of these. Report your findings to your counselor.

Event Requirements

Merit Badge College 2027

Mining in Society **2022-01-01**

U PR

#8. Do ONE of the following:

[X] [ ] **#8a** With your parent or guardian's and counselor's approval, interview a worker in the mining industry. Discuss the work, equipment, and technology used in this individual's position, and learn about a current project. Ask to see reports, drawings, and/or maps made for the project. Find out about the educational and professional requirements for this individual's position. Ask how the individual's mining career began. Discuss with your counselor what you have learned.

[X] [ ] **#8b** Find out about three career opportunities in the mining industry. Pick one and find out the education, training, and experience required for this profession. Discuss this with your counselor, and explain why this profession might interest you.

[X] [ ] **#8c** With your parent or guardian's permission and counselor's approval, visit a college, university, or trade school to learn about educational and training requirements for a position in the mining industry that interests you. Find out why this position is critical to the mining industry, and discuss what you learned with your counselor.

Event Requirements

Merit Badge College 2027

Model Design and Building **2020-01-01**

U	PR	
X	X	**#1** Study and understand the requirements for personal safety when using modelmaker hand tools such as knives, handsaws, vices, files, hammers, screwdrivers, hand drills and drill bits, pliers, portable power tools, and when to use proper protective equipment such as goggles when grinding or drilling. Know what precautions to take when using flammable or hazardous products such as glue, epoxy, paint, and thinners. Discuss these with your counselor before you begin your modelmaking project and tell why they are important.
X		**#1** Study and understand the requirements for personal safety when using modelmaker hand tools such as knives, handsaws, vices, files, hammers, screwdrivers, hand drills and drill bits, pliers, portable power tools, and when to use proper protective equipment such as goggles when grinding or drilling. Know what precautions to take when using flammable or hazardous products such as glue, epoxy, paint, and thinners. Discuss these with your counselor before you begin your modelmaking project and tell why they are important.
X	X	**#2** Explain the uses for each of the following types of models: architectural, structural, process, mechanical, and industrial. Do research into the different types of materials that could be used in making these models.
X		**#2** Explain the uses for each of the following types of models: architectural, structural, process, mechanical, and industrial. Do research into the different types of materials that could be used in making these models.
X		**#3** With your counselor's advice, select a subject from requirement 4 for your model project. Kits may not be used. Prepare the necessary plans to the proper scale. This model should be your own original work. Tell your counselor why you selected this project.
		#4. Do ONE of the following:
X		**#4a** Make an architectural model. Build a model of a house to a scale of 14" = 1'0" (50:1 metric). Discuss with your counselor the materials you intend to use, the amount of detail required, outside treatment (finish, shrubbery, walks, etc.), and color selections. After completing the model, present it to your counselor for approval.
X		**#4b** Build a structural model. Construct a model showing corner construction of a wood-frame building to a scale of 112" = 1'0" (8:1 metric). All structures shown must be to scale. Cardboard or flat sheet wood stock may be used for sheeting or flooring on the model. Review with your counselor the problems you encountered in gathering the materials and supporting the structure. Be able to name the parts of the floor and wall frames, such as intermediate girder, joist, bridging, subfloor, sill, sole plate, stud, and rafter.
X		**#4c** Make a process model. Build a model showing the plumbing system in your house. Show hot and cold-water supply, all waste returns, and venting to a scale of 3 4" = 1'0" (15:1 metric). Talk to your counselor about how to begin this model, and present the scale and the materials you will use. After completion, present the model to your counselor, and be prepared to discuss any problems you had building this model.
X		**#4d** Complete a mechanical model. Build a model of a mechanical device that uses at least two of the six simple machines. After completing the model, present it to your counselor. Be prepared to discuss materials used, the machine's function, and any particular difficulty you might have encountered.
X		**#4e** Make an industrial model. Build a model of an actual passenger-carrying vehicle to a scale of 1" = 1'0" or 1 2" = 1'0" (10:1 or 25:1 metric). Take the dimensions of the vehicle and record the important dimensions. Draw the top, front, rear, and sides of the vehicle to scale. From your plans, build a model

Event Requirements

Merit Badge College 2027

Model Design and Building **2020-01-01**

U PR

of the vehicle and finish it in a craftsmanlike manner. Discuss with your counselor the most difficult part of completing the model.

#5. Build a special-effects model of a fantasy spacecraft or a hand-held prop that might appear in a Hollywood science-fiction movie. Determine an appropriate scale for your design. Include a cockpit or control area, living space, storage unit, engineering spaces, and propulsion systems. As you plan and build your model, do the following:

- [X] [ ] **#5a** Study existing designs of vehicles and hand-held devices.
- [X] [ ] **#5b** Arrange and assemble the parts.
- [X] [ ] **#5c** Sketch your completed model.
- [X] [ ] **#5d** Discuss your design, scale, and materials choices with your counselor. Describe how you engineered your model and discuss any difficulties you encountered and what you learned.
- [X] [ ] **#6** List at least six occupations in which modelmaking is used and discuss with your counselor some career opportunities in this field.

Event Requirements

Merit Badge College 2027

Merit Badge College Adult

Model Design and Building (2020 version): Model Design and Building 2020-01-01

U	PR	
X	X	**#1** Study and understand the requirements for personal safety when using modelmaker hand tools such as knives, handsaws, vices, files, hammers, screwdrivers, hand drills and drill bits, pliers, portable power tools, and when to use proper protective equipment such as goggles when grinding or drilling. Know what precautions to take when using flammable or hazardous products such as glue, epoxy, paint, and thinners. Discuss these with your counselor before you begin your modelmaking project and tell why they are important.
X		**#1** Study and understand the requirements for personal safety when using modelmaker hand tools such as knives, handsaws, vices, files, hammers, screwdrivers, hand drills and drill bits, pliers, portable power tools, and when to use proper protective equipment such as goggles when grinding or drilling. Know what precautions to take when using flammable or hazardous products such as glue, epoxy, paint, and thinners. Discuss these with your counselor before you begin your modelmaking project and tell why they are important.
X	X	**#2** Explain the uses for each of the following types of models: architectural, structural, process, mechanical, and industrial. Do research into the different types of materials that could be used in making these models.
X		**#2** Explain the uses for each of the following types of models: architectural, structural, process, mechanical, and industrial. Do research into the different types of materials that could be used in making these models.
X		**#3** With your counselor's advice, select a subject from requirement 4 for your model project. Kits may not be used. Prepare the necessary plans to the proper scale. This model should be your own original work. Tell your counselor why you selected this project.
		#4. Do ONE of the following:
X		**#4a** Make an architectural model. Build a model of a house to a scale of 14" = 1'0" (50:1 metric). Discuss with your counselor the materials you intend to use, the amount of detail required, outside treatment (finish, shrubbery, walks, etc.), and color selections. After completing the model, present it to your counselor for approval.
X		**#4b** Build a structural model. Construct a model showing corner construction of a wood-frame building to a scale of 112" = 1'0" (8:1 metric). All structures shown must be to scale. Cardboard or flat sheet wood stock may be used for sheeting or flooring on the model. Review with your counselor the problems you encountered in gathering the materials and supporting the structure. Be able to name the parts of the floor and wall frames, such as intermediate girder, joist, bridging, subfloor, sill, sole plate, stud, and rafter.
X		**#4c** Make a process model. Build a model showing the plumbing system in your house. Show hot and cold-water supply, all waste returns, and venting to a scale of 3 4" = 1'0" (15:1 metric). Talk to your counselor about how to begin this model, and present the scale and the materials you will use. After completion, present the model to your counselor, and be prepared to discuss any problems you had building this model.
X		**#4d** Complete a mechanical model. Build a model of a mechanical device that uses at least two of the six simple machines. After completing the model, present it to your counselor. Be prepared to discuss materials used, the machine's function, and any particular difficulty you might have encountered.
X		**#4e** Make an industrial model. Build a model of an actual passenger-carrying vehicle to a scale of 1" = 1'0" or 1 2" = 1'0" (10:1 or 25:1 metric). Take the

Event Requirements

Merit Badge College 2027

Model Design and Building (2020 version): Model Design and Building 2020-01-01

U PR

dimensions of the vehicle and record the important dimensions. Draw the top, front, rear, and sides of the vehicle to scale. From your plans, build a model of the vehicle and finish it in a craftsmanlike manner. Discuss with your counselor the most difficult part of completing the model.

#5. Build a special-effects model of a fantasy spacecraft or a hand-held prop that might appear in a Hollywood science-fiction movie. Determine an appropriate scale for your design. Include a cockpit or control area, living space, storage unit, engineering spaces, and propulsion systems. As you plan and build your model, do the following:

- [X] [ ] **#5a** Study existing designs of vehicles and hand-held devices.
- [X] [ ] **#5b** Arrange and assemble the parts.
- [X] [ ] **#5c** Sketch your completed model.
- [X] [ ] **#5d** Discuss your design, scale, and materials choices with your counselor. Describe how you engineered your model and discuss any difficulties you encountered and what you learned.
- [X] [ ] **#6** List at least six occupations in which modelmaking is used and discuss with your counselor some career opportunities in this field.

Event Requirements

Merit Badge College 2027

Merit Badge College

Music (2026 version): Music 2026-01-01

U	PR	
		null NOTE: The official merit badge pamphlets are now free and downloadable HERE or can be purchased at the Scout Shop.
X		**#1** Sing or play a simple song or hymn chosen by your counselor, using good technique, phrasing, tone, rhythm, and dynamics. Read all the signs and terms of the score.
X		**#2** Name the five general groups of musical instruments. Create an illustration that shows how tones are generated and how instruments produce sound.
		#3. Do TWO of the following:
X	X	**#3(a)** Attend a live performance, or listen to three hours of recordings from any two of the following musical styles: blues, jazz, classical, country, bluegrass, ethnic, gospel, musical theater, opera. Describe the sound of the music and the instruments used. Identify the composers or songwriters, the performers, and the titles of the pieces you heard. If it was a live performance, describe the setting and the reaction of the audience. Discuss your thoughts about the music.
X	X	**#3(b)** Interview an adult member of your family about music. Find out what the most popular music was when he or she was your age. Find out what his or her favorite music is now, and listen to three of your relative's favorite tunes with him or her. How do those favorites sound to you? Had you ever heard any of them? Play three of your favorite songs for your relative, and explain why you like these songs. Ask what he or she thinks of your favorite music.
X	X	**#3(c)** Serve for six months as a member of a school band, choir, or other organized musical group, or perform as a soloist in public six times.
X	X	**#3(d)** List five people who are important in the history of American music and explain to your counselor why they continue to be influential. Include at least one composer, one performer, one innovator, and one person born more than 100 years ago.
		#4. Do ONE of the following:
		#4(a) Teach three songs to a group of people. Lead them in singing the songs, using proper hand motions.
X		**#4(b)** Compose and write the score for a piece of music of 12 measures or more, and play this music on an instrument.
		#4(c) Make a traditional instrument and learn to play it.
X		**#5** Define for your counselor intellectual property (IP). Explain how to properly obtain and share recorded music.
		#6. Do ONE of the following:
		#6(a) Explore careers related to this merit badge. Research one career to learn about the training and education needed, costs, job prospects, salary, job duties, and career advancement. Your research methods may include—with your parent or guardian's permission—an internet or library search, an

Event Requirements

Merit Badge College 2027

Music (2026 version): Music 2026-01-01

U PR

interview with a professional in the field, or a visit to a location where people in this career work. Discuss with your counselor both your findings and what about this profession might make it an interesting career.

[X] [X] **#6(b)** Explore how you could use knowledge and skills from this merit badge to pursue a hobby. Research any training needed, expenses, and organizations that promote or support it. Discuss with your counselor what short-term and long-term goals you might have if you pursued this.

Event Requirements

Merit Badge College 2027

Nuclear Science **2024-01-01**

U PR

#1. Do the following:

[X] [ ] **#1a.** Explain radiation and the difference between ionizing and nonionizing radiation.
Resources: Radiation & You (video)
IDTIMWYTIM: Radiation (video)

[X] [ ] **#1b.** Explain the ALARA principle and the measures required by law to minimize these risks. Describe what safety requirements you will need to consider while performing the requirements in this merit badge.
Resource: The ALARA Principle (website)

[X] [ ] **#1c.** Describe the radiation hazard symbol and explain where it should be used.
Resources: Radiation Hazard Symbol (video)
How Are Universal Ionizing Radiation Symbols Used Around the World? (website)

[X] [ ] **#1d.** Explain how we are exposed to ionizing radiation from outside the earth as well as on earth every day. List four examples of Naturally Occurring Radioactive Materials (NORM) that are in your house or grocery store and explain why they are radioactive.
Resources: Five Radioactive Products We Use Every Day (video)
Your Grocery Store is Radioactive (and So Is Everything Else) (video)
The Mystery of High-Energy Cosmic Rays (video)

[X] [ ] **#1e.** Explain the difference between radiation exposure and contamination. Describe the hazards of radiation to humans, the environment, and wildlife. Calculate your approximate annual radiation dose and compare it to a typical expected dose of someone who works in a nuclear power plant.
Resources: What Do Radiation Contamination and Exposure Mean? (video)
Biological Effects of Radiation (video)
Radiation Dose Calculator (website)

#2. Do the following:

[X] [ ] **#2a.** Explain the following terms: atom, nucleus, proton, neutron, electron, quark, isotope; alpha particle, beta particle, gamma ray, X-ray; ionization, radioactivity, radioisotope, and stability.
Resources: Glossary of Nuclear Science Terms (website)
What Are Isotopes? (video)
Quarks Explained (video)

[X] [ ] **#2b.** Choose an element from the periodic table. Construct 3-D models for the atoms of three isotopes of this element, showing neutrons, protons, and electrons. Write down the isotope notation for each model including the atomic and mass numbers. In a separate model or diagram, explain or show how quarks make up protons and neutrons.
Resources: Make a Model of an Isotope (PDF)
Interactive Isotopes (website)

Event Requirements

Merit Badge College 2027

Nuclear Science **2024-01-01**

U PR

#3. Do ONE of the following; then discuss modern particle physics with your counselor:

[X] [ ] **#3a.** Visit an accelerator, research lab, or university where scientists study the properties of the nucleus or nucleons.

Resources:
Lawrence Berkeley National Laboratory Nuclear Science Division (video)
Inside the World's Largest Science Experiment (video)

[X] [ ] **#3b.** List three particle accelerators and describe several experiments that each accelerator performs, including basic science and practical applications.
Resource: Particle Accelerators: What Are They, How Do They Work, and Why Are They Important to Us? (video)

#4. Do TWO of the following; then discuss with your counselor:
Resource: Detecting and Measuring Ionizing Radiation - A Short History (PDF)

[X] [X] **#4a.** Build an electroscope. Show how it works. Place a radiation source inside and explain the effect it causes.
Resource: DIY Electroscope (video)

[X] [X] **#4b.** Make a cloud chamber. Show how it can be used to see the tracks caused by radiation. Explain what is happening.
Resources: How to Build a Cloud Chamber! (video)
Working Cloud Chamber | Exploratorium (video)
Visualize Radioactive Decay in a Cloud Chamber (PDF)

[X] [X] **#4c.** Perform an experiment demonstrating half-life. Discuss decay chains.
Resources: How Radioactive Decay Works | Decay Chains (video)
Skittles Half Life Lab | Radioactive Isotope Decay | Half Life Graph (video)

#5. Do ONE of the following; then discuss with your counselor the principles of radiation safety:

[X] [X] **#5a.** Using a radiation survey meter and a radioactive source, show how the counts per minute change as the source gets closer to or farther from the radiation detector. Place three different materials between the source and the detector, then explain any differences in the measurements per minute. Explain how time, distance, and shielding can reduce an individual's radiation dose.
Resources: How Materials Shield Radiation (PDF)
Time, Distance and Shielding (video)
Measuring Radiation (video)
Using a Survey Meter: CPM vs Distance (video)

[X] [X] **#5b.** Describe how radon is detected in homes. Discuss the steps taken for the long-term and short-term test methods, tell how to interpret the results, and explain when each type of test should be used. Explain the health concerns related to radon gas and tell what steps can be taken to reduce radon in buildings.
Resources: What is Radon, Anyway? (video)

Event Requirements

Merit Badge College 2027

Nuclear Science **2024-01-01**

U PR

How Dangerous Is Radon to Your Health? (video)

[X] [X] **#5c.** Visit a place where X-rays are used. Draw a floor plan of this room. Show where the unit, the unit operator, and the patient would be when the X-ray unit is operated. Explain the precautions taken and the importance of those precautions.
Resource: X-Ray Room Tour || Ask the Rad Tech (video)

#6. Do ONE of the following; then discuss with your counselor how nuclear energy is used to produce electricity:

Resource: Nuclear Energy (website)

[X] [X] **#6a.** Make a drawing showing how nuclear fission happens. Observe a mousetrap reactor (setup by an adult) and use it to explain how a chain reaction could be started. Explain how a chain reaction could be stopped or controlled in a nuclear reactor. Explain what is meant by a "critical mass."
Resources: What Really Happened the First Time We Split a Heavy Atom in Half (video)
What is Critical Mass | Nuclear Chain Reaction| Fission Chain Reaction| Critical Mass Of Uranium (video)
Mousetrap Fission (video)

[X] [X] **#6b.** Visit a local nuclear power plant or nuclear reactor either in person or online (with your parent or guardian's permission). Learn how a reactor works and how the plant generates electricity. Find out what percentage of electricity in the United States is generated by nuclear power plants, by coal, and by gas.
Resources: What Is Nuclear Energy? Shrink Down to an Atom and Find Out (video)
Energy Consumption & Efficiency Data | Energy Information Agency (website)

[X] [ ] **#7.** Give an example of each of the following in relation to how energy from an atom can be used: nuclear medicine, environmental applications, industrial applications, space exploration, and radiation therapy. For each example, explain the application and its significance to nuclear science.
Resources: Radiation Technologies in Daily Life (video)
Ways Nuclear Science Helps Cancer Patients (video)
Ways Nuclear Techniques Combat Malnutrition (video)
Ways Nuclear Science Helps Ocean Health (video)

[X] [ ] **#8.** Find out about three career opportunities in nuclear science that interest you. Pick one and find out the education, training, and experience required for this profession and discuss this with your counselor. Tell why this profession interests you.
Resources: What do Nuclear Scientists Do? (video)
Nuclear Engineering (video)
Nuclear Medicine (video)
Navy Nuclear (video)

Event Requirements

Merit Badge College 2027

Oceanography **2013-01-01**

U	PR	
X		**#1** Name four branches of oceanography. Describe at least five reasons why it is important for people to learn about the oceans.
X		**#2** Explain the following terms: salinity, temperature, and density. Describe how these important properties of seawater are measured by oceanographer. Discuss the circulation and currents of the ocean. Describe the effects of the oceans on weather and climate.
X		**#3** Describe the characteristics of ocean waves. Point out the differences among the storm surge, tsunami, tidal wave, and tidal bore. Explain the difference between sea, swell, and surf. Explain how breakers are formed.
		#4. Draw a cross-section of underwater topography. Show what is meant by:
X		**#4a** Continental shelf
X		**#4b** Continental slope
X		**#4c** Abyssal plain.
X		**#5** List the main salts, gases, and nutrients in seawater. Describe some important properties of water. Tell how the animals and plants of the ocean affect the chemical composition of seawater. Explain how differences in evaporation and precipitation affect the salt content of the oceans.
X		**#6** Describe some of the biologically important properties of seawater. Define benthos, nekton, and plankton. Name some of the plants and animals that make up each of these groups. Describe the place and importance of phytoplankton in the oceanic food chain.
		#7. Do ONE of the following:
X	X	**#7a** Make a plankton net. Tow the net by a dock, wade with it, hold it in a current, or tow it from a rowboat. Do this for about 20 minutes. Save the sample. Examine it under a microscope or high-power glass. Identify the three most common types of plankton in the sample. **Note:** May be done in lakes or streams.
X	X	**#7b** Make a series of models (clay or plaster and wood) of a volcanic island. Show the growth of an atoll from a fringing reef through a barrier reef. Describe the Darwinian theory of coral reef formation.
X	X	**#7c** Measure the water temperature at the surface, midwater, and bottom of a body of water four times daily for five consecutive days. You may measure depth with a rock tied to a line. Make a Secchi disk to measure turbidity (how much suspended sedimentation is in the water). Measure the air temperature. Note the cloud cover and roughness of the water. Show your findings (air and water temperature, turbidity) on a graph. Tell how the water temperature changes with air temperature.
X	X	**#7d** Make a model showing the inshore sediment movement by littoral currents, tidal movement, and wave action. Include such formations as high and low waterlines, low-tide terrace, berm, and coastal cliffs. Show how offshore bars are built up and torn down.

Event Requirements

Merit Badge College 2027

Oceanography **2013-01-01**

U	PR	
X	X	**#7e** Make a wave generator. Show reflection and refraction of waves. Show how groins, jetties, and breakwaters affect these patterns.
X	X	**#7f** Track and monitor satellite images available on the internet for a specific location for three weeks. Describe what you have learned to your counselor.
		#**8.** Do ONE of the following:
X	X	**#8a** Write a 500-word report on a book about oceanography approved by your counselor.
		#**(b)** Visit one of the following and write a 500-word report about your visit.
X	X	**#8b[1]** Oceanographic research ship
X	X	**#8b[2]** Oceanographic institute, marine laboratory, or marine aquarium.
X	X	**#8c** Explain to your troop in a five-minute prepared speech "Why Oceanography Is Important" or describe "Career Opportunities in Oceanography." (Before making your speech, show your speech outline to your counselor for approval.)
X		**#9** Describe four methods that marine scientists use to investigate the ocean, underlying geology, and organisms living in the water.

Event Requirements

Merit Badge College 2027

Personal Management (Eagle required) **2019-01-01**

U	PR	
		#**1.** Do the following:
X	X	**#1a** Choose an item that your family might want to purchase that is considered a major expense.
		#**(b)** Write a plan that tells how your family would save money for the purchase identified in requirement 1(a).
X	X	**#1b[1]** Discuss the plan with your counselor.
X	X	**#1b[2]** Discuss the plan with your family.
X	X	**#1b[3]** Discuss how other family needs must be considered in this plan.
		#**(c)** Develop a written shopping strategy for the purchase identified in requirement 1(a).
X	X	**#1c[1]** Determine the quality of the item or service (using consumer publications or rating systems).
X	X	**#1c[2]** Comparison shop for the item. Find out where you can buy the item for the best price. (Provide prices from at least two different price sources.) Call around; study ads. Look for a sale or discount coupon. Consider alternatives. Can you buy the item used? Should you wait for a sale?
		#**2.** Do the following:
X	X	**#2a** Prepare a budget reflecting your expected income (allowance, gifts, wages), expenses, and savings for a period of 13 consecutive weeks.
		#**(b)** Compare expected income with expected expenses.
X	X	**#2b[1]** If expenses exceed budget income, determine steps to balance your budget.
X	X	**#2b[2]** If income exceeds budget expenses, state how you would use the excess money (new goal, savings).
X	X	**#2c** Track and record your actual income, expenses, and savings for 13 consecutive weeks (the same 13-week period for which you budgeted.) (You may use the forms provided in the Personal Management merit badge pamphlet, devise your own, or use a computer-generated version.) When complete, present the records showing the results to your counselor.
X	X	**#2b(3)** Track and record your actual income, expenses, and savings for 13 consecutive weeks (the same 13-week period for which you budgeted). (You may use the forms provided in this pamphlet, devise your own, or use a computer-generated version.) When complete, present the records showing the results to your merit badge counselor.
X	X	**#2d** Compare your budget with your actual income and expenses to understand when your budget worked and when it did not work. With your counselor, discuss what you might do differently the next time.

Event Requirements

Merit Badge College 2027

Personal Management (Eagle required) **2019-01-01**

U	PR	
X	X	**#2b(4)** Compare your budget with your actual income and expenses to understand when your budget worked and when it did not work. With your merit badge counselor, discuss what you might do differently the next time.
		#3. Discuss with your counselor FIVE of the following concepts:
X		**#3a** The emotions you feel when you receive money.
X		**#3b** Your understanding of how the amount of money you have with you affects your spending habits.
X		**#3c** Your thoughts when you buy something new and your thoughts about the same item three months later. Explain the concept of buyer's remorse.
X		**#3d** How hunger affects you when shopping for food items (snacks, groceries).
X		**#3e** Your experience of an item you have purchased after seeing or hearing advertisements for it. Did the item work as well as advertised?
X		**#3f** Your understanding of what happens when you put money into a savings account.
X		**#3g** Charitable giving. Explain its purpose and your thoughts about it.
X		**#3h** What you can do to better manage your money.
		#4. Explain the following to your counselor:
X		**#4a** The differences between saving and investing, including reasons for using one over the other.
X		**#4b** The concepts of return on investment and risk and how they are related.
X		**#4c** The concepts of simple interest and compound interest.
X		**#4d** The concept of diversification in investing.
X		**#4e** Why it is important to save and invest for retirement.
		#5. Explain to your counselor what the following investments are and how each works:
X		**#5a** Common stocks
X		**#5b** Mutual funds

Event Requirements

Merit Badge College 2027

Personal Management (Eagle required) **2019-01-01**

U	PR	
X		**#5c** Life insurance
X		**#5d** A certificate of deposit (CD)
X		**#5e** A savings account
X		**#5f** A U.S. savings bond
		#6 Explain to your counselor why people might purchase the following types of insurance and how they work:
X		**#6a** Automobile
X		**#6b** Health
X		**#6c** Homeowner's/renter's
X		**#6d** Whole life and term life
		#7. Explain to your counselor the following:
X		**#7a** What a loan is, what interest is, and how the annual percentage rate (APR) measures the true cost of a loan
X		**#7b** The different ways to borrow money
X		**#7c** The differences between a charge card, debit card, and credit card, including the costs and pitfalls of using these financial tools, and why it is unwise to make only the minimum payment on your credit card
X		**#7d** Credit reports and how personal responsibility can affect your credit report
X		**#7e** Ways to reduce or eliminate debt.
		#8. Demonstrate to your counselor your understanding of time management by doing the following:
X	X	**#8a** Write a to-do list of tasks or activities, such as homework assignments, chores, and personal projects, that must be done in the coming week. List these in order of importance to you.
X	X	**#8b** Make a seven-day calendar or schedule. Put in your set activities, such as school classes, sports practices or games, jobs or chores, and/or Scout or place of worship or club meetings, then plan when you will do all the tasks from your to-do list between your set activities.

Event Requirements

Merit Badge College 2027

Personal Management (Eagle required) **2019-01-01**

U	PR	
X	X	**#8c** Follow the one-week schedule you planned. Keep a daily diary or journal during each of the seven days of this week's activities, writing down when you completed each of the tasks on your to-do list compared to when you scheduled them.
X	X	**#8d** With your counselor, review your to-do list, one-week schedule, and diary/journal to understand when your schedule worked and when it did not work. Discuss what you might do differently the next time.
		#9. Prepare a written project plan demonstrating the steps below, including the desired outcome. This is a project on paper, not a real-life project. Examples could include planning a camping trip, developing a community service project or a school or religious event, or creating an annual patrol plan with additional activities not already included in the troop annual plan. Discuss your completed project plan with your counselor.
X	X	**#9a** Define the project. What is your goal?
X	X	**#9b** Develop a timeline for your project that shows the steps you must take from beginning to completion.
X	X	**#9c** Describe your project.
X	X	**#9d** Develop a list of resources. Identify how these resources will help you achieve your goal.
X	X	**#9e** Develop a budget for your project.
		#10. Do the following:
X	X	**#10a** Choose a career you might want to enter after high school or college graduation. Discuss with your counselor the needed qualifications, education, skills, and experience.
X	X	**#10b** Explain to your counselor what the associated costs might be to pursue this career, such as tuition, school or training supplies, and room and board. Explain how you could prepare for these costs and how you might make up for any shortfall.
		null *Always be sure to have proper permission before using the internet. To learn about appropriate behavior and etiquette while online, consider earning the BSA Cyber Chip. Go to www.scouting.org/training/youth-protection/cyber-chip/ for more information.

Event Requirements

Merit Badge College 2027

Personal Management B: Personal Management (Eagle required) **2019-01-01**

U	PR	
		null NOTE: The official merit badge pamphlets are now free and downloadable HERE or can be purchased at the Scout Shop.
		#**1.** Do the following:
X	X	**#1a** Choose an item that your family might want to purchase that is considered a major expense.
		#**(b)** Write a plan that tells how your family would save money for the purchase identified in requirement 1(a).
X	X	**#1b[1]** Discuss the plan with your counselor.
X	X	**#1b[2]** Discuss the plan with your family.
X	X	**#1b[3]** Discuss how other family needs must be considered in this plan.
		#**(c)** Develop a written shopping strategy for the purchase identified in requirement 1(a).
X	X	**#1c[1]** Determine the quality of the item or service (using consumer publications or rating systems).
X	X	**#1c[2]** Comparison shop for the item. Find out where you can buy the item for the best price. (Provide prices from at least two different price sources.) Call around; study ads. Look for a sale or discount coupon. Consider alternatives. Can you buy the item used? Should you wait for a sale?
		#**2.** Do the following:
X	X	**#2a** Prepare a budget reflecting your expected income (allowance, gifts, wages), expenses, and savings for a period of 13 consecutive weeks.
		#**(b)** Compare expected income with expected expenses.
X	X	**#2b[1]** If expenses exceed budget income, determine steps to balance your budget.
X	X	**#2b[2]** If income exceeds budget expenses, state how you would use the excess money (new goal, savings).
X	X	**#2c** Track and record your actual income, expenses, and savings for 13 consecutive weeks (the same 13-week period for which you budgeted.) (You may use the forms provided in the Personal Management merit badge pamphlet, devise your own, or use a computer-generated version.) When complete, present the records showing the results to your counselor.
X	X	**#2d** Compare your budget with your actual income and expenses to understand when your budget worked and when it did not work. With your counselor, discuss what you might do differently the next time.

Event Requirements

Merit Badge College 2027

Personal Management B: Personal Management (Eagle required) **2019-01-01**

U PR

#3. Discuss with your counselor FIVE of the following concepts:

- [X] [ ] **#3a** The emotions you feel when you receive money.
- [X] [ ] **#3b** Your understanding of how the amount of money you have with you affects your spending habits.
- [X] [ ] **#3c** Your thoughts when you buy something new and your thoughts about the same item three months later. Explain the concept of buyer's remorse.
- [X] [ ] **#3d** How hunger affects you when shopping for food items (snacks, groceries).
- [X] [ ] **#3e** Your experience of an item you have purchased after seeing or hearing advertisements for it. Did the item work as well as advertised?
- [X] [ ] **#3f** Your understanding of what happens when you put money into a savings account.
- [X] [ ] **#3g** Charitable giving. Explain its purpose and your thoughts about it.
- [X] [ ] **#3h** What you can do to better manage your money.

#4. Explain the following to your counselor:

- [X] [ ] **#4a** The differences between saving and investing, including reasons for using one over the other.
- [X] [ ] **#4b** The concepts of return on investment and risk and how they are related.
- [X] [ ] **#4c** The concepts of simple interest and compound interest.
- [X] [ ] **#4d** The concept of diversification in investing.
- [X] [ ] **#4e** Why it is important to save and invest for retirement.

#5. Explain to your counselor what the following investments are and how each works:

- [X] [ ] **#5a** Common stocks
- [X] [ ] **#5b** Mutual funds
- [X] [ ] **#5c** Life insurance

Event Requirements

Merit Badge College 2027

Personal Management B: Personal Management (Eagle required) **2019-01-01**

U	PR	
X		**#5d** A certificate of deposit (CD)
X		**#5e** A savings account
X		**#5f** A U.S. savings bond
		#6. Explain to your counselor why people might purchase the following types of insurance and how they work:
X		**#6a** Automobile
X		**#6b** Health
X		**#6c** Homeowner's/renter's
X		**#6d** Whole life and term life
		#7. Explain to your counselor the following:
X		**#7a** What a loan is, what interest is, and how the annual percentage rate (APR) measures the true cost of a loan
X		**#7b** The different ways to borrow money
X		**#7c** The differences between a charge card, debit card, and credit card, including the costs and pitfalls of using these financial tools, and why it is unwise to make only the minimum payment on your credit card
X		**#7d** Credit reports and how personal responsibility can affect your credit report
X		**#7e** Ways to reduce or eliminate debt.
		#8. Demonstrate to your counselor your understanding of time management by doing the following:
X	X	**#8a** Write a to-do list of tasks or activities, such as homework assignments, chores, and personal projects, that must be done in the coming week. List these in order of importance to you.
X	X	**#8b** Make a seven-day calendar or schedule. Put in your set activities, such as school classes, sports practices or games, jobs or chores, and/or Scout or place of worship or club meetings, then plan when you will do all the tasks from your to-do list between your set activities.
X	X	**#8c** Follow the one-week schedule you planned. Keep a daily diary or journal during each of the seven days of this week's activities, writing down when you

Event Requirements

Merit Badge College 2027

Personal Management B: Personal Management (Eagle required) **2019-01-01**

U PR

completed each of the tasks on your to-do list compared to when you scheduled them.

[X] [X] **#8d** With your counselor, review your to-do list, one-week schedule, and diary/journal to understand when your schedule worked and when it did not work. Discuss what you might do differently the next time.

#9. Prepare a written project plan demonstrating the steps below, including the desired outcome. This is a project on paper, not a real-life project. Examples could include planning a camping trip, developing a community service project or a school or religious event, or creating an annual patrol plan with additional activities not already included in the troop annual plan. Discuss your completed project plan with your counselor.

[X] [X] **#9a** Define the project. What is your goal?

[X] [X] **#9b** Develop a timeline for your project that shows the steps you must take from beginning to completion.

[X] [X] **#9c** Describe your project.

[X] [X] **#9d** Develop a list of resources. Identify how these resources will help you achieve your goal.

[X] [X] **#9e** Develop a budget for your project.

#10. Do the following:

[X] [X] **#10a** Choose a career you might want to enter after high school or college graduation. Discuss with your counselor the needed qualifications, education, skills, and experience.

[X] [X] **#10b** Explain to your counselor what the associated costs might be to pursue this career, such as tuition, school or training supplies, and room and board. Explain how you could prepare for these costs and how you might make up for any shortfall.

Event Requirements

Merit Badge College 2027

Programming **2025-01-01**

U	PR	
		#1. Safety. Do the following:
X	☐	**#1a** View the Personal Safety Awareness "Digital Safety" video (with your parent or guardian's permission.)
X	☐	**#1b** Discuss first aid and prevention for the types of injuries that could occur during programming activities, including repetitive stress injuries and eyestrain.
X	☐	**#2** History. Discuss with your counselor the history of programming and the evolution of programming languages, including at least three milestones related to the advancement or development of programming over time.
		#3. General Knowledge. Do the following:
X	☐	**#3a** Create a list of five popular programming languages in use today and describe which industry or industries they are primarily used in and why.
X	☐	**#3b** Describe three different programmed devices you rely on every day.
		#4. Intellectual Property. Do the following:
X	☐	**#4a** Explain the four types of intellectual property used to protect computer programs.
X	☐	**#4b** Describe the difference between licensing and owning software.
X	☐	**#4c** Describe the differences between freeware, open source, and commercial software, and why it is important to respect the terms of use of each.
		#5. Project. With your counselor's guidance, select three different programming languages and development environments. For each sub-requirement below, do the following: Write or modify a program using the indicated programming language and development environment. The program must take input and produce output based on computations and decisions made on the input. Debug and demonstrate the program to your counselor. Explain how each program processes inputs, makes decisions based on those inputs, and provides outputs based on computations and decision making.
X	☐	**#5a** In the first language and environment, write or modify a program, debug and demonstrate, and explain as above.
X	☐	**#5b** In the second language and environment, write or modify a program, debug and demonstrate, and explain as above.
X	☐	**#5c** In the third language and environment, write or modify a program, debug and demonstrate, and explain as above.
X	☐	**#6** Careers. Find out about three career opportunities that require knowledge in programming. Pick one and find out the education, training, and experience required. Discuss this with your counselor and explain why this career might be

Event Requirements

Merit Badge College 2027

Programming	**2025-01-01**

U PR

of interest to you.

Event Requirements

Merit Badge College 2027

Pulp & Paper: Pulp and Paper 2014-01-01

U	PR	
X		**#1** Tell the history of papermaking. Describe the part paper products play in our society and economy.
		#2. Learn about the pulp and paper industry.
X		**#2a** Describe the ways the industry plants, grows, and harvests trees.
X		**#2b** Explain how the industry manages its forests so that the supply of trees keeps pace with the demand.
X		**#2c** Tell how the industry has incorporated the concepts of sustainable forest management (SFM).
X		**#2d** Describe two ways the papermaking industry has addressed pollution.
		#3. Name at least four types of trees that are major sources of papermaking fibers. Then do the following:
X		**#3a** Discuss what other uses are made of the trees and the forestland owned by the pulp and paper industry.
X		**#3b** Describe two ways of getting fibers from wood, and explain the major differences between them.
X		**#3c** Tell why some pulps are bleached, and describe the process.
X		**#4** Describe how paper is made. Discuss how paper is recycled. Make a sheet of paper by hand.
X		**#5** Explain what coated paper is and why it is coated. Describe the major uses for different kinds of coated papers. Describe one other way that paper is changed by chemical or mechanical means to make new uses possible.
X		**#6** Make a list of 15 pulp or paper products found in your home. Share examples of 10 such products with your counselor.
		#7. With your parent or guardian's and counselor's approval, do ONE of the following:
X	X	**#7a** Visit a pulp mill. Describe how the mill converts wood to cellulose fibers.
X	X	**#7b** Visit a paper mill and get a sample of the paper made there. Describe the processes used for making this paper. Tell how it will be used.
X	X	**#7c** Visit a container plant or box plant. Describe how the plant's products are made.
X	X	**#7d** Visit a recycled paper collection or sorting facility. Describe the operations there.
X	X	**#7e** Using books, magazines, your local library, the internet (with your parent or guardian's permission), and any other suitable research tool, find out how

Event Requirements

Merit Badge College 2027

Pulp & Paper: Pulp and Paper **2014-01-01**

U PR

paper products are developed. Find out what role research and development play in the papermaking industry. Share what you learned with your counselor.

☒ ☐ **#8** Find out about three career opportunities in the papermaking industry that interest you. Pick one and find out the education, training, and experience required for this profession. Discuss this with your counselor, and explain why this profession might interest you.

Event Requirements

Merit Badge College 2027

Radio **2017-01-01**

U	PR	
		#1. Explain what radio is. Then discuss the following:
X		**#1a** The differences between broadcast radio and hobby radio
X		**#1b** The differences between broadcasting and two-way communications
X		**#1c** Radio station call signs and how they are used in broadcast radio and amateur radio
X		**#1d** The phonetic alphabet and how it is used to communicate clearly.
		#2. Do the following:
X		**#2a** Sketch a diagram showing how radio waves travel locally and around the world.
X		**#2b** Explain how the radio stations WWV and WWVH can be used to help determine what you can expect to hear when you listen to a shortwave radio.
X		**#2c** Explain the difference between a distant (DX) and a local station.
X		**#2d** Discuss what the Federal Communications Commission (FCC) does and how it is different from the International Telecommunication Union.
		#3. Do the following:
X		**#3a** Draw a chart of the electromagnetic spectrum covering 300 kilohertz (kHz) to 3,000 Megahertz (MHz).
X		**#3b** Label the MF, HF, VHF, UHF, and microwave portions of the spectrum on your diagram.
X		**#3c** Locate on your chart at least eight radio services, such as AM and FM commercial broadcast, citizens band (CB), television, amateur radio (at least four amateur radio bands), and public service (police and fire).
X		**#4** Explain how radio waves carry information. Include in your explanation: transceiver, transmitter, receiver, amplifier, and antenna.
		#5. Do the following:
X		**#5a** Explain the differences between a block diagram and a schematic diagram.
X		**#5b** Draw a block diagram for a radio station that includes a transceiver, amplifier, microphone, antenna, and feed line.
X		**#5c** Discuss how information is sent when using amplitude modulation (AM), frequency modulation (FM), continuous wave (CW) Morse Code transmission,

Event Requirements

Merit Badge College 2027

Radio **2017-01-01**

U PR

single sideband (SSB) transmission, and digital transmission.

- [X] [ ] **#5d** Explain how NOAA Weather Radio (NWR) can alert you to danger.
- [X] [ ] **#5e** Explain how cellular telephones work. Identify their benefits and limitations in an emergency.
- [X] [ ] **#6** Explain the safety precautions for working with radio gear, including the concept of grounding for direct current circuits, power outlets, and antenna systems.
- [X] [ ] **#7** Visit a radio installation (an amateur radio station, broadcast station, or public service communications center, for example) approved in advance by your counselor. Discuss what types of equipment you saw in use, how it was used, what types of licenses are required to operate and maintain the equipment, and the purpose of the station.
- [X] [ ] **#8** Find out about three career opportunities in radio. Pick one and find out the education, training, and experience required for this profession. Discuss this with your counselor, and explain why this profession might interest you.

#**9.** Do ONE of the following options:

#**(a)** Option A—Amateur Radio. Do the following:

- [X] [ ] **#9a[1]** Tell why the FCC has an amateur radio service. Describe activities that amateur radio operators can do on the air, once they have earned an amateur radio license.
- [X] [ ] **#9a[2]** Explain differences between the Technician, General, and Extra Class license requirements and privileges. Explain who administers amateur radio exams.
- [X] [ ] **#9a[3]** Explain at least five Q signals or amateur radio terms.
- [X] [ ] **#9a[4]** Explain how you would make an emergency call on voice or Morse code.
- [X] [ ] **#9a[5]** Explain the differences between handheld, mobile, and base station transceivers and their uses. Explain the use of amateur radio repeaters.
- [X] [ ] **#9a[6]** Using proper call signs, Q signals, and abbreviations, carry on a 10-minute real or simulated amateur radio contact using voice, Morse code, or digital mode. (Licensed amateur radio operators may substitute five QSL cards as evidence of contacts with five amateur radio operators. Properly log the real or simulated ham radio contact, and record the signal report.)

#**(b)** Option B—Radio Broadcasting. Do the following:

Event Requirements

Merit Badge College 2027

Radio **2017-01-01**

U	PR	
X		**#9b[1]** Discuss with your counselor FCC broadcast regulations. Include power levels, frequencies, and the regulations for low-power stations.
X		**#9b[2]** Prepare a program schedule for radio station "KBSA" of exactly one-half hour, including music, news, commercials, and proper station identification. Record your program on audiotape or in a digital audio format, using proper techniques.
X		**#9b[3]** Listen to and properly log 15 broadcast stations. Determine the program format and target audience for five of these stations.
X		**#9b[4]** Explain to your counselor at least eight terms used in commercial broadcasting, such as segue, cut, fade, continuity, remote, Emergency Alert System, network, cue, dead air, PSA, and playlist.
X		**#9b[5]** Discuss with your counselor alternative radio platforms such as internet streaming, satellite radio, and podcasts.
		#**(c)** Option C—Shortwave and Medium-Wave Listening. Do the following:
X		**#9c[1]** Listen across several shortwave bands for four one-hour periods-at least one period during daylight hours and at least one period at night. Log the stations properly and locate them geographically on a map, globe, or web-based mapping service.
X		**#9c[2]** Listen to several medium-wave stations for two one-hour periods, one period during daylight hours and one period at night. Log the stations properly and locate them on a map, globe, or web-based mapping service.
X		**#9c[3]** Compare your daytime and nighttime logs; note the frequencies on which your selected stations were loudest during each session. Explain differences in the signal strength from one period to the next.
X		**#9c[4]** Compare your medium-wave broadcast station logs and explain why some distant stations are heard at your location only during the night.
X		**#9c[5]** Demonstrate listening to a radio broadcast using a smartphone/cell phone. Include international broadcasts in your demonstration.
		#**(d)** Option D—Amateur Radio Direction Finding. Do the following:
X		**#9d[1]** Describe amateur radio direction finding and explain why direction finding is important as both an activity and in competition.
X		**#9d[2]** Describe what frequencies and equipment are used for ARDF or fox hunting.
X		**#9d[3]** Build a simple directional antenna for either of the two frequencies used in ARDF.
X		**#9d[4]** Participate in a simple fox hunt using your antenna along with a provided receiver.
X		**#9d[5]** Show, on a map, how you located the "fox" using your receiver.

Event Requirements

Merit Badge College 2027

Radio	**2017-01-01**

U PR

Event Requirements

Merit Badge College 2027

Scouting Heritage **2014-01-01**

U	PR	
X		<style isBold="true">#1</style> Discuss with your counselor the life and times of Lord Baden-Powell of Gilwell. Explain why he felt a program like Scouting would be good for the young men of his day. Include in your discussion how Scouting was introduced in the United States, and the origins of Boy Scouting and Cub Scouting under Baden-Powell. <style isItalic="true">Resource:</style> Baden Powell - Father of Scouting, Origins of Scouting (video)
		#**2.** Do the following:
		#**(a)** Give a short biographical summary of any TWO of the following, and tell of their roles in how Scouting developed and grew in the United States.
X	X	<style isBold="true">#2a[1]</style> Daniel Carter Beard <style isItalic="true">Resource:</style> Daniel Carter Beard - BSA Founder (video)
X	X	<style isBold="true">#2a[2]</style> William D. Boyce <style isItalic="true">Resource:</style> William D. Boyce - BSA Founder (video)
X	X	**#2a[3]** Waite Phillips *Resource:* Waite Phillips - BSA Benefactor and Donor of Philmont (video)
X	X	**#2a[4]** Ernest Thompson Seton *Resource:* Ernest Thompson Seton - BSA Founder (video)
X	X	**#2a[5]** James E. West *Resource:* James E. West - BSA Founder (video)
X	X	**#2a[6]** Green Bar Bill Hillcourt. *Resource:* Green Bar Bill Hillcourt Biography (video)
		#**(b)** Discuss the significance to Scouting of any TWO of the following:
X	X	**#2b[1]** Brownsea Island *Resource:* Artifact of the Week - Brownsea Island (video)
X	X	**#2b[2]** The First World Scout Jamboree *Resources:* Artifact of the Week - World Scout Jamborees Part 01 (video) Artifact of the Week - World Scout Jamborees Part 02 (video)

Event Requirements

Merit Badge College 2027

Scouting Heritage **2014-01-01**

U	PR	
X	X	<style isBold="true">#2b[3]</style> Scouts BSA Handbook <style isItalic="true">Resources:</style> NSM History of the Scout Handbook (video) Artifact of the Week - First Scout Handbook (video)
X	X	**#2b[4]** Scout Life magazine (formerly Boys' Life). *Resources:* Artifact of the Week - Boys' Life to Scout Life (video) The Story of Boys' Life / Scout Life (video)
X	☐	**#3** Discuss with your counselor how Scouting's programs have developed over time and been adapted to fit different age groups and interests (Cub Scouting, Scouts BSA, Exploring, Venturing). *Resources:* Legacy Video Scouting History Timeline (video) Artifact of the Week - Development of Cub Scouting (video) Artifact of the Week - Sea Scouts (video) History of Venturing (website) History of Exploring (website)
		#4. Do ONE of the following:
X	X	**#4a** Attend either a Scouting America National Jamboree, OR World Scout Jamboree, OR a national Scouting America high-adventure base. While there, keep a journal documenting your day-to-day experiences. Upon your return, report to your counselor what you did, saw, and learned. You may include photos, brochures, and other documents in your report. *Resources:* 100 Years of the World Scout Jamboree (video) Scouting America High Adventure Overview (video)
X	X	<style isBold="true">#4b</style> Write or visit the National Scouting Museum. Obtain information about this facility. Give a short report on what you think the role of this museum is in the Scouting program. <style isItalic="true">Resources:</style> National Scouting Museum at Summit Bechtel Reserve Virtual Tour (video) National Scouting Museum at Philmont Virtual Tour (website)
X	X	**#4c** Visit an exhibit of Scouting memorabilia or a local museum with a Scouting history gallery, or (with your parent or guardian's permission and counselor's approval) visit with someone in your council who is recognized as a dedicated Scouting historian or memorabilia collector. Learn what you can about the history of Scouting America. Give a short report to your counselor on what you saw and learned.
X	X	**#5** Learn about the history of your unit or Scouting in your area. Interview at least two people (one from the past and one from the present) associated with your troop. These individuals could be adult unit leaders, Scouts, troop committee members, or representatives of your troop's chartered organization. Find

Event Requirements

Merit Badge College 2027

Scouting Heritage **2014-01-01**

U PR

out when your unit was originally chartered. Create a report of your findings on the history of your troop, and present it to your patrol or troop or at a court of honor, and then add it to the troop's library. This presentation could be in the form of an oral/written report, an exhibit, a scrapbook, or a computer presentation such as a slide show.

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[X] [X] <style isBold="true">#6</style> Make a collection of some of your personal patches and other Scouting memorabilia. With their permission, you may include items borrowed from family members or friends who have been in Scouting in the past, or you may include photographs of these items. Show this collection to your counselor, and share what you have learned about items in the collection.
<style isBold="true">Note:</style> There is no requirement regarding how large or small this collection must be.
<style isItalic="true">Resources:</style> <a href="https://www.youtube.com/watch?v=njI2Wb4sAEw&t=1s" type="Reference" target="_blank"
>Scouting Memorabilia Collection - Philmont License Plates (video)
Philmont Recognition Patches (video)

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>Scouting Memorabilia Collection - Philmont License Plates (video)
Philmont Recognition Patches (video)

[X] [X] **#7** Reproduce the equipment for an old-time Scouting game such as those played at Brownsea Island. You may find one on your own (with your counselor's approval) or pick one from the Scouting Heritage merit badge pamphlet. Teach and play the game with other Scouts.
Resources: Troop Games - Large Area (website)
Troop Games - Small Space (website)
Troop Games - Pre-Meeting (website)

[X] [ ] **#7** Reproduce the equipment for an old-time Scouting game such as those played at Brownsea Island. You may find one on your own (with your counselor's approval) or pick one from the Scouting Heritage merit badge pamphlet. Teach and play the game with other Scouts.
Resources: Troop Games - Large Area (website)
Troop Games - Small Space (website)
Troop Games - Pre-Meeting (website)

[X] [X] **#8** Interview at least three people (different from those you interviewed for requirement 5) over the age of 40 who were Scouts. Find out about their Scouting experiences. Ask about the impact that Scouting has had on their lives. Share what you learned with your counselor.

Event Requirements

Merit Badge College 2027

Scouting Heritage **2014-01-01**

U	PR	
X		**#8** Interview at least three people (different from those you interviewed for requirement 5) over the age of 40 who were Scouts. Find out about their Scouting experiences. Ask about the impact that Scouting has had on their lives. Share what you learned with your counselor.

Event Requirements

Merit Badge College 2027

Merit Badge College Adult

Scouting Heritage (2014 version): Scouting Heritage 2014-01-01

U	PR	
X		<style isBold="true">#1</style> Discuss with your counselor the life and times of Lord Baden-Powell of Gilwell. Explain why he felt a program like Scouting would be good for the young men of his day. Include in your discussion how Scouting was introduced in the United States, and the origins of Boy Scouting and Cub Scouting under Baden-Powell. <style isItalic="true">Resource:</style> Baden Powell - Father of Scouting, Origins of Scouting (video)
		#**2.** Do the following:
		#**(a)** Give a short biographical summary of any TWO of the following, and tell of their roles in how Scouting developed and grew in the United States.
X	X	<style isBold="true">#2a[1]</style> Daniel Carter Beard <style isItalic="true">Resource:</style> Daniel Carter Beard - BSA Founder (video)
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X	X	**#2a[5]** James E. West *Resource:* James E. West - BSA Founder (video)
X	X	**#2a[6]** Green Bar Bill Hillcourt. *Resource:* Green Bar Bill Hillcourt Biography (video)
		#**(b)** Discuss the significance to Scouting of any TWO of the following:
X	X	**#2b[1]** Brownsea Island *Resource:* Artifact of the Week - Brownsea Island (video)
X	X	**#2b[2]** The First World Scout Jamboree *Resources:* Artifact of the Week - World Scout Jamborees Part 01 (video) Artifact of the Week - World Scout Jamborees Part 02 (video)

Event Requirements

Merit Badge College 2027

Scouting Heritage (2014 version): Scouting Heritage 2014-01-01

U	PR	
X	X	<style isBold="true">#2b[3]</style> Scouts BSA Handbook <style isItalic="true">Resources:</style> NSM History of the Scout Handbook (video) Artifact of the Week - First Scout Handbook (video)
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X	X	<style isBold="true">#4b</style> Write or visit the National Scouting Museum. Obtain information about this facility. Give a short report on what you think the role of this museum is in the Scouting program. <style isItalic="true">Resources:</style> National Scouting Museum at Summit Bechtel Reserve Virtual Tour (video) National Scouting Museum at Philmont Virtual Tour (website)
X	X	**#4c** Visit an exhibit of Scouting memorabilia or a local museum with a Scouting history gallery, or (with your parent or guardian's permission and counselor's approval) visit with someone in your council who is recognized as a dedicated Scouting historian or memorabilia collector. Learn what you can about the history of Scouting America. Give a short report to your counselor on what you saw and learned.
X	X	**#5** Learn about the history of your unit or Scouting in your area. Interview at least two people (one from the past and one from the present) associated with your troop. These individuals could be adult unit leaders, Scouts, troop committee members, or representatives of your troop's chartered organization. Find

Event Requirements

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Scouting Heritage (2014 version): Scouting Heritage 2014-01-01

U PR

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[X] [X] **#8** Interview at least three people (different from those you interviewed for requirement 5) over the age of 40 who were Scouts. Find out about their Scouting experiences. Ask about the impact that Scouting has had on their lives. Share what you learned with your counselor.

Event Requirements

Merit Badge College 2027

Scouting Heritage (2014 version): Scouting Heritage 2014-01-01

U	PR	
X		**#8** Interview at least three people (different from those you interviewed for requirement 5) over the age of 40 who were Scouts. Find out about their Scouting experiences. Ask about the impact that Scouting has had on their lives. Share what you learned with your counselor.

Event Requirements

Merit Badge College 2027

Merit Badge College

Search & Rescue : Search and Rescue 2014-01-01

U PR

#1. Do the following:

- [X] [ ] **#1a** Explain to your counselor the hazards you are most likely to encounter while participating in search and rescue (SAR) activities, and what you should do to anticipate, help prevent, mitigate, and respond to these hazards.
- [X] [ ] **#1b** Discuss first aid and prevention for the types of injuries or illnesses that could occur while participating in SAR activities, including: snakebites, dehydration, shock, environmental emergencies such as hypothermia or heatstroke, blisters, and ankle and knee sprains.
- [X] [ ] **#10** Find out about three career or volunteer opportunities in search and rescue. Pick one and find out the education, training, and experience required for this professional or volunteer position. Discuss this with your counselor, and explain why this position might interest you.

#2. Demonstrate knowledge to stay found and prevent yourself from becoming the subject of a SAR mission.

- [X] [ ] **#2a** How does the buddy system help in staying found and safe?
- [X] [ ] **#2b** How can knowledge of the area and its seasonal weather changes affect your plans?
- [X] [ ] **#2c** Explain how the Ten Essentials are similar to a "ready pack."

#(c) Explain the following terms:

- [X] [ ] **#3c[1]** AFRCC (Air Force Rescue Coordination Center)
- [X] [ ] **#3c[2]** IAP (Incident Action Plan)
- [X] [ ] **#3c[3]** ICS (Incident Command System)
- [X] [ ] **#3c[4]** Evaluating search urgency
- [X] [ ] **#3c[5]** Establishing confinement
- [X] [ ] **#3c[6]** Scent item
- [X] [ ] **#3c[7]** Area air scent dog
- [X] [ ] **#3c[8]** Briefing and debriefing.

Event Requirements

Merit Badge College 2027

Search & Rescue : Search and Rescue 2014-01-01

U	PR	
		#3. Discuss the following with your counselor:
X		**#3a** The difference between search and rescue
X		**#3b** The difference between PLS (place last seen) and LKP (last known point)
X		**#4** Find out who in your area has authority for search and rescue and what their responsibilities are. Discuss this with your counselor, and explain the official duties of a search and rescue team.
X		**#5** Working with your counselor, become familiar with the Incident Command System. You may use any combination of resource materials, such as printed or online. Discuss with your counselor how features of the ICS compare with Scouting's patrol method.
		#6. Identify four types of search and rescue teams and discuss their use or role with your counselor. Then do the following:
X		**#6a** Interview a member of one of the teams you have identified above, and learn how this team contributes to a search and rescue operation. Discuss what you learned with your counselor.
X		**#6b** Describe the process and safety methods of working around at least two of the specialized SAR teams you identified above.
X		**#6c** Explain the differences between wilderness, urban, and water SARs.
		#7. Discuss the Universal Transverse Mercator (UTM) system, latitude, and longitude. Then do the following:
X		**#7a** Using a 1:24,000 scale USGS topographic map, show that you can identify a location of your choice using UTM coordinates.
X		**#7b** Using a 1:24,000 scale map, ask your counselor to give you a UTM coordinate on the map, then identify that location.
X		**#7c** Show that you can identify your current location using the UTM coordinates on a Global Positioning System (GPS) unit and verify it on a 1:24,000 scale map.
X		**#7d** Determine a hypothetical place last seen, and point out an area on your map that could be used for containment using natural or human-made boundaries.
		#8. Choose a hypothetical scenario, either one presented in the Search and Rescue merit badge pamphlet or one created by your counselor. Then do the following:
X	X	**#8a** Complete an incident objectives form for this scenario.

Event Requirements

Merit Badge College 2027

Search & Rescue : Search and Rescue 2014-01-01

U	PR	
X	X	**#8b** Complete an Incident Action Plan (IAP) to address this scenario.
X	X	**#8c** Discuss with your counselor the behavior of a lost person and how that would impact your incident action plan (for example, the differences between searching for a young child versus a teen).
X	X	**#8d** After completing 8(a)-8(c), discuss the hypothetical scenario with your counselor.
		#9. Discuss with your counselor the terms hasty team and hasty search. Then do the following:
X	X	**#9a** Plan and carry out a practice hasty search—either urban or wilderness—for your patrol or troop. Include the following elements in the search: clue awareness, evidence preservation, tracking the subject, and locating the subject using attraction or trail sweep.
X	X	**#9b** When it's over, hold a team debriefing to discuss the hasty search. Discuss problems encountered, successful and unsuccessful tactics, and ideas for improvement.

Event Requirements

Merit Badge College 2027

Space Exploration **2020-01-01**

U	PR	
		#1. Tell the purpose of space exploration and include the following:
X		**#1a** Historical reasons
X		**#1b** Immediate goals in terms of specific knowledge
X		**#1c** Benefits related to Earth resources, technology, and new products
X		**#1d** International relations and cooperation.
X	X	**#2** Design a collector's card, with a picture on the front and information on the back, about your favorite space pioneer. Share your card and discuss four other space pioneers with your counselor.
		#3. Build, launch, and recover a model rocket. Make a second launch to accomplish a specific objective. Identify and explain the following rocket parts: **Safety Note:** Rocket must be built to meet the safety code of the National Association of Rocketry. See the "Model Rocketry" chapter of the Space Exploration merit badge pamphlet. **Alternative requirement:** If local laws prohibit launching model rockets, do the following activity: Make a model of a NASA rocket. Explain the functions of the parts. Give the history of the rocket. Identify and explain the following rocket parts:
X	X	**#3a** Body tube
X	X	**#3b** Engine mount
X	X	**#3c** Fins
X	X	**#3d** Igniter
X	X	**#3e** Launch lug
X	X	**#3f** Nose cone
X	X	**#3g** Payload
X	X	**#3h** Recovery system

Event Requirements

Merit Badge College 2027

Space Exploration **2020-01-01**

U	PR	
X	X	**#3i** Rocket engine.
		#4. Discuss and demonstrate each of the following:
X		**#4a** The law of action-reaction
X		**#4b** How rocket engines work
X		**#4c** How satellites stay in orbit
X		**#4d** How satellite pictures of Earth and pictures of other planets are made and transmitted.
		#5. Do TWO of the following:
X		**#5a** Discuss with your counselor a robotic space exploration mission and a historic crewed mission. Tell about each mission's major discoveries, its importance, and what was learned from it about the planets, moons, or regions of space explored.
X		**#5b** Using articles from the internet, photographs and text, create a blog, website, or slide show about a current planetary mission or use magazine photographs, news clippings, and articles from the internet to make a scrapbook about a current planetary mission.
X		**#5c** Design a robotic mission to another planet, moon, comet, or asteroid that will return samples of its surface to Earth. Name the planet, moon, comet, or asteroid your spacecraft will visit. Show how your design will cope with the conditions of the environments of the planet, moon, comet, or asteroid.
		#6. Describe the purpose, operation, and components of ONE of the following:
X		**#6a** Space shuttle or any other crewed orbital vehicle, whether government-owned (U.S. or foreign) or commercial
X		**#6b** International Space Station.
		#7. Design an inhabited base located within our solar system, such as Titan, asteroids, or other locations that humans might want to explore in person. Make drawings or a model of your base. In your design, consider and plan for the following:
X		**#7a** Source of energy
X		**#7b** How it will be constructed
X		**#7c** Life-support system

Event Requirements

Merit Badge College 2027

Space Exploration **2020-01-01**

U	PR	
X		**#7d** Purpose and function.
X		**#8** Discuss with your counselor two possible careers in space exploration that interest you. Find out the qualifications, education, and preparation required and discuss the major responsibilities of those positions.

Event Requirements

Merit Badge College 2027

Surveying **2024-01-01**

U	PR	
X		**#1.** Show that you know first aid for the types of injuries that could occur while surveying, including cuts, scratches, snake bite, insect stings, tick bites, heat- and cold-related reactions, and dehydration. Explain to your counselor why a surveyor should be able to identify the poisonous plants and animals found in your area.
		#2. Do the following:
X		**#2a.** Set an instrument over one of the corners of a five-sided lot laid out by your counselor and sighting one of the other corners for reference and, using radial measurement methods, record the angle turned and the distance measured to each of the remaining corners, as directed by your counselor. Record the angle and distance to five topographic features (trees, shrubs, rocks, etc.) near your work area.
X		**#2b.** Measure to three of the same points with GPS measurement and compare the distances between the points measured.
X		**#3.** From the field notes gathered for requirement 2, and using a protractor and scale, plot the points you measured and draw to scale a map of your survey which includes a north arrow, scale bar, title, date and a diagram of the lot you measured. Submit a neatly drawn copy.
X		**#4.** Use one of the corner markers from requirement 2 as a benchmark with an assumed elevation of 100 feet. Using a level and rod, collect and record measurements, and determine the elevation of the other four corner markers.
X	X	**#5.** Get a copy of the deed to a piece of property approved by your counselor, from the local courthouse or title agency. Discuss with your counselor the different parts of the deed and their importance.
X		**#6.** Discuss emerging surveying technology such as drones and laser scanning and the strengths and weaknesses of each.
X		**#7.** Tell what GPS is; discuss with your counselor the importance of GPS and how it is changing the field of surveying.
X		**#8.** Identify three career opportunities that would use skills and knowledge in surveying. Pick one and research the training, education, certification requirements, experience, and expenses associated with entering the field. Research the prospects for employment, starting salary, advancement opportunities and career goals associated with this career. Discuss what you learned with your counselor and whether you might be interested in this career.

Event Requirements

Merit Badge College 2027

Truck Transportation **2006-01-01**

U	PR	
X		**#1** List the major truck lines serving your town.
		#2. Do the following:
X		**#2a** Describe the role of truck transportation within commerce (the movement of goods, funds, and information).
X		**#2b** Describe how trucks fit into a company's supply chain. This could be a manufacturer, importer, wholesaler, or retailer.
X		**#2c** On paper, map out how goods that are manufactured overseas are transported to a retailer in this country.
X		**#3** Describe the difference between the gasoline engine and the diesel engine that power trucks. List the advantages of each.
		#4. Visit a truck terminal and complete items 4(a) through 4(e). After your visit, share what you have learned with your counselor.
X		**#4a** Find out what kind of maintenance program the company follows to help keep its fleet, drivers, and the roadway safe.
X		**#4b** Find out how dispatchers maintain communication with drivers on the road.
X		**#4c** Talk with a professional truck driver about safety. Learn about the truck driver's rules of the road for safe driving. List five safe-driving rules every professional truck driver must follow.
X		**#4d** Review the driver's log and find out what kind of information the log contains.
X		**#4e** Learn about important federal regulations that help ensure public safety.
		#5. Do the following:
X		**#5a** Outline the general organization of a trucking company. Describe what each department does.
X		**#5b** List five positions with trucking companies and describe each one.
X		**#6** Name five government agencies that work closely with the trucking industry. Describe their role.
X		**#7** List five different kinds of trucks. Tell the service each provides.
		#8. Assume that you are going to ship by truck 500 pounds of goods (freight class 65) from your town to another town 500 miles away. Your shipment must arrive within three days. Explain in writing:

Event Requirements

Merit Badge College 2027

Truck Transportation **2006-01-01**

U	PR	
X		**#8a** How to prepare the shipment
X		**#8b** How to compare at least three carriers for time in transit and rates
X		**#8c** How to choose which carrier to use
X		**#8d** How to insure the shipment for damages
X		**#9** Explain the following terms: bill of lading, ETA, logbook, intermodal, containers, tariff, shippers, carrier, consignee, drayage, and cartage.
X		**#10** Explore careers related to this merit badge. Research one career to learn about the training and education needed, costs, job prospects, salary, job duties, and career advancement. Your research methods may include—with your parent or guardian's permission—an internet or library search, an interview with a professional in the field, or a visit to a location where people in this career work. Discuss with your counselor both your findings and what about this profession might make it an interesting career.

Event Requirements

Merit Badge College 2027

Weather **2018-01-01**

U	PR	
X		**#1** Define meteorology. Explain what weather is and what climate is. Discuss how the weather affects farmers, sailors, aviators, and the outdoor construction industry. Tell why weather forecasts are important to each of these groups.
X		**#2** Name five dangerous weather-related conditions. Give the safety rules for each when outdoors and explain the difference between a severe weather watch and a warning. Discuss the safety rules with your family.
X		**#3** Explain the difference between high and low pressure systems in the atmosphere. Tell which is related to good and to poor weather. Draw cross sections of a cold front and a warm front , showing the location and movements of the cold and warm air, the frontal slope, the location and types of clouds associated with each type of front, and the location of precipitation.
X		**#4** Tell what causes wind, why it rains, and how lightning and hail are formed.
X		**#5** Identify and describe clouds in the low, middle, and upper levels of the atmosphere. Relate these to specific types of weather.
X		**#6** Draw a diagram of the water cycle and label its major processes. Explain the water cycle to your counselor.
X		**#7** Identify some human activities that can alter the environment, and describe how they affect the climate and people.
X		**#8** Describe how the tilt of Earth's axis helps determine the climate of a region near the equator, near the poles, and across the area in between.
		#9. Do ONE of the following:
X		**#9a** Make one of the following instruments: wind vane, anemometer, rain gauge, hygrometer. Keep a daily weather log for one week using information from this instrument as well as from other sources such as local radio and television stations, NOAA Weather Radio All Hazards, and internet sources (with your parent or guardian's permission). Record the following information at the same time every day: wind direction and speed, temperature, precipitation, and types of clouds. Be sure to make a note of any morning dew or frost. In the log, also list the weather forecasts from radio or television at the same time each day and show how the weather really turned out.
X		**#9b** Visit a National Weather Service office or talk with a local radio or television weathercaster, private meteorologist, local agricultural extension service officer, or university meteorology instructor. Find out what type of weather is most dangerous or damaging to your community. Determine how severe weather and flood warnings reach the homes in your community.
X		**#10** Give a talk of at least five minutes to a group (such as your unit or a Cub Scout pack) explaining the outdoor safety rules in the event of lightning, flash floods, and tornadoes. Before your talk, share your outline with your counselor for approval.
X		**#11** Find out about a weather-related career opportunity that interests you. Discuss with and explain to your counselor what training and education are required for such a position, and the responsibilities required of such a position.

Event Requirements

Merit Badge College 2027

Woodcarving: Wood Carving **2015-01-01**

U	PR	
		#1. Do the following:
X		**#1(a)** Explain to your counselor the hazards you are most likely to encounter while wood carving, and what you should do to anticipate, help prevent, mitigate, or lessen these hazards.
X		**#1(b)** Show that you know first aid for injuries that could occur while wood carving, including minor cuts and scratches and splinters.
		#2. Do the following:
X	X	**#2(a)** Earn the Totin' Chip recognition.
X		**#2(b)** Discuss with your counselor your understanding of the Safety Checklist for Carving.
		#3. Do the following:
X		**#3(a)** Explain to your counselor, orally or in writing, the care and use of five types of tools that you may use in a carving project.
X		**#3(b)** Tell your counselor how to care for and use several types of sharpening devices, then demonstrate that you know how to use these devices.
		#4. Using a piece of scrap wood or a project on which you are working, show your counselor that you know how to do the following:
X		**#4(a)** Paring cut
X		**#4(b)** Basic cut and push cut
X		**#4(c)** V cut
X		**#4(d)** Stop cut or score line
X		**#5** Tell why different woods are used for different projects. Explain why you chose the type of wood you did for your projects in requirements 6 and 7.
X		**#6** Plan your own or select a project from the Wood Carving merit badge pamphlet and complete a simple carving in the round.
X		**#7** Complete a simple low-relief OR a chip carving project.