Digital Technology

Important information about how to prepare for the merit badge

Parents, please review the content of a merit badge prior to registering your Scout; some badges may be challenging for younger Scouts. Also, the class discussions are more interesting if Scouts review *all* the requirements for the badge before the program. The chances of your scout completing all the work for the badge increases dramatically when they are properly motivated and the badge content is age-appropriate.   Digital Technology is complex and academic in nature and will be easier for Scouts older than 12 years of age to complete.

Scouts who are familiar with digital technology (usually much more than their parents,) should not have difficulty with this badge.

Merit badges are not designed to be completed in a day and require independent work on the part of the Scout outside of the workshop.

Parent's please note: National requires that we know that the individual Scout has completed the requirements, so please ask your Scout to follow the following guidelines:
For all merit badges, all aspects of completing merit badges are the Scout's responsibility. It is the Scout's responsibility to answer the requirements. Not the parent.
A Scout may use a parent's email account to submit requirement answers   However:
   It is not the parent's responsibility to scan in your work and send it to me
      That is the Scout's responsibility
Parents are not to act as an agent of the Scout. All assignments must be completed by the Scout and if there are issues, the Scout must communicate those to me.

Before attending, please make sure your Scoutmaster knows the Scout is taking this virtual merit badge class and indicates the Initial Unit Leader Signature in the merit badge in Scoutbook. [Click on the Scout in Scoutbook, click on their advancement, the merit badge and Initial Unit Leader Signature, enter a date.] (The Scoutmaster may alternately sign the front of a blue card for the badge. Blue cards are available here: https://support.grandcanyonbsa.org/wp-content/uploads/2022/11/mb-app-blue-cardfillable.pdf   send the signed card to: bill.nelson@scouting.org)

IMPORTANT: For full credit for the badge, the Scout must attend the classes and individually pass a quiz after each class, evidence of the prerequisites, as explained below, must be sent to: bill.nelson@scouting.org

The merit badge classes will be held in two sessions about 2-3 hours long each.

Though not required, Scout workbooks are very useful and we prefer that Scouts use the workbook during the program. A workbook for Digital Technology can be found at:
https://scoutingevent.com/Download/010159868/OR/Digital_Technology_MB_Worksheet.pdf

About blue cards: We will utilize Scoutbook.com and record requirement completion online. Blue cards can be printed by parents and unit leaders in Scoutbook by clicking on the Scout, the Scout's advancement, the merit badge, and print blue cards.

Prerequisites

- TYPE OR WRITE LEGIBLY AND WHERE NOT ASKED FOR A LIST, IN COMPLETE SENTENCES.
- PUT YOUR NAME IN EMAILS TO ME AND IN ALL ATTACHMENTS
- READ THE REQUIREMENTS CAREFULLY, YOU MUST ANSWER THE REQUIREMENTS AND PROVIDE WHAT IS BEING ASKED FOR.
- COPY A PARENT OR GUARDIAN ON ALL CORRESPONDENCE

PREREQUISITES

Digital Technologies: Requirements: 1, 2, 3, 4, 5, 6, 7, 8, and 9

You need to do the requirements on your own. We will discuss your answers in class and provide a lot additional information. You need to send your answers to the requirements to: bill.nelson@scouting.org (ALWAYS COPY A PARENT OR GUARDIAN)

Prerequisites

1 . View the Personal Safety Awareness "Digital Safety" video (with your parent or guardian's permission). Follow this link to the Personal Safety Awareness videos.

Send me a screen image of any of the final screens of the video.

2. Do the following:

(a)   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. Use the workbook or a Word document to share your answer. Be prepared to discuss your answers in class.

> Resources:
> Technology Evolution - 100,000 BCE to 2020 (video)
> Past & Present Technology, Then And & Now (video)
> Past and Present | Technology Then and Now (video)

(b)   Describe what kinds of computers or devices you imagine might be available when you are an adult. Send your answer to bill.nelson@scouting.org

> Resource:
> Technologies of the Future (video)

3. Do the following: (use the workbook or a Word document to share your answers. Be prepared to discuss in class.)

(a) Explain to your counselor how text, sound, and pictures are digitized for storage.
For help, see the following videos:
Text coding: https://youtu.be/rVja_Tv9_Uk?si=GbIIYq4JfSIPGpyo
Sound: https://youtu.be/g3tfly9mKhY?si=I0O02-4Nf2V3d_Z7
Pictures: https://youtu.be/yck1o8-__Yg?si=ncHnKoalio_URGi5

(b) Describe the difference between lossy and lossless data compression, and give an example where each might be used.
Help is here: https://youtu.be/3nym3fkHqyk?si=-FAAjYLwYR8F62OC

(c) Describe two digital devices and how they are made more useful by their programming.

> Resource:
> Types of Digital Devices (video)

(d) 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)

(e) Explain what a computer network is and the difference between a local area network (LAN) versus a wide area network (WAN).
Help is here: https://youtu.be/NyZWSvSj8ek?si=mqBCcIA_5Jkfn_qU

4. Do the following: (use the workbook or a Word document to share your answers. Be prepared to discuss in class.)

(a) Explain what a program or software application or "app" is and how a computer uses a CPU and memory to execute it.
A help video is here: https://youtu.be/XQq_1yaVDpM?si=JKwGWZA6rLmoj2y8

(b) Name four software programs or mobile apps you or your family use, and explain how each one helps you.

Resource:
Understandng Software Applications (video)

(c) Describe what malware is, and explain how to protect your digital devices and the information stored on them.
Help video: https://youtu.be/mqzP7gJDM2s?si=h7O2yI-vT0kSih5z

(d) Explain what a barcode, a QR code, and an RFID tag are along with the data they contain and two or more examples where each are used.

Resources: What is RFID (video)
How do Barcodes Work?
Difference between barcodes and QR codes

5. Do the following: (use the workbook or a Word document to share your answers. Be prepared to discuss in class.)

(a) 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)

(b) Using an internet search engine (with your 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.

> What I need from you:
>
> 1.   Give me the links to the sites you visited
> 2.   From each site give me a list of ideas you found
> 3.   Explain how you used a search engine to find this information.
>
> Send to: bill.nelson@scouting.org

(c) 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. Help is here: https://youtu.be/w0QbnxKRD0w?si=BhE65IU0RONRAaQQ

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. (Use the workbook or a Word document to share your answers. Be prepared to discuss in class.)

> a.   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)
> b.   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)
> c.   Using a graphics program, design and draw a campsite plan for your troop OR create a flier for an upcoming troop event, incorporating text and some type of visual such as a photograph or an illustration.
>   Resource:
>   Google Drawing Basics (video)

d. 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)

e. 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. Let me know what the troop activity was.
   Resource:
   Sending Photos on a Smartphone (video)

f. 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)

g. 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 guardians AND counselor AND get their approval.
   Resource:
   How to Write a Blog Post for Beginners: From Start to End (video)

h. Create a web page 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 web page with your parent or guardians AND counselor AND get their approval.
   Resource:
   How To Create a Simple Webpage (video)

7. Do the following: (Use the workbook or a Word document to share your answers. Be prepared to discuss in class.)

(a) Explain to your counselor each of these protections and why they exist: copyright, patents, trademarks, trade secrets.
Help: https://youtu.be/EUo4G1lw-w8?si=KPEytEXY-omEcDwo

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

(c) Discuss with your counselor an article or (with your parent of 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: (Use the workbook or a Word document to share your answers. Be prepared to discuss in class.)

(a)   Describe why it is important to properly dispose of digital technology. List at least three dangerous 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)

(b)   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)

(c)   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.

Resource:
How E-Wastes Are Recycled (video)

(d)   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)](website)

(e) 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)](website)

9: Do ONE of the following:

a. Explore careers related to the Digital Technology 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. ref: https://www.bls.gov/ooh/computerand-information-technology/home.htm

b. Explore how you could use knowledge and skills from the Digital Technology merit badge to pursue a hobby or interest. 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.